IRAN
The Mineral Industry of Iran
By Philip M. Mobbs

Iran had an extensive mineral production and processing sector. Iran’s hydrocarbon sector, which included the production of natural gas and oil, the refining of crude oil, and the distribution of hydrocarbons, was a significant facet of the country’s economy. According to the U.S. Energy Information Administration (2007), Iran was the world’s fourth ranked producer of crude oil. Iranian crude oil and condensate production averaged about 4 million barrels per day in 2006, or about 5.5% of the world’s output. The country also was estimated to account for more than 1% of the world’s output of cement, chromium, refined copper, and fluor spar (table 1; Edelstein, 2007, p. 21.25-21.27; Miller, 2008; Papp, 2008; van Oss, 2008).

Minerals in the National Economy

Production, processing, transportation, and sales of crude oil and natural gas accounted for about 11% of the country’s gross domestic product (GDP) at constant prices. Other mineral commodities, which included coal, industrial minerals, and metals, accounted for a minor amount of the GDP (Central Bank of the Islamic Republic of Iran, 2007, p. 3).

Government Policies and Programs

The Mining Code of 1998, which was based on Articles 44 and 45 of Chapter 4 of the 1978 Constitution of the Islamic Republic of Iran, and various amendments to the Mining Code, regulated the mining sector. In 2004, a reinterpretation of the Constitution allowed private domestic and international investor participation in the mining sector. The Petroleum Act of 1987 clarified the Government’s authority in the oil sector. With regard to the provisions of Article 81 of Chapter 6 of the Constitution (which prohibited foreigners from acquiring equity interest in Iran’s agriculture, commercial, industrial, mineral extraction, and services sectors), adjustments, such as Note 29 of the First Five-Year Plan, and Note 22 of the Second Five-Year Plan, allowed international companies to participate in Iranian petroleum sector operations under ‘buyback’ contracts, which were short-term service contracts that authorized international companies to work on oil and natural gas production projects for a defined time period in return for revenue from produced oil and gas. Domestic critics of the controversial program were annoyed because buyback contracts effectively skirted the Constitution. Because most buyback contracts covered the development or redevelopment of the project and the subsequent initial production period, technical concerns were raised concerning the possibility that it would be in the economic interest of foreign commercial companies to overproduce crude oil or natural gas during the contract, which could lead to permanent reservoir damage (Ceragioli and Martellini, 2003; Oil, Gas & Energy Law Intelligence, 2003; McDowall, 2006b).

Production

Based on estimates of mineral commodity production, significant increases in output in 2006 compared with that of 2005 were projected for bauxite, borax, copper concentrate, copper metal, iron ore, refined lead, perlite, and refined zinc. Declines were projected for ferrochromium, ferrosilicon, and pig iron. Data on estimated mineral production are provided in table 1.

Structure of the Mineral Industry

The Ministry of Industries and Mines administered all mining, smelting, and refining industries except the oil and gas sectors, which were administered by the Ministry of Petroleum. Basic geologic exploration and most initial evaluations of the nation’s mineral resources (except hydrocarbons) were performed by the Geological Survey of Iran. Most of the country’s active mines were privately owned, although the Government retained control of many of the larger mineral commodity companies, especially those that produced aluminum, ammonia, coal, copper, iron and steel, natural gas and oil, salt, and sulfur. In 2006, the Ministry of Industry and Mines announced that it planned to privatize some of the Government’s equity interest in Bushehr Cement Co., Chadormalou Mining and Industrial Co., Darab Cement Co., Gol-e-Gohar Iron Ore Co., Iran Aluminium Co., Khouzestan Steel Co., Mobarekeh Steel Co., and National Iranian Copper Industries Co. The Government also reaffirmed its 2004 proposal to address the constitutional ban on international investors acquiring interest in the oil industry and planned to begin to privatize the downstream oil and gas sector (Iran Daily, 2006d; Middle East Economic Digest, 2006g).

Mineral Trade

The Central Bank of the Islamic Republic of Iran (2007, p. 13) reported that hydrocarbon exports were valued at about $62.5 billion in Iranian year 1385 (the period from March 21, 2006, to March 20, 2007) compared with a revised value of $53.8 billion in Iranian year 1384. Crude oil exports accounted for most of the hydrocarbon exports; natural gas and refined petroleum products accounted for the remainder. In Iranian year 1385, hydrocarbons accounted for about 83% of total exports, which were valued at $75.5 billion. Exports to the United States were limited by the U.S. Government embargo on goods and services of Iranian origin. For the 2006 calendar year, Iranian exports to the United States were valued at $157 million; no mineral-commodity trade was reported (U.S. International Trade Commission, 2007; U.S. Office of Foreign Assets Control, undated).

1Where necessary, values have been converted from Iranian rials (RI) to U.S. dollars (US$) at the average exchange rate of R19,197=US$1.00.
Commodity Review

Metals

Aluminum and Bauxite and Alumina.—Construction continued on the capacity expansion of Iran Aluminum Co.’s Arak smelter to 250,000 metric tons per year (t/yr) from 120,000 t/yr (Metals Insider, 2006).

The Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO) requested bids for the construction of a 200,000-t/yr-capacity alumina plant at Sarab. The facility would process nepheline syenite from Razgah and limestone from Arshitenab. In addition to alumina, the facility was to include a 3.4-million-metric-ton-per-year (Mt/yr)-capacity cement plant, a 116,000-t/yr-capacity potassium carbonate plant, a 36,000-t/yr-capacity soda ash plant, and a 2,800-t/yr-capacity potassium sulfate plant. The winning contractor was expected to arrange the financing for the project. Construction was expected to take 3 to 4 years (Industrial Minerals, 2006).

Gold.—The increased international price of gold ignited additional interest in the development of Iran’s gold occurrences. IMIDRO requested bids for the construction of the Zarshuran 2-t/yr-capacity gold mine and pressure oxidation plant at Takab. Persian Gold plc of Ireland completed a 17-hole drill program on the Chah-e-Zard prospect in Yazd. Rio Tinto Ltd. of Australia revealed that the results of a feasibility study indicated the Sari Gunay prospect in Kurdistan was not commercially viable. The Geological Survey of Iran reportedly started exploration in the Barika, the Dareh-Zaq, the Khorapeh, the Shahr-e Babak, the Tangvieh, and the Zeytounjian areas. Local companies were evaluating gold deposits in the Gandi and the Sharakabad areas (Middle East Economic Digest, 2006d; Reuters, 2006).

Iron Ore and Iron and Steel.—Gohar Zamin Iron Ore Co. requested bids for a 5-unit iron ore concentration plant and two direct-reduction iron (DRI) plants. The winning contractor was expected to arrange the financing for the project, which was to be built at the Gol-e-Gohar mining complex. Ore from the Gohar Zamin Mine, which was expected to begin operations in 2008, would feed the 10-Mt/yr-capacity concentration and DRI facility, which was expected to start operations in 2009 (Middle East Economic Digest, 2006c).

