



# 2016 Minerals Yearbook

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**IRAN [ADVANCE RELEASE]**

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# THE MINERAL INDUSTRY OF IRAN

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In 2016, Iran's hydrocarbon sector, which included the production of natural gas and crude petroleum, the refining of crude petroleum, and the distribution of hydrocarbons, played a significant role in the country's economy. Among mineral fuels, Iran was the world's third-ranked producer of natural gas (accounting for 5.7% of the world's output) and the fourth-ranked producer of crude petroleum and condensate (combined, 5.0%). Iran was also the world's 3d-ranked producer of gypsum, accounting for 6.1% of the world's output; 5th-ranked producer of barite, 6.6%; 6th-ranked producer of feldspar, 4.2%; 7th-ranked producer of bentonite, 2.3%, and molybdenum, 1.3%; 10th-ranked producer of iron ore, 1.5%, and kaolin, 2.2%; and 12th-ranked producer of sulfur, 2.7% (table 1; BP p.l.c., 2017, p. 14, 28; Apodaca, 2018; Crangle, 2018; McRae, 2018; Polyak, 2018; Tanner, 2018; Tuck, 2018; West, 2018).

Iran was estimated to hold the world's second-largest feldspar reserves, the fifth-largest barite reserves, the sixth-largest gypsum reserves, the eighth-largest fluor spar reserves, and the ninth-largest iron ore reserves. In 2016, Iran held the world's largest natural gas reserves (accounting for 18% of proven worldwide natural gas reserves) and the world's fourth-largest crude petroleum reserves (accounting for 9.3% of proven worldwide crude petroleum reserves) (BP p.l.c., 2017, p. 12, 26; Crangle, 2017; McRae, 2017a, b; Tanner, 2017; Tuck, 2017).

## Minerals in the National Economy

In 2016, the gross domestic product (GDP) of Iran increased by 12.5% in real terms compared with a decrease of 1.6% in 2015 and an average increase of 1.8% between 2006 and 2014. The lifting of international sanctions, a rebound in crude petroleum production and prices, and growth in the construction and service sectors had a positive effect on economic output. The hydrocarbon sector portion of the real GDP was estimated to have increased by 61.6% in 2016 compared with an increase of 7.2% in 2015. The remaining portion of real GDP made up by all other sectors increased by 3.3% in 2016 compared with a decrease of 3.1% in 2015 (International Monetary Fund, 2018, p. 4, 30, 47).

Iran had an extensive nonfuel mineral industry, but its economy remained highly dependent on hydrocarbon production. In 2016, the hydrocarbon sector made up 12.3% of the GDP, whereas mining and manufacturing together accounted for 13.4%. The mineral processing sector, which included the processing and refining of copper and zinc and the production of cement and steel, accounted for an estimated 4% of the GDP, and the mining sector, an estimated 1% (tables 1, 2; Iran International Magazine, 2016, p. 39–40; Central Bank of the Islamic Republic of Iran, 2018a, p. 46).

## Government Policies and Programs

The Government-owned holding company Iranian Mines and Mining Industries Development and Renovation Organization

(IMIDRO) was responsible for the formulation and implementation of the country's policies on mineral exploration and mining, mine and plant construction and development, and royalty rates on mineral production. The Ministry of Industry, Mine, and Trade (MIMT) issued mineral exploration and mining licenses (Iran Ministry of Industry, Mine, and Trade, 2015; Iranian Mines and Mining Industries Development and Renovation Organization, [undated]).

International sanctions on Iran related to uranium enrichment and reprocessing remained partially in place in 2016. The Joint Comprehensive Plan of Action (JCPOA) of July 2015 (commonly known as the "Iran nuclear deal"), which went into effect on January 16, 2016, stipulated the removal of sanctions that prohibited foreign companies from investing in mineral-related facilities and fields, as well as trade in petroleum and petroleum products and trade in gold and other precious metals, graphite, raw and semifinished metals (such as aluminum and steel), and coal. Secondary sanctions on Iran were removed in 2016; these sanctions applied to foreign companies who wanted to invest, engage in a business with, or otherwise conduct any type of transaction related to the energy and petrochemical sectors of Iran. Despite implementation of the plan, large-scale foreign direct investment into Iran's mineral sector was not expected in the near future owing to ongoing political uncertainty (U.S. Department of the Treasury and U.S. Department of State, 2016, p. 4, 10; International Monetary Fund, 2017, p. 64).

In 2016, the Iranian Integrated Petroleum Contract (IPC) was approved by the Iranian Government. The purpose of the IPC was to attract foreign investment and technology to spur development of upstream crude petroleum and natural gas projects. New contract terms were set for a maximum of 20 years, with the possibility of a 5-year extension for enhanced petroleum recovery projects. The IPC required that contracts involving the exploration, development, or production phases have an Iranian ownership of at least 51% (U.S. Energy Information Administration, 2018, p. 4).

## Production

Notable increases in Iran's mineral production in 2016 compared with production in 2015 included that of bentonite, which increased by 38%; copper concentrate (Cu content) and crude petroleum, by 17% each; urea, by an estimated 13%; raw steel and refined primary copper, by 11% each; and direct-reduced iron, by 10%. Notable decreases in production included smelted zinc, which decreased by 17%; and iron ore (Fe content), magnesite, and smelted secondary copper, which decreased by 12% each. Data on mineral production are in table 1.

## Structure of the Mineral Industry

The Government controlled most large-capacity mineral companies through IMIDRO. The leading IMIDRO subsidiaries were Almahdi Aluminum Co. (AHAC) (aluminum and lime), Esfahan Steel Co. (ESCO) (steel), Iranian Aluminium Co. (IRALCO) (aluminum), Iran Minerals Production and Supply Co. (IMPASCO) (multiple minerals), Iran Zinc Mines Development Co. (lead and zinc), Khouzestan Steel Co. (KSC) (steel), Mobarakeh Steel Co. (MSC) (steel), National Iranian Copper Industries Co. (NICICO) (copper and molybdenum), and National Iranian Steel Co. (NISCO) (steel). The National Iranian Oil Co. (NIOC) was responsible for exploration and production of petroleum and natural gas. The Atomic Energy Organization of Iran (AEOI) was engaged in the exploration, mining, and treatment of uranium. Table 2 is a list of major mineral industry facilities (Iran International Magazine, 2016, p. 42; Iranian Mines and Mining Industries Development and Renovation Organization, 2018; U.S. Energy Information Administration, 2018, p. 3; World Nuclear Association, 2018).

