

# **2016 Minerals Yearbook**

# **IRAN [ADVANCE RELEASE]**

# 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 sulfur, 2.7% (table 1; BP p.1c., 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 fluorspar 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 mineralrelated 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 directreduced 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 (Mbbl/d) in 2016 compared with 1.574 Mbbl/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 Mbbl/d of crude petroleum in 2016 compared with 3.90 Mbbl/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 Mbbl/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.1.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 (Mbbl) of crude petroleum, Kharg Island was the main export terminal in Iran; it had a loading capacity of up to 7 Mbbl/day. Lavan Island and Sirri Island were smaller terminals with storage capacities of 5.5 Mbbl and 4.5 Mbbl 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 Mbbl/d in 2016, and its refineries produced 1.85 Mbbl/d, which was an increase of 2.1% compared with the 1.82 Mbbl/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 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
METALS					
Aluminum					
Bauxite	892 000	788 630 <sup>r</sup>	748 297 <sup>r</sup>	861 604 <sup>r</sup>	800 000 °
Alumina	227,000	249,000	251,000	241 000	250,000 °
Aluminum metal primary	337,000	350,000	355,000	355,000	360,000
Antimony mine Sh content <sup>e</sup>		400	432	216 <sup>r</sup>	200
Antimony, mile, 50 content	101	110	110	110 °	110 °
Chromium mine chromite concentrate:	101	110	110	110	110
Gross weight	411 566 <sup>r</sup>	344 169 <sup>r</sup>	350 337 I	276 570 <sup>r</sup>	275.000 °
Cr.O. content	102 210 <sup>r</sup>	101 100	157.052 <sup>f</sup>	270,570	135,000 °
	192,210	191,100	157,955	142,810	133,000
$\frac{\text{Copper:}}{M_{\text{int}} \left( 0 \left( 0 \right) + 1 \left( 20 \right) \right)}$					
Mille (0.6% to 1.2% Cu):	24 790	22 420	25 000	44.500	47.000 °
Gross weight thousand metric tons	34,780	32,420	35,900	44,500	47,000
	238,000	222,900	216,800 ·	246,400 <sup>1</sup>	289,300
Concentrate (29% to 35% Cu, Cu content)	233,000	209,200	203,900	233,400	262,000
Leaching, electrowon, Cu content	12,500	13,700	12,700	13,000	13,400
Refinery, Cu content:	120.200	100 100	124 000	112 000	10 ( 000
Primary	138,300	123,100	124,000	113,900	126,000
Secondary	75,600	54,500	60,800	59,900	64,000
Smelter:	152 100	1.5.4 (00)	156 500	1.52.500	1.50 400
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
Iron ore, mine:					
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
Iron and steel:					
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
Lead:					
Mine concentrate:					
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
Refinery:					
Primary	25,000	20,000	23,000	16,000	15,000 °
Secondary	56,000	56,000	47,000	60,000	60,000 <sup>e</sup>
Manganese, mine: <sup>e</sup>					
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 °
Molybdenum, mine, concentrate:					
Gross weight	6,300 <sup>e</sup>	6,200 <sup>e</sup>	6,200 °	6,705 <sup>r</sup>	6,500 <sup>e</sup>
Mo content	3,516	3,471	3,494	3,500 °	3,500 °
Silver, mine, Ag content kilograms	96,000	85,000	80,000	90,000 <sup>e</sup>	90,000 °
Zinc:					
Mine, concentrate:					
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 °
Smelter	148.000	140,000	145,000	138,000	115.000
INDUSTRIAL MINERALS	,	,	, , , , , , , , , , , , , , , , ,		,000
Barite	393.000	435.798 <sup>r</sup>	440.741 <sup>r</sup>	405.038 r	400.000 °
Boron, borax	3.000 °	2.330 r	1.383 <sup>r</sup>	675 r	700 °
Celestite	189 000 <sup>r, e</sup>	46.240 r	41.050 <sup>r</sup>	36.760 <sup>r</sup>	40 000 °
	100,000	,	,	20,700	,

#### 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
INDUSTRIAL MINERALS—Continued	2012	2015	2011	2010	2010
Cement, hydraulic thousand metric tons	70,250	68,700	66,700	58,600	62.000 °
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 °	850,000 °
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 °
Feldspar, mine	1,100,000	1,313,233 <sup>r</sup>	1,055,368 <sup>r</sup>	736,149 <sup>r</sup>	750,000 °
Fluorspar	80,000 °	69,800	78,700	79,000 °	80,000 °
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 °	20,000 °
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 °	150.000 °
Mica <sup>e</sup>	7.000	7.000	7.000	5.600 r	5,600
Nitrogen N content: <sup>e</sup>	,,	,,	,,000	2,000	2,000
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 °	45 000 °
Phosphate rock ore:	50,000	55,100	42,000	-15,000	-15,000
Gross weight <sup>e</sup>	370.000	380.000	120 000 r	130 000 r	130,000
$P_{2}\Omega_{2}$ content	110,000	113 600	36 500	40.000 °	40.000 °
Solt thousand matrix tons	2 062	2 070 <sup>r</sup>	2 040 <sup>r</sup>	40,000 °	40,000 °
San mousaid metre tons	2,902	2,079	3,940	4,000	4,000
Stone, sand, and gravel industrial glass sand quartzite and silica	1 500	1 500	1 500	1 500	1 500
Stone crushed unspecified	27,000	27,000	27,000	27,000	27,000
Sulfur natural as and natraloum hymroduat S content <sup>6</sup>	27,000	2100.000	2 000 000	2 200 000	2 200 000
Tale	2,000,000	2,100,000	2,000,000	2,200,000	130 000 °
Vermiculite	1 200	1 200	1 200	1.000	1 000 °
MINERAL FUELS AND RELATED MATERIALS	1,200	1,200	1,200	1,000	1,000
Bituminous thousand metric tons	831	1 183	1 434	1 470	1 500 °
Lignite do	2 820	2 800	2 700	2 800 °	2 800 °
Coke. metallurgical do.	940	1.002	965 r	980 r	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:	<i>) )</i> -	<i>) )</i>	, ,	, ,	)
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>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 $^{\rm 1}$

#### (Thousand metric tons unless otherwise specified)

			Annual
Commodity	Major operating companies and major equity owners	Location of main facilities	capacity
Alumina	Iran Alumina Co. [Iranian Mines and Mining Industries	Northeast of Jajarm, Khorasan-e Shomali	280
	Development and Renovation Organization (IMIDRO)] <sup>2</sup>	Province	
Aluminum	Iranian Aluminium Co. (IRALCO) [Iranian Mines and Mining	Arak, Markazi Province	230
	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%]		
Do.	Almahdi Aluminium Co. (AHAC) [(Iranian Mines and Mining	Bandar Abbas, Hormozgan Province	257
	Industries Development and Renovation Organization (IMIDRO)] <sup>2</sup>		
Barite	Mehdi Abad Zinc Co. (K.D.D. Group)	Mehdi Abad Mine, Yazd Province	600
Bauxite	Iran Alumina Co. [Iranian Mines and Mining Industries	Jajarm Mine, about 15 kilometers northeast	800
	Development and Renovation Organization (IMIDRO)] <sup>2</sup>	of Jajarm	
Cement	Abadeh Cement Co.	Abadeh, Fars Province	393
Do.	Abyek Cement Co. (Fars & Khouzestan Cement Co.)	Abyek, Qazvin Province, 80 kilometers	3,900
		northwest of Tehran	
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 & Khouzestan 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 & Khouzestan Cement Co.)	About 37 kilometers from Bojnourd,	1,654
		Khorasan-e Shomali Province	
Do.	Bushehr Cement Co. (Dashtestan Cement)	Borazjan, Bushehr Province	1,000
Do.	Darab Cement Co. [General public (Justice shares), 50%, and Bank	About 190 kilometers southeast of Shiraz,	1,123
	Melli Iran Investment Co., 29%]	Fars Province	
Do.	Dashtestan Cement Co.	NA	936
Do.	Doroud Cement Co. (Fars & Khouzestan 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 & Khouzestan Cement Co.)	Shiraz, Fars Province	819
Do.	Fars Now Cement Co. (Fars & Khouzestan Cement Co.)	About 65 kilometers southeast of Shiraz, Fars	936
		Province	
Do.	Ghaen Cement Co. (Cement Investment and Development Co.,	Qayen (Ghaen), Khorasan-e Jonubi Province	811
	26%, and Bank Melli Iran Investment Co., 14%)		
Do.	Gharb Cement Co. (Fars & Khouzestan 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.	Istahan Cement Co.	Estahan, Estahan 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
<u>Do.</u>	Khash Cement Co. (Fars & Khouzestan Cement Co.)	Khash, Sistan va Baluchestan Province	811
Do.	Khazar Cement Co. (Fars & Khouzestan Cement Co.)	About 80 kilometers northwest of Qazvin,	1,248
		Qazvin Province	
Do.	Khouzestan Cement Co. (Fars & Khouzestan Cement Co.)	Ramhormoz, Khuzestan Province	2,496
Do.	Kohkiloye Yasuj Cement (State Retirement Organization <sup>2</sup> and	Benbahan, near Deh Dasht, Kohkiloye,	1,200
	Fars & Khouzestan Cement Co.)	Kohgiluyeh va Bowyer Ahmad Province	