Arfa Iron and Steel Co., which was 49% state-owned, requested bids for an 800,000-t/yr-capacity steel plant in Ardakan. Arfa also proposed to build a DRI plant at the facility. Isfahan Steel Co. requested bids on a 300,000-t/yr-capacity expansion of its DRI plant at Esfahan. The winning contractor was expected to arrange the financing for the project, source iron ore feedstock, and arrange for the marketing of the DRI output. National Iranian Steel Co. requested bids on three 800,000-t/yr-capacity DRI plants. Proposed locations of the plants were to be determined at a later date (Middle East Economic Digest, 2006a, b, h).

Titanium.—In 2006, IMIDRO proposed to build a 50,000-t/yr-capacity titanium dioxide pigment plant at Kahnuj. The facility also would have a 70,000-t/yr-capacity slag processing plant and a 130,000-t/yr-capacity ilmenite beneficiation plant (Middle East Economic Digest, 2006f).

Zinc.—In 2006, Mehdiabad Zinc Co., which was a venture of IMIDRO (50% interest), Iran Itok Engineering and Technology Co. (an affiliate of Itok GmbH of Austria) (25%), and Union Resources Ltd. of Australia (25%), received a completed feasibility study of the Mehdiabad zinc project. In December, IMIDRO notified Union Resources that it had terminated the joint venture because of alleged breaches of contract. Union Resource disputed the notice of termination and attempted to settle the dispute (Union Resources Ltd., 2006).

Industrial Minerals

Cement.—Construction of new cement plants and capacity expansions at existing plants continued; more than 4 Mt/yr of capacity was added in 2006. By 2007, annual Iranian cement production capacity was expected to reach 42 Mt/yr, although production was expected to be about 36 million metric tons. The Government proposed to remove subsidies on cement prices, which resulted in a local price of cement that was equivalent to $40 per metric ton, compared with an average of about $100 in other countries in the region (Iran Daily, 2006c; Lidstone, 2007).

Nitrogen.—In early 2006, Petrochemical Industries Design and Engineering Co. of Iran won the bid to build new ammonia and urea plants for the Shiraz Petrochemical Co., which was a subsidiary of state-owned National Petrochemical Co. The new facility would include a 1.1-Mt/yr-capacity urea plant and a 670,000-t/yr-capacity ammonia plant. At yearend, Shiraz Petrochemical continued to attempt to secure domestic (Government) financing for the project (Middle East Economic Digest, 2006e).

Mineral Fuels and Related Materials

Uranium.—Limited information was available concerning uranium exploration, which continued in central and northwest Iran. Mining operations reportedly were underway at the Saghand Mine. Recovery of uranium also was reported underway at the Ghchine Mine and the closed Meskan and Talmesi copper mines and their tailings piles (International Atomic Energy Agency, 2004, p. 3; Nuclear Threat Initiative, 2006; Atomic Energy Organization of Iran, undated, p. 2, 5).

Outlook

Numerous development or expansion projects are planned or underway in the aluminum, cement, copper, ferroalloys, gold, iron and steel, magnesium compounds, oil and gas, potash, stone, and zinc sectors, several of which are dominated by large state-owned companies. Although private and state-owned companies have expanded their metals processing operations during the past two decades, significant potential for additional mineral development and value-added beneficiation of minerals remains, especially in the industrial minerals sector (Iran Daily, 2006b; O’Driscoll, 2006).

Increased demand for funding other domestic programs and increased subsidies for cement and petroleum fuels have reduced the availability of Government funding for mineral resource development. The Government had a backlog of about
9,000 development projects in various economic areas that were awaiting Government funding. The acquisition of international funding for capital-intensive development of mineral-related projects by Government-controlled and private companies operating in Iran was impaired, in part, by the Government’s continued development of a nuclear-fueled electricity-generating reactor at Bushehr, which adversely affected the country’s international relations. The lack of domestic and international funding is affecting the timeliness of mineral development and expansion projects. Such delays historically have resulted in increased construction costs and lost revenues (Iran Daily, 2006a; McDowall, 2006a).

More than 60% of Iranian oil production was exported in 2006. The ratio of oil exports to production, however, has declined each year since 2003, despite increased oil production. Domestic demand for crude oil is expected to continue to increase in the future, which may require Iran to forego hard currency oil exports to meet demand. Planning for the development of identified natural gas and oil resources is expected to continue, subject to funding constraints, limitations imposed by existing (2006) economic sanctions, and the specter of an international embargo on oil exports. The ongoing and often-delayed development of the multiphase South Pars natural gas project is expected to continue for a number of years. New construction and renovation of existing oil refineries is expected to begin during the current 5-year plan (2005 to 2009) (Central Bank of the Islamic Republic of Iran, 2007, p. 7).

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TABLE 1
IRAN: PRODUCTION OF MINERAL COMMODITIES\(^1, 2\)

(Metric tons unless otherwise specified)

