The Mineral Industry of Turkey

By E. Shekarchi [1]

The mineral and metallurgical industry of Turkey in 1975 was not as successful as in the previous year. Slight decreases in production of iron ore, primary copper, and lead-zinc ores were noted, while a significant decline in the production of pyrite, mercury, magnesite, antimony, bauxite, and boron minerals were registered. The only production increases were in chromite and manganese. Based on the Turkish State Institute of Statistics' figures, the growth rate of real gross national product (GNP) in 1975 reached 7.9%. This compared favorably with real growth of 6.9% in 1972, 6.6% in 1973, and 7.1% in 1974. Per capita income at 1975 prices increased to $900.[2] Workers remittances from abroad were down by 9% for 1975 to $1.3 billion.

In mid-April, the Turkish Parliament passed legislation enabling the Government to set up a State Industry and Labor Investment Bank. The Government was directed to inaugurate the bank and its branch offices in 2 years. The Treasury Department was to own 85% of the total capital stock, and to the extent feasible, this was to be sold to workers abroad as well as domestically. The remaining 15% equity was to be raised by State-owned enterprises and the Ministry of Industry and Technology. Turkish workers abroad who bought shares in the bank were to be guaranteed a 12% return on investment. The bank envisaged, by this method, to induce Turkish workers abroad, particularly in West Germany, to remit funds in West German banks estimated at $3 billion.

Turkey's associate membership in the Economic Communities (EC) and the goal of full membership by 1995 worked for an advantage when, finally, the right of a large number of Turkish workers to remain in Europe and thereby keep incoming remittances of foreign exchange high was approved by the EC Council of Ministers.

Turkish Government policy and existing legislation welcomed foreign investment provided that it responded to clearly delineated national criteria. Foreign investment was to contribute positively to economic development, contribute to exports, and introduce new technology; it was not to displace Turkish enterprises or entail a monopoly. Nevertheless, foreign direct investment in Turkey, which appeared to have gathered momentum in the 1950's and early 1960's, has for a variety of reasons stagnated in recent years.

The State-owned Turkish Fertilizer Corporation (Azot Sanayi T.A.S.) announced in December that it had awarded a contract to Kellogg International for engineering and consulting services on its proposed $100 million ammonia plant at Gemlik. Financing details remained to be worked out, but it was reported that Libya has agreed to provide 50% of the financing for the new plant.

In April 1975, Gubre T.A.S. (Fertilizer Plant Corporation of Turkey) inaugurated at Iskenderun a major fertilizer complex with a capacity of 230,000 tons per year of sulfuric acid and 150,000 tons per year of phosphoric acid. The same corporation had previously established at Yarimca, Izmit, a similar complex which was designed to produce 150,000 tons per year of phosphoric acid and 100,000 tons per year of triple superphosphate. Total cost of the two projects was estimated at about

[1] Supervisory physical scientist, International Data and Analysis.

[2] Where necessary, values have been converted from Turkish lira (Lt) to U.S. dollars at the rate of Lt14 = US$1.00.

$36 million and was to save Turkey $90 million per year through import substitution.

The International Finance Corp. (IFC) agreed to finance Boru Sanayii A.S. (BORUSAN) in building a new steel pipe plant at Gemlik. The IFC purchased 10% of the equity in BORUSAN's new investment which was eventually to cost approximately $4 million. The IFC also confirmed in mid-1975 that it would join Koc Holdings and other private investors in forming a company which was to set up a gray iron castings plant with a capacity of 22,000 tons per year. The project aimed to supply a substantial portion of the casting requirements of the tractor and automotive manufacturing industries of Turkey. IFC was to provide equity capital of $1.4 million and a loan of $7.5 million for this project.

The full text of the crude oil pipeline agreement between Turkey and Iraq was published in the Turkish Official Gazette of June 17, 1975. Remuneration for the transport across the Turkish territory of crude oil originating in Iraq and for the loading of such crude oils on tankers at the terminal was fixed at $0.35 per barrel. The Iraqis agreed to sell the Turkish Government crude oil from the Iraqi pipeline in the amount of 10 million tons per year between 1977–79, 12 million tons per year from 1980–82, and 14 million tons per year in 1982 and thereafter. Construction of the pipeline and other facilities was expected to be completed within a period of 14 months. Mannesmann-Thyssen of West Germany was handling the entire project, covering a distance of 981 kilometers. Some 640 kilometers of the pipeline was in Turkish territory. Turkey and Iraq also agreed to set up a joint transport company to handle miscellaneous imports and exports. The proposed company planned to handle most of Iraq's imports from Europe via Turkey.

In June, the Turkish Government and the Soviet Union reached an agreement to increase the capacity of the Iskenderun steel plant from 1 million to 4 million tons per year, to expand the Seydisehir aluminum installations, and to set up two lignite-fired thermal powerplants with a capacity of 400 megawatts each in Cannakale and Bolue Provinces. New areas for the expansion of economic technical cooperation between the two countries were under consideration, and a 10- to 12-year loan of approximately $600 million for the machinery, material, and equipment was to be provided by the Soviet Union. Turkey was to reimburse this loan by exports to the U.S.S.R. A joint committee was to be established to improve the management of economic and technical cooperation between these two countries.

The United Nations Development Program (UNDP) agreed to assist in the exploitation and development of uranium deposits in the southwestern part of Turkey. The project was to be carried out by the State-owned Maden Tetkik ve Arama Enstitüsü (MTA), the Mineral Research and Exploration Institute of Turkey, assisted by the Turkish Atomic Energy Commission, the Turkish Coal Enterprise, and Etibank, under the coordination of the Ministry of Energy and Natural Resources.

