



# 2006 Minerals Yearbook

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## MIDDLE EAST

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# THE MINERAL INDUSTRIES OF THE MIDDLE EAST

By Philip M. Mobbs, Glenn J. Wallace, and Thomas R. Yager

Production and processing of crude oil and natural gas formed the foundation upon which the economies of many of the countries in the Middle East region were based. Production of metals and industrial minerals was a significant factor in the economies of Iran and Turkey; besides oil and gas, metal production also was a notable factor in the economies of Bahrain, Oman, Saudi Arabia, and the United Arab Emirates. In 2006, the continued international demand for mineral fuels, especially natural gas and oil, extended the Middle East region's economic boom.

The 14 nations of the Middle East that are covered in this volume encompass an area of more than 6 million square kilometers, which is about two-thirds the size of the United States and about 4% of the world's land mass. In 2006, according to the World Bank Group (2007), the total population of the Middle East region was estimated to be about 262 million compared with 299 million for the United States and 6.5 billion for the world.

## Acknowledgments

The U.S. Geological Survey (USGS) acknowledges and expresses its sincere appreciation to the Government agencies and organizations listed below for providing mineral production statistics and basic economic data.

For mineral production statistics—

- Bahrain—National Oil and Gas Authority;
- Iran—Iranian Mines and Mining Industries Development and Renovation Organization;
- Israel—Mines Authority of the Ministry of National Infrastructures;
- Jordan—Department of Statistics and the Natural Resources Authority;
- Kuwait—Ministry of Planning;
- Oman—Ministry of National Economy;
- Qatar—Central Statistical Office and the Ministry of Energy and Industry;
- Saudi Arabia—Central Department of Statistics and Information of the Ministry of Economy and Planning, and Ministry of Petroleum and Mineral Resources; and
- Turkey—General Directorate of Mining Affairs, General Directorate of Petroleum Affairs, and State Institute of Statistics.

For basic economic and population data—

- The International Monetary Fund and the World Bank Group in the United States.

## General Economic Conditions

As a region, the Middle East was a major supplier of hydrocarbons to the world market. The economies of the oil-producing nations in the region were buoyed by the continued high international market prices for crude oil and natural gas. The economies of nations that were dependant on imports of

refined petroleum products, however, were adversely affected. Merchandise exports of the nations that encircle the Persian Gulf were dominated by hydrocarbons; most of the region's exports of natural gas and oil were shipped to Asia, especially to China, India, Japan, the Republic of Korea, and Singapore.

The abundance of locally produced natural gas, which had resulted in the availability of low-cost electrical energy, coupled with convenient access to ocean transportation, had provided the initial justification for the region's development of energy-intensive mineral-processing operations, such as aluminum smelting; petrochemical establishments, which included fertilizer plants; and value-added minerals facilities, such as direct-reduced iron plants, plants with electric arc furnaces for the production of crude steel, and steel-rolling mills. The significant increases in local demand for natural gas and in international prices of gas during the past few years have decreased the economic feasibility of developing new projects in the region. Expansion of the nonfuel minerals sector, however, was supported by the national Governments of the area, which strongly endorsed the diversification of their respective economies into nonoil sectors.

The booming demand for consumer products was driven in part by the fast-growing, youthful population of the Middle East. The regional trend toward increased population and the significant increase in regional income associated with the high international oil prices spurred numerous projects in the construction sector; these included commercial office buildings, industrial facilities, residential housing, retail centers, and the infrastructure necessary to support the new buildings and facilities. The demands of the construction boom in the past few years have resulted in significant price increases or shortages of construction materials, such as aggregate, aluminum, cement, glass, steel beams, and steel concrete-reinforcing bar (rebar), and have strained the ability of the regional labor force to supply personnel. In 2006, equipment and material cost increases and labor shortages adversely affected the economic feasibility of the construction of new mineral industry projects or the expansion of existing facilities. An increasing number of projects were delayed (Thompson, 2006).

