



# 2011 Minerals Yearbook

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## IRAN

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# THE MINERAL INDUSTRY OF IRAN

By Philip M. Mobbs

The mineral industry held a very prominent role in the economy of Iran, especially the hydrocarbon sector, which included the production of natural gas and oil, the refining of crude oil, and the distribution of hydrocarbons. According to BP p.l.c., Iran was the world's fourth ranked producer of crude oil and condensate (natural gas liquids) and accounted for about 5.2% of the world's output. Iran also was the world's fourth ranked producer of natural gas. About 2% of the world's crude oil refining capacity was located in the country, and Iran held 15.9% of proved worldwide natural gas reserves and 9.1% of proved oil reserves in 2011 (BP p.l.c., 2012, p. 6, 10, 16, 20, 22).

Iran held a diverse range of mineral resources. About 40 mineral commodities were mined and about 15 metals and mineral-related commodities were refined or manufactured, respectively. The country was estimated to account for about 9% of the world's output of gypsum and pumice; more than 2% of the world's output of barite, feldspar, nitrogen, and sulfur; and more than 1% of the world's output of cement, industrial (or glass) sand, iron ore, and molybdenum. Mineral-related issues (primarily uranium enrichment) negatively affected Iran's relations with the Governments of many nations (Bureau of Economic, Energy, and Business Affairs, 2011; Apodaca, 2012a, b; Crangle, 2012a, b; Dolley, 2012; Jorgenson, 2012; Miller, 2012; Polyak, 2012; Tanner, 2012; van Oss, 2012).

## Minerals in the National Economy

Iran had an extensive mineral production and processing industry. Production, processing, transportation, and sales of crude oil and natural gas accounted for a notable portion of the country's gross domestic product. Cement and steel also were significant components of the domestic mineral industry (tables 1, 2; International Monetary Fund, 2011, p. 31; Antonioli and Saul, 2012).

Various international sanctions had been imposed on Iran during the construction of the Bushehr nuclear powerplant owing to the potential for the diversion of nuclear sector technology and the potential for Iran to recover and disseminate nuclear material (such as plutonium) from spent fuel rods. The issue was thought to be resolved partially in 2005 when Russia agreed to take back and reprocess the spent fuel rods from the Bushehr plant, which began to generate electricity in 2011. The discovery of stand-alone uranium enrichment facilities in Iran, which potentially could produce highly enriched uranium for nuclear weapons, however, generated additional sanctions. The effect of the international sanctions on Iran's mineral sector, which historically has required large investments to develop mineral deposits (especially metal ores and crude petroleum) and to process the minerals, had thus far been mixed. Initially, the petroleum sector was the focus of sanctions owing to its contribution to Iran's economy. In 1995, the President of the United States issued Executive Order 12957, which prohibits United States entities or persons from entering

into certain transactions with respect to the development of Iranian petroleum resources, and Executive Order 12959, which prohibits other types of transactions, including any new investment in entities owned or controlled by the Government of Iran. In the 1990s and 2000s, however, many other nations declined to honor the American sanctions (Katzman, 2007, p. 1; Khlopkov and Lutkova, 2010, p. 8; Fars News Agency, 2011; Cable News Network, 2012).

The United States' Comprehensive Iran Sanctions, Accountability, and Divestment Act of 2010 (CISADA), which amended the Iran Sanctions Act of 1996 and the Iran Freedom Support Act of 2006, targeted (a) international investments with a value of \$20 million or more that were intended to help Iran develop its petroleum resources, (b) sales of petroleum products with a fair market value of more than \$1 million (or with a value of \$5 million or more in a 12-month period), and (c) the provision of goods and services that could enhance Iran's ability to import refined petroleum products, including finance, brokering, insurance, and shipping services. Issued in 2011, Executive Orders 13574 and 13590 authorized the implementation of certain sanctions in response to Iran's nuclear activities (U.S. Department of State, undated a, b; U.S. Department of the Treasury, undated).

In 2010, the United Nations (UN) adopted Resolution 1929 in response to Iran's apparent lack of appropriate response to previous UN resolutions that obliged Iran to suspend uranium reprocessing and enrichment activities. The European Union issued Council Regulation (EU) No. 96/2010, which restricted Iran's access to bonds and insurance markets, also restricted the following: investment in the Iranian uranium mining and nuclear industry, investment in the Iranian oil and gas industry, trade of petroleum industry equipment and technology with Iran, and transfers of funds to and from Iran (European Union, 2010; United Nations Security Council, 2010; Martin and Woolich, 2012).

## 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, regulate the mining sector. The Petroleum Act of 1987 clarifies the Government's authority in the oil sector. A new mines exploitation law remained under consideration by the National Consultative Assembly of Iran. The Government continued its program to phase out subsidies to several segments of the economy, which, together with international sanctions, made the availability of affordable energy, availability of funding, and access to export markets more difficult for the medium- and small-scale mineral operations than for the larger Government-affiliated mineral companies (Fox News.com, 2011; Donya-e Eqtesad, 2012).

The Government's Fifth Development Plan for the years 2011 to 2015 proposed that the production capacities of several mineral commodities be increased by 2015. Owing to international sanctions, the Government continued to emphasize the development of local self-sufficiency in the areas of mine and mineral-processing plant construction, design, and planning. In addition to increased use of domestic consulting engineering services for mine and plant design, the Government promoted local manufacturing of mineral-industry-related equipment, machinery, and parts (Mining & Development, 2010, p. 8).

## Production

Data on estimated mineral production in Iran are 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 more than 5,000 active mines were privately owned. The Government, primarily through the Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO), controlled many of the larger capacity mining and mineral-processing companies, especially those that produced aluminum, ammonia, coal, copper, iron and steel, natural gas, petroleum, salt, and sulfur, although the Government anticipated that it would divest some of its interest in mineral-related operations (table 2).

## Mineral Trade

The Central Bank of the Islamic Republic of Iran reported that hydrocarbons accounted for about 83% of the total value of exports in 2011. Hydrocarbon exports were valued at about \$118 billion in 2011 compared with \$79 billion in 2010. Increased oil prices contributed to the increase. Crude oil exports accounted for most of the hydrocarbon exports. Iran also imported petroleum condensate, natural gas, natural gas liquids, and refined oil products, which in 2011 were valued at about \$3.5 billion, or about 5% of total imports (Central Bank of the Islamic Republic of Iran, 2011a–d; 2012).