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

#### (Thousand metric tons unless otherwise specified)

			Annual
Commodity	Major operating companies and major equity owners	Location of main facilities	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	Momtazan Cement Co.	Kerman, Kerman Province	1.030
Do	Naeen Cement Co	NA	1,650
Do	Nahavend Cement Co	NA	1,030
 	Nevriz White Cement Co. (Fars & Khouzestan Cement Co.)	Nevriz Fars Province	164
Do	Nevzar Oom Cement Co	NA	1 030
Do	Omran Anarak Cement Co	Delijan Markazi Province	1,030
Do.	Oeshm Cement Co	Oeshm Island Hormozgan Province	240
Do.	Regrand Cologian Compart Co	NA	1 020
 	Safaish Coment Co.	NA NA	624
 	Salalen Cement Co.	NA	2 1 9 4
D		NA R 1 1 P	2,104
Do.	Sarooj Bushehr International Co.	Kangan, Bushenr Province	624
Do.	Saveh Grey Cement Co. (Fars & Khouzestan Cement Co.)	Saveh, Markazi Province	2,246
Do.	Saveh White Cement Co. (Fars & Khouzestan 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 & Khouzestan 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 & Khouzestan Cement Co., 50%;	About 33 kilometers northwest of Tabriz,	2,184
	and Social Security Organization Investment Co., 50%)	East Azerbaijan Province	
Do.	Tehran Cement Co. (Ghadir Investment Co.)	Tehran, Tehran Province	3,170
Do.	Tejarat Mehriz Cement Co.	NA	1,123
Do.	Tis Chabahar Cement Co.	Chabahar, Sistan and Baluchestan Province	6,000
Do.	Urmia Cement Co. (Fars & Khouzestan 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 & Khouzestan Cement Co.)	Zanjan, Zanjan Province	606
Do.	Zarin Rafsanjan Cement Co.	NA	218
Do.	Zarveh Torbat Cement Co.	Torbat e-Heydariyeh, Khorasan-e Razavi	1,092
		Province	
Chromite, concentrate,	Faryab Mining Co.	Faryab Mine and processing plant, Minab,	180 °
$Cr_2O_3$ content		Hormozgan Province	
Do.	Esfandaghe Mines Co.	Abdasht Mine, Kerman Province: Sugan	30
	8	(Saboughan) Mine, Kerman Province:	
		Processing plant at Esfandaghe.	
		Kerman Province	
Do	NA	Furumad Mine, Shahroud, Semnan Province: Gaft	6
20.	1124	processing plant Semnan Province	0
Do	NA	Mir Mahmud Mine Mayami Semnan Province	6
 	ΝΔ	Dumak Mine, Zahedan, Sistan ya Baluahastan	2
D0.	11/1	Province	2
Coke	Istahan Steel Co. [Iranian Mines and Mining Industries	Plant about 40 kilometers couthwest of Ecchan	000
COKE	istanti Steel Co. Inantan Mines and Mining industries	Fofehen Drovinge	900
	Middle Foot Coleo Production Co. [University Mines and Mines		000
D0.	Middle East Coke Production Co. [[Iranian Mines and Mining	NA	800
	Industries Development and Renovation Organization (IMIDRO)]		

# TABLE 2—Continued IRAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2016 $^{\rm 1}$

#### (Thousand metric tons unless otherwise specified)

				Annual
Commodity		Major operating companies and major equity owners	Location of main facilities	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 cont	ent	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	10
			of Birjand, Khorasan-e Jonubi Province	
Do.		do.	Chah Firozeh, Chah Messi, Darehzar, and Eijo	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	210
			of Rafsanian. Kerman Province	
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 kilog content	grams	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	Zarshouran Mine, 31 kilometers north of Takab, West Azerbaijan Province	3,000
Do.	do.	and Renovation Organization (IMIDRO)] <sup>2</sup> National Iranian Copper Industries Co. (NICICO) [Iranian Mines and Mining Industries Development and Renovation	Combined production from various copper mines	600
Da	d -	Organization (IMIDRO)] <sup>2</sup>	A sh Downsh	2 200
Do.	u0.	Pooya Zarcan Agn Darren	Agn Darren	2,200
D	ao.	Zar Kun Winning Co.	San Gunay Mine, Kordestan Province	2,000
Do.	do.	Artisanal placer operations	Neysnabur area, Khorasan-e Razavi Province	NA
Metal	do.	National Iranian Copper Industries Co. (NICICO) [Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)] <sup>2</sup>	Sarcneshmeh copper complex, south of Rafsanjan, Kerman Province	210

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

#### (Thousand metric tons unless otherwise specified)

Commentites			Annual
	Major operating companies and major equity owners	Location of main facilities	capacity
Iron and steel:	- Chadormaly Mining and Industrial Co. [Omid Investment	Chadarmaly Mine 80 kilomators north of	16 000
lion ore	Management Corp. 37%: Mines and Metals Development	Bafgh Vazd Province	10,000
	Investment Co. 15%: Iranian Mines and Mining Industries	Baign, 1 azu 1 lovince	
	Development and Renovation Organization (IMIDRO) <sup>2</sup> 8%]		
Do.	Gol-e-Gohar Iron Ore Co. [Omid Investment Management Corp.,	Gol-e-Gohar Mine, about 50 kilometers	7.000
	39%: Mines and Metals Development Investment Co., 28%:	southwest of Sirjan. Kerman Province	.,
	Iranian Mines and Mining Industries Development and		
	Renovation Organization (IMIDRO). <sup>2</sup> 18%]		
Do.	Iran Central Iron Ore Co. [National Iranian Steel Co. (NISCO),	Choghart Mine, Bafgh, Yazd Province	3,250
	100%] <sup>5</sup>		
Do.	Iranian Minerals Production and Supply Co. (IMPASCO)	Jalal Abad Mine, about 40 kilometers northwest	2,000
	[Iranian Mines and Mining Industries Development and	of Zarand	
	Renovation Organization (IMIDRO) <sup>2</sup> ]		
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	2,600
		southeast of Torbat e-Heydariyeh,	
		Khorasan-e Razavi Province	
Do.	About 20 small privately owned mines	NA	1,000 °
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	5,000
		southwest of Esfahan, Esfahan Province	1.000
Do.	Khouzestan Steel Co. (KSC) [National Iranian Steel Co. (NISCO)] <sup>4</sup>	Direct-reduction iron plant, Ahwaz, Khuzestan	4,000
Da		Province	1 500
D0.	and portners]	Hormozgan Province	1,500
Do	Eafahan Staal Co. (ESCO) [National Impion Staal Co. (NISCO)] <sup>4</sup>	Direct reduction iron plant about 40 kilometers	600
D0.	Estanan Steer Co. (ESCO) [National Iranian Steer Co. (NISCO)]	southwest of Esfahan Esfahan Province	000
Steel crude	Moharakeh Steel Co. (MSC) [National Iranian Steel Co. (NISCO)] <sup>4</sup>	Plant about 50 kilometers southwest of Esfahan	5 400
Steel, erude		Esfahan Province	5,100
Do.	Khouzestan 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,	3,600
		Esfahan Province	,
Do.	Kish South Kaveh Steel Co. (SKS)	Hormozgan Province	1,200
Do.	Khorasan Steel Co. [Iranian Mines and Mining Industries	Plant at Neyshabur, Khorasan-e Razavi Province	650
	Development and Renovation Organization (IMIDRO) <sup>2</sup>		
	majority interest, and a Government pension fund, 40%]		
Do.	Vian Steel Melting and Casting Co.	Plant, about 42 kilometers of Hamadan, Hamadan	600
		Province	
Do.	Meibod (Meybod) Steel Co. (Iranian Mines and Mining Industries	About 15 kilometers southwest of Meybod, Yazd	300
	Development and Renovation Organization (IMIDRO)], <sup>2</sup> 50%	Province	
Lead:	_		
Concentrate, Pb content	Calcimin Co. (Iran Zinc Mines Development Co.)	Dandi zinc and lead concentrator plant,	30
		Zanjan Province	
Do.	Zanjan Zinc Khales Sazan Industrial Group	Zanjan plant, Zanjan Province	20
Refined metal	National Iranian Lead and Zinc Co. (Iran Zinc Mines	About 12 kilometers east of Zanjan,	40
	Development Co.)	Zanjan Province	
Lead and zinc, ore	Iran Zinc Mines Development Co.	Angouran open pit mine, Dandi, Zanjan Province	1,000
Do.	Mehdi Abad Zine Co. (K.D.D. Group)	Mendi Abad Mine, Yazd Province	700
D0.	Ber-Oner Lehran Co.	Emarat Mine, about 25 kilometers southwest	150
	Defet Mining Co	01 Arak, Markazi Province	120
D0.	Dargii winning Co.	Rouslik Mine, Yaza Province	120