<table>
<thead>
<tr>
<th>Commodity</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005(^5)</th>
<th>2006(^6)</th>
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<td><strong>METALS</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Aluminum:</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Bauxite, gross weight</td>
<td>57,254</td>
<td>364,306</td>
<td>366,000</td>
<td>437,595</td>
<td>500,000</td>
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<tr>
<td>Alumina</td>
<td>101,339</td>
<td>102,785</td>
<td>137,002</td>
<td>150,000</td>
<td>150,000</td>
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<td>Metal, primary ingot</td>
<td>168,715</td>
<td>182,477</td>
<td>212,602</td>
<td>220,000</td>
<td>220,000</td>
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<tr>
<td>Arsenic, orpiment and realgar, concentrates(^7)</td>
<td>400</td>
<td>275</td>
<td>89</td>
<td>100</td>
<td>100</td>
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<td>Chromite, mine output, concentrate</td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Gross weight</td>
<td>512,640</td>
<td>97,328</td>
<td>138,755</td>
<td>223,563</td>
<td>225,000</td>
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<tr>
<td>Cr(_2)O(_3) content(^\d)</td>
<td>250,000</td>
<td>48,000</td>
<td>68,000</td>
<td>110,000</td>
<td>110,000</td>
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<td>Copper:</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Mine output:</td>
<td></td>
<td></td>
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<tr>
<td>Ore mined (0.6% to 1.2% Cu):</td>
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<tr>
<td>Gross weight</td>
<td>15,529</td>
<td>15,084</td>
<td>18,885</td>
<td>19,000</td>
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<tr>
<td>Cu content(^\d)</td>
<td>160,000</td>
<td>160,000</td>
<td>190,000</td>
<td>190,000</td>
<td>210,000</td>
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<tr>
<td>Concentrate (29% to 35% Cu):</td>
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<tr>
<td>Gross weight</td>
<td>394,061</td>
<td>395,036</td>
<td>448,689</td>
<td>480,000</td>
<td>620,000</td>
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<tr>
<td>Cu content(^\d)</td>
<td>121,000</td>
<td>130,000</td>
<td>150,000</td>
<td>160,000</td>
<td>208,000</td>
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<tr>
<td>Metal:</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Smelter output, blister or anode</td>
<td>171,591</td>
<td>168,613</td>
<td>184,814</td>
<td>227,000</td>
<td>242,000</td>
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<tr>
<td>Refined output, cathode</td>
<td>143,438</td>
<td>145,669</td>
<td>152,463</td>
<td>178,000</td>
<td>200,000</td>
</tr>
<tr>
<td>Gold, mine output, Au content(^3)</td>
<td>210</td>
<td>203</td>
<td>195</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Iron and steel:</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Ore and concentrate:</td>
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<tr>
<td>Gross weight</td>
<td>16,906</td>
<td>18,287</td>
<td>18,205</td>
<td>19,000</td>
<td>21,000</td>
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<tr>
<td>Fe content(^\d)</td>
<td>8,000</td>
<td>9,000</td>
<td>8,900</td>
<td>9,162</td>
<td>10,000</td>
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<td>Metal:</td>
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<tr>
<td>Pig iron(^1)</td>
<td>2,400</td>
<td>2,709</td>
<td>2,136</td>
<td>2,300</td>
<td>2,000</td>
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<tr>
<td>Direct-reduced iron (^1)</td>
<td>5,280</td>
<td>5,620</td>
<td>6,410</td>
<td>6,850</td>
<td>6,900</td>
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<tr>
<td>Ferrochromium(^7)</td>
<td>8,000</td>
<td>10,000</td>
<td>7,750</td>
<td>8,000</td>
<td>7,000</td>
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<tr>
<td>Ferrosilicon(^7)</td>
<td>40,000</td>
<td>40,297</td>
<td>50,140</td>
<td>50,000</td>
<td>45,000</td>
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<td>Steel, crude, ingots and castings:</td>
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<td>Gross weight</td>
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<td>7,869</td>
<td>8,382</td>
<td>9,400</td>
<td>9,800</td>
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<td>23</td>
<td>23</td>
<td>25</td>
<td>25</td>
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<tr>
<td>Lead:</td>
<td></td>
<td></td>
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<tr>
<td>Mine output, concentrate:</td>
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<tr>
<td>Gross weight</td>
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<td>39,093</td>
<td>42,018</td>
<td>43,000</td>
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<tr>
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<td>22,000</td>
<td>22,000</td>
<td>24,000</td>
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<tr>
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<td>115,680</td>
<td>128,924</td>
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<tr>
<td>Mn content(^7)</td>
<td>42,000</td>
<td>38,000</td>
<td>43,000</td>
<td>42,000</td>
<td>42,000</td>
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<td>Molybdenum, mine output, concentrate:</td>
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<tr>
<td>Gross weight</td>
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<td>4,084</td>
<td>3,367</td>
<td>4,603</td>
<td>4,600</td>
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<td>Mo content(^7)</td>
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<td>2,200</td>
<td>1,800</td>
<td>2,476</td>
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<td>Silver, mine output, Ag content</td>
<td>23</td>
<td>23</td>
<td>25</td>
<td>25</td>
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<td>Zinc:</td>
<td></td>
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<td>Mine output, concentrate:</td>
<td></td>
<td></td>
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<tr>
<td>Gross weight</td>
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<td>222,000</td>
<td>244,006</td>
<td>310,000</td>
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<td>Zn content(^7)</td>
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<td>121,000</td>
<td>167,000</td>
<td>164,000</td>
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<tr>
<td>Metal</td>
<td>82,571</td>
<td>78,428</td>
<td>109,400</td>
<td>120,000</td>
<td>140,000</td>
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<td><strong>INDUSTRIAL MINERALS</strong></td>
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</tr>
<tr>
<td>Asbestos:</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Concentrate (3% to 8% marketable fiber)</td>
<td>70,000</td>
<td>98,000</td>
<td>82,018</td>
<td>40,000</td>
<td>40,000</td>
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<tr>
<td>Marketable fiber(^7)</td>
<td>1,500</td>
<td>1,470</td>
<td>6,000</td>
<td>1,300</td>
<td>1,300</td>
</tr>
<tr>
<td>Barite</td>
<td>178,652</td>
<td>196,169</td>
<td>275,607</td>
<td>231,184</td>
<td>230,000</td>
</tr>
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See footnotes at end of table.
TABLE 1—Continued

IRAN: PRODUCTION OF MINERAL COMMODITIES¹, ²

(Metric tons unless otherwise specified)