## Commodity Review

### Metals

**Aluminum.**—Administration and management functions of the 147,000-metric-ton-per-year (t/yr)-capacity Hormozgan aluminum complex (Hormozal) and the adjacent 110,000-t/yr-capacity Almahdi aluminum complex at Bandar Abbas were unified in 2011. The merger was expected to reduce administrative costs of the resultant entity, Almahdi Hormozal Aluminum Co. Also in 2011, an 80,000-t/yr-capacity carbon anode plant was inaugurated at Almahdi (Sadre Sanat Consulting Engineers, 2011).

IMIDRO projected that Iran's aluminum production capacity would reach 1.5 million metric tons by 2025.

United Company RUSAL of Russia entered discussions with IMIDRO about the possibility of building a 375,000-t/yr-capacity smelter. Other aluminum projects in Iran included South Aluminum Co.'s 276,000-t/yr-capacity smelter at Lamerd, a 110,000-t/yr-capacity expansion of Iran Aluminum Co.'s construction of a smelter at Arak, and construction of a 110,000-t/yr-capacity smelter at Masjed Solieman. The construction of a 310,000-t/yr-capacity aluminum smelter, which Kerman Development Organisation and National Aluminium Co. of India proposed in 2007, remained on hold owing to the lack of funding (Alu Product, 2011; Asankin, Kiseleva, and Yegikyan, 2011; Iranian Mines and Mining Industries Development and Renovation Organization, 2011, p. 24–25; Shubhashish, 2011).

**Copper and Molybdenum.**—National Iranian Copper Industries Co. (NICICO) requested bids on the design and construction of an ore concentrator at Sarcheshmeh that could process 2,200 metric tons per hour of ore with a grade of 0.65% copper to recover (a) 379,000 t/yr of copper concentrate with a grade of 26% copper and (b) 4,100 t/yr of molybdenum concentrate. By 2017, NICICO's second 5-year plan proposed to increase the company's copper production to 700,000 t/yr from 220,000 t/yr. New copper projects mentioned in the 5-year plan included the construction of a mine at Dareh Alo, which would process 7 million metric tons per year (Mt/yr) of ore to produce 100,000 t/yr of copper concentrate with a grade of 26% copper. A 5,000-t/yr-capacity solvent-extraction electrowinning plant, which would produce copper cathode, also was planned to be built at Dareh Alo. Also proposed were the construction of mines and plants at Darreh Zar and at Nochun, each of which would have the capacity to produce 100,000 t/yr of copper concentrate, and the construction of the Chah Firooz, the Chah Mesi, the Haft Cheshmeh, the Ijoo, the Kahang, the Masjed Daghi, and the Taft copper mines. The conversion of the Sarcheshmeh smelter to a flash smelting process from a reverberatory furnace, the expansion of the output capacity of the Khatoon Abad smelter to 200,000 t/yr of copper anode from 80,000 t/yr, and the construction of a 200,000-t/yr-capacity copper smelter at Sungun also were planned (Iran Daily, 2011; Iranian Mines and Mining Industries Development and Renovation Organization, 2011, p. 9; MEED, 2011).

**Gold.**—Persian Gold plc of Ireland divested its interest in the Dalli copper/gold project in 2011. The company subsequently changed its name to Clontarf Energy plc and shifted its focus to international petroleum exploration, but retained royalty interest in the Chah-e Zard gold project in Iran. Construction of the Zarshoran gold mine continued; the mine was expected to start commercial operations in late 2012 (Clontarf Energy plc, 2012, p. 3–4).

**Zinc.**—Mehdiabad Zinc Co., which was a joint venture of Karoun Dez Dasht (45.6% equity interest), Itok GmbH of Austria (24.5% interest), UCL Resources Ltd. of Australia (formerly Union Resources Ltd.) (24.5% interest), and minority shareholders (5.4% interest), continued negotiations to develop the Mehdiabad zinc prospect with IMIDRO, which held the exploitation license for the deposit. The project had effectively been on care-and-maintenance status since 2006 owing to IMIDRO's claims of alleged breaches of contract by Mehdiabad Zinc, although Union Resources had undertaken studies

of various development options during the interim period. Future foreign investment in the project remained subject to UN sanctions, which could delay additional exploration and development activity (UCL Resources Ltd., 2012, p. 2, 11–12).

### **Mineral Fuels and Related Materials**

**Helium.**—In 2011, Pars Oil and Gas Co. authorized a study of the feasibility of recovering helium from the South Pars gasfield, which is the northern section of the North Field that is located in Iranian territorial waters. Helium had been produced from the North Field in Qatar since 2005, and a second helium plant was expected to become operational in Qatar in 2013 (Offshore Magazine, 2012; Chemicals Technology, undated).

### **Outlook**

Numerous production-capacity expansion projects and new mineral commodity development projects in Iran's mineral sector are planned. There has been some foreign investment in the mineral sector in the past few years; however, the availability of international funding for capital-intensive development of mineral-related projects by Government-controlled and private companies operating in Iran is expected to remain impaired owing, in part, to international sanctions. Consequently, most large-scale mineral resource development programs will be even more dependent on the availability of scarce Government funding.