## Mineral Trade

Mineral fuels accounted for about 66% of Iran's total exports of \$84.0 billion in 2016 compared with 51% of the \$63.0 billion total in 2015; the increase in the value of mineral fuel exports and their percentage of total exports was a response to the implementation of the JCPOA and an increase in global petroleum prices. Iran's crude petroleum and condensate exports amounted to 2.224 million barrels per day (Mbbbl/d) in 2016 compared with 1.574 Mbbbl/d in 2015. In 2016, Iran exported 8.4 billion cubic meters of natural gas (mostly to Turkey) and imported 6.9 billion cubic meters of natural gas (mostly from Turkmenistan). Imports of gas and petroleum products were valued at \$1.4 billion in 2016 compared with \$1.6 billion in 2015. Iran's total imports were valued at \$63.1 billion in 2016 compared with \$57.6 billion in 2015 (table 1; BP p.l.c., 2017, p. 34; Central Bank of the Islamic Republic of Iran, 2018b, p. 7, 13).

Iran's nonfuel mineral exports were valued at \$7 billion in 2016 and accounted for 8.3% of total exports. Steel and steel products accounted for the largest share of nonfuel mineral exports at 38%. Noteworthy others included iron ore (11.7%), copper and copper products (9.5%), cement (7.1%), stones (4.7%), zinc (3.7%), and aluminum (3.4%). Nonfuel mineral imports were valued at \$3.7 billion and accounted for 5.9% of total imports in 2016. Steel and steel products, primarily from Kazakhstan and Russia, also accounted for the largest share of nonfuel mineral imports at 68.4%. Noteworthy others included aluminum (9.2%) and titanium (3.3%) (Financial Tribune, 2017a; Garshenina and others, 2018).

## Commodity Review

### Metals

**Bauxite and Alumina and Aluminum.**—In 2016, aluminum production increased slightly to 360,000 metric tons (t) from 355,000 t in 2015; alumina production increased to an estimated 250,000 t from 241,000 t in 2015, which was an increase of 3.7%. Iran Alumina Co., which was Iran's only producer of alumina,

operated the country's largest (in terms of output) bauxite mine; the mine, which was located at Jajarm, had reserves of 8 million metric tons (Mt) and an annual capacity of about 800,000 metric tons per year (t/yr) of bauxite. To meet increased domestic bauxite demand, IMIDRO pursued a policy of increasing domestic production and investing in bauxite mining overseas. In 2016, IMIDRO continued with plans to develop the Société des Bauxites de Dabola-Tougue (SBDT) bauxite project in Guinea, which had estimated reserves of 600 Mt of bauxite (table 2; Thomson Reuters, 2015; Financial Tribune, 2016b; Iranian Mines and Mining Industries Development and Renovation Organization, 2016, p. 36–37).

In 2016, Iran's total aluminum and alumina production capacity was about 487,000 t/yr and 280,000 t/yr, respectively. IMIDRO planned to increase annual production to 360,000 t of aluminum and 248,000 t of alumina during the next several years through three projects. In 2015, IMIDRO signed a contract for the construction and gas supply of the South Aluminum Co. (SALCO) aluminum smelter, which would have a production capacity of 276,000 t/yr of aluminum ingot upon completion of the first phase of construction. IMIDRO also signed contracts for the construction of a 200,000-t/yr alumina powder plant as part of the Sarab nepheline syenite project and a 36,600-t/yr aluminum ingot plant at Jajarm, which was expected to be constructed by 2017. The Sarab project also envisioned the production of 150,000 t/yr of salt from nepheline syenite (Financial Tribune, 2016b; Iranian Mines and Mining Industries Development and Renovation Organization, 2016, p. 36–37, 70, 80–81).

**Gold.**—Iran's production of gold was estimated to have increased by nearly 6% to 3,700 kilograms (kg) in 2016 from 3,500 kg in 2015. The increase was likely owing to continued growth at Iran's largest gold mine, the Zarshouran Mine, which began operating in 2014 and had a production capacity of 3,000 kilograms per year (kg/yr) of gold. IMIDRO planned to increase the capacity of the Zarshouran Mine to 6,000 kg/yr during the next several years, which would nearly double the country's overall gold production (Iranian Mines and Mining Industries Development and Renovation Organization, 2016, p. 84, 94).

**Iron and Steel.**—In 2016, Iran's iron ore production was 35.1 Mt compared with 39.4 Mt in 2015. Output, which consisted of lump and pelletized iron ore, had been projected to increase to nearly 50 Mt by 2017. The country's total iron ore production capacity was 52 million metric tons per year (Mt/yr). The two largest mines were the Chadormalu Mine, which had a production capacity of 16 Mt/yr, and the Gol-e-Gohar Mine, which had a production capacity of 7 Mt/yr. In 2016, Iran exported 17.8 Mt of iron ore compared with 13.1 Mt in 2015. Despite the increase, iron ore exports were projected to decrease during the next several years owing in part to an anticipated increase in demand from domestic steel producers. In 2016, Iran imported 390,000 t of iron ore compared with 492,000 t in 2015 (table 2; Iranian Mines and Mining Industries Development and Renovation Organization, 2016, p. 34; World Steel Association, 2017, p. 104, 106).

Iran was the leading steelmaker in the Middle East and North Africa region in 2016, with a total steel production capacity of about 30 Mt/yr. In the Government's 2025 Vision Plan, Iran's steel production capacity was targeted at 55 Mt/yr by 2025, which

would make it the world's sixth-ranked steelmaker. In 2016, Iran produced 17.90 Mt of continuously cast steel from electric arc furnaces compared with 16.15 Mt in 2015; it produced 16.01 Mt of direct-reduced iron compared with 14.55 Mt in 2015 and 2.25 Mt of pig iron compared with 2.46 Mt in 2015 (table 2; Financial Tribune, 2017b; World Steel Association, 2017, p. 2, 4, 6, 10, 12, 18, 91, 97).

**Lead and Zinc.**—In 2016, lead (Pb content) production increased slightly to 42,000 t and zinc (Zn content) production increased slightly to an estimated 125,000 t. The two largest zinc and lead mines in Iran were the Mehdi Abad Mine and the Angouran Mine. The Mehdi Abad Mine had reserves of 75 Mt at an average grade of 6% zinc and 2.7% lead. The Angouran Mine had reserves of 16 Mt of ore at an average grade of 26% zinc and 6% lead. In 2015, IMIDRO awarded a new tender to build a processing plant at the Mehdi Abad Mine with a production capacity of 800,000 t/yr of zinc concentrate and 80 t/yr of lead and silver concentrate. The Mehdi Abad Mine was expected to become the main supplier of zinc and lead after zinc deposits in the Angouran Mine are depleted (Iran International Magazine, 2016, p. 17, 40; Iranian Mines and Mining Industries Development and Renovation Organization, 2016, p. 70, 82).