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<tr>
<th>Commodity</th>
<th>2002</th>
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<th>2005</th>
<th>2006</th>
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<tr>
<td>Boron, borax</td>
<td>2,079</td>
<td>3,361</td>
<td>2,142</td>
<td>1,660</td>
<td>2,000</td>
</tr>
<tr>
<td>Cement, hydraulic, thousand metric tons</td>
<td>28,600</td>
<td>30,460</td>
<td>32,198</td>
<td>32,650</td>
<td>33,000</td>
</tr>
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<td><strong>Clays:</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Bentonite</td>
<td>125,510</td>
<td>140,528</td>
<td>193,046</td>
<td>261,888</td>
<td>260,000</td>
</tr>
<tr>
<td>Industrial clays</td>
<td>450,000</td>
<td>388,543</td>
<td>578,750</td>
<td>550,000</td>
<td>550,000</td>
</tr>
<tr>
<td>Kaolin</td>
<td>553,782</td>
<td>484,501</td>
<td>531,109</td>
<td>311,501</td>
<td>310,000</td>
</tr>
<tr>
<td>Diatomite</td>
<td>1,879</td>
<td>9,500</td>
<td>8,028</td>
<td>1,450</td>
<td>1,500</td>
</tr>
<tr>
<td>Feldspar</td>
<td>191,316</td>
<td>242,988</td>
<td>252,713</td>
<td>286,033</td>
<td>290,000</td>
</tr>
<tr>
<td>Fluorspar</td>
<td>32,006</td>
<td>47,730</td>
<td>54,052</td>
<td>64,601</td>
<td>65,000</td>
</tr>
<tr>
<td>Gemstones, turquoise, kilograms</td>
<td>20,000</td>
<td>20,000</td>
<td>20,000</td>
<td>20,000</td>
<td>20,000</td>
</tr>
<tr>
<td>Gypsum, thousand metric tons</td>
<td>13,535</td>
<td>13,828</td>
<td>12,594</td>
<td>11,196</td>
<td>12,000</td>
</tr>
<tr>
<td>Industrial or glass sand (quartzite and silica)</td>
<td>1,878,867</td>
<td>1,964,965</td>
<td>1,880,093</td>
<td>1,900,000</td>
<td>1,900,000</td>
</tr>
<tr>
<td>Lime, thousand metric tons</td>
<td>2,200</td>
<td>2,300</td>
<td>2,500</td>
<td>2,500</td>
<td>2,600</td>
</tr>
<tr>
<td>Magnesite</td>
<td>128,565</td>
<td>87,795</td>
<td>88,194</td>
<td>114,708</td>
<td>110,000</td>
</tr>
<tr>
<td>Mica</td>
<td>2,845</td>
<td>5,500</td>
<td>7,032</td>
<td>705</td>
<td>--</td>
</tr>
<tr>
<td>Nepheline syenite</td>
<td>75,000</td>
<td>75,500</td>
<td>63,798</td>
<td>65,000</td>
<td>70,000</td>
</tr>
<tr>
<td><strong>Nitrogen:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N content of ammonia</td>
<td>1,119,100</td>
<td>1,115,100</td>
<td>1,087,700</td>
<td>1,020,000</td>
<td>1,020,000</td>
</tr>
<tr>
<td>N content of urea</td>
<td>732,700</td>
<td>734,200</td>
<td>717,800</td>
<td>670,000</td>
<td>670,000</td>
</tr>
<tr>
<td>Perlite</td>
<td>20,000</td>
<td>26,495</td>
<td>31,259</td>
<td>31,000</td>
<td>40,000</td>
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<tr>
<td>Phosphate rock:</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Ore</td>
<td>303,000</td>
<td>194,000</td>
<td>229,575</td>
<td>324,166</td>
<td>325,000</td>
</tr>
<tr>
<td>P₂O₅ content</td>
<td>36,000</td>
<td>23,000</td>
<td>28,000</td>
<td>40,000</td>
<td>40,000</td>
</tr>
<tr>
<td>Pigments, mineral, natural iron oxide, ochre</td>
<td>2,300</td>
<td>2,300</td>
<td>2,500</td>
<td>2,500</td>
<td>2,600</td>
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<tr>
<td>Pumice and related volcanic materials</td>
<td>1,181,543</td>
<td>1,228,388</td>
<td>1,536,448</td>
<td>1,500,000</td>
<td>1,400,000</td>
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<tr>
<td>Salt</td>
<td>1,664,496</td>
<td>2,002,899</td>
<td>1,790,669</td>
<td>2,009,195</td>
<td>2,000,000</td>
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<tr>
<td>Soda ash</td>
<td>120,000</td>
<td>120,000</td>
<td>130,000</td>
<td>130,000</td>
<td>130,000</td>
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<tr>
<td>Sodium compound, caustic soda</td>
<td>22,000</td>
<td>22,000</td>
<td>22,000</td>
<td>22,000</td>
<td>20,000</td>
</tr>
<tr>
<td><strong>Stone:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction and building, crushed, thousand metric tons</td>
<td>19,809</td>
<td>21,383</td>
<td>25,369</td>
<td>25,000</td>
<td>25,000</td>
</tr>
<tr>
<td>Dimension and decorative:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Granite, do.</td>
<td>620</td>
<td>838</td>
<td>1,019</td>
<td>1,000</td>
<td>1,000</td>
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<tr>
<td>Marble, blocks and slabs</td>
<td>3,462</td>
<td>4,014</td>
<td>4,068</td>
<td>4,000</td>
<td>4,000</td>
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<tr>
<td>Travertine, blocks</td>
<td>728</td>
<td>935</td>
<td>1,360</td>
<td>1,400</td>
<td>1,400</td>
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<tr>
<td>Total, do.</td>
<td>4,810</td>
<td>5,790</td>
<td>6,450</td>
<td>6,400</td>
<td>6,400</td>
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<tr>
<td>Dolomite, do.</td>
<td>439</td>
<td>522</td>
<td>609</td>
<td>600</td>
<td>600</td>
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<tr>
<td>Limestone</td>
<td>41,100</td>
<td>46,170</td>
<td>50,380</td>
<td>50,000</td>
<td>50,000</td>
</tr>
<tr>
<td>Strontium, celestite</td>
<td>2,000</td>
<td>2,100</td>
<td>7,500</td>
<td>672</td>
<td>--</td>
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<tr>
<td>Sulfates, natural:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Aluminum potassium sulfate (alum)</td>
<td>10,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
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<tr>
<td>Sodium sulfate</td>
<td>580,000</td>
<td>580,000</td>
<td>600,000</td>
<td>600,000</td>
<td>600,000</td>
</tr>
<tr>
<td>Sulfur, Total</td>
<td>1,200,000</td>
<td>1,310,000</td>
<td>1,400,000</td>
<td>1,400,000</td>
<td>1,400,000</td>
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<tr>
<td>Byproduct of petroleum and natural gas</td>
<td>50,000</td>
<td>50,000</td>
<td>60,000</td>
<td>60,000</td>
<td>60,000</td>
</tr>
<tr>
<td>Byproduct of metallurgical processing, S content of acid</td>
<td>1,250,000</td>
<td>1,360,000</td>
<td>1,460,000</td>
<td>1,460,000</td>
<td>1,460,000</td>
</tr>
<tr>
<td>Total</td>
<td>68,007</td>
<td>65,833</td>
<td>187,465</td>
<td>70,600</td>
<td>70,000</td>
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<tr>
<td><strong>MINERAL FUELS AND RELATED MATERIALS</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Coal, thousand metric tons</td>
<td>2,076</td>
<td>1,902</td>
<td>2,498</td>
<td>1,898</td>
<td>2,000</td>
</tr>
<tr>
<td>Coke, do.</td>
<td>1,055</td>
<td>1,004</td>
<td>1,021</td>
<td>1,020</td>
<td>1,000</td>
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</tbody>
</table>

See footnotes at end of table.
<table>
<thead>
<tr>
<th>Commodity</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005(^e)</th>
<th>2006(^e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas, natural:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross million cubic meters</td>
<td>120,000</td>
<td>125,000</td>
<td>137,000</td>
<td>150,000</td>
<td>160,000</td>
</tr>
<tr>
<td>Dry do.</td>
<td>75,000</td>
<td>81,500</td>
<td>89,663</td>
<td>100,000</td>
<td>105,000</td>
</tr>
<tr>
<td>Plant liquids thousand 42-gallon barrels</td>
<td>25,000</td>
<td>25,000</td>
<td>84,000</td>
<td>85,000</td>
<td>90,000</td>
</tr>
<tr>
<td>Petroleum:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crude do.</td>
<td>1,250,000</td>
<td>1,470,000 (^f)</td>
<td>1,500,000 (^f)</td>
<td>1,500,000 (^f)</td>
<td>1,530,000</td>
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<tr>
<td>Refinery products:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Liquefied petroleum gases do.</td>
<td>16,000</td>
<td>16,000</td>
<td>48,100 (^f)</td>
<td>50,000 (^f)</td>
<td>50,000</td>
</tr>
<tr>
<td>Motor gasoline do.</td>
<td>67,000</td>
<td>67,000</td>
<td>92,000 (^f)</td>
<td>92,000 (^f)</td>
<td>92,000</td>
</tr>
<tr>
<td>Jet fuel do.</td>
<td>14,000</td>
<td>14,000</td>
<td>6,300 (^f)</td>
<td>6,000 (^f)</td>
<td>6,000</td>
</tr>
<tr>
<td>Kerosene do.</td>
<td>46,000</td>
<td>46,000</td>
<td>52,800 (^f)</td>
<td>53,000 (^f)</td>
<td>53,000</td>
</tr>
<tr>
<td>Distillate fuel oil do.</td>
<td>135,000</td>
<td>140,000</td>
<td>117,000 (^f)</td>
<td>120,000 (^f)</td>
<td>120,000</td>
</tr>
<tr>
<td>Residual fuel oil do.</td>
<td>152,000</td>
<td>160,000</td>
<td>172,000 (^f)</td>
<td>170,000 (^f)</td>
<td>170,000</td>
</tr>
<tr>
<td>Other do.</td>
<td>95,000</td>
<td>100,000</td>
<td>21,000 (^f)</td>
<td>20,000 (^f)</td>
<td>20,000</td>
</tr>
<tr>
<td>Total do.</td>
<td>525,000</td>
<td>543,000</td>
<td>509,200 (^f)</td>
<td>511,000 (^f)</td>
<td>511,000</td>
</tr>
</tbody>
</table>