### **References Cited**

- Alu Product, 2011, Iran aluminum ingot production capacity doubled: Alu Product, December 26. (Accessed December 6, 2012, at <http://www.alu-support.com/newsdisp.php?ID=2265>.)
- Antonioli, Silvia, and Saul, Jonathan, 2012, Steel sanctions cut deep into Iran's economy: Reuters, November 11. (Accessed February 6, 2013, at <http://www.reuters.com/article/2012/11/11/us-iran-sanctions-steel-idUSBRE8AA02P20121111>.)
- Apodaca, L.E., 2012a, Nitrogen (fixed)—Ammonia: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 112–113.
- Apodaca, L.E., 2012b, Sulfur: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 158–159.
- Asankin, Roman, Kiseleva, Yelena, and Yegikyan, Seda, 2011, “Rusal” dokapyvaetsya do Irana [“Rusal” is digging up to Iran]: Kommersant, September 22. (Accessed December 6, 2011, at <http://www.kommersant.ru/doc/1778407>.)
- BP p.l.c., 2012, BP statistical review of world energy June 2012: London, United Kingdom, BP p.l.c., 45 p.
- Bureau of Economic, Energy, and Business Affairs, 2011, Fact sheet—Comprehensive Iran Sanctions, Accountability, and Divestment Act (CISADA): U.S. Department of State, May 23. (Accessed December 6, 2012, at <http://www.state.gov/e/eb/esc/iransanctions/docs/160710.htm>.)
- Cable News Network, 2012, Iran says nuclear reactor is weeks from operating at full capacity: Cable News Network, January 7. (Accessed January 31, 2012, at [http://articles.cnn.com/2012-01-07/middleeast/world\\_meast\\_iran-nuclear\\_1\\_bushehr-plant-director-general-yukiya-amano-iran-s-bushehr?\\_s=PM:MIDDLEEAST](http://articles.cnn.com/2012-01-07/middleeast/world_meast_iran-nuclear_1_bushehr-plant-director-general-yukiya-amano-iran-s-bushehr?_s=PM:MIDDLEEAST).)
- Central Bank of the Islamic Republic of Iran, 2011a, Bahman—Balance of payments: Central Bank of the Islamic Republic of Iran. (Accessed December 8, 2012, at <http://www.cbi.ir/page/8670.aspx>.)
- Central Bank of the Islamic Republic of Iran, 2011b, Dey—Balance of payments: Central Bank of the Islamic Republic of Iran. (Accessed December 8, 2012, at <http://www.cbi.ir/page/8669.aspx>.)
- Central Bank of the Islamic Republic of Iran, 2011c, Esfand—Balance of payments: Central Bank of the Islamic Republic of Iran. (Accessed December 8, 2012, at <http://www.cbi.ir/page/8671.aspx>.)
- Central Bank of the Islamic Republic of Iran, 2011d, Farvardin to Azar—Balance of payments: Central Bank of the Islamic Republic of Iran. (Accessed December 8, 2012, at <http://www.cbi.ir/page/7976.aspx>.)
- Central Bank of the Islamic Republic of Iran, 2012, Farvardin to Bahman—Balance of payments: Central Bank of the Islamic Republic of Iran. (Accessed December 8, 2012, at <http://www.cbi.ir/page/9388.aspx>.)
- Chemicals Technology, [undated], Qatar Helium II refining facility, Qatar: Chemicals Technology. (Accessed July 19, 2012, at <http://www.chemicals-technology.com/projects/qatar-helium-ii>.)
- Clontarf Energy plc, 2012, 2011 reports and consolidated financial statements: Clontarf Energy plc, 56 p. (Accessed December 12, 2012, at [http://www.clontarfenery.com/app\\_user\\_files/file/2011-Clontarf-annualreport.pdf](http://www.clontarfenery.com/app_user_files/file/2011-Clontarf-annualreport.pdf).)
- Crangle, R.D., Jr., 2012a, Gypsum: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 70–71.
- Crangle, R.D., Jr., 2012b, Pumice and pumicite: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 124–125.
- Dolley, T.P., 2012, Sand and gravel (industrial): U.S. Geological Survey Mineral Commodity Summaries 2012, p. 138–139.
- Donya-e Eqtesad, 2012, [Evaluation of economic players in the industry, 90 years of production and internal challenges and external pressures]: Tehran, Iran, Donya-e Eqtesad, March 18. (Accessed December 10, 2012, at [http://www.donya-e-qtasad.com/Default\\_view.asp?@=295106](http://www.donya-e-qtasad.com/Default_view.asp?@=295106).)
- European Union, 2010, Council Regulation (EU) No 961/2010 of 25 October 2010 on restrictive measures against Iran and repealing Regulation (EC) No 423/2007: European Union, October 27, 77 pages. (Accessed December 6, 2012, at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:281:0001:0077:EN:PDF>.)
- Fars News Agency, 2011, Minister stresses Iran's ability to withstand West's sanctions: Fars News Agency, November 14. (Accessed December 6, 2012, at <http://english.farsnews.com/newstext.php?nn=9007273375>.)
- Fox News.com, 2011, Iran keeps lights on to keep tempers cool: Fox News.com, August 9. (Accessed December 10, 2012, at <http://www.foxnews.com/world/2011/08/09/iran-keeps-lights-on-to-keep-tempers-cool>.)
- International Monetary Fund, 2011, Islamic Republic of Iran—2011 Article IV consultation—Staff report—Public information notice on the Executive Board discussions—and statement by the Executive Director for Iran: International Monetary Fund country report no. 11/241, August, 32 p. (Accessed February 6, 2013, at <http://www.imf.org/external/pubs/ft/scr/2011/cr11241.pdf>.)
- Iran Daily, 2011, NICICO's ordinary, extraordinary general assemblies approve—200% capital boost, DPS payment, higher output target: Iran Daily, July 12. (Accessed May 12, 2012, at [http://www.iran-daily.com/1390/4/21/mainpaper/4002/page/6/mainpaper\\_4002\\_6.pdf](http://www.iran-daily.com/1390/4/21/mainpaper/4002/page/6/mainpaper_4002_6.pdf).)
- Iranian Mines and Mining Industries Development and Renovation Organization, 2011, Investment opportunities in Iran's mines and mining industries sector: Tehran, Iran, Iranian Mines and Mining Industries Development and Renovation Organization, November, 52 p.
- Jorgenson, J.D., 2012, Iron ore: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 84–85.
- Katzman, Kenneth, 2007, The Iran Sanctions Act (ISA): Washington, DC, Congressional Research Service, The Library of Congress, October 12, 6 p.
- Khlopkov, Anton, and Lutkova, Anna, 2010, The Bushehr NPP—Why did it take so long?: Center for Energy and Security Studies, August 21, 12 p. (Accessed December 7, 2012, at <http://ceness-russia.org/data/doc/TheBushehrNPP-WhyDidItTakeSoLong.pdf>.)
- Martin, Daniel, and Woolich, Anthony, 2012, If in doubt? Don't do it: Petroleum Economist, v. 79, no. 4, May, p. 12.
- MEED, 2011, Tehran tenders copper plant contract: MEED, v. 55, no 16, April 22, p. 12.
- Miller, M.M., 2012, Barite: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 24–25.
- Mining & Development, 2010, First exhibition of mines and mining industries localization to [be] held January 2011: Iranian Mines and Mining Industries Development and Renovation Organization, v. 4, no. 39, November 24, 8 p.
- Offshore Magazine, 2012, Iran examines helium, oil options at South Pars: Offshore Magazine, February 29. (Accessed July 19, 2012, at <http://www.offshore-mag.com/articles/2012/02/iran-examines-helium.html>.)
- Polyak, D.E., 2012, Molybdenum: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 106–107.
- Sadre Sanat Consulting Engineers, 2011, Almahdi anode making & baking project: Sadre Sanat Consulting Engineers. (Accessed December 10, 2012, at <http://www1.sadresanat.com/en/?q=node/139>.)