## Investment Data and Political Risk

State-owned companies dominated the Middle East's mineral industry, although foreign investment was finding its way into the mineral sector. In 2006, the sustained international demand for minerals fueled the continued interest in the development or expansion of the mineral operations in the area. Work on planning the construction of new aluminum smelters or smelter-production-capacity expansions, new cement plants, new hydrocarbon-processing plants, and new iron-and-steel-processing facilities was underway in several countries. The expansion of the copper mining and refining capacities of state-owned facilities continued in Iran, subject to constraints based

on the availability of Government funds. Progress was made on the internationally funded development of gold resources in Turkey, Government- and privately funded development of gold resources in Saudi Arabia, foreign-investor-funded development of nickel resources in Turkey, Government-funded development of phosphate resources in Saudi Arabia, and internationally funded development of zinc resources in Yemen.

The U.S. Government had instituted sanctions on international and U.S. company investment in Iran under Executive Order 12957 of March 15, 1995; Executive Order 12959 of May 6, 1995; Executive Order 13059 of August 19, 1997; Public Law 104-172 (The Iran Sanctions Act of 1996 [ISA], formerly the Iran-Libya Sanctions Act of 1996 [ILSA]); and Public Law 107-24 (ISA Extension Act of 2001, formerly the ILSA Extension Act of 2001). In 2006, Public Law 109-293 (Iran Freedom Support Act) extended the ISA sanctions until 2011. Although several foreign companies had entered into agreements for natural gas or oil development projects in Iran, no companies formally had been sanctioned, although they (and the Governments of their home countries) had been made aware of U.S. Government concerns.

## Legislation

In Iraq, Investment law No. 13 paved the way for the Government to begin the privatization of state-owned nonfuel minerals operations. Also, work continued on a new hydrocarbons law.

## Exploration

Local and international exploration companies were allowed to explore for minerals in most of the countries of the region. Government agencies engaged in mineral prospecting and general exploration included the Geological Survey of Iran, the Department of Geological Survey of the Directorate General of Minerals in Oman, the Saudi Geological Survey, the General Directorate of Mineral Research and Exploration in Turkey, and the Geological Survey and Mineral Resources Board of Yemen. In 2006, metal exploration activity was most notable in Turkey. Exploration and prospecting also were underway in Iran, Oman, Saudi Arabia, the United Arab Emirates, and Yemen. As long as high international mineral prices are sustained, additional exploration activity is expected.

In the Middle East region, exploration for crude oil and natural gas was undertaken by state-owned and international oil companies. In 2006, exploration for hydrocarbons continued in all countries of the region.

## Commodity Overview

The Middle East has significant identified resources of boron minerals, bromine, crude oil, helium, natural gas, perlite, phosphate rock, and potash. In tables 5 through 18, estimates for the production of major mineral commodities for 2009 and beyond have been based upon supply-side assumptions, such as announced plans for increased production and new capacity construction and bankable feasibility studies of

development projects. The outlook tables in this summary chapter show historic and projected production trends; therefore, no indication is made about whether the data are estimated or reported and revisions are not identified. Data on individual mineral commodities in tables in the individual country chapters are labeled to indicate estimates and revisions. The outlook segments of the mineral commodity tables are based on projected trends that could affect current (2006) producing facilities and on planned new facilities that operating companies, consortia, or Governments have projected to come online within indicated timeframes. Forward-looking information, which includes estimates of future production, exploration and mine development, cost of capital projects, and timing of the start of operations, are subject to a variety of risks and uncertainties that could cause actual events or results to differ significantly from expected outcomes. Projects listed in the following section are presented as an indication of industry plans and are not a USGS prediction of what will take place.

## Metals

**Alumina and Bauxite and Aluminum.**—Bahrain and the United Arab Emirates each accounted for more than 2% of world aluminum production in 2006; as a region, the Middle East accounted for about 6% of the world's total aluminum production. Much of the produced aluminum was exported, although the increase in regional demand that was attributed to the construction sector had made additional aluminum rolling and fabrication plants more attractive investments in the region.