\(^e\)Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. \(^f\)Revised. -- Zero. 
\(^1\)Data are for Iranian years ending March 20 of that stated, except data for alumina, natural gas, natural-gas-plant liquids, and petroleum, which are for Gregorian calendar years. 
\(^2\)In addition to commodities listed, the following may have been produced, but information is inadequate to estimate output: antimony, bromine, ferromolybdenum, hafnium oxide, ilmenite, selenium, shell, silicomanganese, uranium, zeolite, and zirconium metal. 
\(^3\)Reported figure. 
\(^4\)Includes gold recovered from the Mouteh gold mine and from the Sarcheshmeh copper complex. 
\(^5\)Includes marble and travertine. 
\(^6\)Includes marmarite.
<table>
<thead>
<tr>
<th>Commodity</th>
<th>Major operating companies and major equity owners</th>
<th>Location of main facilities</th>
<th>Annual capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alumina</td>
<td>Iran Alumina Co. (Government)</td>
<td>About 15 kilometers northeast of Jajarm</td>
<td>280</td>
</tr>
<tr>
<td>Aluminum</td>
<td>Iran Aluminium Co. (Iranian Mines and Mining Development and Renovation Organization)</td>
<td>Arak</td>
<td>120</td>
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<tr>
<td>Do.</td>
<td>Almahdi Aluminium Corp. (Iranian Mines and Mining Industries Development and Renovation Organization, 59.34% and International Development Corp., 20.78%)</td>
<td>Bandar Abbas</td>
<td>110</td>
</tr>
<tr>
<td>Cement</td>
<td>Abadeh Cement Co.</td>
<td>Abadeh</td>
<td>175</td>
</tr>
<tr>
<td>Do.</td>
<td>Abyek Cement Co. (Fars &amp; Khouzestan Cement Co.)</td>
<td>Abyek, 80 kilometers northwest of Tehran</td>
<td>2,600</td>
</tr>
<tr>
<td>Do.</td>
<td>Ardebel Cement Co. (Ehdasse Sanat Corp. and Holcim Ltd.)</td>
<td>About 20 kilometers from Astara</td>
<td>800</td>
</tr>
<tr>
<td>Do.</td>
<td>Behbahan Cement Co. (Fars &amp; Khouzestan Cement Co.)</td>
<td>Behbahan</td>
<td>960</td>
</tr>
<tr>
<td>Do.</td>
<td>Benvid White Cement Co.</td>
<td>Benvid, Isfahan</td>
<td>175</td>
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<tr>
<td>Do.</td>
<td>Bojnourd Cement Plant (Fars &amp; Khouzestan Cement Co.)</td>
<td>About 37 kilometers from Bojnourd</td>
<td>700</td>
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<tr>
<td>Do.</td>
<td>Bushehr Cement Co. (Dashstan Cement) (Ehdasse Sanat Corp.)</td>
<td>Borajian</td>
<td>1,100</td>
</tr>
<tr>
<td>Do.</td>
<td>Darab Cement Co. (Ehdasse Sanat Corp.)</td>
<td>Near Shiraz</td>
<td>1,100</td>
</tr>
<tr>
<td>Do.</td>
<td>Doroud Cement Co. (Fars &amp; Khouzestan Cement Co.)</td>
<td>Doroud</td>
<td>1,400</td>
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<tr>
<td>Do.</td>
<td>Ekbatan Cement Co.</td>
<td>Ekbatan</td>
<td>175</td>
</tr>
<tr>
<td>Do.</td>
<td>Estabban Cement Co.</td>
<td>Estabban</td>
<td>350</td>
</tr>
<tr>
<td>Do.</td>
<td>Faraz Firouzkhuz Cement Co. (Fars &amp; Khouzestan Cement Co., 55%, and The Cement Tamin Co., 45%)</td>
<td>Fars</td>
<td>1,200</td>
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<td>Do.</td>
<td>Fars Cement Co. (Fars &amp; Khouzestan Cement Co.)</td>
<td>Fars</td>
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<tr>
<td>Do.</td>
<td>Fars Nov Cement Co. (Fars &amp; Khouzestan Cement Co.)</td>
<td>do.</td>
<td>1,000</td>
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<tr>
<td>Do.</td>
<td>Ghaen Cement Co. (Fars &amp; Khouzestan Cement Co.)</td>
<td>Ghaen</td>
<td>770</td>
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<td>Do.</td>
<td>Gharb Cement Co. (Fars &amp; Khouzestan Cement Co.)</td>
<td>Kermanshah</td>
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<tr>
<td>Do.</td>
<td>Gorgon Cement Co.</td>
<td>NA</td>
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<tr>
<td>Do.</td>
<td>Hegmatan Cement Co. (Tehran Cement Co.)</td>
<td>East of Razan</td>
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<tr>
<td>Do.</td>
<td>Hormozgan Cement Co. (Sepahan Cement Co.)</td>
<td>About 52 kilometers west of Bandar Abbas</td>
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</tr>
<tr>
<td>Do.</td>
<td>Ilam Cement Co. (Tehran Cement Co.)</td>
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<tr>
<td>Do.</td>
<td>Isfahan Cement Co.</td>
<td>Isfahan</td>
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<tr>
<td>Do.</td>
<td>Karoon Cement Co.</td>
<td>Karoon</td>
<td>1,050</td>
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<tr>
<td>Do.</td>
<td>Kavir Kashan</td>
<td>Near Kashan</td>
<td>660</td>
</tr>
<tr>
<td>Do.</td>
<td>Kerman Cement Co. (Bank Melli Iran Investment Co.)</td>
<td>Kerman</td>
<td>1,260</td>
</tr>
<tr>
<td>Do.</td>
<td>Khash Cement Co. (Fars &amp; Khouzestan Cement Co.)</td>
<td>Khash</td>
<td>730 e</td>
</tr>
<tr>
<td>Do.</td>
<td>Khazar Cement Co. (Fars &amp; Khouzestan Cement Co.)</td>
<td>Khazar</td>
<td>640 e</td>
</tr>
<tr>
<td>Do.</td>
<td>Khouzestan Cement Co. (Fars &amp; Khouzestan Cement Co.)</td>
<td>Ramhormoz</td>
<td>1,100 e</td>
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<tr>
<td>Do.</td>
<td>Kohkiloye Yasuj Cement (State Retirement Organization)</td>
<td>Kohkiloye</td>
<td>240</td>
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<tr>
<td>Do.</td>
<td>Kordestan Cement Co. (Sepahan Cement Co.)</td>
<td>North of Bajar</td>
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<td>Do.</td>
<td>Mazandaran Cement Co. (Bank Melli Iran Investment Co.)</td>
<td>Neka</td>
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<td>Mashad Cement Co.</td>
<td>Mashad</td>
<td>1,000 e</td>
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<td>Do.</td>
<td>Qeshm Cement Co.</td>
<td>Qeshm Island</td>
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<td>Oroumeyeh Cement Co.</td>
<td>Oroumeyeh (Urumia)</td>
<td>740</td>
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<tr>
<td>Do.</td>
<td>Oroumeyeh White Cement Co.</td>
<td>do.</td>
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<td>Do.</td>
<td>Neyriz White Cement Co. (Fars &amp; Khouzestan Cement Co.)</td>
<td>Neyriz</td>
<td>160</td>
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<td>Saveh White Cement Co. (State Retirement Organization)</td>
<td>Saveh Grey Cement Factory, Saveh</td>
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</tr>
<tr>
<td>Do.</td>
<td>do.</td>
<td>Saveh White Cement Factory, Saveh</td>
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<tr>
<td>Do.</td>
<td>Sepahan Cement Co.</td>
<td>Sepahan</td>
<td>2,300</td>
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<tr>
<td>Do.</td>
<td>Shahroud Cement Co. (Sepahan Cement Co.)</td>
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<td>Do.</td>
<td>Sharg Cement Co. (Sepahan Cement Co.)</td>
<td>Mashhad</td>
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<td>Do.</td>
<td>Shomal Cement Co. (Bank Melli Iran Investment Co.)</td>
<td>Shomal</td>
<td>880</td>
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<td>Simansaz (Loshan) Cement Co. (Tehran Cement Co.)</td>
<td>Loshan</td>
<td>200 e</td>
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<td>Do.</td>
<td>Soufian Cement Co. (Tehran Cement Co.)</td>
<td>Sufiyan</td>
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<tr>
<td>Do.</td>
<td>Tehran Cement Co.</td>
<td>Tehran</td>
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<tr>
<td>Do.</td>
<td>Yazd Bohrouk Cement Co.</td>
<td>Yazd</td>
<td>1,260</td>
</tr>
</tbody>
</table>