Shubhashish, 2011, Nalco's RS 10,000-cr Iran aluminium project remains a non-starter: Business Standard [New Delhi, India], July 22. (Accessed December 6, 2012, at <http://www.business-standard.com/india/news/nalcos-rs-10000-cr-iran-aluminium-project-remainsnon-starter/443547>.)

Tanner, A.O., 2012, Feldspar: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 54–55.

UCL Resources Ltd., 2012, Annual report 2012: Brisbane, Queensland, Australia, UCL Resources Ltd., 65 p.

United Nations Security Council, 2010, Resolution 1929: United Nations Security Council, June 9. (Accessed December 6, 2012, at [http://www.un.org/ga/search/view\\_doc.asp?symbol=S/RES/1929\(2010\)](http://www.un.org/ga/search/view_doc.asp?symbol=S/RES/1929(2010)).)

U.S. Department of State, [undated]a, Executive orders: U.S. Department of State. (Accessed December 6, 2012, at <http://www.state.gov/e/eb/tfs/spi/iran/eo/index.htm>.)

U.S. Department of State, [undated]b, Statutes: U.S. Department of State. (Accessed December 6, 2012, at <http://www.state.gov/e/eb/tfs/spi/iran/statutes/index.htm>.)

U.S. Department of the Treasury, [undated], Iran sanctions: U.S. Department of the Treasury. (Accessed December 6, 2012, at <http://www.treasury.gov/resource-center/sanctions/Programs/Pages/Iran.aspx>.)

van Oss, H.G., 2012, Cement: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 38–39.

TABLE 1  
IRAN: ESTIMATED PRODUCTION OF MINERAL COMMODITIES<sup>1, 2, 3</sup>

(Metric tons unless otherwise specified)

Commodity <sup>4</sup>	2007	2008	2009	2010	2011
<b>METALS</b>					
<b>Aluminum:</b>					
Bauxite, gross weight	520,800 <sup>5</sup>	715,339 <sup>5</sup>	522,018 <sup>5</sup>	681,235 <sup>r, 5</sup>	600,000
Alumina	250,000	250,000	250,000	250,000	250,000
Metal, primary ingot	215,981 <sup>5</sup>	200,000 <sup>r</sup>	200,000 <sup>r</sup>	192,000 <sup>r</sup>	223,554 <sup>5</sup>
Arsenic, orpiment and realgar, concentrates	100	100	100	100	100
<b>Chromite, mine output, concentrate:</b>					
Gross weight	185,760 <sup>5</sup>	268,586 <sup>5</sup>	225,129 <sup>5</sup>	45,000 <sup>r, 5</sup>	100,000
Cr <sub>2</sub> O <sub>3</sub> content	90,000	130,000	110,000	22,000 <sup>r</sup>	50,000
<b>Copper:</b>					
<b>Mine output:</b>					
Ore mined (0.6% to 1.2% Cu):					
Gross weight	26,500	26,500	27,000	27,500	27,500
Cu content	244,000	248,000	263,000 <sup>r</sup>	257,000 <sup>r</sup>	259,000
Concentrate (29% to 35% Cu):					
Gross weight	731,000	740,000	750,000	760,000	760,000
Cu content	235,000	240,000	250,000	255,000	255,000
<b>Metal:</b>					
Smelter output, blister or anode	250,000	248,000	262,000 <sup>r</sup>	279,000 <sup>r</sup>	270,000
Refined output, cathode	204,000 <sup>r</sup>	201,000 <sup>r</sup>	210,254 <sup>5</sup>	220,000 <sup>r</sup>	227,000
Gold, mine output, Au content <sup>6</sup>	1,000 <sup>r</sup>	1,000 <sup>r</sup>	2,000 <sup>r</sup>	2,000 <sup>r</sup>	2,000
<b>Iron and steel:</b>					
<b>Ore and concentrate:</b>					
Gross weight	31,538 <sup>5</sup>	32,000	34,034 <sup>5</sup>	35,000	35,000
Fe content	15,000	15,000	16,000	16,500	16,500
<b>Metal:</b>					
Pig iron	2,572 <sup>5</sup>	2,200	2,400	2,500	2,500
Direct-reduced iron	7,440 <sup>5</sup>	7,500	8,200	9,400	10,400
Ferrosilicon	8,000	8,000	8,000	8,000	8,000
Ferrosilicon	45,000	45,000	45,000	45,000	45,000
Steel, crude, ingots and castings	10,100	9,960	10,000	12,000	13,000
<b>Lead:</b>					
<b>Mine output, concentrate:</b>					
Gross weight	40,000	53,000	39,254 <sup>5</sup>	70,000	70,000
Pb content	20,000	26,905 <sup>5</sup>	20,000	35,000	35,000
Refinery output, includes secondary	70,000	75,000	75,000	75,000	75,000
<b>Manganese, mine output (30% to 35% Mn):</b>					
Gross weight	103,441 <sup>5</sup>	115,000	125,506 <sup>5</sup>	131,561 <sup>r, 5</sup>	130,000
Mn content	35,000	40,000	45,000	46,000	46,000
<b>Molybdenum, mine output, concentrate:</b>					
Gross weight	6,644 <sup>5</sup>	6,597 <sup>5</sup>	4,447 <sup>5</sup>	7,000	7,000
Mo content	3,600	3,700	2,500	3,900	3,900
Silver, mine output, Ag content	20	15	15	15	15
<b>Zinc:</b>					
<b>Mine output, concentrate:</b>					
Gross weight	190,000	130,000	150,000	160,000	160,000
Zn content	100,000	69,267 <sup>5</sup>	72,048 <sup>5</sup>	80,000	80,000
Metal	90,000	60,000	65,000	65,000	65,000

See footnotes at end of table.