### *Industrial Minerals*

**Barite.**—Mehdi Abad Zinc operated a barite mine at the Mehdi Abad Complex located 75 kilometers from Mahriz in central Iran. The reserves of the mine were estimated to be 113 Mt of barite at an average specific weight of 3.8 grams per cubic centimeter. K.D.D. Group, which was the owner of the Mehdi Abad Mine, planned to build a barite-processing plant by 2017; the plant would have the capacity to produce 1 Mt/yr of barite (K.D.D. Group, 2015; Minews, 2015a, p. 41; 2015b; Mehdi Abad Mining, 2016).

**Cement.**—Iran had about 70 cement plants in operation with a total capacity of 85.0 Mt/yr; of these 70 plants, the majority were gray cement plants with a total production capacity of 83.2 Mt/yr, and the remaining ones were white cement plants with a total production capacity of 1.8 Mt/yr. The country's cement kilns were relatively new, as 65% had been commissioned since 2000. In 2016, cement production increased by 6% to 62.0 Mt (estimated) compared with 58.6 Mt in 2015; the increase in production was owing to an economic recovery that resulted from the international lifting of sanctions (Global Cement, 2017).

### *Mineral Fuels and Related Materials*

Iran's primary energy supply sources continued to be natural gas (66.8%) and crude petroleum and petroleum products (31.0%) in 2016. Coal, hydroelectricity, and nuclear energy sources accounted for the remaining 2.2% of the country's energy supply (BP p.l.c., 2017, p. 9).

**Natural Gas.**—Iran produced 226.9 billion cubic meters of natural gas in 2016 compared with 226.7 billion cubic meters in 2015. Natural gas was produced mainly in southern Iran. Of the country's total natural gas output, only about 77% was marketed. The remainder was either reinjected into petroleum wells to

enhance petroleum recovery (17%) or vented and flared (6%). Since 2007, use of natural gas in enhanced petroleum recovery in Iran had increased by more than 50%. Iran vented or flared natural gas where there was insufficient infrastructure to capture and transport natural gas associated with crude petroleum production; the country's amount of vented or flared gas was high compared with other natural gas producers in the world (Organization of the Petroleum Exporting Countries, 2017, p. 124; U.S. Energy Information Administration, 2018, p. 14–15).

The South Pars field in the Persian Gulf, which straddled the Iran-Qatar maritime border, accounted for about 55% of Iran's gross natural gas output and held about 40% of its total proven natural gas reserves in 2016. The South Pars project was the country's most significant mineral fuel development project in 2016. The project had 24 planned phases, of which 18 phases were already operational. The project was managed by Pars Oil and Gas Co., which was a subsidiary of NIOC (U.S. Energy Information Administration, 2018, p. 16).

Iran ranked fourth among countries that consumed natural gas in 2016 after the United States, Russia, and China. Most of Iran's production was consumed domestically by the electric power sector (32% of the total). Other leading sectors that consumed natural gas were the residential and commercial sector (29%) and the industrial sector (27%). In 2016, Iran generated almost 276 billion kilowatthours of electricity. Natural gas was the largest source of fuel for electricity generation in Iran, accounting for 70% of total generation (U.S. Energy Information Administration, 2018, p. 15, 19).

**Petroleum and Petroleum Refinery Products.**—Iran produced 4.60 Mbbbl/d of crude petroleum in 2016 compared with 3.90 Mbbbl/d in 2015. The increase was primarily owing to the ability to increase exports that resulted from the implementation of the JCPOA. As a result, the country's crude petroleum production achieved a 5-year high; production exceeded 4.5 Mbbbl/d—a production level not reached since 2011. Crude petroleum was produced mainly onshore in southwestern Iran; more specifically, in the Khuzestan basin, which held 80% of Iran's total onshore reserves and accounted for about 85% of Iran's total crude petroleum production capacity. Iran also produced crude petroleum from many onshore and offshore fields that were shared with Iraq, Kuwait, Qatar, and Saudi Arabia (BP p.l.c., 2017, p. 14; U.S. Energy Information Administration, 2018, p. 4, 6–7).

More than 40% of Iran's production of crude petroleum was exported in 2016; key destinations were Asia and Europe. Three terminals located in the Persian Gulf handled almost all Iran's crude petroleum exports, namely Kharg Island, Lavan Island, and Sirri Island. With a storage capacity of about 28 million barrels (Mbbbl) of crude petroleum, Kharg Island was the main export terminal in Iran; it had a loading capacity of up to 7 Mbbbl/day. Lavan Island and Sirri Island were smaller terminals with storage capacities of 5.5 Mbbbl and 4.5 Mbbbl of crude petroleum, respectively (Financial Tribune, 2016a; Organization of the Petroleum Exporting Countries, 2017; p. 56; U.S. Energy Information Administration, 2018, p. 9–10).

Iran's total crude refinery capacity was 1.90 Mbbbl/d in 2016, and its refineries produced 1.85 Mbbbl/d, which was an increase of 2.1% compared with the 1.82 Mbbbl/d produced in 2015.



Iran's refinery production capacity ranked second among the OPEC member countries; Saudi Arabia ranked first with 2.9 Mbbl/d of refinery capacity. Other leading OPEC countries with refinery production capacity in 2016 were Venezuela (1.89 Mbbl/d, slightly below Iran), the United Arab Emirates (1.12 Mbbl/d), Kuwait (0.94 Mbbl/d), and Iraq (0.90 Mbbl/d). OPEC's overall total refinery capacity in 2016 was nearly 12 Mbbl/d, which represented 12% of the world total of about 97 Mbbl/d. Since 2012, OPEC member countries had added a total of 1.7 Mbbl/d of refinery capacity, accounting for nearly 70% of the world's increase of 2.5 Mbbl/d (Organization of the Petroleum Exporting Countries, 2017, p. 38–42).

**Uranium.**—The AEOI's uranium mining operations in Iran in 2016 were at the Gachin Mine and the Saghand Mine. The Bandar Abbas uranium plant, which began operations in 2006, produced about 21 t/yr of uranium from the Gachin Mine through acid leaching, which was then delivered to the Isfahan conversion plant. In 2015, uranium ore extraction began at the Saghand underground mine, which had resources of 900 t of contained uranium at a grade of 0.055% uranium; the associated Ardakan uranium plant was expected eventually to produce 50 t/yr of uranium from Saghand ore using acid leaching. The Saghand-Ardakan operation produced an estimated 25 to 30 t of uranium in 2016, and total uranium production in Iran in 2016 was estimated to be 50 t of uranium content. Iran's indicated and inferred resources were reported to be about 1,290 t and 3,130 t of contained uranium, respectively. Iran's uranium mining operations and processing facilities were part of its broader nuclear program, which also included nuclear powerplants, nuclear research sites, a research reactor, and uranium enrichment plants (World Nuclear Association, 2018).