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

#### (Thousand metric tons unless otherwise specified)

Commolity         Major operating comparise and major equity owners         Location of main facilities         equery           Lead and zine, new         BAMA Co. (Fankosh)         Thankosh comparise (Snooffil underground and 100           Continued         BAMA Co. (Fankosh)         Thankosh comparise (Snooffil underground and 100           Magnesite         Birjand Refractory Mining Co. (Fanina Refractories Procurement & Productiona Co.)         Hos Settl, Shirkhulak, and Toviaka Mohammadi.           Molybdeurun,         National Innaian Corper Industrics Co. (NICCO) [Iminia Mane.         Molybdeurun plant, Sacueshand cooper complex.           Sonte Corper Laburtics Co. (NICCO) (Government, 100%)         Associated gas from compary oilfields         96           On.         do.         Molybdeurun plant, Sacueshande cooper complex.         3           Natural gas         Inition         National Inaian Oil Co. (NIOC) (Government, 100%)         Associated gas from compary oilfields         96           Ob.         do.         Associated gas from compary oilfields         97           Do.         do.         National Inaian Oil Co. (NOC					Annual
Lad and zine, ore— Continued Continued Contin	Comr	nodity	Major operating companies and major equity owners	Location of main facilities	capacity
Continued         Tropels Sofk open primates, about 20 kioneters southeast of Esfaina, Pednak Mohammud, NA           Magnesite         Briginal Refinicity Mining Co. (Innuin Refinicities Procurement & Production Co.)         Huz Sefd, Shrikohak, and Traviak Mohammud, Manes, about 50 kioneters southeast of a Riginal, Khorsara-Jennika Mohammud, Manes, about 50 kioneters southeast of Riginal, Khorsara-Jennika Mohammud, Marka, Subout 50 kioneters southeast of Riginal, Khorsara-Jennika Mohammud, Marka, Subout 70 kioneters southeast of Riginal, Khorsara-Jennika Mohammud, Marka, Bubut, and Mining Industries Development and Renovation         Molybdeum plant, Sangas coppet complex, a south of Rafanjan, Kernan Province         8           Do.         do.         Associated gas from compare complex, a south of Rafanjan, Kernan Province         8           Do.         do.         Apart Dalan, Karebashimoh coppare complex, a south of Rafanjan, Kernan Province         96           Do.         do.         Apart Dalan, Karebashimoh coppare complex, a south of Rafanjan, Kernan Province         96           Do.         do.         Apart Dalan, Karebashimoh coppare complex, a south of Rafanjan, Kernan Province         96           Do.         do.         Apart Dalan, Karebashimoh coppare complex, a south of Rafanjan, Kernan Province         160           Do.         do.         Apart Dalan, Gas Co. [NaCC] (Government, 100%)         Onstore collidadis include the Aga Jant, the Astora Innain Ol Co. (NICC) and huyback contract joint venture of Total SA. (10%) and Langas of Co. (NICC) and huyback contract joint venture of Total	Lead and zinc,	ore—	BAMA Co. (Irankouh)	Irankouh complex (Gooshfil underground and	100
Magnesite         Bigind Refractory Mining Co. (Imnian Refractories Procurement Magnesite         Inoz Serdi, Shikohak, and Tenhah. Mehammadi A. Production Co.)         National Innian Corpor Industries Co. (NICCO) [Imnian Mines and Wining Industries Procurement and Wining Industries Procurement Organization (MIDRO)] <sup>2</sup> Ilox Serdi, Shikohak, and Tenhah. Mehammadi Mine, about 50 kiloineers southeast of Biginad. Kursana- Jonubi Province         8           Do.         do.         Melybeleum plant, Sarcheamba copper complex, asath of Rafanjan, Kerman Province         8           Do.         do.         Melybeleum plant. Sarcheamba copper complex, asath of Rafanjan, Kerman Province         3           Do.         do.         Associated gas from company oilfields         96           Do.         do.         Associated gas from company oilfields         96           PeroSentin         National Innian Oil Co. (NIOC) (Government, 100%)         Associated gas from company oilfields         96           Crade         million 42 gailon         National Innian Oil Co. (NIOC) (Government, 100%)         Onshore oilfields include the Aghal Juri, the Abwae-Asmir, the Bargeside, offshore         75           Do.         do.         National Innian Oil Co. (NIOC) and buyback contract joint venture of Shell Iran Nowrooc/Scross Development (176%), JTSAN B. V. (20%), and Innian Oil Co. (NIOC) and buyback contract joint venture oor Total S. A. (5%) and Eng Sp. (45%)         National Innian Oil Co. (NIOC) and buyback contract joint venture oor Total S. A. (6%) and Eng Sp. (45%)	Continued			Tappeh Sorkh open pit mines, about	
Province, and Kohl Davazah Mira, south ort Etidahan, Exfinan Province)           Magnesite         Birjand Refractory Mining Co. (Itanian Refractoriss Procurement & Production Co.)         Province Minises whow 30 Alionnetess of Birjand, Klornsan - Jonobi Province           Molybdenum, concentrate         National Immian Copper Industries Co. (NICCO) [Itanian Mines and Mining Industries Development and Renovation Organization (MIDRO)] <sup>2</sup> Molybdenum plant, Surgne-Onobi Province           Do.         do.         Molybdenum plant, Surgne-Onobi Province         3           Natural gas cubic meters         birling, Industries Development and Renovation Organization (MIDRO)] <sup>2</sup> Molybdenum plant, Surgne-Orper complex, Last Acerbaigin Province         3           Do.         do.         Aghar, Dalan, Kangan, and Nar gaeffelds         57           Do.         do.         Aghar, Dalan, Kangan, and Nar gaeffelds         57           Do.         do.         Aghar, Dalan, Kangan, and Nar gaeffelds         57           Do.         do.         National Immian Oil Co. (NIOC) (Government, 100%)         Onshore oilfields include the Aghar Jari, the Paranan, and the Rage-Safid. Orfishore         160           Petroleuric         of Shell Tran Novmooz Streowth Development (10%), JJI S&N         Advaza-Asmar, the Bangartan, the Maran, the Paranan, and the Rage-Safid. Orfishore         75           Do.         do.         National Immian Oil Co. (NIOC) and hipback contrast joint venture of Sh				20 kilometers southeast of Esfahan, Esfahan	
Operation         Operation of Estimation, Estimation, and Toroskk Mohammadi, NA           Magnesite         Brijand Refractory Mining Co. (Intaina Refractoriss Procurement.         Hor Seff, Shirshak, and Toroskk Mohammadi, NA           Molybdenum,         National Innaian Copper Industries Co. (NICICO) [Iranian Mines, and Mining Industries Development and Renovation         Molybdenum plant, Sarcheshme, Copper complex, 8           concentrate         and Mining Industries Development and Renovation         Molybdenum plant, Sarcheshme, Copper complex, 8           Do.         do.         Molybdenum plant, Sarcheshme, Copper complex, 3           Ling age         billion         National Innaian Oil Co. (NIOC) (Government, 100%)         Associated gas from company oilfields         96           Do.         do.         Pars Oil and Cas Co. [National Innaian Oil Co. (NIOC) (Government, 100%)         Onshore oilfields include the Agha Iari, the 1, 400           Periodeum:         Torde         million National Innaian Oil Co. (NIOC) and buyback contract joint venture of Shell Fan Neurop/Storesh Development (10%)         Onshore oilfields include the Agha Iari, the 1, 400           Periodeum:         Of Shell Fan Neurop/Storesh Development (10%)         Neurosz and Saros (10%)         Neurosz and Saros (10%)           Do.         do.         National Innaian Oil Co. (NIOC) and buyback contract joint venture oiffields include the Agha Iari, the 1, 400         1, 400           Do.         do.         N				Province, and Kolah Darvazeh Mine, south	
Magnesite         Birjand Refractory Mining Co. (Innain Refractorics Procurement & Production Co.)         Hor Selid. Shirtelake, shout 93 kilometers southeast of Birjand, Khornsan-Umbit Province         More Selid. Shirtelake, shout 93 kilometers southeast of Birjand, Khornsan-Umbit Province           oncentrate         and Mining Industries Development and Renovation Organization (MIDRO)?         Molybderum plant, Sangan copper complex, as outh of Rafsanjan, Kerman Province         3           Natural gas         billion ocie meters         Molybderum plant, Sangan copper complex, as outh of Rafsanjan, Kerman Province         3           Natural gas         billion ocie meters         do.         Basi Azerbaijin Province         3           Do.         do.         do.         Associated gas from company oilfelds         96           Da.         do.         Part Oil and Gas Co. [National Innain Oil Co. (NIOC), (100%) <sup>2</sup> South Para gasfields, include the Aglaa Iari, the IAGMA appendix and the Agla-Salid. OfBhore         160           Perroleurn:         Onshore oilfields include the Aglaa Iari, the IAGMA appendix and the Naray-Salid. OfBhore         75           Do.         do.         National Innaian Oil Co. (NIOC) and buyback contract joint venture of Shell Iran Nowrooz Sorosoh Development (NM), JI S&N R.V. (20%), and Ennian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (55%) and Fai SpA (45%)         Doroud field, ofBhore         75           Do.         do.         National Innaian Oil Co. (NIOC) a				of Esfahan, Esfahan Province)	