TABLE 1—Continued  
 IRAN: ESTIMATED PRODUCTION OF MINERAL COMMODITIES<sup>1,2,3</sup>

(Metric tons unless otherwise specified)

Commodity <sup>4</sup>	2007	2008	2009	2010	2011	
INDUSTRIAL MINERALS						
Barite	249,495 <sup>5</sup>	226,590 <sup>5</sup>	361,217 <sup>5</sup>	326,275 <sup>r,5</sup>	330,000	
Boron, borax	1,603 <sup>5</sup>	1,020 <sup>5</sup>	388 <sup>5</sup>	500	500	
Cement, hydraulic	thousand metric tons	41,000	44,400	50,000	55,000	66,000
Clays:						
Bentonite	254,084 <sup>5</sup>	375,898 <sup>5</sup>	387,437 <sup>5</sup>	350,208 <sup>r,5</sup>	350,000	
Industrial clays	550,000	530,000	530,000	550,000	550,000	
Kaolin	350,000	320,000	907,487 <sup>5</sup>	1,480,291 <sup>r,5</sup>	1,400,000	
Diatomite	300	2,000 <sup>5</sup>	--	--	--	
Feldspar	512,261 <sup>5</sup>	501,821 <sup>5</sup>	634,503 <sup>5</sup>	652,020 <sup>r,5</sup>	650,000	
Fluorspar	68,192 <sup>5</sup>	61,592 <sup>5</sup>	71,409 <sup>5</sup>	72,000	70,000	
Gemstones, turquoise	kilograms	20,000	19,000	19,000	20,000	20,000
Gypsum	thousand metric tons	12,000	11,251 <sup>5</sup>	13,000	11,914 <sup>r,5</sup>	12,000
Industrial or glass sand (quartzite and silica)	do.	2,000	2,000	1,500	1,500	1,500
Lime	do.	2,600	2,700	2,600	2,700	2,700
Magnesite	112,229 <sup>5</sup>	115,987 <sup>5</sup>	130,575 <sup>5</sup>	130,000	130,000	
Mica	1,800 <sup>5</sup>	1,510 <sup>5</sup>	6,797 <sup>5</sup>	2,860 <sup>r,5</sup>	2,900	
Nepheline syenite	70,000	70,000	70,000	70,000	70,000	
Nitrogen:						
N content of ammonia	2,000,000	2,000,000	2,000,000	2,500,000	2,500,000	
N content of urea	1,300,000	1,300,000	1,300,000	1,600,000	1,600,000	
Perlite	30,000	30,000	30,000	30,000	30,000	
Phosphate rock:						
Ore	330,000	325,000	330,000	330,000	330,000	
P <sub>2</sub> O <sub>5</sub> content	40,500	37,000	39,000	39,000	39,000	
Pigments, mineral, natural iron oxide, ochre	2,600	2,600	2,600	2,600	2,600	
Pumice and related volcanic materials	thousand metric tons	1,500	1,500	1,500	1,500	1,500
Salt	2,564,871 <sup>5</sup>	2,158,280 <sup>5</sup>	2,816,235 <sup>5</sup>	3,291,063 <sup>r,5</sup>	3,000,000	
Soda ash	140,000	140,000	140,000	140,000	140,000	
Sodium compound, caustic soda	20,000	20,000	20,000	20,000	20,000	
Stone:						
Construction and building, crushed <sup>7</sup>	thousand metric tons	26,000	25,000	25,000	26,000	26,000
Dimension and decorative:						
Granite	do.	1,100	1,000	1,000	1,000	1,000
Marble, blocks and slabs <sup>8</sup>	do.	4,200	4,000	4,000	4,000	4,000
Travertine, blocks	do.	1,500	1,500	1,500	1,500	1,500
Total	do.	6,800	6,500	6,500	6,500	6,500
Dolomite	do.	650	600	600	600	600
Limestone	do.	55,000	50,000	50,000	50,000	50,000
Strontium, celestite	2,000	2,000	15,396 <sup>5</sup>	16,000	16,000	
Sulfates, natural:						
Aluminum potassium sulfate (alum)	1,000	1,000	1,000	1,000	1,000	
Sodium sulfate	600,000	600,000	600,000	600,000	600,000	
Sulfur:						
Byproduct of petroleum and natural gas	1,500,000	1,500,000	1,500,000	1,700,000	1,700,000	
Byproduct of metallurgical processing, S content of acid	70,000	70,000	70,000	80,000	80,000	
Total	1,570,000	1,570,000	1,570,000	1,800,000	1,800,000	
Talc	90,889 <sup>5</sup>	89,110 <sup>5</sup>	66,383 <sup>5</sup>	95,767 <sup>r,5</sup>	90,000	

See footnotes at end of table.

TABLE 1—Continued  
 IRAN: ESTIMATED PRODUCTION OF MINERAL COMMODITIES<sup>1,2,3</sup>

(Metric tons unless otherwise specified)

Commodity <sup>4</sup>	2007	2008	2009	2010	2011	
MINERAL FUELS AND RELATED MATERIALS						
Coal	thousand metric tons	2,000	1,800	2,181 <sup>5</sup>	2,300	2,300
Coke	do.	1,200 <sup>5</sup>	1,300	1,300	1,350	1,350
Gas, natural:						
Gross	million cubic meters	170,000	175,000	200,000	210,000	220,000
Dry	do.	112,000	116,000	131,000	138,000	145,000
Gas plant liquids	thousand 42-gallon barrels	150,000	140,000	140,000	145,000	145,000
Petroleum:						
Crude	do.	1,470,000 <sup>5</sup>	1,490,000	1,450,000 <sup>5</sup>	1,470,000	1,440,000
Refinery products:						
Liquefied petroleum gases	do.	53,000	55,000	56,000	57,000	57,000
Motor gasoline	do.	103,000	102,000	105,000	106,000	106,000
Jet fuel	do.	7,900	8,000	8,100	8,200	8,200
Kerosene	do.	51,000	49,000	50,000	50,500	50,500
Distillate fuel oil	do.	187,000	196,000	200,000	203,000	203,000
Residual fuel oil	do.	168,000	178,000	180,000	182,000	182,000
Other	do.	17,000	19,000	20,000	20,000	20,000
Total	do.	586,900	607,000	619,000	627,000	627,000

<sup>1</sup>Revised. do. Ditto. -- Zero.

<sup>2</sup>Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown.

<sup>3</sup>Table includes data available through December 12, 2012.

<sup>4</sup>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.

<sup>5</sup>In addition to the commodities listed, the following may have been produced, but information is inadequate to estimate output: antimony, bromine, crude construction materials (such as sand and shell), ferromolybdenum, hafnium oxide, ilmenite, selenium, silicomanganese, uranium, zeolite, and zirconium metal.