Mining activities in Turkey were governed by Mining Law 6309, enacted in 1954, Petroleum Law 6324 of 1954, and the amended Petroleum Reform Law 1702, of 1973. The bill to nationalize the extraction of boron, lignite, and other unspecified strategic minerals, which was drafted and revised by previous governments, had not yet been approved by parliament.

Exploration programs for base metal anamolies were continued and mineral water resources were catalogued by MTA. In 1975, on the basis of MTA's surveys, detailed geological and hydrogeochemical studies of the geothermal fields, geophysical resistance studies and gradient drilling, a pilot turbo generator of 0.5-megawatt capacity was installed in the Denizli-Sarakoy area.

PRODUCTION

Table 1 gives the production of primary minerals and processed metals and nonmetals.

Table 1.—Turkey: Production of mineral commodities

(Metric tons unless otherwise specified)

Commodity	1973	1974	1975 p
METALS			
Aluminum:			
Bauxite	352,100	664,909	569,803
Metal	--	1,900	16,500
Antimony:			
Ore:			
Gross weight	r 41,547	40,573	24,562
Mine output, metal content	r 6,066	5,924	3,586
Regulus	63	543	850
Chromite ore (48% Cr_2O_3 content) thousand tons	261	316	450
Copper:			
Mine output, metal content	30,200	40,700	43,500
Metal:			
Smelter output:			
Primary	24,264	r 29,577	26,950
Secondary	450	NA	NA
Refined output	15,000	29,600	21,400
Iron and steel:			
Iron ore, gross weight thousand tons	2,570	2,256	2,230
Pig iron and ferroalloys:			
Ferrochromium e	9,500	9,500	9,500
Pig iron and other ferroalloys thousand tons	896	1,200	e 1,200
Crude steel (including castings) do	1,163	1,458	1,794
Lead:			
Mine output, metal content [1]	r 4,562	4,842	4,693
Smelter	5,500	5,600	3,000
Manganese ore, gross weight	3,708	3,240	33,937
Mercury 76-pound flasks	r 8,738	8,877	5,421
Zinc, mine output, metal content [2]	r 24,700	31,600	26,600
NONMETALS			
Abrasives, natural emery	92,292	149,772	70,700
Asbestos	4,776	15,586	15,589
Barite	89,808	45,732	9,854
Boron minerals	525,588	1,038,588	970,951
Cement, hydraulic thousand tons	8,952	8,940	10,833
Clays:			
Bentonite	r 7,810	13,420	39,764
Kaolin	r 23,987	25,100	21,735
Other	r 44,041	77,612	230,673
Fertilizer materials, all type	667,897	574,250	537,612
Fluorspar	1,935	1,428	1,405
Gypsum e thousand tons	358	357	433
Magnesite, crude ore	r 351,119	520,767	458,869
Meerschaum kilograms	22,200	20,850	30,900
Perlite	r 14,736	17,963	10,527
Pyrite, cupreous, gross weight	43,530	76,249	23,564
Salt, all types thousand tons	889	913	740
Sodium sulfate	36,838	55,504	79,646
Stone, sand and gravel, n.e.s.:			
Limestone thousand tons	[3] 430	[3] 428	7,000
Marble	34,300	28,900	18,700
Quartzite	r 114,113	NA	NA
Sand, siliceous	r 59,480	31,226	27,612
Shale (argillite)	13,929	NA	NA
Sulfur:			
Native, other than Frasch	17,748	10,476	19,450
Content of pyrite	20,268	35,456	e 35,000
Byproduct	29,200	e 29,000	e 29,000
Total	67,216	e r 74,932	e 83,450
Wollastonite	10,295	NA	NA
MINERAL FUELS AND RELATED MATERIALS			
Asphalt, natural thousand tons	r 289	340	474
Coal:			
Bituminous do	4,643	5,121	5,000
Lignite do	7,476	e 7,800	e 8,300
Coke and semicoke:			
Metallurgical do	e 1,280	1,250	e 1,260
Gashouse do	e r 32	e r 32	e 68
Breeze do	e r 116	e r 110	72
Total do	1,428	1,392	e 1,400
Gas, natural:			
Gross production e million cubic feet	24,000	25,000	25,000
Marketed production e do	5,000	5,000	5,000
Petroleum:			
Crude thousand 42-gallon barrels	25,144	23,661	22,167

See footnotes at end of table.

Table 1.—Turkey: Production of mineral commodities—Continued

(Metric tons unless otherwise specified)

Commodity	1973	1974	1975 p
MINERAL FUELS AND RELATED MATERIALS—Continued			
Petroleum—Continued			
Refinery products:			
Gasoline ---thousand 42-gallon barrels--	16,426	16,454	16,899
Jet fuel ---do---	1,927	2,855	2,080
Kerosine ---do---	4,466	3,999	3,204
Distillate fuel oil ---do---	23,053	23,658	23,503
Residual fuel oil ---do---	37,759	36,537	37,865
Lubricants ---do---	NA	257	511
Other:			
Liquefied petroleum gas ---do---	4,929	4,659	4,298
Naphtha ---do---	2,046	2,756	2,949
Petroleum asphalt ---do---	1,407	1,448	1,765
Unspecified ---do---	75	161	101
Refinery fuel and losses ---do---	3,483	1,896	3,167
Total ---do---	[4] 95,571	94,680	96,342

e Estimate. p Preliminary. r Revised. NA Not available.

[1] Total content of material reported as run-of-mine lead ore and lead-zinc ore; excludes lead content of material reported as run-of-mine zinc ore.

[2] Total content of material reported as run-of-mine zinc ores and lead-zinc ore; excludes zinc content of material reported as run-of-mine lead ore.

[3] Does not include crushed limestone used in the manufacture of cement.

[4] Total for listed figures only; does not include an estimate for lubricant production.