& Production Co.)         Mines, about 90.1/interest southerst of Britjind Khorsan-t-formbi Province           Molybdenum, concentrate         National Imnian Copper Industries Co. (NICCO) [Innian Mines and Mining Industries Development and Renovation         Molybdenum plant, Surcheshmeh: copper complex, south of Rafsanjun, Kerman Province         8           Do.         do.         Molybdenum plant, Surcheshmeh: copper complex, and Mining Industries Development, 100%)         Associated gas from company oilfields         96           Natural gas         billion         National Innian Oil Co. (NIOC) (Government, 100%)         Associated gas from company oilfields         96           Do.         do.         net         Pars Oil and Cas Co. [National Innian Oil Co. (NIOC) (Government, 100%)         Onshore oilfields include the Agha Iari, the Alwaz-Asmari, the Bangestan, the Hakimsh, the Cashstram, the Karanj, the Karanj, the Manu, the Pazanan, and the Rage-Safid. Offshore oilfields include the Agha Iari, the Alwaz-Asmari, the Bangestan, the Hakimsh, the Cashstram, the Karanj, the Manu, the Pazanan, and the Rage-Safid. Offshore         75           Do.         do.         National Innian Oil Co. (NIOC) and buyback contract joint venture of Shell Fan Novoroz 2000 Development (NPA), JJI S&N         Novroz and Sorosh fields, offshore         75           Do.         do.         National Innian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (0PA) and DETRONAS Carigal international shaft Mat (2016).         Notronal Innian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (0PA) and DETRONAS Cariga	Magnesite		Birjand Refractory Mining Co. (Iranian Refractories Procurement	Hoz Sefid, Shirkuhak, and Torshak Mohammadi	NA
Bitjind, Kloraam- Jounki Province           Molybdenum, Soneentrate         National Innian Copper Industice Sci CNICO) [Innin Mines and Mining Industries Development and Renovation         Molybdenum plant, Surchenhen copper complex, south of Rafunjan, Kerman Province         8           Do.         do.         Molybdenum plant, Surchenhen copper complex, do.         3           Do.         do.         Molybdenum plant, Surchenhen copper complex, euble meters         3           Do.         do.         Associated gas from company oilfields         96           Crude         million         National Innian Oil Co. (NIOC) (Government, 100%)         Associated gas from company oilfields         57           Do.         do.         Pars Oil and Gas Co. [National Innian Oil Co. (NIOC) (Government, 100%)         Onshere oilfields include the Algla Jari, the 1400         1,400           Advaza-Asmari, the Bangestani, the Hakimeh, the Gasharan, the Kange-Safid. Offshore         75         0.         Onshere oilfields include the Algla Jari, the 1400         1,400           Do.         do.         National Innian Oil Co. (NIOC) and buyback contract joint venture of Shell Iran Nourozz/Storoba Development (10%).         Natoraz and Storoba fields, offshore         75           Do.         do.         National Innian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (70%) and En StorA (45%)         Darquain field, offshore         17           Do.<	-		& Production Co.)	Mines, about 50 kilometers southeast of	
Molybolenum, concentrate         National Insiaia Copper Industries Co. (NICICO) [Imaina Mines and Mining Industries Development and Renovation         Molybolenum plant, Sarcheshneh copper complex, south of Rafanajan, Kernan Province         8           Do.         do.         Molybolenum plant, Sarcheshneh copper complex, asouth of Rafanajan, Kernan Province         3           Natural gas         billion         National Inniaian Oil Co. (NIOC) (Government, 100%)         Associated gas from company oilfields         96           Do.         do.         Associated gas from company oilfields         96           Do.         do.         Associated gas from company oilfields         96           Peroleum:         Crade         Pars Oil and Gas Co. [National Iranian Oil Co. (NIOC), 100%] <sup>2</sup> South Pars gasfields, offshore         160           Peroleum:         Crade         nullion         Advarz-Assnari, the Baspestan, the Hakingh, 0         Advarz-Assnari, the Baspestan, the Hakingh, 0           Do.         do.         National Iranian Oil Co. (NIOC) and buyback contract joint venture of Shell Iran Noorvoz2/Soroeb Development (10%), JI S&N B V, (20%), and En SpA (45%)         Norvoz and Soroosh fields, offshore         75           Do.         do.         National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (76%) and Paffung Advars)         Sirri A and E fields, offshore         17           Do.         do.         National			,	Birjand, Khorasan-e Jonubi Province	
concentrate         and Mining Industries Development and Renovation         south of Rafsanjan, Kerman Province           Do.         do.         Molybelenum plant, Sungun copper complex, East Azerbaijan province         3           Natural gas         billion         National Innian Oil Co. (NIOC) (Government, 100%)         Associated gas from company oilfields         96           Do.         do.         Asto do.         Aghar, Dalan, Kangan, and Nar gasfields         57           Do.         do.         Part Oil and Gas Co. [National Innian Oil Co. (NIOC) (Government, 100%)         Ashore oilfelds include the Agha Jari, the Automation of the Co. (NIOC) and buyback centract joint venture oilfields include the Agha Jari, the Paraman, and Hwanga-Safid. Offshore         1,400           Do.         do.         National Innian Oil Co. (NIOC) and buyback centract joint venture of Shell Iran Novroz/Storosh Development (70%), JJ S&N B V. (20%), and Iraina Offshore Engineering & Construction Co. (10%)         Novroza and Sorosah fields, offshore         75           Do.         do.         National Innian Oil Co. (NIOC) and buyback centract joint venture of Total S.A. (70%) and DETRONAS Carigati International Shab Bd (30%)         Novroza and Sorosah fields, offshore         40           Do.         do.         National Innian Oil Co. (NIOC) and buyback centract joint venture of Total S.A. (70%) and DETRONAS Carigati International Shab Bd (30%)         Sirri A and E fields, offshore         17           Do.         do.	Molybdenum,		National Iranian Copper Industries Co. (NICICO) [Iranian Mines	Molybdenum plant, Sarcheshmeh copper complex.	8
Organization (MDRO)] <sup>2</sup> Autor           Do.         do.         Molybehrum plant, Sugun copper complex, East Azarbaijan Province         3           Natural gas         billion         National Iranian Oil Co. (NIOC) (Government, 100%)         Associated gas from company oilfields         96           Do.         do.         do.         Aghur, Dalan, Kangan, and Nar gasfields.         57           Do.         do.         Pars Oil and Gas Co. [National Iranian Oil Co. (NIOC). (Government, 100%)         Onshore oilfields include the Aghu Jari, the         1,400           Crude         million         National Iranian Oil Co. (NIOC) (Government, 100%)         Onshore oilfields include the Aghu Jari, the         1,400           Abarrels         Azaraan, and the Rage-Safid. Offshore         75         Norwozand Sorosh fields, offshore         75           Do.         do.         National Iranian Oil Co. (NIOC) and buyback contract joint venture of Shell Tran Nowrooz/Sorosh Development (20%), JII S&N         Nowrooz and field, offshore         65           Do.         do.         National Iranian Oil Co. (NIOC) and buyback contract joint venture of Shell Tran Nowrooz/Sorosh Acrigali International she Bid. (20%) and DEI RSAN Carigali International she Bid. (20%)         Doroad field, offshore         66           Do.         do.         National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (60%) and DEI RSAN Carigali International<	concentrate		and Mining Industries Development and Renovation	south of Rafsanian. Kerman Province	
Do.         Journe Journe (EDFRO)         Molybeleximp plant, Sungan copper complex, a start Azabajian Province         3           Natural gas         billion         National Iranian Oil Co. (NIOC) (Government, 100%)         Associated gas from company olifields         96           Do.         do.         Pars Oil and Gas Co. [National Iranian Oil Co. (NIOC), 100%]         South Pars gasfields, offshore         160           Pernleum         Crude         million         National Iranian Oil Co. (NIOC) (Government, 100%)         Onshore oilfields include the Agha Jari, the 1,400           Alegalion         barrels         Do.         do.         Parsana, and the Rage-Safid. Offshore         160           Pernleum         Crude         million         National Iranian Oil Co. (NIOC) and buyback contract joint venture         Onshore oilfields include the Agha Jari, the 1,400         Alwaz-Asamari, the Karage-Safid. Offshore         75           Do.         do.         National Iranian Oil Co. (NIOC) and buyback contract joint venture         Nowrooz and Soroosh Fields, offshore         75           Do.         do.         National Iranian Oil Co. (NIOC) and buyback contract joint venture         Siri A and E fields, offshore         40           of Total S.A. (00%) and PETRON ASC arigali International Sdn Bhd (30%)         Siri A and E fields, offshore         17           Do.         do.         National Iranian Oil Co.			$Organization (IMIDRO)^2$	5 /	
East Azerbaijan Province         T         T         T           Natural gas         billion         National Imniin Oil Co. (NIOC) (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 Imnian Oil Co. (NIOC), 100%]         South Pars gasfields, offshore         160           Perroleum:         Crude         million         National Innian Oil Co. (NIOC) (Government, 100%)         Onshore oilfields include the Agha Jari, the 14,400         Abwar-Asmari, the Bangestan, the Hakineh, the Gabsaran, the Karanj, the Marun, the Paranan, and the Rage-Safid. Offshore         75           Ob.         do.         National Innian Oil Co. (NIOC) and bayback contract joint venture of Shell Iran Nowrooz/Sorosh Development (70%), JI S&N         Nowrooz and Sorosh fields, offshore         75           Do.         do.         National Imnian Oil Co. (NIOC) and bayback contract joint venture of Total S.A. (70%) and ErispA (45%)         Doroud field, offshore         65           Do.         do.         National Imnian Oil Co. (NIOC) and bayback contract joint venture of Total S.A. (70%) and PETRONAS Carigati International Shift (M9%)         17           Potal S.A. (70%) and PETRONAS Carigati International Shift (M9%)         17         17         17           Origal S.A. (70%) and PETRON	Do.		do.	Molvbdenum plant, Sungun copper complex,	3