<sup>6</sup>Reported figure.

<sup>7</sup>Includes gold recovered from the Mouteh gold mine and from the Sarcheshmeh copper complex.

<sup>8</sup>Includes marble and travertine.

<sup>9</sup>Includes marmarite.

TABLE 2  
IRAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2011<sup>1,2</sup>

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Alumina	Iran Alumina Co. (Government)	Northeast of Jajarm, Khorasan Province	280
Aluminum	Iran Aluminium Co. [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO) <sup>3</sup> majority interest, and a joint venture of Industrial Development Investment Co. and a subsidiary of Mehr Finance & Credit Institution, 40%]	Arak, Markazi Province	190
Do.	Almahdi Hormozal Aluminium Co.	Bandar Abbas, Hormozgan Province	257
Bauxite	Iran Alumina Co. (Government)	Jajarm Mine, about 15 kilometers northeast of Jajarm	500
Cement	Abadeh Cement Co.	Abadeh, Fars Province	175
Do.	Abyek Cement Co. (Fars & Khouzestan Cement Co.)	Abyek, Qazvin Province, 80 kilometers northwest of Tehran	5,100
Do.	Anarak Special Cement Co.	Anarak, Markazi Province	500
Do.	Ardebil Cement Co. (Espandar Cement Investment Co.)	Namin, Ardebil Province	1,050
Do.	Ardestan Cement Co.	North of Esfahan, Esfahan Province	1,000
Do.	Behbahan Cement Co. (Fars & Khouzestan Cement Co.)	Behbahan, Khuzestan Province	960
Do.	Benvid White Cement Co. (Bank Melli Iran Investment Co.)	Benvid, Esfahan Province	175
Do.	Bojnourd Cement Plant (Fars & Khouzestan Cement Co.)	About 37 kilometers from Bojnourd, Khorasan Province	700
Do.	Bushehr Cement Co. (Dashtestan Cement)	Borazjan, Bushehr Province	1,000
Do.	Darab Cement Co. [General public (Justice shares), 50%, and Bank Melli Iran Investment Co., 29%]	About 190 kilometers southeast of Shiraz, Fars Province	1,100
Do.	Doroud Cement Co. (Fars & Khouzestan Cement Co.)	Doroud, Lorestan Province	1,400
Do.	Ekbatan Cement Co. (Espandar Cement Investment Co.)	Ekbatan, Tehran Province	175
Do.	Estahban Cement Co.	20 kilometers west of Estahban, Fars Province	350
Do.	Faraz Firouzkuh Cement Co. (Espandar Cement Investment Co.)	About 180 kilometers northeast of Tehran	1,200
Do.	Fars Cement Co. (Fars & Khouzestan Cement Co.)	Shiraz, Fars Province	2,000
Do.	Fars Nov Cement Co. (Fars & Khouzestan Cement Co.)	About 65 kilometers southeast of Shiraz, Fars Province	1,000
Do.	Firozkuh	Firozkuh	1,100
Do.	Ghaen Cement Co. (Cement Investment and Development Co., 26%, and Bank Melli Iran Investment Co., 14%)	Qayen (Ghaen), Khorasan Province	770
Do.	Gharb Cement Co. (Fars & Khouzestan Cement Co.)	Kermanshah, Kermanshah Province	700
Do.	Hegmatan Cement Co. (Tehran Cement Co., 79%)	East of Razan, Hamedan Province	1,000
Do.	Hormozgan Cement Co. (OMID Investment Co.)	About 75 kilometers west of Bandar Abbas	2,200
Do.	Ilam Cement Co. (Tehran Cement Co., 47%)	Northeast of Ilam, Ilam Province	700
Do.	Isfahan Cement Co.	Esfahan, Esfahan Province	1,100
Do.	Karoon Cement Co.	Near Masjed Soleyman, Khozestan Province	1,100
Do.	Kavir Kashan Cement Co. (Espandar Cement Investment Co.)	Near Kashan, Esfahan Province	660
Do.	Kerman Cement Co. (Bank Melli Iran Investment Co., 38%)	Kerman, Kerman Province	1,260
Do.	Khash Cement Co. (Fars & Khouzestan Cement Co.)	Khash, Sistan va Baluchestan Province	730 <sup>e</sup>
Do.	Khazar Cement Co. (Fars & Khouzestan Cement Co.)	About 80 kilometers northwest of Qazvin, Qazvin Province	1,200
Do.	Khouzestan Cement Co. (Fars & Khouzestan Cement Co.)	Ramhormoz, Khuzestan Province	1,100 <sup>e</sup>
Do.	Kohkiloye Yasuj Cement (State Retirement Organization <sup>3</sup> and Fars & Khouzestan Cement Co.)	Behbahan, near Deh Dasht, Kohkiloye, Kohgiluyeh va Bowyer Ahmad Province	240
Do.	Kordestan Cement Co. (Ghadir Investment Co.)	North of Bijar, Kurdistan Province	1,000
Do.	Lar-e Sabzevar Cement Co.	Sabzevar, Khorasan Province	1,100
Do.	Loshan Cement Co. (Tehran Cement Co., 66%)	Loshan, Gilan Province	100
Do.	Mazandaran Cement Co. (Bank Melli Iran Investment Co., 60%)	Neka, Mazandaran Province	1,600
Do.	Neyriz White Cement Co. (Fars & Khouzestan Cement Co.)	Neyriz, Fars Province	160
Do.	Omran Anarak Cement Co.	Delijan, Markazi Province	1,030

See footnotes at end of table.



TABLE 2—Continued  
 IRAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2011<sup>1,2</sup>

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Cement—Continued	Qeshm Cement Co.	Qeshm Island, Hormozgan Province	250
Do.	Sarooj Bushehr International Co.	Kangan, Bushehr Province	1,600
Do.	Saveh Grey Cement Co. (Fars & Khouzestan Cement Co.)	Saveh, Markazi Province	2,200
Do.	Saveh White Cement Co. (Fars & Khouzestan Cement Co.)	do.	350
Do.	Sepahan Cement Co. (Ghadir Investment Co.)	Mobarekeh, Esfahan Province	2,300
Do.	Shahroud Cement Co. (Fars & Khouzestan Cement Co.)	Shahroud, Semnan Province	600
Do.	Sharg Cement Co. (Ghadir Investment Co.)	Mashhad, Khorasan Province	1,600
Do.	Shemal Cement Co. (Bank Mellī Iran Investment Co., 59%)	Pardis, Tehran Province	880
Do.	Soufian Cement Co. (Fars & Khouzestan Cement Co. and Social Security Organization Investment Co.)	About 33 kilometers northwest of Tabriz, East Azerbaijan Province	1,500
Do.	Tehran Cement Co. (Ghadir Investment Co.)	Tehran, Tehran Province	6,000
Do.	Urmia Cement Co. (Fars & Khouzestan Cement Co.)	Orumiyeh, West Azerbaijan Province	740
Do.	Urumieh White Cement Co.	do.	180
Do.	Yazd Bohrouk Cement Co.	Yazd, Yazd Province	1,100
Do.	Zanjan Cement Co. (Fars & Khouzestan Cement Co.)	Zanjan, Zanjan Province	600
Do.	Zarveh Torbat Cement Co.	Torbat-Heydareh, Khorasan Province	1,100
Chromite	Faryab Mining Co.	Faryab Mine and processing plant, Minab, Hormozgan Province	180 <sup>e</sup>
Do.	Esfandaghe Mines Co.	Abdasht Mine, Kerman Province; Suqan (Saboughan) Mine, Kerman Province; Processing plant at Esfandaghe, Kerman Province	30
Do.	NA	Furumad Mine, Shahrud, Semnan Province; Gaft processing plant, Semnan Province	6
Do.	NA	Mir Mahmud Mine, Mayami, Semnam Province	6
Do.	NA	Dumak Mine, Zahedan, Sistan va Baluchestan Province	2
Coke	Isfahan Steel Co. [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>3</sup>	Plant about 40 kilometers southwest of Esfahan, Esfahan Province	900
Do.	Zarand Iranian Steel Co.	Zarand, Kerman Province	400
Copper:			
Concentrate	National Iranian Copper Industries Co. (NICICO) [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>3</sup>	Sarcheshmeh Mine, south of Rafsanjan, Kerman Province	670
Do.	do.	Sungun copper mine, East Azerbaijan Province	150
Do.	do.	Miduk copper mine, Kerman Province	150
Do.	do.	Qal'eh Zari Mine, about 120 kilometers southwest of Birjand, Khorasan Province	10
Do.	do.	Chah Firozeh, Chah Messi, Darehzar, and Eijo copper mines, Kerman Province	NA
Do.	Private cooperatives	Chah Musa Mine and Qal'eh Sukhteh, Semnan Province	5
Smelter output	National Iranian Copper Industries Co. (NICICO) [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>3</sup>	Smelter, Sarcheshmeh copper complex, south of Rafsanjan, Kerman Province	145
Do.	do.	Smelter near Khatoonabad, Kerman Province	80
Refined metal	do.	Refinery, Sarcheshmeh copper complex, south of Rafsanjan, Kerman Province	210
Do.	do.	Electrowon plant, Sarcheshmeh copper complex, south of Rafsanjan, Kerman Province	14
Gemstones, turquoise	NA	Neyshabur Mine, Khorasan Province	6 <sup>e</sup>

See footnotes at end of table.

TABLE 2—Continued  
 IRAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2011<sup>1,2</sup>

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
<b>Gold:</b>				
Ore	kilograms	Iran Gold Co.	Muteh Mine (Chah Khaton and Senjedeh pits), Esfahan Province, and Kuh-e-Zar Mine, Semnan Province	600
Do.	do.	National Iranian Copper Industries Co. (NICICO) [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>3</sup>	Coproduct of production from various copper mines	600
Do.	do.	Pooya Zarcan Agh Darreh	Agh Darreh	1,000 <sup>4</sup>
Do.	do.	Artisanal placer operations	Neyshabur area, Khorasan Province	NA
Metal <sup>5</sup>	do.	National Iranian Copper Industries Co. (NICICO) [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>3</sup>	Sarcheshmeh copper complex, south of Rafsanjan, Kerman Province	500
<b>Iron and steel:</b>				
Iron ore		Iran Central Iron Ore Co. [National Iranian Steel Co. (NISCO), 100%] <sup>6</sup>	Choghart Mine, Bafgh, Yazd Province	7,400
Do.		Chadormalu Mining and Industrial Co. [Omid Investment Management Corp., 37%; Mines and Metals Development Investment Co., 15%; Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO), <sup>3</sup> 8%]	Chadormalu Mine, 80 kilometers north of Bafgh, Yazd Province	6,500
Do.		Gol-e-Gohar Iron Ore Co. [Omid Investment Management Corp., 39%; Mines and Metals Development Investment Co., 28%; Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO), <sup>3</sup> 18%]	Gol-e-Gohar Mine, about 50 kilometers southwest of Sirjan, Kerman Province	3,800
Do.		Sangan Iron Ore Co. (National Iranian Steel Co., 100%) <sup>3</sup>	Sangan (Songun) Mine, about 140 kilometers southeast of Torbat e-Heydariyeh, Khorasan Province	2,000
Do.		Iranian Minerals Production and Supply Co. (IMPASCO) [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>3</sup>	Jalal Abad Mine, about 40 kilometers northwest of Zarand	1,700
Do.		About 20 small privately owned mines	NA	1,000 <sup>e</sup>
<b>Iron:</b>				
Cast iron		Zagros Steel Co. (Government, majority interest)	Foundry in Kurdistan Province	70
Iron metal		Mobarekeh Steel Co. [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>3</sup> majority interest; Social Security Organization, <sup>3</sup> 10%; a subsidiary of Mehr Finance & Credit Institution, 5%, and the Steel Employees Fund, 5%]	Direct-reduction iron plant (Midrex® process) about 50 kilometers southwest of Esfahan, Esfahan Province	4,000
Do.		Khuzestan Steel Co. [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO), <sup>3</sup> majority interest]	Direct-reduction iron plant (HYL I, Midrex®, and Purofer processes), Ahwaz, Khuzestan Province	3,200
Do.		Hormozgan Steel Complex [National Iranian Steel Co. (NISCO) <sup>6</sup> and partners]	Direct-reduction iron plant (Midrex® process)	850
Do.		Isfahan Steel Co. [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>3</sup>	Direct-reduction iron plant (Ghaem process) about 40 kilometers southwest of Esfahan, Esfahan Province	600
Steel, crude		Mobarekeh Steel Co. [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>3</sup> majority interest; Social Security Organization, <sup>3</sup> 10%; a subsidiary of Mehr Finance & Credit Institution, 5%; the Steel Employees Fund, 5%]	Plant about 50 kilometers southwest of Esfahan, Esfahan Province	4,200
Do.		Khuzestan Steel Co. [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO), <sup>3</sup> majority interest]	Plant at Ahwaz, Khuzestan Province	2,600
Do.		Isfahan Steel Co. [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>3</sup>	Plant about 40 kilometers southwest of Esfahan, Esfahan Province	2,200

See footnotes at end of table.