## Outlook

Iran's economy is projected to grow at a rate of 4% in both 2017 and 2018, according to the International Monetary Fund. Iran's mineral commodity production may increase in coming years if foreign investment materializes and global commodity prices stabilize. Numerous production-capacity expansion projects, especially for metals and industrial minerals, are either currently in progress or were planned by IMIDRO. Maintenance of current levels of hydrocarbon output in the country will depend on technological upgrades, development of new fields, and the full lifting of international sanctions on Iran (International Monetary Fund, 2018, p. 4, 6, 11, 47).

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TABLE 1  
IRAN: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons, gross weight, unless otherwise specified)

Commodity <sup>2</sup>	2012	2013	2014	2015	2016	
<b>METALS</b>						
<b>Aluminum:</b>						
Bauxite	892,000	788,630 <sup>r</sup>	748,297 <sup>r</sup>	861,604 <sup>r</sup>	800,000 <sup>e</sup>	
Alumina	227,000	249,000	251,000	241,000	250,000 <sup>e</sup>	
Aluminum metal, primary	337,000	350,000	355,000	355,000	360,000	
Antimony, mine, Sb content <sup>e</sup>	--	400	432	216 <sup>r</sup>	200	
Arsenic trioxide	101	110	110	110 <sup>e</sup>	110 <sup>e</sup>	
<b>Chromium, mine, chromite concentrate:</b>						
Gross weight	411,566 <sup>r</sup>	344,169 <sup>r</sup>	359,332 <sup>r</sup>	276,570 <sup>r</sup>	275,000 <sup>e</sup>	
Cr <sub>2</sub> O <sub>3</sub> content	192,210 <sup>r</sup>	191,100	157,953 <sup>r</sup>	142,810 <sup>r</sup>	135,000 <sup>e</sup>	
<b>Copper:</b>						
<b>Mine (0.6% to 1.2% Cu):</b>						
Gross weight	thousand metric tons	34,780	32,420	35,900	44,500	47,000 <sup>e</sup>
Cu content		238,000	222,900	216,800 <sup>r</sup>	246,400 <sup>r</sup>	289,300
Concentrate (29% to 35% Cu, Cu content)		233,000 <sup>r</sup>	209,200 <sup>r</sup>	203,900 <sup>r</sup>	233,400 <sup>r</sup>	262,000
Leaching, electrowon, Cu content		12,500	13,700	12,700	13,000	13,400
<b>Refinery, Cu content:</b>						
Primary		138,300	123,100	124,000	113,900	126,000
Secondary		75,600	54,500	60,800	59,900	64,000
<b>Smelter:</b>						
Primary		173,100	154,600	156,500	153,500	153,400
Secondary		96,000	69,500	76,000	82,100	72,200
Gold, mine, Au content <sup>e, 3</sup>	kilograms	2,800	2,500	3,300	3,500	3,700
<b>Iron ore, mine:</b>						
Gross weight	thousand metric tons	43,497 <sup>r</sup>	48,693 <sup>r</sup>	48,451	39,370	35,100
Fe content	do.	21,085 <sup>r</sup>	25,330 <sup>r</sup>	25,709 <sup>r</sup>	25,798 <sup>r</sup>	22,800
<b>Iron and steel:</b>						
Direct-reduced iron	do.	11,582	14,458	14,551	14,546	16,013
Pig iron	do.	2,143	2,007	2,782	2,459	2,251
Raw steel, ingots, and castings	do.	14,463	15,400 <sup>e, r</sup>	16,300 <sup>e, r</sup>	16,146	17,895
<b>Lead:</b>						
<b>Mine concentrate:</b>						
Gross weight <sup>e</sup>		96,000	89,000	94,000	87,000	84,000
Pb content		45,000	42,000	44,000	40,800 <sup>r</sup>	42,000
<b>Refinery:</b>						
Primary		25,000	20,000	23,000	16,000	15,000 <sup>e</sup>
Secondary		56,000	56,000	47,000	60,000	60,000 <sup>e</sup>
<b>Manganese, mine:<sup>e</sup></b>						
Gross weight		195,000	163,000 <sup>r</sup>	140,000 <sup>r</sup>	86,500 <sup>r</sup>	90,000
Mn content		66,100	70,200	56,600	35,000 <sup>r</sup>	36,000
Mercury, Hg content		--	10	12	14 <sup>r</sup>	15 <sup>e</sup>
<b>Molybdenum, mine, concentrate:</b>						
Gross weight		6,300 <sup>e</sup>	6,200 <sup>e</sup>	6,200 <sup>e</sup>	6,705 <sup>r</sup>	6,500 <sup>e</sup>
Mo content		3,516	3,471	3,494	3,500 <sup>e</sup>	3,500 <sup>e</sup>
Silver, mine, Ag content	kilograms	96,000	85,000	80,000	90,000 <sup>e</sup>	90,000 <sup>e</sup>
<b>Zinc:</b>						
<b>Mine, concentrate:</b>						
Gross weight <sup>e</sup>		284,000	272,000	282,000	252,000	250,000
Zn content		140,000	134,000	139,000	124,000	125,000 <sup>e</sup>
Smelter		148,000	140,000	145,000	138,000	115,000
<b>INDUSTRIAL MINERALS</b>						
Barite		393,000	435,798 <sup>r</sup>	440,741 <sup>r</sup>	405,038 <sup>r</sup>	400,000 <sup>e</sup>
Boron, borax		3,000 <sup>e</sup>	2,330 <sup>r</sup>	1,383 <sup>r</sup>	675 <sup>r</sup>	700 <sup>e</sup>
Celestite		189,000 <sup>r, e</sup>	46,240 <sup>r</sup>	41,050 <sup>r</sup>	36,760 <sup>r</sup>	40,000 <sup>e</sup>

See footnotes at end of table.