Natural gas         billion         National Iranian Oil Co. (NIOC) (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. (NIOC), 100%)         South Pars gasfields, offshore         160           Petroleum:         Crude         milion         National Iranian Oil Co. (NIOC) (Government, 100%)         Orshore oilfelds include the Agha Iari, the I 4.400           Alwaz-Asmari, the Bangestin, the Kanzi, the Manum, the parsman, and the Rage-Saïld. Offshore         of Shell Iran Nowrooz/Sorosoh Development (70%), JJI S&N         Nowrooz and Soroosh fields, offshore         75           Do.         do.         National Iranian Olf Co. (NIOC) and buyback contract joint venture of Total S A. (5%) and Iranian Olf Co. (NIOC) and buyback contract joint venture of Total S A. (5%) and Iranian Olf Co. (NIOC) and buyback contract joint venture of Total S A. (7%) and PETRONAS Carigali International SA the Bid (8%)         Doroud field, offshore         61           Do.         do.         National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S A. (6%) and Maftiran Internatol Co. (NIORDC)         Doroud field, onshore         17           Do.         do.         National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S A. (6%) and Natiran Internatol Co. (NIORDC)         Refinery at Adadan         399 <td></td> <td></td> <td></td> <td>East Azerbaijan Province</td> <td></td>				East Azerbaijan Province	
cubic meters         cubic field         cubic field         cubic field         field <thfield< th="">         field         <thfield< th=""> <th< td=""><td>Natural gas</td><td>billion</td><td>National Iranian Oil Co. (NIOC) (Government, 100%)</td><td>Associated gas from company oilfields</td><td>96</td></th<></thfield<></thfield<>	Natural gas	billion	National Iranian Oil Co. (NIOC) (Government, 100%)	Associated gas from company oilfields	96
Do.         do.         Pars Oil and Gas Co. [National Iranian Oil Co. (NIOC). 100%a] <sup>2</sup> South Pare gasfields. Offshore         160           Petroleum:         Petroleum:         South Pare gasfields. Offshore         160           Petroleum:         Petroleum:         Onshore oilfields include the Agha Jari, the J.400         142-gallon         Athwaz-Asmari, the Bangestin, the Hakimeh, the Gachasran, the Karanj, the Marun, the Pazama, and the Rage-Safid. Offshore         161/ds         161/ds </td <td>U</td> <td>cubic meters</td> <td></td> <td></td> <td></td>	U	cubic meters			
Do.         do.         Pars Oil and Gas Co. [National Iranian Oil Co. (NIOC). 100%] <sup>2</sup> South Pars gasfields, offshore         160           Petroleum:         Crude         million         National Iranian Oil Co. (NIOC) (Government, 100%)         Onshore oilfields include the Agha Jari, the IAgona, the Bakimeh, the Gachsaman, the Karani, the Marun, the Pazanan, and the Rage-Safid. Offshore oilfields include the Aboutzar and the Salman         1,400           Do.         do.         National Iranian Oil Co. (NIOC) and buyback contract joint venture of Shell ran Nowrooz Sorosh Development (70%), JJ S&N         National Iranian Oil Co. (NIOC) and buyback contract joint venture of Shell ran Nowrooz Sorosh Development (70%), JJ S&N         National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (5%) and Eni SpA (45%)         Do. do.         National Iranian Oil Co. (NIOC) and buyback contract joint venture Siri A and E fields, offshore         40           Do.         do.         National Iranian Oil Co. (NIOC) and buyback contract joint venture Siri A and E fields, offshore         40           Of Total S.A. (70%) and PETRONAS Cargali International Sha Bbd (30%)         Do.         do.         National Iranian Oil Co. (NIOC) and buyback contract joint venture Darquain field, onshore         17           Do.         do.         National Iranian Oil Co. (NIOC) and buyback contract joint venture Darquain field, onshore         17           Of Total S.A. (60%) and Natiran Intertrade Co. (40%)         Constrade Co. (40%)         Alexal A. (60%)         2	Do.	do.	do.	Aghar, Dalan, Kangan, and Nar gasfields	57
Petroleum:         Image: Crude million definition         National Iranian Oil Co. (NIOC) (Government, 100%)         Onshore oilfields include the Agha Jari, the l,400           A2-gallon         Alwaz-Asmari, the Bangestan, the Hakimeh, the Pazanan, and the Rage-Safid. Offshore oilfields include the Agha Jari, the Pazanan, and the Rage-Safid. Offshore oilfields include the Agha Jari, the Pazanan, and the Rage-Safid. Offshore oilfields include the Agha Jari, the Marun, the Pazanan, and the Rage-Safid. Offshore oilfields include the Agha Jari, the Curstraction Co. (10%)           Do.         do.         National Iranian Oil Co. (NIOC) and buyback contract joint venture of Stell Tan Novrooz Storeos osh Development (70%), JJI S&N         National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (55%) and Eni SpA (45%)         Do.         Advisual Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (70%) and PETRONAS Carigali International Stan Bhd (30%)         Stri A and E fields, offshore         40           Do.         do.         National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (60%) and PETRONAS Carigali International Stan Bhd (30%)         Stri A and E fields, offshore         17           Do.         do.         National Iranian Oil Refining and Distribution Co. (NIORDC)         Refinery at Abadan         399           products         42-gallon         Government, 100%)         Refinery at Isfahan         375           Do.         do.         do.         Refinery at Isfahan         375	Do.	do.	Pars Oil and Gas Co. [National Iranian Oil Co. (NIOC), 100%] <sup>2</sup>	South Pars gasfields, offshore	160
Crude         million         National Iranian Oil Co. (NIOC) (Government, 100%)         Onshore oilfields include the Agha Jari, the         1,400           42-gallon         Alvaz-Asmari, the Bangestan, the Hakimeh, the Gachsaman, and the Rage-Safid. Offshore oilfields include the Agba Jari, the Bangestan, the Hakimeh, the Gachsaman, and the Rage-Safid. Offshore oilfields include the Abouzar and the Salman           Do.         do.         National Iranian Oil Co. (NIOC) and buyback contract joint venture of Shell Iran Nowrooz Sorosh Development (70%), JJ S&N         Novrooz and Soroosh fields, offshore         75           Do.         do.         National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (55%) and Eni SpA (45%)         Dorud field, offshore         65           Do.         do.         National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (70%) and PETRONAS Carigali International Sin Bhd (30%)         Sirri A and E fields, offshore         40           Do.         do.         National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (70%) and PETRONAS Carigali International Sin Bhd (30%)         Darquain field, onshore         17           Do.         do.         National Iranian Oil Refining and Distribution Co. (NIORDC)         Refinery at Abadan         399           products         42-gallon         Government, 100%)         Refinery at Isfahan         375           Do.         do.         do.         Refine	Petroleum:			~ ~	
42-gallon       Ahwaz-Asmari, the Bangestan, the Hakimeh, the Gachsaran, the Karanj, the Marun, the Pazana, and the Rag-Sila, Offshore         Do.       do.       National Iranian Oil Co. (NIOC) and buyback contract joint venture of Shell Iran Nowrooz/Sorosh Development (70%), JIJ S&N       Nowrooz and Sorosh fields, offshore       75         Do.       do.       National Iranian Oil Co. (NIOC) and buyback contract joint venture construction Co. (10%)       Nowrooz and Sorosh fields, offshore       65         Ob.       do.       National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (70%) and En SpA (45%)       Doroud field, offshore       65         Do.       do.       National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (60%) and PETRONAS Carigali International Series (Co. (40%)       Stri A and E fields, offshore       40         Do.       do.       National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (60%) and Nafitran Intertade Co. (40%)       Darquain field, onshore       17         Refined       thousand       Ode       Refinery at Shahan       375         Do.       do.       Refiner distribution Co. (NIORDC)       Refinery at Abadan       399         products       42-gallon       Geovernment, 100%)       284         Do.       do.       Refinery at Arak       242         Do.       do.       Refinery at Arak	Crude	million	National Iranian Oil Co. (NIOC) (Government, 100%)	Onshore oilfields include the Agha Jari, the	1,400
barrels barrel		42-gallon		Ahwaz-Asmari, the Bangestan, the Hakimeh,	
De.         de.         National Iranian Oil Co. (NIOC) and buyback contract joint venture of Shell Iran Nowrooz/Soroesh 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. (NIOC) and buyback contract joint venture of Total S.A. (55%) and Eni SpA (45%)         Doroud field, offshore         65           Do.         do.         National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (70%) and PETRONAS Carigali International Sdn Bhd (30%)         Dirit A and E fields, offshore         40           Do.         do.         National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (60%) and Natitran Intertrade Co. (40%)         Darquain field, onshore         17           Mational Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (60%) and Natitran Intertrade Co. (40%)         Darquain field, onshore         17           Mational Iranian Oil Refining and Distribution Co. (NIORDC)         Refinery at Abadan         399           products         42.gallon         60.         Refinery at Isfahan         375           Do.         do.         Ao         Refinery at Tahran         245           Do.         do.         Refinery at Tahran         245           Do.         do.         Refinery at Tahran         245		barrels		the Gachsaran, the Karani, the Marun, the	
Do.       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.       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.       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.       do.       National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (60%) and PETRONAS Carigali International Sdn Bhd (30%)       Darquain field, onshore       17         Do.       do.       National Iranian Oil Refining and Distribution Co. (NIORDC)       Refinery at Abadan       399         products       42-gallon (Government, 100%)       Government, 100%)       375         Do.       do.       do.       Refinery at Isfahan       375         Do.       do.       do.       Refinery at Isfahan       375         Do.       do.       do.       Refinery at Isfahan       375         Do.       do.       Refinery at Total XA. (60%)       Refinery at Isfahan       375         Do.       do.       d				Pazanan, and the Rag-e-Safid. Offshore	