Regional bauxite production capacity was projected to increase by about 240% by 2011 and by about 280% by 2013 (compared with that of 2006) following the expected completion of the construction of the Saudi Arabian mineral railroad. Compared with 2006, regional aluminum production capacity was expected to increase by 27% by 2009, by about 115% by 2011, and by about 170% by 2013. The projected increase in aluminum output is attributable to the expansion of the Arak and Al Mahdi smelters in Iran and potlines 5B and 6B in the United Arab Emirates, and the construction of new smelters for South Aluminum Corp. in Iran, Sohar Aluminum Co. in Oman, Qatar Aluminium Ltd. in Qatar, Saudi Arabian Mining Co. (Ma'aden) in Saudi Arabia, and Abu Dhabi Aluminium Co. and Emirates Aluminium Co. in the United Arab Emirates (table 6). With the exception of Saudi Arabia, the proposed expansion of the region's aluminum smelter capacity was expected to greatly increase the region's demand for imports of alumina because of the limited occurrences of bauxite and the limited production of alumina in the region.

**Copper.**—The Middle East region was a minor contributor to the world's copper stocks. Iran was the most notable copper producer in the region. The Government of Iran's Fourth Five-Year Development Program (2005 to 2009) accounted for much of the region's planned expansion of production capacity of copper ore (through the proposed capacity expansions at the Dareh Zereshk and the Songun Mines) and refined copper (through the planned expansion of the Sarcheshmeh Refinery).

Other proposed additions to regional copper output included the proposed development of the Jabal Sayid copper deposit

in Saudi Arabia and the planned capacity expansion at Çayeli Bakir İşletmeleri A.Ş.' copper mine in Turkey.

**Gold.**—The Middle East was a significant gold trading region, and the region's jewelry manufacturing sector was a noted consumer of gold; the Middle East's gold mines, however, were modest contributors to the world's supply of precious metals. Plans to increase mine output of gold significantly in Iran, Saudi Arabia, and Turkey could result in the region's gold production reaching an annual volume of about 29 metric tons (t) by 2011.

**Iron and Steel.**—Iron ore was produced in Iran and Turkey. Iron ore deposits in Saudi Arabia had been evaluated in the past but not developed.

The short-term demands of the regional construction boom significantly increased interest in the construction of new plants to produce rolled-steel products, such as rebar. The construction of new steel plants and the expansion of the production capacities of existing crude steel plants also were attractive projects for domestic and international investors, based on current (2006) demand.

Much of the planned expansion of iron and steel production capacity in the region was attributed to projects in the Government of Iran's Fourth Five-Year Development Program, which included the proposed construction of new crude steel plants at Ardakan, Azarbayjan, Bafq, and Sirjan and the scheduled capacity expansions at the steel plants of Iranian Steel Industries National Group, Isfahan Steel Co., Khuzestan Steel Co., and Mobarekeh Steel Co. To help meet the expected increase in raw material demand by the Iranian-steel sector, which was dominated by Government-owned companies, expansions of Iranian iron ore mining and concentration capacities were planned at the Chadormalu, the Chah Gaz, the Chuqart, the Gol Gohar, the Jalal Abad-e-Zarand, and the Sangan iron ore operations.

Other proposed new crude steel facilities in the region included the Consolidated Jordanian Iron and Steel Co. plant in Jordan, the Shadeed Iron & Steel LLC plant in Oman, the Rajhi Steel Industries plant in Saudi Arabia, and the Emirates Iron Industries plant in the United Arab Emirates. Planned increases in crude steel production capacity included the expansions of the Qatar Steel Co. plant in Qatar, Al Azizia Steel Co. Ltd. plant and the Saudi Iron and Steel Co. facilities in Saudi Arabia, and the plant of the Emirates Steel Establishment in the United Arab Emirates.

**Lead and Zinc.**—Projects of the Government of Iran's Fourth Five-Year Development Program accounted for most of the planned expansion of zinc ore and metal production capacities in the region. Included in the 5-year plan were the expansion of production from the Anguran lead-zinc mine and the anticipated construction of a 100,000-t/yr-capacity zinc plant in the Zanjan district. The slight projected increase in the regional lead ore production capacity was associated with the expansion of lead-zinc ore production capacity in Iran (Iranian Mines and Mining Industries Development and Renovation Organization, 2005, p. 195).