See footnotes at end of table.

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<table>
<thead>
<tr>
<th>Commodity</th>
<th>Major operating companies and major equity owners</th>
<th>Location of main facilities</th>
<th>Annual capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromite</td>
<td>Faryab Mining Co.</td>
<td>Faryab Mine and processing plant, Minab, Hormuzgan</td>
<td>180 e</td>
</tr>
<tr>
<td>Do.</td>
<td>Esfandaghe Mines Co.</td>
<td>Abdasht Mine, Kerman and Suqan (Saboughan) Mine Kerman; Processing plant at Esfandaghe, Kerman</td>
<td>30</td>
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<td>Do.</td>
<td>NA</td>
<td>Furumad Mine, Shahroud, Semnan; Gaft processing plant, Semnan</td>
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<tr>
<td>Do.</td>
<td>NA</td>
<td>Mir Mahmud Mine, Mayami, Semnan</td>
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<tr>
<td>Do.</td>
<td>NA</td>
<td>Dumak Mine, Zahedan, Sistan va Baluchestan</td>
<td>2</td>
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<tr>
<td>Do.</td>
<td>Other companies</td>
<td>Other mines</td>
<td>30 e</td>
</tr>
<tr>
<td>Coal</td>
<td>Kerman Coal Co. (Iranian Mineral Production &amp; Supply Co., 100%)</td>
<td>Includes the Ashkli, the Banbino, the Badamouiyeh, the Eshkeli, the Hamkar, the Hojedik, the Kamsar, the Khoshooni (Hashouni), and the Pabdana Mines</td>
<td>1,300</td>
</tr>
<tr>
<td>Do.</td>
<td>Iranian Mineral Production &amp; Supply Co. *4</td>
<td>Parvadeh 3 and 4 Mines, Tabass, Khorasan</td>
<td>750 b</td>
</tr>
<tr>
<td>Do.</td>
<td>Zirab Coal Co. (Iranian Mineral Production &amp; Supply Co., 100%)</td>
<td>Gajereh, Goliran, and Zirab Mines, Mazandaran</td>
<td>600</td>
</tr>
<tr>
<td>Do.</td>
<td>Shahroud Coal Co. (Iranian Mineral Production &amp; Supply Co., 100%)</td>
<td>Shahroud Mine, Mazandaran; Razi and Tazareh Mines, Semnan</td>
<td>280</td>
</tr>
<tr>
<td>Do.</td>
<td>Western Alborz Coal Co. (Iranian Mineral Production &amp; Supply Co., 100%)</td>
<td>Abyek Mine, Qazvin; Sangroud Mine, Gilan</td>
<td>150</td>
</tr>
<tr>
<td>Do.</td>
<td>Fajr Mazinoy Cooperative Co.</td>
<td>East Mazinoy and West Mazinoy, Khorasan</td>
<td>8</td>
</tr>
<tr>
<td>Copper:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concentrate</td>
<td>National Iranian Copper Industries Co. (Iranian Mines and Mining Industries Development and Renovation Organization)</td>
<td>Sar Cheshmeh Mine, 60 kilometers south of Rafsanjan, Kerman</td>
<td>179</td>
</tr>
<tr>
<td>Do.</td>
<td>do.</td>
<td>Songun copper mine, Azarbaijan</td>
<td>45 e</td>
</tr>
<tr>
<td>Do.</td>
<td>do.</td>
<td>Meiduk copper mine, Kerman</td>
<td>34</td>
</tr>
<tr>
<td>Do.</td>
<td>do.</td>
<td>Qa'eh Zari Mine, near Birjand, Khorsan</td>
<td>10</td>
</tr>
<tr>
<td>Do.</td>
<td>Private cooperatives</td>
<td>Chah Musa Mine and Qa'eh Sukhteh, Semnan</td>
<td>5</td>
</tr>
<tr>
<td>Smelter output</td>
<td>National Iranian Copper Industries Co. (Iranian Mines and Mining Industries Development and Renovation Organization)</td>
<td>Smelter, Sar Cheshmeh copper complex</td>
<td>197</td>
</tr>
<tr>
<td>Do.</td>
<td>do.</td>
<td>Smelter, Khatounabad</td>
<td>96</td>
</tr>
<tr>
<td>Refined metal</td>
<td>do.</td>
<td>Refinery, Sar Cheshmeh copper complex</td>
<td>200</td>
</tr>
<tr>
<td>Do.</td>
<td>do.</td>
<td>Electrowon plant, Sar Cheshmeh copper complex</td>
<td>14</td>
</tr>
<tr>
<td>Ferroalloys:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ferrochromium</td>
<td>Kerman Ferrochrome Co.</td>
<td>Kerman</td>
<td>25</td>
</tr>
<tr>
<td>Do.</td>
<td>Iranian Mineral Production &amp; Supply Co. *4</td>
<td>Sabzevar, Khorasan</td>
<td>25</td>
</tr>
<tr>
<td>Do.</td>
<td>Faryab Mining Co.</td>
<td>Faryab, Kerman</td>
<td>15</td>
</tr>
<tr>
<td>Do.</td>
<td>Navid Alloy Co.</td>
<td>NA</td>
<td>2</td>
</tr>
<tr>
<td>Ferromanganese</td>
<td>Faryab Mining Co.</td>
<td>Faryab, Kerman</td>
<td>15 e</td>
</tr>
<tr>
<td>Ferromolybdenum</td>
<td>Pars Molybden Co.</td>
<td>Yazd, Yazd</td>
<td>1</td>
</tr>
<tr>
<td>Do.</td>
<td>National Iranian Copper Industries Co. (Iranian Mines and Mining Industries Development and Renovation Organization)</td>
<td>Khatounabad smelter</td>
<td>1.5 e</td>
</tr>
<tr>
<td>Do.</td>
<td>Zanjani Bronze Co.</td>
<td>NA</td>
<td>0.5 e</td>
</tr>
<tr>
<td>Ferrosilicon</td>
<td>Iran Ferroalloy Industries Co. (Bank of Industry and Mines, 100%)</td>
<td>Azna, Lorestan</td>
<td>25</td>
</tr>
<tr>
<td>Do.</td>
<td>Iran Ferroalloy Co.</td>
<td>Semnan</td>
<td>25</td>
</tr>
<tr>
<td>Fluorspar</td>
<td>Private cooperative</td>
<td>Kamar Mehdi Mine, 165 kilometers southwest of Tabas</td>
<td>20 e</td>
</tr>
<tr>
<td>Do.</td>
<td>NA</td>
<td>Delijan Region Mines, 10 kilometers from Delijan, Markazi</td>
<td>6 e</td>
</tr>
<tr>
<td>Do.</td>
<td>NA</td>
<td>Kamarposht Mine, 20 kilometers from Zirab</td>
<td>5 e</td>
</tr>
<tr>
<td>Do.</td>
<td>NA</td>
<td>Emaft Mine, 30 kilometers from Zirab, Mazandaran</td>
<td>3 e</td>
</tr>
</tbody>
</table>