Do.       do.       National Iranian Oil Co. (NIOC) and buyback contract joint venture of Shell Iran Nowrooz/Sorosh Development (79%), JJI S&N B. V. (20%), and Trainan OfShore Engineering & Construction Co. (10%)       Nowrooz and Soroosh fields, offshore       75         Do.       do.       National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S. A. (55%) and Enis pA (45%)       Doroud field, offshore       65         Do.       do.       National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S. A. (55%) and Enis pA (45%)       Sirri A and E fields, offshore       40         Do.       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       17         Do.       do.       National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S. A. (60%) and Natirian Intertrade Co. (40%)       Refinery at Abdan       399         Po.       do.       National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S. A. (60%) and Natirian Intertrade Co. (40%)       Refinery at Isfahan       375         Do.       do.       do.				oilfields include the Abouzar and the Salman	
of Shell Iran Nowrooz/Soroosh Development (70%), JII S&N B.V. (20%), and Iranian Offshore Engineering & Construction Co. (10%) Do. do. National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (55%) and Eni SpA (45%) Do. do. National Iranian Oil Co. (NIOC) and buyback contract joint venture Sfiri A and E fields, offshore 40 of Total S.A. (70%) and PETRONAS Carigali International Sdn Bhd (30%) Do. do. National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (70%) and PETRONAS Carigali International Sdn Bhd (30%) Do. do. National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (60%) and Nafiran Internate Co. (40%) Refined thousand products 42, gallon (Government, 100%) barrels per day Do. do. do. do. Refinery at Isfahan 375 Do. do. do. do. Refinery at Isfahan 375 Do. do. do. do. Refinery at Tehran 244 Do. do. do. Refinery at Tehran 244 Do. do. do. Refinery at Tabada 2442 Do. do. do. Refinery at Tabada 2442 Do. do. do. Refinery at Tabriz 110 Do. do. do. Refinery at Tabriz 120 Do. do. do. Refinery at Tabriz 120 Do. do. do. Refinery at Tabriz 120 Do. do. do. Refinery at Stahan 335 Do. do. do. Refinery at Stahan 34 Do. do. do. Refinery at Carana 22 Do. do. do. Refinery at Aras 2 10 Do. do. do. do. Refinery at Aras 2 3 Do. do. do. do. Refinery at Aras 1 5 Do. do. do. do. Refi	Do.	do.	National Iranian Oil Co. (NIOC) and buyback contract joint venture	Nowrooz and Soroosh fields, offshore	75
B.V. (20%), and Iranian OffShore Engineering & Construction Co. (10%)       Do.       Antional Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (55%) and En iSpA (45%)       Doroud field, offShore       65         Do.       do.       National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (50%) and En iSpA (45%)       Sirri A and E fields, offShore       40         Do.       do.       National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (60%) and PETRONAS Carigali International Stal Bhd (30%)       Sirri A and E fields, offShore       17         Do.       do.       National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (60%) and Nafiriran Intertrade Co. (40%)       Darquain field, onshore       17         Refined       thousand products       42-gallon       (Government, 100%)       Refinery at Jafahan       375         Do.       do.       do.       Refinery at Isfahan       375         Do.       do.       do.       Refinery at Arak       242         Do.       do.       do.       Refinery at Bordar Abbas       284         Do.       do.       do.       Refinery at Tehran       245         Do.       do.       do.       Refinery at Arak       242         Do.       do.       do.       Refinery at Arak       242 <t< td=""><td></td><td></td><td>of Shell Iran Nowrooz/Soroosh Development (70%), JJI S&amp;N</td><td></td><td></td></t<>			of Shell Iran Nowrooz/Soroosh Development (70%), JJI S&N		
Construction Co. (10%)       Construction Co. (10%)       Construction Co. (NOC) and buyback contract joint venture of Total S.A. (55%) and Eni SpA (45%)       Doroud field, offshore       65         Do.       do.       National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (70%) and PETRONAS Carigali International Sdn Bhd (30%)       Siri A and E fields, offshore       40         Do.       do.       National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (60%) and Natiran Intertrade Co. (40%)       Darquain field, onshore       17         Refined       thousand       National Iranian Oil Refining and Distribution Co. (NIORDC)       Refinery at Abadan       399         products       42-gallon       Government, 100%)       Refinery at Bandar Abbas       284         Do.       do.       do.       Refinery at Bandar Abbas       284         Do.       do.       do.       Refinery at Borzuych       120         Do.       do.       do.       Refinery at Borzuych       120         Do.       do.       do.       Refinery at Borzuych       120         Do.       do.       Refinery at Kermanshah       48         Do.       do.       Refinery at Marka       242         Do.       do.       Refinery at Marka       242         Do.			B.V. (20%), and Iranian Offshore Engineering &		
Do.         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.         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.         do.         National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (60%) and PETRONAS Carigali International Sdn Bhd (30%)         Darquain field, onshore         17           Do.         do.         National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (60%) and Nafiran Intertrade Co. (40%)         Darquain field, onshore         17           Refined         thousand products         42-gallon         (Government, 100%)         Refinery at Sfahan         375           Do.         do.         do.         do.         Refinery at Sfahan         375           Do.         do.         do.         Refinery at Tafahan         375           Do.         do.         do.         Refinery at Tafahan         242           Do.         do.         do.         Refinery at Tafahan         245           Do.         do.         do.         Refinery at Borazuyeh         120           Do.         do. <td< td=""><td></td><td></td><td>Construction Co. (10%)</td><td></td><td></td></td<>			Construction Co. (10%)		
of Total S.A. (55%) and Eni SpA (45%)       Sirri A and E fields, offShore       40         Do.       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.       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       thousand       National Iranian Oil Refining and Distribution Co. (NIORDC)       Refinery at Abadan       399         products       42-gallon       (Government, 100%)       Refinery at Isfahan       375         Do.       do.       do.       Refinery at Bandar Abbas       284         Do.       do.       do.       Refinery at Tehran       245         Do.       do.       do.       Refinery at Tabriz       110         Do.       do.       do.       Refinery at Tabriz       110         Do.       do.       do.       Refinery at Kermanshah       48         Do.       do.       do.       Refinery at Kermanshah       48         Do.       do.       do.       Refinery at Shiraz       56         Do.       do.       do.       Refinery at Kermanshah       <	Do.	do.	National Iranian Oil Co. (NIOC) and buyback contract joint venture	Doroud field, offshore	65
Do.       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.       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       thousand       National Iranian Oil Refining and Distribution Co. (NIORDC)       Refinery at Abadan       399         products       42-gallon       (Government, 100%)       Refinery at Isfahan       375         Do.       do.       do.       Refinery at Bandar Abbas       284         Do.       do.       do.       Refinery at Tehran       245         Do.       do.       do.       Refinery at Tehran       245         Do.       do.       do.       Refinery at Tabriz       110         Do.       do.       do.       Refinery at Shiraz       56         Do.       do.       do.       Refinery at Arak       242         Do.       do.       do.       Refinery at Shiraz       56         Do.       do.       do.       Refinery at Tabriz       110         Do.       do.       do.       Refinery at Aras 2       10			of Total S.A. (55%) and Eni SpA (45%)	,	
of Total S.A. (70%) and PETRONAS Carigali International Sdn Bhd (30%)         Do.       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       thousand       National Iranian Oil Refining and Distribution Co. (NIORDC)       Refinery at Abadan       399         products       42-gallon       (Government, 100%)       Refinery at Isfahan       375         Do.       do.       do.       Refinery at Bandar Abbas       284         Do.       do.       do.       Refinery at Tohran       245         Do.       do.       do.       Refinery at Tohran       242         Do.       do.       do.       Refinery at Tohran       242         Do.	Do.	do.	National Iranian Oil Co. (NIOC) and buyback contract joint venture	Sirri A and E fields, offshore	40
Sdn Bhd (30%)       Sdn Bhd (30%)       Image: Sdn Bh			of Total S.A. (70%) and PETRONAS Carigali International	,	
Do.     do.     National Iranian Oil Co. (NIOC) and buyback contract joint venture of Total S.A. (60%) and Nafiran Intertrade Co. (40%)     Darquain field, onshore     17       Refined     thousand     National ranian Oil Refining and Distribution Co. (NIORDC)     Refinery at Abadan     399       products     42-gallon     (Government, 100%)     Refinery at Isfahan     375       Do.     do.     do.     Refinery at Isfahan     375       Do.     do.     do.     Refinery at Tehran     245       Do.     do.     do.     Refinery at Tehran     245       Do.     do.     do.     Refinery at Taka     242       Do.     do.     do.     Refinery at Tehran     245       Do.     do.     do.     Refinery at Taka     242       Do.     do.     do.     Refinery at Takinz     110       Do.     do.     do.     Refinery at Borzuych     120       Do.     do.     do.     Refinery at Shiraz     56       Do.     do.     do.     Refinery at Refinery at Reso     34       Do.     do.     do.     Refinery at Isina     34       Do.     do.     do.     Refinery at Aras 2     10       Do.     do.     do.     Refinery at Aras 1     5			Sdn Bhd (30%)		