**Nickel.**—In Turkey, European Nickel PLC continued trial mining of the Çaldağ Mine's laterite ore while the Government

processed European Nickel's forestry permit. The lack of a forestry permit delayed the planned construction of the mine's heap-leach facilities and processing plant, which originally were expected to begin in 2007. The expected date of initial nickel production was rescheduled for mid-2009. Produced nickel was to be exported.

### *Industrial Minerals*

**Phosphate Rock.**—The Middle East region accounted for about 8% of the world's phosphate rock production in 2006. In Saudi Arabia, the initial production of phosphate rock from Al Jalamid deposit by Ma'aden was expected to begin in 2008. By 2011, Al Jalamid Mine was scheduled to be at full production level, which was expected to be 11.3 million metric tons per year (Mt/yr) of ore with an average grade of 18.9% phosphorous pentoxide (P<sub>2</sub>O<sub>5</sub>). Ma'aden planned to beneficiate the crude phosphate rock to recover about 4.5 Mt/yr of shipping concentrate, which was expected to have an average grade of 32% P<sub>2</sub>O<sub>5</sub> (about 1.4 Mt/yr of P<sub>2</sub>O<sub>5</sub> content). Mine operations were expected to continue for at least 27 years. Concentrate was to be shipped to a fertilizer complex to be built at Ras Az Zawr (Saudi Arabian Mining Co., undated).

### *Mineral Fuels and Related Materials*

**Coal.**—Iran and Turkey were the region's coal producers. By 2011, the planned expansion of mine capacity in Iran was expected to double the country's output capacity to more than 4 Mt/yr. In Turkey, many of the smaller Government-owned coal mines had been closed in the past decade, and most of the planned new coal-fueled electricity-generating powerplants had come online. Coal production capacity was expected to stabilize at about 50 Mt/yr.

**Uranium.**—In Iran, uranium has been produced, but available information was inadequate to estimate output. The production capacity of the Saghand Mine was expected to be about 50 metric tons per year (t/yr) of uranium. A national project to explore for and to evaluate additional uranium deposits in central and northwest Iran was planned (Atomic Energy Organization of Iran, undated).

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TABLE 1  
MIDDLE EAST: AREA AND POPULATION (2006)

Country	Area <sup>1</sup> (square kilometers)	Estimated population <sup>2</sup> (millions)
Bahrain	665	0.7
Iran	1,648,000	69.2
Iraq <sup>1</sup>	437,072	27.5
Israel <sup>3</sup>	20,770	7.0
Jordan	92,300	5.6
Kuwait	17,820	2.6
Lebanon	10,400	4.1
Oman	212,460	2.6
Qatar	11,437	0.8
Saudi Arabia	2,149,690	23.7
Syria	185,180	19.5
Turkey	780,580	72.9
United Arab Emirates	83,600	4.6
Yemen	527,970	21.6
Total	6,177,944	262.4
United States	9,161,923	299.0
World	148,940,000 <sup>4</sup>	6,517.8

<sup>1</sup>Source: U.S. Central Intelligence Agency, World Factbook 2007.

<sup>2</sup>Source: World Bank Group, World Development Indicators 2007.

<sup>3</sup>Does not include Gaza Strip or the West Bank areas.

<sup>4</sup>Land area.

TABLE 2  
MIDDLE EAST: ECONOMY IN 2006<sup>1,2</sup>

Country	Gross domestic product based on purchasing power parity		Real gross domestic product growth rate (percentage)
	Total (billion dollars)	Per capita (dollars)	
Bahrain	\$18	\$24,324	7.6
Iran	595	8,604	4.9
Iraq <sup>3</sup>	88	3,200	2.4
Israel <sup>4</sup>	216	30,686	5.2
Jordan	31	5,550	6.3
Kuwait	65	25,010	5.0
Lebanon	21	5,179	0.0
Oman	48	18,300	5.9
Qatar	31	37,440	10.3
Saudi Arabia	391	16,511	4.3
Syria	82	4,206	4.4
Turkey	671	9,200	6.1
United Arab Emirates	144	31,061	9.4
Yemen	21	971	4.0
Total	\$2,422	XX	XX
United States	12,955	43,329	2.9
World	67,062	XX	5.4

XX Not applicable.