See footnotes at end of table.
<table>
<thead>
<tr>
<th>Commodity</th>
<th>Major operating companies and major equity owners</th>
<th>Location of main facilities</th>
<th>Annual capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluorspar—Continued</td>
<td>NA</td>
<td>Helali Gonabad Mine, 27 kilometers from Gonabad-Bajestan road</td>
<td>2 e</td>
</tr>
<tr>
<td>Do.</td>
<td>NA</td>
<td>Mahalat Mine, 5 kilometers from Mahalat, Markazi</td>
<td>2 e</td>
</tr>
<tr>
<td>Do.</td>
<td>NA</td>
<td>Pachi Miyana Mine, 30 kilometers from Zirab</td>
<td>2 e</td>
</tr>
<tr>
<td>Do.</td>
<td>NA</td>
<td>Jouimand Mine, 23 kilometers northwest of Gonabad, Khorasan</td>
<td>NA</td>
</tr>
<tr>
<td>Do.</td>
<td>NA</td>
<td>Derasele deposit</td>
<td>NA</td>
</tr>
<tr>
<td>Gemstones, turquoise</td>
<td>NA</td>
<td>Neyshabour Mine</td>
<td>6 e</td>
</tr>
<tr>
<td>Gold</td>
<td>Ore kilograms: Iran Gold Co.</td>
<td>Muteh Mine (Chah Khaton and Senjede pits), Esfahan, and Kuh-e-Zar Mine, Semnan</td>
<td>600</td>
</tr>
<tr>
<td>Do.</td>
<td>do. Artisanal placer operations</td>
<td>Neyshabour area</td>
<td>NA</td>
</tr>
<tr>
<td>Metal</td>
<td>do. National Iranian Copper Industries Co. (Iranian Mines and Mining Industries Development and Renovation Organization)</td>
<td>Sarcheshmeh Copper Complex, Kerman</td>
<td>500</td>
</tr>
<tr>
<td>Iron</td>
<td>Ore: Iran Central Iron Ore Co. (National Iranian Steel Co., 100%)</td>
<td>Choghart Mine, Bafgh, Yazd</td>
<td>7,400</td>
</tr>
<tr>
<td>Do.</td>
<td>Chadormalou Mining and Industrial Co. (National Iranian Steel Co., 100%)</td>
<td>Chadormalou Mine, 90 kilometers north of Tchogart</td>
<td>6,500</td>
</tr>
<tr>
<td>Do.</td>
<td>Gol-e-Gohar Iron Ore Co. (National Iranian Steel Co., 100%)</td>
<td>Gol-e-Ghar Mine, Kerman</td>
<td>3,800</td>
</tr>
<tr>
<td>Do.</td>
<td>Sangan Iron Ore Co. (National Iranian Steel Co., 100%)</td>
<td>Sangan (Songun) Mine, Golestan</td>
<td>300</td>
</tr>
<tr>
<td>Do.</td>
<td>About 50 small privately owned mines</td>
<td>NA</td>
<td>1,000 e</td>
</tr>
<tr>
<td>Metal</td>
<td>Mobarekeh Steel Co. (Iranian Mines and Mining Industries Development and Renovation Organization)</td>
<td>Direct-reduction iron plant (Midrex process) at Esfahan</td>
<td>4,000</td>
</tr>
<tr>
<td>Do.</td>
<td>Isfahan Steel Co. (Iranian Mines and Mining Industries Development and Renovation Organization)</td>
<td>Direct-reduction iron plant (Ghaem process) at Esfahan</td>
<td>600</td>
</tr>
<tr>
<td>Manganese</td>
<td>Iran Manganese Mines Co. (Takado Co.)</td>
<td>Venarch Manganese Mine, Qom</td>
<td>70</td>
</tr>
<tr>
<td>Do.</td>
<td>Qom Manganese Mines Co.</td>
<td>Shahrestouak Mine, Qom</td>
<td>3</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>National Iranian Copper Industries Co. (Iranian Mines and Mining Industries Development and Renovation Organization)</td>
<td>Sarcheshmeh Copper Complex, Kerman</td>
<td>NA</td>
</tr>
<tr>
<td>Natural gas</td>
<td>billion cubic meters</td>
<td>Associated gas from company oilfields</td>
<td>96</td>
</tr>
<tr>
<td>Petroleum</td>
<td>Crude million 42-gallon barrels</td>
<td>Onshore oilfields include the Agha Jari, the Ahwaz-Asmari, the Bangestan, the Hakimeh, the Gachsaran, the Karanj, the Marun, the Pazanan, and the Rag-e-Safid. Offshore oilfields include the Abouzar, and the Salman</td>
<td>1,400</td>
</tr>
<tr>
<td>Do.</td>
<td>do. National Iranian Oil Co. and buyback contract joint venture of Shell Iran Nowrooz/Soroosh Development (70%), JJI S&amp;N B.V. (20%), and Iranian Offshore Engineering &amp; Construction Co. (10%)</td>
<td>Nowrooz and Soroosh Fields, offshore</td>
<td>75</td>
</tr>
<tr>
<td>Do.</td>
<td>do. National Iranian Oil Co. and buyback contract joint venture of Total S.A. (55%) and Eni SpA (45%)</td>
<td>Doroud Field, offshore</td>
<td>65</td>
</tr>
<tr>
<td>Do.</td>
<td>do. National Iranian Oil Co. and buyback contract joint venture of Total S.A. (70%) and PETRONAS Carigali International Sdn Bhd (30%)</td>
<td>Sirri A and E Fields, offshore</td>
<td>40</td>
</tr>
<tr>
<td>Do.</td>
<td>do. National Iranian Oil Co. and buyback contract joint venture of Total S.A. (60%) and Naftiran Intertrade Co. (40%)</td>
<td>Darquain Field, onshore</td>
<td>17</td>
</tr>
</tbody>
</table>