of Total S.A. (60%) and Naftiran Intertrade Co. (40%)         Refined       thousand       National Iranian Oil Refining and Distribution Co. (NIORDC)       Refinery at Abadan       399         products       42-gallon       (Government, 100%)       375         Do.       do.       do.       Refinery at Isfahan       375         Do.       do.       do.       Refinery at Bandar Abbas       284         Do.       do.       do.       Refinery at Tehran       245         Do.       do.       do.       Refinery at Tehran       245         Do.       do.       do.       Refinery at Tabriz       110         Do.       do.       do.       Refinery at Shiraz       56         Do.       do.       do.       Refinery at Kermanshah       48         Do.       do.       do.       Refinery at Lavan       22         Do.       do.       do.       Refinery at Lavan       22         Do.       do.       do.       Refinery at Shiraz       56         Do.       do.       do.       Refinery at Lavan       22         Do.       do.       do.       Refinery at Lavan       22         Do.       do.       do.	Do.	do.	National Iranian Oil Co. (NIOC) and buyback contract joint venture	Darguain field, onshore	17
Refined productsNational Iranian Oil Refining and Distribution Co. (NIORDC) (Government, 100%) barrels per dayRefinery at Abadan399Do.do.do.Refinery at Isfahan375Do.do.do.Refinery at Bandar Abbas284Do.do.do.Refinery at Bandar Abbas284Do.do.do.Refinery at Tehran245Do.do.do.Refinery at Tehran245Do.do.do.Refinery at Tabriz110Do.do.do.Refinery at Borzuyeh120Do.do.do.Refinery at Shiraz56Do.do.do.Refinery at Booli Sina34Do.do.do.Refinery at Aras22Do.do.do.Refinery at Aras22Do.do.do.Refinery at Aras 210Do.do.do.Refinery at Aras 210Do.do.do.Refinery at Aras 15Do.do.do.Refinery at Yazd3Do.do.do.Refinery at Yazd3Do.do.do.Refinery at Yazd3Do.do.do.Refinery at Zarand1Phosphate rockEsfordi Phosphate Complex [Iran Minerals Production and Supply Co. (IMPASCO)] <sup>2</sup> Province			of Total S.A. (60%) and Naftiran Intertrade Co. (40%)	1	
products42-gallon barrels per day(Government, 100%)Do.do.do.Refinery at Isfahan375Do.do.do.Refinery at Isfahan375Do.do.do.Refinery at Bandar Abbas284Do.do.do.Refinery at Bandar Abbas284Do.do.do.Refinery at Bandar Abbas245Do.do.do.Refinery at Arak242Do.do.do.Refinery at Arak242Do.do.do.Refinery at Borzuyeh120Do.do.do.Refinery at Tabriz110Do.do.do.Refinery at Shiraz56Do.do.do.Refinery at SoAli Sina34Do.do.do.Refinery at BooAli Sina34Do.do.do.Refinery at Lavan22Do.do.do.Refinery at Aras 210Do.do.do.Refinery at Aras 35Do.do.do.Refinery at Aras 15Do.do.do.Refinery at Aras 15Do.do.do.Refinery at Yazd3Do.do.do.Refinery at Zarand1Phosphate rockEsfordi Phosphate Complex [Iran Minerals Production and Supply Co. (IMPASCO)]2ProvinceFrovince	Refined	thousand	National Iranian Oil Refining and Distribution Co. (NIORDC)	Refinery at Abadan	399
barrels per dayDo.do.do.Refinery at Isfahan375Do.do.do.Refinery at Bandar Abbas284Do.do.do.Refinery at Tehran245Do.do.do.Refinery at Tehran242Do.do.do.Refinery at Borzuych120Do.do.do.Refinery at Borzuych120Do.do.do.Refinery at Tabriz110Do.do.do.Refinery at Tabriz110Do.do.do.Refinery at Shiraz56Do.do.do.Refinery at Shiraz56Do.do.do.Refinery at BooAli Sina34Do.do.do.Refinery at Lavan22Do.do.do.Refinery at Aras 210Do.do.do.Refinery at Aras 210Do.do.do.Refinery at Aras 15Do.do.do.Refinery at Yazd3Do.do.do.Refinery at Yazd3Do.do.do.Refinery at Yazd3Do.do.do.Refinery at Zarand1Phosphate rockEsfordi Phosphate Complex [Iran Minerals Production and Supply Co. (IMPASCO)]2Province	products	42-gallon	(Government, 100%)	-	
Do.do.do.Refinery at Isfahan375Do.do.do.Refinery at Bandar Abbas284Do.do.do.Refinery at Tehran245Do.do.do.Refinery at Tehran245Do.do.do.Refinery at Arak242Do.do.do.Refinery at Borzuyeh120Do.do.do.Refinery at Borzuyeh120Do.do.do.Refinery at Tabriz110Do.do.do.Refinery at Tabriz110Do.do.do.Refinery at Shiraz56Do.do.do.Refinery at Kermanshah48Do.do.do.Refinery at BooAli Sina34Do.do.do.Refinery at Refinery at Lavan22Do.do.do.Refinery at Aras 210Do.do.do.Refinery at Aras 15Do.do.do.Refinery at Yazd3Do.do.do.Refinery at Zarand1Phosphate rockEsfordi Phosphate Complex [Iran Minerals Production and Supply Co. (IMPASCO)]2Province	b	arrels per day			
Do.do.do.Refinery at Bandar Abbas284Do.do.do.Refinery at Tehran245Do.do.do.Refinery at Tehran245Do.do.do.Refinery at Arak242Do.do.do.Refinery at Mark242Do.do.do.Refinery at Borzuyeh120Do.do.do.Refinery at Tabriz110Do.do.do.Refinery at Tabriz56Do.do.do.Refinery at Shiraz56Do.do.do.Refinery at Kermanshah48Do.do.do.Refinery at BooAli Sina34Do.do.do.Refinery at Bushehr22Do.do.do.Refinery at Lavan22Do.do.do.Refinery at Aras 210Do.do.do.Refinery at Aras 15Do.do.do.Refinery at Aras 15Do.do.do.Refinery at Yazd3Do.do.do.Refinery at Zarand1Phosphate rockEsfordi Phosphate Complex [Iran Minerals Production and Supply Co. (IMPASCO)]^2Province	Do.	do.	do.	Refinery at Isfahan	375
Do.         do.         do.         Refinery at Tehran         245           Do.         do.         do.         do.         Refinery at Arak         242           Do.         do.         do.         do.         Refinery at Borzuych         120           Do.         do.         do.         do.         Refinery at Shiraz         56           Do.         do.         do.         do.         Refinery at Shiraz         56           Do.         do.         do.         do.         Refinery at Shiraz         56           Do.         do.         do.         do.         Refinery at Kermanshah         48           Do.         do.         do.         Refinery at Lavan         22           Do.         do.         do.         Refinery at Aras 2         10           Do.         do.         do.         Refinery at Aras 1         5           Do.         do. </td <td>Do.</td> <td>do.</td> <td>do.</td> <td>Refinery at Bandar Abbas</td> <td>284</td>	Do.	do.	do.	Refinery at Bandar Abbas	284
Do.do.do.Refinery at Arak242Do.do.do.Refinery at Borzuyeh120Do.do.do.Refinery at Tabriz110Do.do.do.Refinery at Tabriz56Do.do.do.Refinery at Shiraz56Do.do.do.Refinery at Kermanshah48Do.do.do.Refinery at BooAli Sina34Do.do.do.Refinery at BooAli Sina34Do.do.do.Refinery at Lavan22Do.do.do.Refinery at Aras 210Do.do.do.Refinery at Aras 15Do.do.do.Refinery at Aras 15Do.do.do.Refinery at Yazd3Do.do.do.Refinery at Zarand1Phosphate rockEsfordi Phosphate Complex [Iran Minerals Production and Supply Co. (IMPASCO)] <sup>2</sup> Province	Do.	do.	do.	Refinery at Tehran	245
Do.do.do.Refinery at Borzuyeh120Do.do.do.Refinery at Tabriz110Do.do.do.Refinery at Tabriz56Do.do.do.Refinery at Shiraz56Do.do.do.Refinery at Kermanshah48Do.do.do.Refinery at BooAli Sina34Do.do.do.Refinery at Lavan22Do.do.do.Refinery at Aras 210Do.do.do.Refinery at Aras 210Do.do.do.Refinery at Aras 15Do.do.do.Refinery at Yazd3Do.do.do.Refinery at Yazd3Do.do.do.Refinery at Zarand1Phosphate rockEsfordi Phosphate Complex [Iran Minerals Production and Supply Co. (IMPASCO)]2About 35 kilometers northeast of Bafgh, Yazd500	Do.	do.	do.	Refinery at Arak	242
Do.do.do.Refinery at Tabriz110Do.do.do.Refinery at Shiraz56Do.do.do.Refinery at Shiraz56Do.do.do.Refinery at Kermanshah48Do.do.do.Refinery at Kermanshah48Do.do.do.Refinery at BooAli Sina34Do.do.do.Refinery at Lavan22Do.do.do.Refinery at Aras 210Do.do.do.Refinery at Aras 15Do.do.do.Refinery at Yazd3Do.do.do.Refinery at Yazd3Do.do.do.Refinery at Zarand1Phosphate rockEsfordi Phosphate Complex [Iran Minerals Production and Supply Co. (IMPASCO)]^2About 35 kilometers northeast of Bafgh, Yazd500	Do.	do.	do.	Refinery at Borzuyeh	120
Do.do.do.Refinery at Shiraz56Do.do.do.Refinery at Kermanshah48Do.do.do.Refinery at BooAli Sina34Do.do.do.Refinery at BooAli Sina34Do.do.do.Refinery at Lavan22Do.do.do.Refinery at Aras 210Do.do.do.Refinery at Aras 15Do.do.do.Refinery at Aras 15Do.do.do.Refinery at Yazd3Do.do.do.Refinery at Zarand1Phosphate rockEsfordi Phosphate Complex [Iran Minerals Production and Supply Co. (IMPASCO)] <sup>2</sup> Province	Do.	do.	do.	Refinery at Tabriz	110
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Do.	do.	do.	Refinery at Shiraz	56
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Do.	do.	do.	Refinery at Kermanshah	48
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Do.	do.	do.	Refinery at BooAli Sina	34
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Do.	do.	do.	Refinery at Lavan	22
Do.do.do.Refinery at Bushehr10Do.do.do.Refinery at Aras 15Do.do.do.Refinery at Yazd3Do.do.do.Refinery at Yazd3Do.do.do.Refinery at Zarand1Phosphate rockEsfordi Phosphate Complex [Iran Minerals Production and Supply Co. (IMPASCO)]2About 35 kilometers northeast of Bafgh, Yazd500	Do.	do.	do.	Refinery at Aras 2	10
Do.do.do.Refinery at Aras 15Do.do.do.Refinery at Yazd3Do.do.do.Refinery at Zarand1Phosphate rockEsfordi Phosphate Complex [Iran Minerals Production and Supply Co. (IMPASCO)]2About 35 kilometers northeast of Bafgh, Yazd500	Do.	do.	do.	Refinery at Bushehr	10
Do.     do.     do.     Refinery at Yazd     3       Do.     do.     do.     Refinery at Zarand     1       Phosphate rock     Esfordi Phosphate Complex [Iran Minerals Production and Supply Co. (IMPASCO)] <sup>2</sup> About 35 kilometers northeast of Bafgh, Yazd     500	Do.	do.	do.	Refinery at Aras 1	5
Do.         do.         do.         Refinery at Zarand         1           Phosphate rock         Esfordi Phosphate Complex [Iran Minerals Production and Supply Co. (IMPASCO)] <sup>2</sup> About 35 kilometers northeast of Bafgh, Yazd         500	Do.	do.	do.	Refinery at Yazd	3
Phosphate rock     Esfordi Phosphate Complex [Iran Minerals Production and Supply Co. (IMPASCO)] <sup>2</sup> About 35 kilometers northeast of Bafgh, Yazd     500       Province	Do.	do.	do.	Refinery at Zarand	1
Supply Co. (IMPASCO)] <sup>2</sup> Province	Phosphate rock		Esfordi Phosphate Complex [Iran Minerals Production and	About 35 kilometers northeast of Bafgh, Yazd	500
	-		Supply Co. (IMPASCO)] <sup>2</sup>	Province	