TABLE 1—Continued  
 IRAN: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons, gross weight, unless otherwise specified)

Commodity <sup>2</sup>	2012	2013	2014	2015	2016
<b>INDUSTRIAL MINERALS—Continued</b>					
Cement, hydraulic thousand metric tons	70,250	68,700	66,700	58,600	62,000 <sup>e</sup>
Clay and shale:					
Bentonite	427,000	397,100	419,700	436,000 <sup>r, e</sup>	600,000
Kaolin	800,000	946,400	820,100	850,000 <sup>e</sup>	850,000 <sup>e</sup>
Other <sup>e</sup>	550,000	550,000	600,000	600,000	600,000
Diatomite	--	9,500	9,912 <sup>r</sup>	9,500 <sup>r</sup>	9,500 <sup>e</sup>
Feldspar, mine	1,100,000	1,313,233 <sup>r</sup>	1,055,368 <sup>r</sup>	736,149 <sup>r</sup>	750,000 <sup>e</sup>
Fluorspar	80,000 <sup>e</sup>	69,800	78,700	79,000 <sup>e</sup>	80,000 <sup>e</sup>
Gemstones, turquoise <sup>e</sup> kilograms	21,000	21,000	21,000	21,000	21,000
Gypsum thousand metric tons	19,000	21,100	19,600	20,000 <sup>e</sup>	20,000 <sup>e</sup>
Lime <sup>e</sup>	2,800,000	2,800,000	2,800,000	2,800,000	2,800,000
Magnesite	143,000	171,000 <sup>r, e</sup>	165,900	170,000 <sup>e</sup>	150,000 <sup>e</sup>
Mica <sup>e</sup>	7,000	7,000	7,000	5,600 <sup>r</sup>	5,600
Nitrogen, N content: <sup>e</sup>					
Ammonia	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000
Urea	1,600,000	1,600,000	1,600,000	1,600,000	1,800,000
Perlite	30,000	55,100	42,600	45,000 <sup>e</sup>	45,000 <sup>e</sup>
Phosphate rock, ore:					
Gross weight <sup>e</sup>	370,000	380,000	120,000 <sup>r</sup>	130,000 <sup>r</sup>	130,000
P <sub>2</sub> O <sub>5</sub> content	110,000	113,600	36,500	40,000 <sup>e</sup>	40,000 <sup>e</sup>
Salt thousand metric tons	2,962	2,079 <sup>r</sup>	3,940 <sup>r</sup>	4,000 <sup>e</sup>	4,000 <sup>e</sup>
Stone, sand, and gravel: <sup>e</sup>					
Sand and gravel, industrial, glass sand, quartzite and silica do.	1,500	1,500	1,500	1,500	1,500
Stone, crushed, unspecified do.	27,000	27,000	27,000	27,000	27,000
Sulfur, natural gas and petroleum, byproduct, S content <sup>e</sup>	2,000,000	2,100,000	2,000,000	2,200,000	2,200,000
Talc	116,087 <sup>r</sup>	93,116 <sup>r</sup>	112,500 <sup>r</sup>	137,135 <sup>r</sup>	130,000 <sup>e</sup>
Vermiculite	1,200	1,200	1,200	1,000	1,000 <sup>e</sup>
<b>MINERAL FUELS AND RELATED MATERIALS</b>					
Coal:					
Bituminous thousand metric tons	831	1,183	1,434	1,470	1,500 <sup>e</sup>
Lignite do.	2,820	2,800	2,700	2,800 <sup>e</sup>	2,800 <sup>e</sup>
Coke, metallurgical do.	940	1,002	965 <sup>r</sup>	980 <sup>r</sup>	1,031
Natural gas:					
Dry basis million cubic meters	202,431	199,293	212,796	226,673	226,905
Natural gas liquids <sup>e</sup> thousand 42-gallon barrels	150,000	156,000	160,000	160,000	160,000
Petroleum:					
Crude do.	1,392,110	1,318,015	1,363,640	1,430,800	1,678,956
Refinery:					
Distillate fuel oil do.	202,794	214,839	194,545	199,071	205,057
Gasoline, motor do.	152,789	166,331	150,563	154,176	158,812
Kerosene do.	45,443	45,443	50,261	47,012	47,961
Other do.	86,505	86,505	96,360	96,360	97,346
Residual fuel oil do.	173,850	187,172	169,470	167,097	168,776
Total do.	661,000 <sup>r</sup>	700,000 <sup>r</sup>	661,000 <sup>r</sup>	664,000 <sup>r</sup>	678,000
Uranium, mine, U content	15	40	45	46	50 <sup>e</sup>

<sup>e</sup>Estimated. <sup>r</sup>Revised. do. Ditto. -- Zero.

<sup>1</sup>Table includes data available through March 13, 2018. All data are reported unless otherwise noted. Totals and estimated data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>In addition to the commodities listed, bromine, caustic soda, crude construction materials (such as sand and shell), dimension stone, dolomite, ferroalloys, hafnium oxide, ilmenite, iron oxide pigments, refined lead, limestone, nepheline syenite, pumice, selenium, silicomanganese, soda ash, zeolites, and zirconium metal may have been produced in Iran, but available information was inadequate to make reliable estimates of output.

<sup>3</sup>Includes gold recovered from the Sarcheshmeh copper complex.