<sup>1</sup>Source: International Monetary Fund, World Economic Outlook Database, October 2007.

<sup>2</sup>Table data compiled April 2008; may be different from that presented in individual country chapters.

<sup>3</sup>Source: U.S. Central Intelligence Agency, World Factbook 2007.

<sup>4</sup>Does not include Gaza Strip or the West Bank areas.

TABLE 3  
SELECTED EXPLORATION SITES IN 2006

Country	Type <sup>1</sup>	Prospect	Commodity	Companies	Resource notes <sup>2</sup>	Exploration notes
Iran	F	Mehdiabad	Zinc, lead	Union Resources Ltd.	15.6 million metric tons of zinc; 6.2 million metric tons of lead	Feasibility study completed.
Turkey	D	Çaldağ	Nickel, cobalt	European Nickel PLC	380,000 metric tons of nickel, 22,000 metric tons of cobalt	Feasibility study completed; trial mining.
Do.	F	Çöpler	Gold	Anatolia Minerals Development Ltd.	118,000 kilograms of gold	Feasibility study completed; additional drilling.
Do.	D	Havran-Kucukdere	Gold	Koza Altın İşletmeleri A.Ş.	NA	Trial mining.

NA Not available.

<sup>1</sup>D--Development approved or ongoing. F--Feasibility work completed or ongoing.

<sup>2</sup>Resources reported where available based on data from various public sources. Data were not verified by the U.S. Geological Survey.

TABLE 4  
MIDDLE EAST: PRODUCTION OF SELECTED MINERAL COMMODITIES IN 2006<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Country	Metals				Industrial minerals						Mineral fuels and related materials		
	Aluminum, metal, primary	Chromite, mine output, gross weight	Steel, crude	Ammonia, N content	Cement, hydraulic	Gypsum	Phosphate rock, gross weight	Potash, K <sub>2</sub> O equivalent	Petroleum		Refinery products (thousand 42-gallon barrels)		
									Crude, including condensate (thousand 42-gallon barrels)				
Bahrain	872	--	--	360	192	--	--	--	13,085		96,217		
Iran	220	225	9,800	1,020	33,000	12,000	325	--	1,530,000 <sup>e</sup>		511,000 <sup>e</sup>		
Iraq	--	--	--	10 <sup>e</sup>	3,515	--	3 <sup>e</sup>	--	730,000 <sup>e</sup>		140,000 <sup>e</sup>		
Israel	--	--	480 <sup>e</sup>	--	5,089	111	2,949	2,220	25		87,300		
Jordan	--	--	140 <sup>e</sup>	--	3,967	334	5,805	1,040	10		30,200 <sup>e</sup>		
Kuwait <sup>e</sup>	--	--	500	470	2,200	--	--	--	980,000		305,000		
Lebanon <sup>e</sup>	--	--	--	--	5,000	30	--	--	--		--		
Oman <sup>e</sup>	--	67	84	1,000	2,600	130	--	--	269,242 <sup>2</sup>		31,027 <sup>2</sup>		
Qatar <sup>e</sup>	--	--	1,039 <sup>2</sup>	1,800	1,400	--	--	--	290,000		115,000		
Saudi Arabia	--	--	4,000	2,000	27,055	2,200	--	--	3,347,000 <sup>3</sup>		715,430		
Syria <sup>e</sup>	--	--	70	120	4,700	444 <sup>2</sup>	3,664 <sup>2</sup>	--	152,000 <sup>2</sup>		88,300		
Turkey <sup>e</sup>	60	458 <sup>3</sup>	23,300	100	47,977 <sup>2</sup>	300	--	--	13,600		183,000		
United Arab Emirates <sup>e</sup>	861	NA	70	380	9,800	130	--	--	900,000		207,000		
Yemen <sup>e</sup>	--	--	--	--	1,550	44	--	--	133,330 <sup>2</sup>		38,400		
Total	2,010	750	39,500	7,260	148,000	15,700	12,700	3,260	8,360,000		2,550,000		
Share of world total	6%	4%	3%	6%	6%	12%	8%	11%	31%		10%		
United States	2,280	--	98,200	8,520 <sup>4</sup>	99,700	21,100	30,100	1,100	1,860,000		3,610,000		
World total	34,100	18,700	1,240,000	128,000	2,520,000	135,000	151,000	30,600	27,100,000		26,400,000		

<sup>e</sup>Estimated; estimated data, U.S. data, and world totals are rounded to no more than three significant digits. NA Not available. -- Zero.