# TABLE 2—Continued IRAN: STRUCTURE OF THE MINERAL INDUSTRY IN $2016^1$

#### (Thousand metric tons unless otherwise specified)

				Annual
	Commodity	Major operating companies and major equity owners	Location of main facilities	capacity
Potash		Khur and Biabanak Potash Complex [Iran Minerals Production &	Near Khur and Biabanak Mines, Isfahan Province	NA
		Supply Co. (IMPASCO)] <sup>2</sup>		
Titanium	, ilmenite	Kahnuj pilot plant [Iranian Mines and Mining Industries	Daregaz placer and Kahnuj titanium dioxide	NA
		Development and Renovation Organization (IMIDRO)] <sup>2</sup>	processing plant	
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	21
			Province	
Do.	do.	do.	Natanz nuclear fuel enrichment plant, 80 kilometers	3
			southeast of Qom, Qom Province	
Do.	do.	Atomic Energy Organization of Iran (AEOI) (Government)	Fordow nuclear fuel enrichment plant, 20 kilometer	21
			north of Qom, Qom Province	
Do.	do.	do.	Bandar Abbas uranium plant, Bandar Abbas,	12
			Hormozgan Province	
Do.	do.	do.	Isfahan nuclear conversion plant, Isfahan, Isfahan Province	200
Do.	do.	do.	Isfahan enriched uranium powder plant, Isfahan,	2
			Isfahan Province	
Do.	do.	do.	Arak heavy water reactor, Arak, Markazi Province	NA
Zinc:				
Concer	ntrate, 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
Refine	d 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,	20
			Hormozgan Province	
Do.		Faravari Mavad Madani Iran Co. (Iran Zinc Mines	Dandi, Zanjan Province	18
		Development Co.)	, j	
Do		National Iranian Lead and Zinc Co. (Iran Zinc Mines	About 12 kilometers east of Zanian.	15
20.		Development Co )	Zanian Province	10
Do		Bandar Abbas Zine Production Co. (affiliate of Calcimin Co.)	Bandar Abbas Hormozgan Brovince	13
D0.		Danual Autoas Zine I loudenon Co. (anniate of Calennin Co.)	Danuar Abbas, Hornozgan i Iovinee	15

<sup>e</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).