See footnotes at end of table.
TABLE 2--Continued  
IRAN: STRUCTURE OF THE MINERAL INDUSTRY IN 20061, 2

<table>
<thead>
<tr>
<th>(Commodity)</th>
<th>Major operating companies and major equity owners</th>
<th>Location of main facilities</th>
<th>Annual capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphate rock</td>
<td>Phosphate Mines Development Co. (Iranian Mines and Mining Industries Development and Renovation Organization, 100%)</td>
<td>Esfordi Mine, Yazd</td>
<td>360</td>
</tr>
<tr>
<td>Do.</td>
<td>Chadormalou Mining and Industrial Co. (National Iranian Steel Co., 100%)</td>
<td>Chador Malu Mine</td>
<td>NA</td>
</tr>
<tr>
<td>Do.</td>
<td>Other companies</td>
<td>Other mines</td>
<td>29</td>
</tr>
<tr>
<td>Steel, crude</td>
<td>Mobarekeh Steel Co. (Iranian Mines and Mining Industries Development and Renovation Organization)3</td>
<td>Plant at Esfahan</td>
<td>4,200</td>
</tr>
<tr>
<td>Do.</td>
<td>Isfahan Steel Co. (Iranian Mines and Mining Industries Development and Renovation Organization)3</td>
<td>do.</td>
<td>2,900</td>
</tr>
<tr>
<td>Do.</td>
<td>Khouzestan Steel Co. (Iranian Mines and Mining Industries Development and Renovation Organization)3</td>
<td>Plant at Ahwaz</td>
<td>2,600</td>
</tr>
<tr>
<td>Do.</td>
<td>National Iranian Steel Co. (Iranian Mines and Mining Industries Development and Renovation Organization)3</td>
<td>Includes subsidiaries Iran National Steel Industrial Group plant at Ahwaz, and Khorasan Steel Co. plant near Neyshabur</td>
<td>1,500</td>
</tr>
<tr>
<td>Titanium, ilmenite</td>
<td>Kahnuj pilot plant (Iranian Mines and Mining Industries Development and Renovation Organization)3</td>
<td>Daregaz placer and Kahnuj titanium dioxide processing plant</td>
<td>NA</td>
</tr>
<tr>
<td>Uranium</td>
<td>Atomic Energy Organization of Iran (Government)</td>
<td>Saghand Mine, about 100 kilometers northeast of Yazd</td>
<td>NA</td>
</tr>
<tr>
<td>Zinc: Ore</td>
<td>Angouran Mining Company (Iran Zinc Mine Development Co.)</td>
<td>Angouran Mine, Zanjan</td>
<td>500 9</td>
</tr>
<tr>
<td>Do.</td>
<td>BAMA Co.</td>
<td>Irankouh complex (Goosh-e-feel, Goward-e-Zendan, Khaneh Gorgi, Kolah Darwazeh, and Tappeh Sorkhi Mines), Esfahan</td>
<td>190 9</td>
</tr>
<tr>
<td>Do.</td>
<td>Bafgh Mining Co.</td>
<td>Kushk Mine, Yazd</td>
<td>120 9</td>
</tr>
<tr>
<td>Refined metal</td>
<td>Bafgh Zinc Co. (Iran Zinc Mine Development Co.)</td>
<td>Bafgh, Yazd</td>
<td>30</td>
</tr>
<tr>
<td>Do.</td>
<td>Qeshm Zinc Smelter Co. (affiliate of Calcinin Co.)</td>
<td>Qeshm Island, Hormozgan</td>
<td>20</td>
</tr>
<tr>
<td>Do.</td>
<td>National Iranian Lead and Zinc Co. (Iran Zinc Mine Development Co.)</td>
<td>Zanjan</td>
<td>15</td>
</tr>
<tr>
<td>Do.</td>
<td>Calcinim Co. (Iran Zinc Mine Development Co.)</td>
<td>Dandi (Angouran) plant, Zanjan</td>
<td>14</td>
</tr>
<tr>
<td>Do.</td>
<td>Faravari Mavad Madani Iran Co. (Iran Zinc Mine Development Co.)</td>
<td>Zanjan</td>
<td>14</td>
</tr>
<tr>
<td>Do.</td>
<td>Bandar Abbas Zinc Production Co. (affiliate of Calcinin Co.)</td>
<td>Bandar Abbas</td>
<td>13</td>
</tr>
<tr>
<td>Do.</td>
<td>Zanjan Zinc Smelter Co. (affiliate of Calcinin Co.)</td>
<td>Zanjan</td>
<td>5</td>
</tr>
</tbody>
</table>

6Estimated. NA Not available.
1About 2,700 mines are located in Iran, about 2,000 of which are active. About 65% of the active mines and quarries produce building and construction materials, such as aggregate, sand, and stone.
2Data was augmented by input from the Iranian National Committee of the World Mining Congress.
3Government owned.
4A subsidiary of state-owned Iranian Mines and Mining Industries Development and Renovation Organization.
5Associated with the Iranian Social Security Organisation.
6Under construction.
7Recovered from Sar Chemesh copper plant slimes.
8May include basic sediment and condensate.
9Includes lead and zinc ores.