<sup>1</sup>Totals may not add due to independent rounding. Percentages are calculated on unrounded data. Table includes data available as of June 11, 2008.

<sup>2</sup>Reported figure.

<sup>3</sup>Includes natural gas liquids.

<sup>4</sup>Synthetic anhydrous ammonia; excludes coke oven byproduct ammonia.

TABLE 5  
MIDDLE EAST: HISTORIC AND PROJECTED BAUXITE MINE PRODUCTION, 1995-2013

(Metric tons)

Country	1995	2000	2005	2006	2009 <sup>c</sup>	2011 <sup>c</sup>	2013 <sup>c</sup>
Iran	148,000	485,130	437,595	500,000	500,000	710,000	710,000
Saudi Arabia	--	--	--	--	--	2,800,000	3,300,000
Turkey	232,278	458,537	475,349	771,227	800,000	800,000	800,000
Total	380,000	944,000	913,000	1,270,000	1,300,000	4,300,000	4,800,000

<sup>c</sup>Estimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown. -- Negligible or no production.

TABLE 6  
MIDDLE EAST: HISTORIC AND PROJECTED PRIMARY AND SECONDARY ALUMINUM PRODUCTION, 1995-2013

(Metric tons)

Country	1995	2000	2005	2006	2009 <sup>c</sup>	2011 <sup>c</sup>	2013 <sup>c</sup>
Bahrain <sup>1</sup>	450,709	509,308	750,710	872,388	875,000	880,000	880,000
Iran	119,400	140,000	220,000	220,000	300,000	470,000	745,000
Oman	--	--	--	--	350,000	350,000	350,000
Qatar	--	--	--	--	50,000	585,000	585,000
Saudi Arabia	--	--	--	--	--	300,000	670,000
Turkey	61,514	61,000	60,000	60,000	60,000	60,000	60,000
United Arab Emirates	247,400	470,000	722,000	861,000	920,000	1,620,000	2,100,000
Total	879,000	1,180,000	1,750,000	2,010,000	2,560,000	4,300,000	5,400,000

<sup>c</sup>Estimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown. -- Negligible or no production.

<sup>1</sup>May include some secondary aluminum produced from used beverage cans.

TABLE 7  
MIDDLE EAST: HISTORIC AND PROJECTED COPPER MINE PRODUCTION, 1995-2013<sup>1</sup>

(Metal content of concentrate in thousand metric tons)

Country	1995	2000	2005	2006	2009 <sup>c</sup>	2011 <sup>c</sup>	2013 <sup>c</sup>
Iran	102	125	160	208	280	350	350
Israel	--	--	--	--	11	22	22
Oman	--	--	--	--	20	20	20
Saudi Arabia	1	1	1	1	1	10	16
Turkey	24	70	54	46	56	55	55
Total	127	196	215	255	360	430	430

<sup>c</sup>Estimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown. -- Negligible or no production.

<sup>1</sup>Copper content of mined ore (gross weight).



TABLE 8  
MIDDLE EAST: HISTORIC AND PROJECTED REFINED COPPER METAL PRODUCTION, 1995-2013<sup>1</sup>

(Metric tons)

Country	1995	2000	2005	2006	2009 <sup>c</sup>	2011 <sup>c</sup>	2013 <sup>c</sup>
Iran	90,400	155,856	178,000	200,000	250,000	400,000	410,000
Israel	--	--	--	--	11	22	22
Oman	33,900	24,281	24,543	24,500	25,000	25,000	25,000
Turkey	100,300	64,100	95,000	106,000	100,000	100,000	100,000
Total	225,000	244,000	298,000	331,000	375,000	525,000	535,000

<sup>c</sup>Estimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown. -- Negligible or no production.