TABLE 2  
IRAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2016<sup>1</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. [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>2</sup>	Northeast of Jajarm, Khorasan-e Shomali Province	280
Aluminum	Iranian Aluminium Co. (IRALCO) [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>2</sup> majority interest, and a joint venture of Industrial Development Investment Co. and a subsidiary of Mehr Finance & Credit Institution, 40%]	Arak, Markazi Province	230
Do.	Almahdi Aluminium Co. (AHAC) [(Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>2</sup>	Bandar Abbas, Hormozgan Province	257
Barite	Mehdi Abad Zinc Co. (K.D.D. Group)	Mehdi Abad Mine, Yazd Province	600
Bauxite	Iran Alumina Co. [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>2</sup>	Jajarm Mine, about 15 kilometers northeast of Jajarm	800
Cement	Abadeh Cement Co.	Abadeh, Fars Province	393
Do.	Abyek Cement Co. (Fars & Khuzestan Cement Co.)	Abyek, Qazvin Province, 80 kilometers northwest of Tehran	3,900
Do.	Anarak Special Cement Co.	Anarak, Markazi Province	500
Do.	Ardebil Cement Co. (Espandar Cement Investment Co.)	Namin, Ardabil Province	1,092
Do.	Ardestan Cement Co.	North of Esfahan, Esfahan Province	1,092
Do.	Azar-Abadegan Khoy Cement Co.	West Azerbaijan Province	1,095
Do.	Behbahan Cement Co. (Fars & Khuzestan Cement Co.)	Behbahan, Khuzestan Province	718
Do.	Benvid White Cement Co. (Bank Melli Iran Investment Co.)	Benvid, Esfahan Province	164
Do.	Bojnourd Cement Plant (Fars & Khuzestan Cement Co.)	About 37 kilometers from Bojnourd, Khorasan-e Shomali Province	1,654
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	1,123
Do.	Dashtestan Cement Co.	NA	936
Do.	Doroud Cement Co. (Fars & Khuzestan Cement Co.)	Doroud, Lorestan Province	1,245
Do.	East White Cement Co.	NA	330
Do.	Ekbatan Cement Co. (Espandar Cement Investment Co.)	Ekbatan, Tehran Province	114
Do.	Estahban Cement Co.	20 kilometers west of Estahban, Fars Province	350
Do.	Faraz Firouzkhuh Cement Co. (Espandar Cement Investment Co.)	About 180 kilometers northeast of Tehran	1,030
Do.	Fars Cement Co. (Fars & Khuzestan Cement Co.)	Shiraz, Fars Province	819
Do.	Fars Now Cement Co. (Fars & Khuzestan Cement Co.)	About 65 kilometers southeast of Shiraz, Fars Province	936
Do.	Ghaen Cement Co. (Cement Investment and Development Co., 26%, and Bank Melli Iran Investment Co., 14%)	Qayen (Ghaen), Khorasan-e Jonubi Province	811
Do.	Gharb Cement Co. (Fars & Khuzestan Cement Co.)	Kermanshah, Kermanshah Province	1,248
Do.	Gilan Sabz Cement Co.	Deylaman, Gilan Province	1,200
Do.	Hegmatan Cement Co. (Tehran Cement Co., 79%)	East of Razan, Hamadan Province	2,059
Do.	Hormozgan Cement Co. (OMID Investment Co.)	About 75 kilometers west of Bandar Abbas	1,872
Do.	Ilam Cement Co. (Tehran Cement Co., 47%)	Northeast of Ilam, Ilam Province	1,654
Do.	Isfahan Cement Co.	Esfahan, Esfahan Province	1,036
Do.	Jovein Cement Co.	Jovein, Khuzestan Province	1,400
Do.	Karoun Cement Co.	Near Masjed Soleyman, Khuzestan Province	936
Do.	Kavan Boukan Cement Co.	Near Kashan, Esfahan Province	1,030
Do.	Kavir Kashan Cement Co. (Espandar Cement Investment Co.)	do.	557
Do.	Kerman Cement Co. (Bank Melli Iran Investment Co., 38%)	Kerman, Kerman Province	1,148
Do.	Khamseh Cement Co.	Zanjan Province	1,061
Do.	Khash Cement Co. (Fars & Khuzestan Cement Co.)	Khash, Sistan va Baluchestan Province	811
Do.	Khazar Cement Co. (Fars & Khuzestan Cement Co.)	About 80 kilometers northwest of Qazvin, Qazvin Province	1,248
Do.	Khuzestan Cement Co. (Fars & Khuzestan Cement Co.)	Ramhormoz, Khuzestan Province	2,496
Do.	Kohkiloye Yasuj Cement (State Retirement Organization <sup>2</sup> and Fars & Khuzestan Cement Co.)	Behbahan, near Deh Dasht, Kohkiloye, Kohgiluyeh va Bowyer Ahmad Province	1,200

See footnotes at end of table.

TABLE 2—Continued  
 IRAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2016<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Cement—Continued	Kordestan Cement Co. (Ghadir Investment Co.)	North of Bijar, Kordestan Province	998
Do.	Lamerd Cement Co.	Lamerd, Fars Province	1,030
Do.	Lar-e Sabzevar Cement Co.	Sabzevar, Khorasan-e Razavi Province	1,030
Do.	Larestan Cement Co.	Fars Province	142
Do.	Loshan Cement Co. (Tehran Cement Co., 66%)	Loshan, Gilan Province	206
Do.	Mazandaran Cement Co. (Bank Melli Iran Investment Co., 60%)	Neka, Mazandaran Province	2,278
Do.	Montazan Cement Co.	Kerman, Kerman Province	1,030
Do.	Naeen Cement Co.	NA	1,560
Do.	Nahavend Cement Co.	NA	1,030
Do.	Neyriz White Cement Co. (Fars & Khuzestan Cement Co.)	Neyriz, Fars Province	164
Do.	Neyzar Qom Cement Co.	NA	1,030
Do.	Omran Anarak Cement Co.	Delijan, Markazi Province	1,030
Do.	Qeshm Cement Co.	Qeshm Island, Hormozgan Province	240
Do.	Peyvand Golestan Cement Co.	NA	1,030
Do.	Safaieh Cement Co.	NA	624
Do.	Saman Gharb Cement Co.	NA	2,184
Do.	Sarooj Bushehr International Co.	Kangan, Bushehr Province	624
Do.	Saveh Grey Cement Co. (Fars & Khuzestan Cement Co.)	Saveh, Markazi Province	2,246
Do.	Saveh White Cement Co. (Fars & Khuzestan Cement Co.)	do.	230
Do.	Sepahan Cement Co. (Ghadir Investment Co.)	Mobarakeh, Esfahan Province	3,089
Do.	Shahrekord Cement Co.	NA	1,030
Do.	Shahroud Cement Co. (Fars & Khuzestan Cement Co.)	Shahroud, Semnan Province	1,872
Do.	Sharg Cement Co. (Ghadir Investment Co.)	Mashhad, Khorasan-e Razavi Province	1,997
Do.	Shomal Cement Co. (Bank Melli Iran Investment Co., 59%)	Pardis, Tehran Province	1,248
Do.	Shomal White Cement Co. (Bank Melli Iran Investment Co., 59%)	do.	89
Do.	Soufian Cement Co. (Fars & Khuzestan Cement Co., 50%; and Social Security Organization Investment Co., 50%)	About 33 kilometers northwest of Tabriz, East Azerbaijan Province	2,184
Do.	Tehran Cement Co. (Ghadir Investment Co.)	Tehran, Tehran Province	3,170
Do.	Tejarat Mehriz Cement Co.	NA	1,123
Do.	Tis Chabहार Cement Co.	Chabहार, Sistan and Baluchestan Province	6,000
Do.	Urmia Cement Co. (Fars & Khuzestan Cement Co.)	Orumiyeh, West Azerbaijan Province	1,966
Do.	Urmia White Cement Co.	do.	164
Do.	Yasouj Cement Co.	NA	218
Do.	Yazd Bohrouk Cement Co.	Yazd, Yazd Province	1,100
Do.	Zabol Cement Co.	NA	1,030
Do.	Zanjan Cement Co. (Fars & Khuzestan Cement Co.)	Zanjan, Zanjan Province	606
Do.	Zarin Rafsanjan Cement Co.	NA	218
Do.	Zarveh Torbat Cement Co.	Torbat e-Heydariyeh, Khorasan-e Razavi Province	1,092
Chromite, concentrate, Cr <sub>2</sub> O <sub>3</sub> content	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, Shahroud, Semnan Province; Gaft processing plant, Semnan Province	6
Do.	NA	Mir Mahmud Mine, Mayami, Semnan 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>2</sup>	Plant about 40 kilometers southwest of Esfahan, Esfahan Province	900
Do.	Middle East Coke Production Co. [[Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>2</sup>	NA	800

See footnotes at end of table.