TABLE 2—Continued  
 IRAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2011<sup>1,2</sup>

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
<b>Iron and steel—Continued:</b>				
Steel, crude—Continued		Khorasan Steel Co. [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO) <sup>3</sup> majority interest, and a Government pension fund, 40%]	Plant at Neyshabur, Khorasan Province	650
Do.		Vian Steel Melting and Casting Co.	Plant, about 42 kilometers of Hamadan, Hamadan Province	600
Do.		Meibod (Maybod) Steel Co. (Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)], <sup>3</sup> 50%	About 15 kilometers southwest of Meybod, Yazd Province	300
Magnesite		Birjand Refractory Mining Co. (Iranian Refractories Procurement & Production Co.)	Hoz Sefid, Shirkuhak, and Torshak Mohammadi Mines, about 50 kilometers southeast of Birjand, South Khorasan Province	NA
Natural gas	billion cubic meters	National Iranian Oil Co. (Government, 100%)	Associated gas from company oilfields	96
Do.	do.	do.	Aghar, Dalan, Kangan, and Nar gasfields	57
Do.	do.	Pars Oil and Gas Co. (National Iranian Oil Co., 100%) <sup>3</sup>	South Pars gasfields, offshore	32 <sup>7</sup>
<b>Petroleum:</b>				
Crude	million 42-gallon barrels	National Iranian Oil Co. (Government, 100%)	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	1,400
Do.	do.	National Iranian Oil Co. and buyback contract joint venture of Shell Iran Nowrooz/Soroosh Development (70%), JJI S&N B.V. (20%), and Iranian Offshore Engineering & Construction Co. (10%)	Nowrooz and Soroosh fields, offshore	75
Do.	do.	National Iranian Oil Co. and buyback contract joint venture of Total S.A. (55%) and Eni SpA (45%)	Doroud field, offshore	65
Do.	do.	National Iranian Oil Co. and buyback contract joint venture of Total S.A. (70%) and PETRONAS Carigali International Sdn Bhd (30%)	Sirri A and E fields, offshore	40
Do.	do.	National Iranian Oil Co. and buyback contract joint venture of Total S.A. (60%) and Naftiran Intertrade Co. (40%)	Darquain field, onshore	17
Refined products	thousand 42-gallon barrels per day	National Iranian Oil Refining and Distribution Co. (NIORDC) (Government, 100%)	Refineries at Abadan, Arak, Bandar Abbas, Esfahan, <sup>8</sup> Kermanshah, Lavan, Shiraz, Tabriz, and Tehran	1,728
Phosphate rock		Esfordi Phosphate Complex (Iran Minerals Production & Supply Co.) <sup>3</sup>	About 35 kilometers northeast of Bafgh, Yazd Province	500
Titanium, ilmenite		Kahnuj pilot plant [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>3</sup>	Daregaz placer and Kahnuj titanium dioxide processing plant	NA
Uranium	metric tons	Atomic Energy Organization of Iran (Government)	Saghand Mine, about 125 kilometers northeast of Yazd, Yazd Province	50 <sup>e</sup>
Do.	do.	do.	Gchine Mine, near Bandar Abbas, Hormozgan Province	21 <sup>e</sup>
<b>Zinc:</b>				
Ore		Iran Zinc Mine Development Co.	Angouran open pit mine, Dandi, Zanjan Province	500 <sup>9</sup>
Do.		BAMA Co. (IranKooh)	Irakouh complex (Gooshfil and Tappeh Sorkh open pit mines, about 20 kilometers southeast of Esfahan, Esfahan Province, and Kolah Darvazeh Mine, south of Esfahan, Esfahan Province)	190 <sup>9</sup>
Do.		Bafgh Mining Co.	Kushk Mine, Yazd Province	120 <sup>9</sup>
Do.		Beroner Tehran Co.	Emarat Mine, about 25 kilometers southwest of Arak, Markazi Province	100 <sup>9</sup>

See footnotes at end of table.

TABLE 2—Continued  
 IRAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2011<sup>1,2</sup>

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Zinc—Continued:			
Refined metal	Bafgh Zinc Co. (Iran Zinc Mine Development Co.)	West of Bafgh, Yazd Province	30
Do.	Qeshm Zinc Smelter Co. (affiliate of Calcimine Co.)	Kaveh Industrial Zone, Qeshm Island, Hormozgan Province	20
Do.	Calcimine Co. (Iran Zinc Mine Development Co.)	Dandi (Angouran) plant, Zanjan Province	18
Do.	Faravari Mavad Madani Iran Co. (Iran Zinc Mine Development Co.)	Dandi, Zanjan Province	18
Do.	National Iranian Lead and Zinc Co. (Iran Zinc Mine Development Co.)	About 12 kilometers east of Zanjan, Zanjan Province	15
Do.	Bandar Abbas Zinc Production Co. (affiliate of Calcimine Co.)	Bandar Abbas, Hormozgan Province	13
Do.	Zanjan Zinc Smelter Co. (affiliate of Calcimine Co.)	Zanjan, Zanjan Province	5

<sup>6</sup>Estimated. Do., do. Ditto. NA Not available.

<sup>1</sup>About 3,000 mines that are located in Iran are active. About 65% of the active mines and quarries produce building and construction materials, such as aggregate, sand, and stone.

<sup>2</sup>Data was augmented by input from the Iranian National Committee of the World Mining Congress.

<sup>3</sup>Government owned.

<sup>4</sup>Operations suspended.

<sup>5</sup>Recovered from Sar Chemesh copper plant slimes.

<sup>6</sup>A subsidiary of state-owned Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO).

<sup>7</sup>May include basic sediment and condensate.

<sup>8</sup>Held 95% equity interest.

<sup>9</sup>Includes lead and zinc ores.