TRADE

Ending a long-standing controversy between British Petroleum Ltd. and Mobil Oil Turk A.S. on the import price of crude oil, the Turkish Government announced in April that it had reached a provisional equitable solution with the companies. The agreement reportedly gave British Petroleum and Mobil Oil Turk the rights to import 36° API crude oil at $10.50 per barrel on terms of a 3-month credit. The agreement also gave the companies the right once again to distribute their products in Turkey, and exploration rights were given to British Petroleum.

Turkey in 1975 reported a severe trade deficit of $3.3 billion. Imports, led by machinery ($1.3 billion), crude petroleum ($811 million), and iron and steel ($679 million), reached $4.7 billion, an increase of 25%, over the 1974 import bill. Exports during the same period fell 8.6%, to $1.4 billion.

Table 2.—Turkey: Exports of mineral commodities

(Metric tons unless otherwise specified)

Commodity	1973	1974	Principal destinations, 1974
METALS			
Aluminum:			
Ore and concentrate	144,620	187,400	All to U.S.S.R.
Oxide and hydroxide	--	101,175	U.S.S.R. 101,125.
Metal:			
Scrap	100	--	
Unwrought	43,973	--	
Semimanufactures	4,870	21,446	U.S.S.R. 17,400; Kuwait 1,341.
Antimony ore and concentrate	5,069	13,174	United States 6,460; West Germany 5,100.
Arsenic, natural sulfides	3	--	
Copper including alloys:			
Unwrought	2,602	363	France 149; United Kingdom 126; Switzerland 69.
Semimanufactures	r 8	12,483	West Germany 4,437; Belgium-Luxembourg 2,335.
Chromium ore and concentrate	404,910	645,896	United States 159,828; Switzerland 103,495.
Iron and steel:			
Ore and concentrate, including roasted pyrite	5,372	--	
Metal:			
Ferroalloys	20,547	9,388	United States 2,900; Belgium-Luxembourg 2,290; Netherlands 1.762.

See footnotes at end of table.

Table 2.—Turkey: Exports of mineral commodities—Continued

(Metric tons unless otherwise specified)

Commodity	1973	1974	Principal destinations, 1974
METALS—Continued			
Iron and steel—Continued			
Metal—Continued			
Semimanufactures	r 27,521	686,450	West Germany 220,145; Japan 147,269.
Lead ore and concentrate	8,390	40,973	Italy 19,013; Bulgaria 11,499.
Manganese ore and concentrate	520	2,000	All to Spain.
Mercury—76-pound flasks	8,011	4,616	Pakistan 1,389; United Kingdom 1,378.
Molybdenum ore and concentrate	--	18	All to Sweden.
Tungsten ore and concentrate	--	9	All to United Kingdom.
Zinc:			
Ore and concentrate	26,010	54,746	Italy 27,405; Bulgaria 11,500.
Metal, semimanufactures	559	96	Switzerland 91.
Other:			
Ore and concentrate	8,970	1,500	All to Japan.
Ash and residue containing nonferrous metals	587	--	
Metals including alloys, all forms	169	545	Netherlands 271; Bulgaria 110; Poland 100.
NONMETALS			
Abrasives, natural, n.e.s	r 65,209	89,427	Netherlands 45,809; France 15,770; U.S.S.R. 15,000.
Barite	110,530	69,573	West Germany 36,226; U.S.S.R. 15,000.
Boron materials:			
Crude natural borates	355,124	664,461	Italy 129,890; France 109,565; Switzerland 95,755.
Oxide and acid	14,376	11,368	West Germany 2,704; United Kingdom 2,150.
Cement—thousand tons	980	292	Syria 144; Libya 42.
Chalk	522	4,084	Libya 3,500.
Clays and clay products:			
Crude clays, n.e.s.:			
Bentonite	2,020	2,420	Iraq 1,520; Italy 900.
Fire clay	45	--	
Fuller's earth, chamotte	50	--	
Kaolin	5,927	13,285	Lebanon 13,275.
Other	17	--	
Products:			
Refractory	r 3,271	646	Iran 638.
Nonrefractory	5,674	1,480	West Germany 545; Netherlands 459; Libya 362.
Diatomite and other infusorial earth	2	12,348	All to Belgium-Luxembourg.
Gypsum	--	1,500	Libya 1,000; Lebanon 500.
Lime	4,568	11,127	All to Libya.
Magnesite:			
Crude	r 8,551	2,970	East Germany 1,800; Australia 1,150.
Calcined	73,444	89,949	Australia 58,400; Netherlands 12,051.
Pyrite (gross weight)	6,160	18,130	West Germany 16,130; U.S.S.R. 2,000.
Salt	23	--	
Stone, sand and gravel:			
Dimension stone:			
Crude and partly worked, calcareous	3,834	14,920	Lebanon 7,398; Italy 3,717.
Worked	16	19	Cyprus 16.
Dolomite	27	73	Iran 40; Greece 33.
Gravel and crushed rock	50	--	
Quartz and quartzite	16	--	
Sand, excluding metal bearing	1,000	--	
Sulfur, sulfuric acid	26,025	--	
Talc	66	125	Iran 80.
Other nonmetals, n.e.s.:			
Crude, meerschaum, amber, jet	8	3	West Germany 2.
Slag, dross and similar waste, not metal bearing	166	200	All to Belgium-Luxembourg.
Oxides and hydroxides of magnesium, strontium, barium	50	--	
Building materials of asphalt, asbestos and fiber cement, and unfired nonmetals, n.e.s	1,529	24	All to Iran.
Unspecified	8,921	37,030	West Germany 10,750; Italy 8,350; Belgium-Luxembourg 5,750.

See footnote at end of table.

Table 2.—Turkey: Exports of mineral commodities—Continued

(Metric tons unless otherwise specified)

Commodity	1973	1974	Principal destinations, 1974
MINERAL FUELS AND RELATED MATERIALS			
Asphalt, natural	50	--	
Coal, coke, briquets	600	300	All to Iraq.
Hydrogen, helium, and rare gases	11	13	All to Israel.
Petroleum:			
Refinery products:			
Gasoline thousand 42-gallon barrels	3,192	4,253	Sweden 1,285; United States 640; West Germany 595.
Kerosine and jet fuel ---do---	r 749	1,492	Belgium-Luxembourg 319; Lebanon 278; Greece 234.
Distillate fuel oil ---do---	1,257	254	Syria 139; Netherlands 115.
Residual fuel oil ---do---	749	--	
Lubricants ---do---	--	154	All to Libya.
Other ---do---	840	171	Iran 119; Libya 52.
Mineral tar and other coal-, petroleum, or gas-derived crude chemicals	11,357	550	All to West Germany.

r Revised.

Table 3.—Turkey: Imports of mineral commodities

(Metric tons unless otherwise specified)

Commodity	1973	1974	Principal sources, 1974
METALS			
Aluminum:			
Oxide and hydroxide	1,892	451	U.S.S.R. 242; West Germany 132.
Metal:			
Unwrought	40,363	50,387	Switzerland 9,708; France 7,490; Norway 6,542.
Semimanufactures	r 6,712	2,400	France 779; West Germany 428; Switzerland 237.
Arsenic trioxide, pentoxide and acids	57	63	West Germany 25; France 20.
Cadmium metal including alloys, all forms	8	12	Netherlands 7; Belgium-Luxembourg 3.
Chromium oxide and hydroxide	201	132	West Germany 64; Italy 50.
Cobalt:			
Oxide and hydroxide	16	12	Mainly from Belgium-Luxembourg.
Metal including alloys, all forms	1	(1)	Mainly from United States.
Copper:			
Ore and concentrate	17,858	--	
Matte	399	--	
Metal:			
Scrap	456	10	West Germany 8; United States 2.
Unwrought	5,073	352	France 149; United Kingdom 125.
Semimanufactures	r 6,052	11,376	West Germany 4,437; Belgium-Luxembourg 2,335.
Iron and steel:			
Ore and concentrate---thousand tons	301	310	Brazil 225; United States 62.
Metal:			
Scrap ---do---	187	118	United States 81; Switzerland 32.
Pig iron, ferroalloys, and similar materials ---do---	173	76	West Germany 30; U.S.S.R. 18.
Primary forms ---do---	r 458	411	West Germany 121; Japan 70; Switzerland 66.
Semimanufactures:			
Bars, rods, angles, shapes, sections ---do---	141	493	West Germany 167; Switzerland 67.
Universals, plates, sheets ---do---	r 171	472	West Germany 178; Japan 144.
Hoop and strip ---do---	8	5	West Germany 1; France 1.
Rails and accessories ---do---	6	62	France 29; Belgium-Luxembourg 13.
Wire ---do---	3	7	Mainly from West Germany.
Tubes, pipes, fittings ---do---	38	20	West Germany 5; Hungary 2; United States 2.
Castings and forgings ---do---	1	2	Mainly from Italy.
Lead metal including alloys:			
Scrap	213	1,829	United States 1,009; Switzerland 717.
Unwrought	4,415	9,192	United Kingdom 5,850; West Germany 1,162.
Semimanufactures	17	648	Canada 451; Italy 109.

See footnotes at end of table.

Table 3.—Turkey: Imports of mineral commodities—Continued

(Metric tons unless otherwise specified)

Commodity	1973	1974	Principal sources, 1974
METALS—Continued			
Magnesium metal including alloys:			
Unwrought	41	229	Switzerland 199; West Germany 12.
Semimanufactures	(1)	1	Mainly from Sweden.
Manganese:			
Ore and concentrate	2,973	3,381	Belgium-Luxembourg 2,650; Greece 731.
Oxides	793	531	West Germany 290; Japan 100.
Metal	1	11	Mainly from Japan.
Nickel:			
Matte, speiss and similar materials	256	188	United Kingdom 93; Netherlands 70.
Semimanufactures	114	103	West Germany 48; United Kingdom 18.
Platinum-group metals and silver metal, including alloys:			
Platinum group—troy ounces	8,359	3,279	United Kingdom 2,669.
Silver—do	46,297	127,574	Mainly from West Germany.
Tin:			
Oxides	12	23	West Germany 22.
Metal including alloys, all forms	r 1,370	1,124	Switzerland 733; West Germany 147.
Titanium:			
Ore and concentrate	655	502	Netherlands 201; Switzerland 105; Australia 100.
Oxides	2,293	1,538	West Germany 385; United Kingdom 368; Czechoslovakia 281.
Zinc:			
Oxide	4,974	3,383	Netherlands 1,006; Lebanon 786; West Germany 675.
Metal including alloys:			
Unwrought	13,490	23,847	West Germany 14,195; Belgium-Luxembourg 3,029.
Semimanufactures	541	169	Yugoslavia 100.
Zirconium ore and concentrate	94	17	Australia 12; Switzerland 3.
Other:			
Ores and concentrates, n.e.s	30	--	
Ash and residue containing nonferrous metals, n.e.s	201	596	United States 348; United Kingdom 197.
Oxides, hydroxides, peroxides of metals, n.e.s	136	105	West Germany 42; France 21; Netherlands 15.
Alkali, alkaline earth, rare-earth metals	r 3	134	Bulgaria 130.
Base metals including alloys, all forms, n.e.s	r 6	18	Switzerland 9; France 5.
NONMETALS			
Abrasives, natural, n.e.s.:			
Crude	(1)	12	All from Netherlands.
Dust and powder of precious and semiprecious stones—kilograms	4	5,006	Do.
Grinding and polishing wheels and stones	910	1,132	United Kingdom 170; Italy 157; West Germany 157.
Asbestos, crude	9,881	14,584	Canada 5,293; U.S.S.R. 4,993; Republic of South Africa 2,044.
Cement	1,412	612	West Germany 250; France 177; United States 167.
Clays and clay products:			
Crude clays, n.e.s.:			
Bentonite	148	26	Sweden 9; Belgium-Luxembourg 6.
Fuller's earth, chamotte	57	--	
Kaolin	37	2,599	United States 1,289; United Kingdom 1,278.
Other	r 474	440	Netherlands 183; United States 97.
Products:			
Refractory (including nonclay bricks)	63,681	37,829	Australia 11,106; United States 4,541.
Nonrefractory	596	1,631	West Germany 893; United Kingdom 303.
Diamond, industrial—thousand carats	225	59	Netherlands 33; United Kingdom 25.
Diatomite and other infusorial earth	274	292	West Germany 204; Italy 42.
Feldspar	22	96	West Germany 70; Sweden 25.

See footnotes at end of table.

Table 3.—Turkey: Imports of mineral commodities—Continued

(Metric tons unless otherwise specified)

Commodity	1973	1974	Principal sources, 1974
NONMETALS—Continued			
Fertilizer materials:			
Crude:			
Nitrogenous	19,756	(1)	All from West Germany.
Phosphatic	329,231	590,994	Morocco 280,414; Tunisia 171,257; Lebanon 52,646.
Manufactured:			
Nitrogenous	847,253	368,410	Italy 123,709; Netherlands 78,577; U.S.S.R. 64,078.
Phosphatic	62,395	10,298	Greece, 7,470; Lebanon 1,333.
Potassic	78	176	West Germany 125; Israel 50.
Other	800,444	421,901	France 94,997; Australia 92,714; Italy 78,087.
Fluorspar	1,176	654	West Germany 498; Switzerland 75.
Graphite, natural	522	517	West Germany 339; Australia 90.
Lime	80	80	All from West Germany.
Magnesite	189	5	France 3.
Mica:			
Crude	41	53	Sweden 32; West Germany 12.
Worked	24	29	Spain 18; West Germany 6.
Pigments, mineral	206	5,198	Cyprus 5,000.
Precious and semiprecious stones, except diamond, manufactured —kilograms	1,527	5,890	East Germany 5,645.
Pyrite (gross weight)	r 127,461	77,191	Cyprus 58,707; United Kingdom 18,484.
Salt	35	14	West Germany 11.
Sodium and potassium compounds:			
Caustic soda	r 24,866	21,625	Italy 17,713; West Germany 2,587.
Caustic potash	422	400	United Kingdom 150; France 137; Italy 101.
Stone, sand and gravel:			
Dimension stone:			
Crude and partly worked	3	6	All from West Germany.
Worked	--	1	Do.
Dolomite	27	2	All from Sweden.
Gravel and crushed rock	2,358	178	Denmark 90; France 80.
Quartz and quartzite	368	394	West Germany 168; Netherlands 101.
Sand, excluding metal bearing	11	11	All from Belgium-Luxembourg.
Sulfur:			
Elemental:			
Other than colloidal	26,260	210	Mainly from Switzerland.
Colloidal	92	131	France 93; West Germany 33.
Sulfuric acid	12,730	129,407	Switzerland 129,398.
Talc	390	549	Italy 497; France 25.
Other nonmetals, n.e.s.:			
Crude	21	43	Canada 20; Sweden 17.
Oxides and hydroxides of magnesium, strontium, barium	141	113	Italy 28; West Germany 21; Belgium-Luxembourg 20.
Building materials of asphalt, asbestos and fiber cement, and unfired nonmetals, n.e.s	1,184	87	U.S.S.R. 68.
MINERAL FUELS AND RELATED MATERIALS			
Asphalt and bitumen, natural	2,534	69	United Kingdom 45; United States 15.
Carbon black	16,433	16,919	Italy 12,967; United Kingdom 778; Israel 699.
Coal and coke, including briquets	23,926	163,474	Italy 119,653; Poland 37,554.
Petroleum:			
Crude and partly refined thousand 24-gallon barrels	r 56,052	74,936	Iraq 34,482; Saudi Arabia 28,183.
Refinery products:			
Gasoline —do—	47	49	Mainly from Italy.
Kerosine and jet fuel —do—	21	1	Mainly from Netherlands.
Distillate fuel oil —do—	(1)	--	
Residual fuel oil —do—	744	1,918	Canada 709; Venezuela 374.
Lubricants —do—	985	938	United Kingdom 291; Netherlands 231.
Other:			
Liquefied petroleum gas —do—	58	550	Italy 426; France 79; Libya 45.
Mineral jelly and wax —do—	34	32	West Germany 15; Romania 5.
Unspecified —do—	17	46	U.S.S.R. 35.
Mineral tar and other coal-, petroleum-, or gas-derived crude chemicals	813	1,376	Netherlands 676; Belgium-Luxembourg 651.

r Revised.
1 Less than ½ unit.

COMMODITY REVIEW

METALS

Aluminum.—Turkish bauxite deposits, located mainly in the Taurus mountains, were estimated to contain 400 million tons of 46% Al_2O_3 reserves. Only the Konya-Seydisehir deposit was in active production during 1975 while the Gaziantep-Islahiye, Hatay-Iskenderun, and Isparta deposits remained dormant. Bauxite production for 1975 was 14% below that of 1974 while aluminum production was the highest recorded for Turkey.

Seydisehir Integrated Aluminum plant (SIA) operated below capacity during the year due to the energy shortage. The cost of the Soviet financed plant, operated by Etibank, had tripled since the 1960 estimates. Also the plant suffered from slow deliveries of equipment, construction difficulties, and sharply increased prices on caustic soda and petroleum coke.

Antimony.—The antimony deposits of Turkey with estimated total reserves of 900,000 tons are found in four districts. Only the Tokat-Turhal District deposits were mined in 1975. The reported proven reserves were 124,000 tons with an antimony content ranging between 11% and 13%. Proven antimony reserves of the other three districts were as follows: Katahya-Simva 300,000 tons of 4% to 5% Sb; Balikesir 305,000 tons of 5% to 6% Sb, and Nidge-Grumusler 100,000 tons of 5% Sb content. Production of antimony in Turkey decreased 39% in 1975 compared with 1974 output.

Chromite.—Chromite ore production reached a new historical high in 1975 due to high prices and market demand. A total of about 941,000 tons of run of mine ore was produced during the year, of which 648,000 tons were from private mines and the remaining from State-owned Etibank mines. Etibank's Antalya ferrochrome plant produced at full capacity, 10,000 tons for the year. Some was used domestically and the remainder was exported to Western European steel mills. Establishment of a ferrochrome plant near Mardin in Elâzig Province with the technical and financial assistance of Metals and Chemicals Co. of Japan proceeded on schedule in 1975. Etibank, the sole owner of the Elâzig ferrochrome plant, expected high-carbon ferrochrome production to begin in 1977. At full-capacity production, the Elâzig plant would produce 50,000 tons of ferrochrome per year.

Copper.—The worldwide slump in copper prices affected both the private and public sectors copper production which showed a 9% decrease in 1975 output. Karadeniz Bakir Isletmeleri A.S. (KBI), (the Black Sea Copper Company), at Samsun, owned 49% by Etibank and the remainder by private Turkish banks, did not achieve its full capacity. When fully operational the Samsun flash copper smelter was to produce 41,000 tons of blister copper, 365,000 tons of sulfuric acid, 11,000 troy ounces of gold, and 210,000 troy ounces of silver per year. The complex was equipped with a 8,000-ton-per-day capacity slag cleaning plant.

Proven ore reserves in some of the copper bearing deposits were as follows: Ergani, copper-pyrite ore, 12 million tons; Cakmakkaya, copper-pyrite ore, 98 million tons; Damar, copper-pyrite ore, 92 million tons; Lahanos, copper-pyrite-zinc ore, 12 million tons; Cayeli, copper-pyrite-zinc ore, 25 million tons; Kure, copper ore, about 2 million; and Madenkoy, copper ore, 15 million tons.

Iron Ore.—Iron ore production in 1975 was 2.2 million tons, a decrease of 1.2% compared with that of 1974. Approximately 1.3 million tons of the total output was from the State-owned Divrigi mine in Central Turkey. Due to inflation, the cost of the iron ore concentrator and pelletization plant was increased from an estimated $26 million in 1970 to $138 million in 1975 as the feasibility study had indicated. The 2-million-ton-per-year roasting plant and 1.6-million-ton pelletizing plant were expected to be completed by 1976. Energy requirements at the mine and pelletizing plant were to be met by a new 180-megawatt thermal powerplant to be erected at Kangal. The thermal plant was to utilize lignite from a newly discovered 150-million-ton deposit in Sivas Province.

Feasibility studies continued on the Hassan Celebi iron ore deposits, which contained an estimated 306 million tons of iron ore with grades ranging from 28% to 48% iron.

Iron and Steel.—Crude steel production, including castings and pig iron, increased 13% in 1975 compared with that of 1974. A third Turkish iron and steel plant at Iskenderun, financed by the U.S.S.R., was officially inaugurated in 1975 in the presence of Soviet officials. The plant was expected to produce 2 million tons of steel per year when in full production. However, the management announced that new agreements with the Soviet Union had been reached to increase production capacity 50%. In 1975, the plant employed 14,000 workers and produced 200,000 tons of pig iron.

Colakoglu Metalurgi Co. installed a concast three-strand continuous billet caster in August. The machine was able to cast billets of 75 to 130 square millimeters. A similar concast machine was due to go into production in 1976 at Electrofer Celik Sanayii. Meanwhile, a Demag single-strand billet caster, delivered to Elektro Metal Sanayii in 1971, was due to go in full operation by 1976. This machine, with a capacity of 30,000 tons per year, could produce billets 80, 100 and 120 square millimeters in a variety of grades including spring, stainless, and tool steels. A concast slab caster was also in the process of being installed at the Eregli steel mill with an expected date of production in 1976.

A fourth integrated steelworks was planned for construction at Elâzig. The project was supported by Makina Va Kimya Endüstrisi Kurumu the State-owned machinery and chemical concern which already operated a steel plant at Kirikkale. No information was available on the financing or shareholders by the end of 1975.

Lead and Zinc.—Cinku-Kurusum Metal Sannayii of Turkey (CINKUR) continued mining in the Zamanti Valley and created stockpiles for further processing. The zinc smelter, owned 47% by Etibank and the remainder by private investors, was not completed at yearend 1975. However, trial runs were made and mid-1976 was given as the full production date. The CINKUR smelter was to process 238,000 tons of mined lead-zinc ore per year and was to produce 40,000 tons of zinc and zinc products. Production of lead and zinc in 1975 was 17% less than 1974 output.

Manganese.—Because of higher demand for manganese in international markets during 1975, Turkish manganese producers, in both the private and public sectors, produced about 34,000 tons of manganese ore, a 10-fold increase compared with 1974 output. Most of the manganese produced was metallurgical grade ore, which was consumed locally or exported to Western Europe.

Mercury.—Etibank's Sizma and Holikoy mercury mines in southwestern Turkey produced about 93,000 tons of ore, 39% below that of 1974. However, intense mapping and geochemical prospecting continued at Etibank's newly acquired 1,000-hectar Bolali concession in Usak Province. By yearend no progress reports were available.

Mercury consumption in the industrialized nations was sharply down in 1975 following reports of mercury pollution. Turkish representatives participated in a conference held in Geneva, Switzerland, to solve the problem of severe price drops of mercury on the international market by prorating production and exchanging data.

Tungsten.—Total reserves of Turkish tungsten deposits were reported to be about 15 million tons; Bursa-Uludag estimated at 14.5 million tons with 0.3% WO_3 and Elâzig-Keban District 0.5 million tons with 0.5% WO_3. Etibank, the sole owner of the Bursa-Uludag deposit, continued mine development and construction of a concentrator in the foot hills of Uludag during the year. Delays, caused by a fire and slow equipment delivery, postponed the production date from 1976 to early 1977. The concentrator was designed to treat sheelite, the typical ore of the Uludag deposit, at a rate of 560,000 tons per year. Reportedly, the estimated cost of the entire project earmarked at $26 million in 1974 was to increase because of worldwide inflation.

Uranium.—MTA's uranium and thorium exploration program continued during the year. The construction of a small pilot plant to process and enrich uranium ore found in western Turkey continued. Etibank, the owner of the plant, expected partial production in 1976. Other details on the operation were not available.

NONMETALS

Asbestos.—Production of asbestos, mostly chrysotile, remained about 16,000 tons in

1975. Turkish exports of asbestos in recent years have been nil because most of the asbestos production was consumed locally. In 1975, Amyan Sanayii A.S., which owned the concession rights at Mihaliceik, East Eskisehir, announced a tentative plan to build a plant with a 10,000-ton-per-year capacity by 1977, and to further expand the plant eventually to a 30,000-ton-per-year capacity. The plant was to process ore for both the local and export markets.

Barite.—Turkish barite deposits, with estimated total reserves of about 10 million tons, were located at Kahraman, Maras, Aksehir, Sarkikaraagac, Alanya, and Tavsanli. However, Barit Maden Turk A.S. (BMT) was the sole producer of barite in 1975. A new decision by the Government of Turkey required all barite producers to export their product in packaged ground form after yearend 1976. During 1975, until the grinding facilities were installed at the mine, BMT could export only 75% of its product in lump form.

Production of barite decreased 78% in 1975, partially because of governmental restriction and partially because of lower world demand and acute competition.

Boron.—Published figures indicated that total reserves of boron minerals in Turkey were about 490 million tons, which constituted more than 50% of world reserves. However, Turkey produced less than 20% of world boron supplies in 1975. Etibank, the State-owned banking and mining organization, mined and processed most of Turkey's boron mineral and derivatives, while private companies controlled the small remainder. Construction of Etibank's processing plant, which was to produce 180,000 tons of pentahydrate borax, 60,000 tons of anhydrous borax, and 17,000 tons of dehydrate borax per year, continued during the year. Furthermore, Etibank announced the construction of a second boric acid plant with a 100,000-ton-per-year capacity, a second sodium perborate plant with a 20,000-ton-per-year capacity, an alpha-hemihydrate plant with a 25,000-ton-per-year capacity, and a hydrogen peroxide plant with a 20,000-ton-per-year capacity to be completed by 1978. The estimated cost of these new installations was not available by yearend 1975.

Cement.—Cement production in Turkey showed a substantial increase in 1975, reaching a new high of 10.8 million tons compared with 8.9 million tons in 1974. The production increase was in line with predictions made in the 5-year plan. The European Investment Bank (EIB) provided a loan of $7.7 million for the construction of a cement mill at Yozgat, Central Anatolia. The capacity of the Yozgat cement plant was to be 500,000 tons per year of portland cement beginning in 1977. The project was to cost $25 million and was established by Yozgat Isci ve Sanayii A.S., a joint stock company especially formed in 1973 to provide a means by which Turkish workers employed abroad could channel their savings into production investments. In 1975 there were about 7,000 shareholders and these were expected to increase to 10,000.

Fertilizer Materials.—Etibank proposed a major capital investment project for the Karatas phosphate deposit in 1975. The project would require a total investment of $6.5 million of which about $1 million would be for equipment to be purchased abroad, and the remainder for development, mining, and extraction at the mine site. A major extension of Azot Sanayii's fertilizer complex at Samsun was commissioned, which made this installation the largest phosphate fertilizer complex in the country. Supplied and constructed by Davy Powergas of West Germany, production capacity of the complex was 1,450 tons of fertilizer per day. The plant employed Olin/Chemiebau technology and was to use Moroccan and Tunisian phosphate rock. By yearend 1975, total Turkish phosphate fertilizer production reached 200,000 tons, and during 1975, 110,000 tons was imported.

Magnesite.—The major magnesite deposits with a reported 17 million tons total reserves were located in Eskisehir, Konya, Denezli, Sivas, Erzincan, Kütahya, Mugla, and Bursa. Magnesite Anonim Sirketi Magnent Ltd., the most important producer, exported 45,000 tons of dead burnt magnesite in 1975. Total magnesite production by various companies was about 459,000 tons which was 12% less than the 1974 output. It was announced that Turkey's annual refractory brick requirements were 53,000 tons in 1973 and were to increase to 142,000 tons by 1985. The refractory brick plant at Konya, operated by the Government, was expanded to a 33,000-ton capacity.

Perlite.—Perlite production was estimated at 11,000 tons, a decrease of about 41% in 1975 compared with that of 1974. Turkey, a newcomer to the international perlite market, was not able to increase its exports, due to stiff competition in prices as well as in transportation. However, perlite producers were optimistic about the future export trade in perlite and their penetration into the market.

Pyrite.—Cupreous pyrite production decreased 69% compared with that of 1974. The decrease was attributed to sluggish copper markets in the Western World and decreased activities in copper production in Turkey. West Germany remained, as in the previous year, the main importer of Turkish pyrite, in exchange for processing it on a barter-like basis.

Salt.—Because of increased domestic consumption and exports of salt, principally to Cyprus, salt production reached a new high of nearly 740,000 tons in 1975. Most of the salt came from the rock salt mines in Anatolya, where some good-quality deposits had been reported. One of the major areas for rock salt consumption was in the tanning industry, where Turkey led among most of the Middle Eastern countries.

MINERAL FUELS

The new Iraq-Turkey petroleum pipeline, which was to give Iraq a new market and security in transit, was almost finished in 1975. The 640-kilometer, 40-inch pipeline from the Kirkuk Field complex in Iraq to the Turkish Iskenderun Bay on the Mediterranean was to be completed by yearend 1976. The pipeline, which was built by Mannesmann-Export Co. of West Germany, was to have an initial capacity of 500,000 barrels per day with an expected peak capacity of up to 700,000 barrels per day. Turkey was to buy 200,000 barrels daily of Iraqi crude from 1977 through 1979, with an option to expand the Turkish offtake to 280,000 barrels per day when the pipeline capacity expands. Iraqi petroleum authorities agreed to pay Turkey a transit fee of 35¢ per barrel for a 20-year period, starting with the transmission of crude.

The Iraq-Turkey pipeline was to extend 341 kilometers from the Kirkuk Field to the Turkish border, and 640 kilometers through Turkey from east to west, crossing the Tigris and Euphrates Rivers to the Mediterranean coast. Turkey was to pay $300 million of the expected $435 million total cost of the project. Feasibility studies on a 2-billion-cubic-feet-per day natural gas pipeline to transport Iraqi natural gas to Istanbul, Turkey, and possibly on to either Europe or the Soviet Union continued and no decision was made by yearend.

According to Türkiye Elekterik Energisi Tüketim Tahminleri, the first nuclear powerplant to produce electricity in Turkey was expected to start operating by 1985. Construction of the plant at Eregli by the Sea of Marmara began in 1975 but the heavy construction was hampered by foundation problems.

Coal.—The Afsin Elbistan lignite project, including an opencast lignite mine and a thermal powerplant, experienced financial difficulties during the year. Reportedly, details of the terms of financing had to be worked out between the World Bank and Türkiye Elektrik Karumu Genel Müdürlugu (TEK), (Turkish Electric Power Directorate General). The cost of the entire project was estimated at $500 million. Mining responsibilities were to be with the Türkiye Komur Isletmeleri (TKI), (Turkish Coal Works). The Elbistan lignite deposit was estimated to contain about 3 billion tons of lignite. TKI planned to mine 20 million tons of lignite annually of which 17.5 million tons were to be used in the power generation plant and 2.5 million tons for other domestic fuel requirements. Initial production of lignite was scheduled for 1978. The powerplant was designed to have four 300-million-watt units with other basic accessories.

Bituminous coal production by both private and the public sectors decreased 2% in 1975 compared with 1974 output, while lignite production in both sectors increased 6% in 1975. Although coke production registered a slight increase, Turkey was obliged to import coke for its growing steel industry from abroad and apparently was to do so in the coming years. Türkiye Demir ve Celik Isletmeleri, the Turkish iron and steel industry, proposed that the Iskenderun steel mill would have to import 1.2 million tons of metallurgical-grade coking coal for its operation in 1977.

Consumption information on bituminous

and lignite coal and coke was not available; however, it is thought that sale figures gave a good indication of domestic consumption. In the following tabulation, data on production and sales for 1974 and 1975 are given in thousand tons:

	Production		Sales	
	1974	1975	1974	1975
Bituminous coal	8,511	8,109	4,708	4,594
Lignite [1]	7,666	8,433	7,600	8,200
Coke	1,214	1,242	640	438

[1] Data do not agree with that shown on table 1 because of difference in source: Turkiye Komur Isletmeleri Kurumu.

Petroleum.—Türkiye Petrolleri A.O. (TPAO), a State-owned Turkish petroleum company, was evaluating the results of seismic and magnetic surveys carried out early in 1975. Reportedly, on the basis of this evaluation TPAO was to spot some wells in the Turgut and Bolgi areas in 1976. TPAO also made a seismic, gravity, and magnetic survey over 5,318 square kilometers in the Mediterranean offshore area during the year. A similar survey with an international group was planned for 6,000 square kilometers of the eastern Mediterranean during the 1976 exploration season.

A group of five companies headed by Marathon spudded a well in the Sea of Marmara. However, after drilling to a depth of about 7,500 feet, the well was abandoned and by yearend 1975 Marathon had surrendered to the Turkish authorities its entire block of eight exploration licenses in the area.

TPAO's research vessel *Sisimik* carried on preliminary exploration work in the Mediterranean during the year. However, actual offshore drilling was postponed because of still unsolved problems between Greece and Turkey. By yearend both countries were hopeful that, by putting the whole problem before the International Court at The Hague, some workable solution acceptable to both parties might be worked out.

During 1975, Turkey obtained 73% of its petroleum imports from Iraq, 15% from Libya, and the remainder from Saudi Arabia, Egypt, and other countries.

Badger Turkey Ltd. was awarded the contract for the refinery expansion of Istanbul Petroleum Refining Co. (IPRAS), a wholly-owned subsidiary of TPAO. The $70-million project was to increase capacity of the refinery at Yarimca, near Izmit to 13 million tons per year. Atmospheric crude distillation, naphtha reforming, kerosine, diesel, desulfurization, and other units were to be added to the refinery by yearend 1976.

Turkish imports and exports of crude petroleum and refinery products, in thousand tons, for the year 1975 are given in the following tabulation:

	Imports	Exports
Crude petroleum	9,600	--
Naphthalene	--	88
Supergasoline	--	143
Regular gasoline	--	117
Jet fuel	--	95
Diesel oil	103	11
Fuel oil No. 6	292	--
Liquefied petroleum gas	149	--
Lubricants	77	--
Paraffin and others	6	--