TABLE 2—Continued  
 IRAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2016<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Coke—	Tabas Coke Production Co. [Iranian Mines and Mining	NA	450
Continued	Development and Renovation Organization (IMIDRO)] <sup>2</sup>		
Do.	Zarand Iranian Steel Co.	Zarand, Kerman Province	400
Coal	National Iranian Copper Industries Co. (NICICO) [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>2</sup>	Eastern Parvadeh Mine, Tabas Province	600
Do.	do.	Khomroud Mine, Kerman Province	450
Do.	National Iranian Copper Industries Co. (NICICO) [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>2</sup>	Parvadeh 4 Mine, Tabas Province	450
Do.	do.	Parvadeh 2 and 3 Mines, Tabas Province	500
Do.	do.	Kordobad Mine, Savadkouh Province	230
Do.	do.	Hashouni and Pabdana Mines, Kerman Province	150
Do.	do.	Takht and Vatan Mines, Alborz Province	150
Copper:			
Concentrate, Cu content	National Iranian Copper Industries Co. (NICICO) [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>2</sup>	Sarcheshmeh copper complex, south of Rafsanjan, Kerman Province	670
Do.	do.	Sungun Mine and Plant, East Azerbaijan Province	150
Do.	do.	Miduk Mine, Kerman Province	150
Do.	do.	Qal'eh Zari Mine, about 120 kilometers southwest of Birjand, Khorasan-e Jonubi 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>2</sup>	Smelter, Sarcheshmeh copper complex, south of Rafsanjan, Kerman Province	158
Do.	do.	Smelter near Khatoonabad, Kerman Province	80
Refined metal	do.	Refinery, Sarcheshmeh copper complex, south of Rafsanjan, Kerman Province	210
Do.	do.	Electrowinning plant, Sarcheshmeh copper complex, south of Rafsanjan, Kerman Province	14
Do.	do.	Electrowinning plant, Miduk copper complex, Kerman Province	5
Gemstones, turquoise	NA	Neyshabur Mine, Khorasan-e Razavi Province	6 <sup>e</sup>
Gold:			
Ore, Au content	kilograms Iran Minerals Production and Supply Co. (IMPSACO) [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>2</sup>	Muteh Mine (Chah Khaton and Senjedeh pits), Esfahan Province, and Kuh-e-Zar Mine, Semnan Province	300
Do.	do.	Zarshouran Gold Mine and Mining Industries Development Company [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>2</sup>	Zarshouran Mine, 31 kilometers north of Takab, West Azerbaijan Province
Do.	do.	National Iranian Copper Industries Co. (NICICO) [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>2</sup>	Combined production from various copper mines
Do.	do.	Pooya Zarcan Agh Darreh	2,200
Do.	do.	Zar Kuh Mining Co.	Sari Gunay Mine, Kordestan Province
Do.	do.	Artisanal placer operations	Neyshabur area, Khorasan-e Razavi Province
Metal <sup>3</sup>	do.	National Iranian Copper Industries Co. (NICICO) [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>2</sup>	Sarcheshmeh copper complex, south of Rafsanjan, Kerman Province

See footnotes at end of table.

TABLE 2—Continued  
 IRAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2016<sup>1</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:</b>			
Iron ore	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>2</sup> 8%]	Chadormalu Mine, 80 kilometers north of Bafgh, Yazd Province	16,000
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>2</sup> 18%]	Gol-e-Gohar Mine, about 50 kilometers southwest of Sirjan, Kerman Province	7,000
Do.	Iran Central Iron Ore Co. [National Iranian Steel Co. (NISCO), 100%] <sup>5</sup>	Choghart Mine, Bafgh, Yazd Province	3,250
Do.	Iranian Minerals Production and Supply Co. (IMPASCO) [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO) <sup>2</sup> ]	Jalal Abad Mine, about 40 kilometers northwest of Zarand	2,000
Do.	NA	Chah Gaz Mine, Yazd Province	NA
Do.	NA	Mishdovan Mine, Yazd Province	NA
Do.	Sangan Iron Ore Co. [National Iranian Steel Co. (NISCO)] <sup>4</sup>	Sangan (Songun) Mine, about 140 kilometers southeast of Torbat e-Heydariyeh, Khorasan-e Razavi Province	2,600
Do.	About 20 small privately owned mines	NA	1,000 <sup>e</sup>
Cast iron	Zagros Steel Co. (Government, majority interest)	Foundry in Kordestan Province	70
Direct reduced	Mobarakeh Steel Co. (MSC) [National Iranian Steel Co. (NISCO)] <sup>4</sup>	Direct-reduction iron plant about 50 kilometers southwest of Esfahan, Esfahan Province	5,000
Do.	Khuzestan Steel Co. (KSC) [National Iranian Steel Co. (NISCO)] <sup>4</sup>	Direct-reduction iron plant, Ahwaz, Khuzestan Province	4,000
Do.	Hormozgan Steel Co. [National Iranian Steel Co. (NISCO) <sup>4</sup> and partners]	Direct-reduction iron plant, Gachin, Hormozgan Province	1,500
Do.	Esfahan Steel Co. (ESCO) [National Iranian Steel Co. (NISCO)] <sup>4</sup>	Direct-reduction iron plant about 40 kilometers southwest of Esfahan, Esfahan Province	600
Steel, crude	Mobarakeh Steel Co. (MSC) [National Iranian Steel Co. (NISCO)] <sup>4</sup>	Plant about 50 kilometers southwest of Esfahan, Esfahan Province	5,400
Do.	Khuzestan Steel Co. (KSC) [National Iranian Steel Co. (NISCO)] <sup>4</sup>	Plant at Ahwaz, Khuzestan Province	3,600
Do.	Esfahan Steel Co. (ESCO) [National Iranian Steel Co. (NISCO)] <sup>4</sup>	Plant about 40 kilometers southwest of Esfahan, Esfahan Province	3,600
Do.	Kish South Kaveh Steel Co. (SKS)	Hormozgan Province	1,200
Do.	Khorasan Steel Co. [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO) <sup>2</sup> majority interest, and a Government pension fund, 40%]	Plant at Neyshabur, Khorasan-e Razavi Province	650
Do.	Vian Steel Melting and Casting Co.	Plant, about 42 kilometers of Hamadan, Hamadan Province	600
Do.	Meibod (Meybod) Steel Co. (Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)), <sup>2</sup> 50%	About 15 kilometers southwest of Meybod, Yazd Province	300
<b>Lead:</b>			
Concentrate, Pb content	Calcimin Co. (Iran Zinc Mines Development Co.)	Dandi zinc and lead concentrator plant, Zanjan Province	30
Do.	Zanjan Zinc Kholes Sazan Industrial Group	Zanjan plant, Zanjan Province	20
Refined metal	National Iranian Lead and Zinc Co. (Iran Zinc Mines Development Co.)	About 12 kilometers east of Zanjan, Zanjan Province	40
Lead and zinc, ore	Iran Zinc Mines Development Co.	Angouran open pit mine, Dandi, Zanjan Province	1,000
Do.	Mehdi Abad Zinc Co. (K.D.D. Group)	Mehdi Abad Mine, Yazd Province	700
Do.	Ber-Oner Tehran Co.	Emarat Mine, about 25 kilometers southwest of Arak, Markazi Province	150
Do.	Bafgh Mining Co.	Koushk Mine, Yazd Province	120

See footnotes at end of table.