<sup>1</sup>May include secondary copper.

TABLE 9  
MIDDLE EAST: HISTORIC AND PROJECTED GOLD MINE PRODUCTION, 1995-2013

(Metal content of ore in kilograms)

Country	1995	2000	2005	2006	2009 <sup>c</sup>	2011 <sup>c</sup>	2013 <sup>c</sup>
Iran	630	216	200	200	2,000	3,500	3,000
Oman	591	551	--	--	--	--	--
Saudi Arabia	8,080	3,800	7,456	5,180	11,000	12,000	12,000
Turkey	1,200	500	5,000	4,500	9,000	13,500	13,000
Total	10,500	5,100	12,700	9,900	22,000	29,000	28,000

<sup>c</sup>Estimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown. -- Negligible or no production.

TABLE 10  
MIDDLE EAST: HISTORIC AND PROJECTED BENEFICIATED IRON ORE PRODUCTION, 1995-2013

(Metal content of ore in thousand metric tons)

Country	Average grade	1995	2000	2005	2006	2009 <sup>c</sup>	2011 <sup>c</sup>	2013 <sup>c</sup>
Iran	49%	4,500	5,800	9,162	10,000	15,000	30,000	30,000
Turkey	53%	2,750	2,200	2,450	1,730	2,000	2,100	2,200
Total		7,300	8,000	11,600	12,000	17,000	32,000	32,000

<sup>c</sup>Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

TABLE 11  
MIDDLE EAST: HISTORIC AND PROJECTED CRUDE STEEL PRODUCTION, 1995-2013

(Thousand metric tons)

Country	1995	2000	2005	2006	2009 <sup>c</sup>	2011 <sup>c</sup>	2013 <sup>c</sup>
Iran	4,696	6,600	9,400	9,800	20,000	29,000	29,000
Iraq	300	50	--	--	--	--	--
Israel	200	270	480	480	480	480	480
Jordan	30	30	140	140	390	390	390
Kuwait	--	--	450	500	500	500	500
Oman	--	--	84	84	600	1,200	1,200
Qatar	614	744	1,057	1,039	1,500	1,500	1,500
Saudi Arabia	2,451	2,973	4,185	4,000	5,200	6,500	6,500
Syria	70	70	70	70	590	590	590
Turkey	12,744	14,325	20,960	23,300	25,000	25,000	26,000
United Arab Emirates	--	70	70	70	1,700	1,700	1,700
Total	21,100	25,100	36,900	39,500	56,000	67,000	68,000

<sup>c</sup>Estimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown. -- Negligible or no production.

TABLE 12  
MIDDLE EAST: HISTORIC AND PROJECTED LEAD MINE PRODUCTION, 1995-2013

(Metal content of concentrate in metric tons)

Country	1995	2000	2005	2006	2009 <sup>e</sup>	2011 <sup>e</sup>	2013 <sup>e</sup>
Iran	15,900	18,000	22,000	24,000	23,000	26,000	26,000
Saudi Arabia	50	50	--	--	50	50	50
Turkey	1,196	8,500	21,000	16,500	20,000	20,000	20,000
Total	17,100	27,000	43,000	41,000	43,000	46,000	46,000

<sup>e</sup>Estimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown. -- Negligible or no production.

TABLE 13  
MIDDLE EAST: HISTORIC AND PROJECTED PRIMARY AND SECONDARY REFINED LEAD PRODUCTION, 1995-2013

(Metric tons)

Country <sup>1</sup>	1995	2000	2005	2006	2009 <sup>e</sup>	2011 <sup>e</sup>	2013 <sup>e</sup>
Iran	45,200	50,000	68,000	75,000	75,000	75,000	75,000
Israel	8,200	13,000	27,000	27,000	25,000	25,000	25,000
Turkey	4,000	4,000	6,000	6,000	5,000	5,000	5,000
Total	57,000	67,000	101,000	108,000	105,000	105,000	105,000

<sup>e</sup>Estimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

<sup>1</sup>In addition to the countries listed, Saudi Arabia also produces secondary lead, but information is inadequate to estimate output.

TABLE 14  
MIDDLE EAST: HISTORIC AND PROJECTED NICKEL MINE PRODUCTION, 1995-2013

(Metal content of ore in metric tons)

Country	1995	2000	2005	2006	2009 <sup>e</sup>	2011 <sup>e</sup>	2013 <sup>e</sup>
Turkey	--	--	1,000	1,000	5,000	20,000	40,000

<sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. -- Negligible or no production.

TABLE 15  
MIDDLE EAST: HISTORIC AND PROJECTED ZINC MINE PRODUCTION, 1995-2013

(Metal content of ore in metric tons)

Country <sup>1</sup>	1995	2000	2005	2006	2009 <sup>e</sup>	2011 <sup>e</sup>	2013 <sup>e</sup>
Iran	145,100	90,000	167,000	164,000	165,000	180,000	180,000
Saudi Arabia	500	3,000	--	983	3,000	3,000	3,000
Turkey	9,118	39,000	50,000	80,000	80,000	80,000	80,000
Total	155,000	132,000	217,000	245,000	248,000	263,000	263,000

<sup>e</sup>Estimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown. -- Negligible or no production.

<sup>1</sup>In Yemen, the Jabail zinc deposit was to be developed as a zinc oxide project. Output of 70,000 metric tons (t) of zinc oxide per year was expected to start in 2009. The ore will be treated hydrometallurgically and not concentrated.

TABLE 16  
MIDDLE EAST: HISTORIC AND PROJECTED ZINC METAL PRODUCTION, 1995-2013

(Metric tons)

Country	1995	2000	2005	2006	2009 <sup>c</sup>	2011 <sup>c</sup>	2013 <sup>c</sup>
Iran	--	51,475	120,000	140,000	150,000	230,000	230,000
Turkey	17,050	--	--	--	--	--	--
Total	17,100	51,500	120,000	140,000	150,000	230,000	230,000

<sup>c</sup>Estimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown. -- Negligible or no production.

TABLE 17  
MIDDLE EAST: HISTORIC AND PROJECTED PHOSPHATE ROCK PRODUCTION, 1995-2013

(P<sub>2</sub>O<sub>5</sub> content of ore in thousand metric tons)

Country	1995	2000	2005	2006	2009 <sup>c</sup>	2011 <sup>c</sup>	2013 <sup>c</sup>
Iran	NA	20	40	40	40	40	40
Iraq	300	200	1	1	--	--	--
Israel	1,264	1,305	890	810	950	1,100	1,100
Jordan	1,655	1,824	2,040	1,860	1,800	1,800	1,800
Saudi Arabia	--	--	--	--	1,000	1,400	1,400
Syria	477	646	1,080	1,130	1,190	1,190	1,190
Total	3,700	4,000	4,100	3,800	5,000	5,500	5,500

<sup>c</sup>Estimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown. NA Not available. -- Negligible or no production.

TABLE 18  
MIDDLE EAST: HISTORIC AND PROJECTED SALABLE COAL PRODUCTION, 1995-2013<sup>1</sup>

(Thousand metric tons)

Country	1995	2000	2005	2006	2009 <sup>c</sup>	2011 <sup>c</sup>	2013 <sup>c</sup>
Iran	1,640	2,002	1,898	2,000	3,200	4,500	4,500
Turkey	59,408	64,645	58,676	64,077	50,000	50,000	50,000
Total	61,000	66,600	60,600	66,000	53,000	55,000	55,000

<sup>c</sup>Estimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

<sup>1</sup>Includes anthracite, bituminous, and lignite.

TABLE 19  
MIDDLE EAST: HISTORIC AND PROJECTED URANIUM PRODUCTION, 1995-2013

(Metal content in metric tons)

Country	1995	2000	2005	2006	2009 <sup>c</sup>	2011 <sup>c</sup>	2013 <sup>c</sup>
Iran <sup>1</sup>	--	--	NA	NA	50	50	50

NA Not available. -- Negligible or no production.

<sup>1</sup>Uranium may have been produced in 2005 and 2006, but information is inadequate to estimate output.