TABLE 2—Continued  
 IRAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2016<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners		Location of main facilities	Annual capacity
Lead and zinc, ore— Continued		BAMA Co. (Irankouh)		Irankouh complex (Gooshfil underground and Tappeh Sorkh open pit mines, about 20 kilometers southeast of Esfahan, Esfahan Province, and Kolah Darvazeh Mine, south of Esfahan, Esfahan Province)	100
Magnesite		Birjand Refractory Mining Co. (Iranian Refractories Procurement & Production Co.)		Hoz Sefid, Shirkuhak, and Torshak Mohammadi Mines, about 50 kilometers southeast of Birjand, Khorasan-e Jonubi Province	NA
Molybdenum, concentrate		National Iranian Copper Industries Co. (NICICO) [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>2</sup>		Molybdenum plant, Sarcheshmeh copper complex, south of Rafsanjan, Kerman Province	8
Do.		do.		Molybdenum plant, Sungun copper complex, East Azerbaijan Province	3
Natural gas	billion cubic meters	National Iranian Oil Co. (NIOC) (Government, 100%)		Associated gas from company oilfields	96
Do.		do.		Aghar, Dalan, Kangan, and Nar gasfields	57
Do.		Pars Oil and Gas Co. [National Iranian Oil Co. (NIOC), 100%] <sup>2</sup>		South Pars gasfields, offshore	160
<b>Petroleum:</b>					
Crude	million 42-gallon barrels	National Iranian Oil Co. (NIOC) (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.		National Iranian Oil Co. (NIOC) 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.		National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (55%) and Eni SpA (45%)		Doroud field, offshore	65
Do.		National Iranian Oil Co. (NIOC) 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.		National Iranian Oil Co. (NIOC) 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%)		Refinery at Abadan	399
Do.		do.		Refinery at Isfahan	375
Do.		do.		Refinery at Bandar Abbas	284
Do.		do.		Refinery at Tehran	245
Do.		do.		Refinery at Arak	242
Do.		do.		Refinery at Borzuyeh	120
Do.		do.		Refinery at Tabriz	110
Do.		do.		Refinery at Shiraz	56
Do.		do.		Refinery at Kermanshah	48
Do.		do.		Refinery at BooAli Sina	34
Do.		do.		Refinery at Lavan	22
Do.		do.		Refinery at Aras 2	10
Do.		do.		Refinery at Bushehr	10
Do.		do.		Refinery at Aras 1	5
Do.		do.		Refinery at Yazd	3
Do.		do.		Refinery at Zaran	1
Phosphate rock		Esfordi Phosphate Complex [Iran Minerals Production and Supply Co. (IMPASCO)] <sup>2</sup>		About 35 kilometers northeast of Bafgh, Yazd Province	500

See footnotes at end of table.



TABLE 2—Continued  
 IRAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2016<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners		Location of main facilities	Annual capacity
Potash	Khur and Biabanak Potash Complex [Iran Minerals Production & Supply Co. (IMPASCO)] <sup>2</sup>		Near Khur and Biabanak Mines, Isfahan Province	NA
Titanium, ilmenite	Kahnuj pilot plant [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>2</sup>		Daregaz placer and Kahnuj titanium dioxide processing plant	NA
Uranium	metric tons	Atomic Energy Organization of Iran (AEOI) (Government)	Saghand Mine, about 125 kilometers northeast of Yazd, Yazd Province	58
Do.	do.	do.	Gachin Mine, near Bandar Abbas, Hormozgan Province	21
Do.	do.	do.	Natanz nuclear fuel enrichment plant, 80 kilometers southeast of Qom, Qom Province	3
Do.	do.	Atomic Energy Organization of Iran (AEOI) (Government)	Fordow nuclear fuel enrichment plant, 20 kilometer north of Qom, Qom Province	21
Do.	do.	do.	Bandar Abbas uranium plant, Bandar Abbas, Hormozgan Province	12
Do.	do.	do.	Isfahan nuclear conversion plant, Isfahan, Isfahan Province	200
Do.	do.	do.	Isfahan enriched uranium powder plant, Isfahan, Isfahan Province	2
Do.	do.	do.	Arak heavy water reactor, Arak, Markazi Province	NA
<b>Zinc:</b>				
Concentrate, Zn content	Calcimin Co. (Iran Zinc Mines Development Co.)		Dandi (Angouran) plant, Zanjan Province	500
Do.	Zangan Zinc Industry (LLP) (Iran Zinc Mines Development Co.)		Zanjan plant, Zanjan Province	250
Do.	Zanjan Zinc Khales Sazan Industrial Group		do.	200
Do.	Mehdi Abad Zinc Co. (K.D.D. Group)		Mehdi Abad plant, Yazd Province	100
Refined metal	Calcimin Co. (Iran Zinc Mines Development Co.)		Dandi (Angouran) plant, Zanjan Province	80
Do.	Zanjan Zinc Khales Sazan Industrial Group		Zanjan, Zanjan Province	35
Do.	Bafgh Zinc Co. (Iran Zinc Mines Development Co.)		West of Bafgh, Yazd Province	30
Do.	Qeshm Zinc Smelter Co. (affiliate of Calcimin Co.)		Kaveh Industrial Zone, Qeshm Island, Hormozgan Province	20
Do.	Faravari Mavad Madani Iran Co. (Iran Zinc Mines Development Co.)		Dandi, Zanjan Province	18
Do.	National Iranian Lead and Zinc Co. (Iran Zinc Mines Development Co.)		About 12 kilometers east of Zanjan, Zanjan Province	15
Do.	Bandar Abbas Zinc Production Co. (affiliate of Calcimin Co.)		Bandar Abbas, Hormozgan Province	13

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

<sup>1</sup>Data were augmented by input from the Iranian National Committee of the World Mining Congress.

<sup>2</sup>Government owned.

<sup>3</sup>Recovered from Sarcheshmeh copper plant slimes.

<sup>4</sup>A subsidiary of state-owned Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO).