



2011 Minerals Yearbook

IRAQ

THE MINERAL INDUSTRY OF IRAQ

By Mowafa Taib

Iraq ranked 10th in the world in crude oil production, with an average of about 2.8 million barrels per day (Mbb/d), and accounted for 3.4% of the world's crude oil output in 2011. Iraq was also the world's 10th ranked crude oil exporting country, and its crude oil exports averaged 2.3 Mbb/d. The country's proved crude oil reserves, which were estimated to be 143.1 billion barrels (Gbb) and which accounted for 8.7% of the world's total reserves, ranked Iraq as the fifth country in the world in terms of the volume of its crude oil reserves after Venezuela (296.5 Gbb), Saudi Arabia (265.4 Gbb), Canada (175.2 Gbb), and Iran (151.2 Gbb). In 2011, Iraq produced 1.9 billion cubic meters of its proved natural gas reserves, which were estimated to be 3.6 trillion cubic meters, or 1.7% of the world's total reserves (BP p.l.c., 2012, p. 6, 8; Organization of the Petroleum Exporting Countries, 2012, p. 55). In addition to fuel minerals, Iraq was a modest producer of bentonite, cement, clay, gypsum, iron oxide pigments, kaolin, limestone, nitrogen and phosphate fertilizers, phosphate rock, salt, sand and gravel, and sulfur (table 1).

Minerals in the National Economy

Iraq's gross domestic product (GDP) increased in real terms by 8.9% in 2011 compared with an increase of only 3.0% in 2010. The International Monetary Fund projected that Iraq's GDP would continue to increase, by 10.2% in 2012 and 14.7% in 2013. Revenue from the hydrocarbon sector accounted for 64% of Government revenue in 2011. The value of Iraqi exports increased by about 59% in 2011 to \$83.0 billion from a revised \$52.9 billion in 2010. The Organization of the Petroleum Exporting Countries (OPEC)'s spot Reference Basket price for Iraq's Basra light crude averaged \$106.17 per barrel in 2011 compared with \$76.79 per barrel in 2010. The volume of crude oil and petroleum products exports averaged 2.33 Mbb/d in 2011, which was an increase of 23% compared with an average volume of 1.90 Mbb/d in 2010 (International Monetary Fund, 2011, p. 16; 2012, p. 3; Organization of the Petroleum Exporting Countries, 2012, p. 55, 82).

Government Policies and Programs

Investment law No. 13 of 2006 covers all areas of investment except for investment in the oil and gas sector. In September, the Government organized a conference on Iraq's mineral resources in London under the name Iraq Mining 2011 to promote international investment in the country's solid minerals production. The Government released its estimates for Iraq's proved mineral resources, which included 10 billion metric tons (Gt) of phosphorite, 8 Gt of limestone, 1.2 Gt of kaolinitic clay stones, 600 million metric tons (Mt) of native sulfur, 330 Mt of dolomite, 130 Mt of gypsum, 75 Mt of quartz sand, 22 Mt each of glauberite and bentonite, 50 Mt of halite salt, 16 Mt

of quartzite, and 2.3 Mt of feldspathic sandstones as well as substantial reserves of construction sand, sandstone, and gravel (Iraq Geological Survey, 2012b).

Iraq Geological Survey (Geosurv-Iraq) identified 12 investment opportunities in the mineral sector in Iraq, which included the phosphate rock mining and beneficiation projects at the Swab Wadi and the Al Hirri Wadi in Al Anbar Province; a mining and processing facility for native sulfur deposits at Mishraq and Lazzaga in Ninawa Province; a silica sand production plant in Al Anbar Province; a feldspar concentrate plant from feldspathic sandstone in An Najaf Province; a sodium sulfate production plant to process glauberite, which is associated with gypsum and clays at Shari Saltern in Salah ad Din Province; a sodium carbonate production plant that uses the Solvay process in Al Anbar Province; a plant to produce alumina from kaolin using the lime-soda sinter process in Al Anbar Province; a ceramic tiles and tile-bricks plant; gypsum mines in Al Anbar, Ninawa, and Wasit Provinces; and a chalk (pure calcium carbonate) mine at the Wadi Al Ghadaf. These investment opportunities were offered under Investment Law No. 13 of 2006 and its modifications and Law of Mineral Investment No. 91 of 1988 (Iraq Geological Survey, 2012b; Ministry of Industry and Minerals, 2012a, b).

The Ministry of Industry and Mining (MIM) invited investors to build five new cement plants in Iraq to use the abundant limestone reserves at different sites in Iraq. The MIM cited the availability of raw materials, the extensive demand by the local market, and the low production cost (because the plants would be located very close to limestone quarries) as incentives for investing in the construction of these plants (Ministry of Industry and Minerals, 2011).

The Petroleum Contracts and Licensing Directorate of the Ministry of Oil conducted several petroleum bidding rounds in accordance with the Law of Private Investment in Crude Oil Refining (law No. 64 of 2007) and its amendments. The first petroleum-licensing round was held in June 2009, and the second round was held in December 2009. A third petroleum-licensing round designated for natural gas development was held in October 2010, and a fourth licensing round was held in 2011. The winners of the fourth oil and gas bidding round, which was also the first exploration round intended to find new crude oil and natural gas reserves, were, for Block 8, Pakistan Petroleum Ltd.; Block 9, Kuwait Energy along with Dragon Oil Plc. of the United Arab Emirates and Türkiye Petrolleri Anonim Ortaklığı (TPAO) of Turkey; Block 10, OAO Lukoil of Russia along with Inpex Corp. of Japan and JSOC Bashneft of Russia; and Block 12, Premier Oil p.l.c. of the United Kingdom. Assuming that all the Government's planned development targets are met, production from the existing and new oilfields would increase to 12.0 Mbb/d by 2016 from the current (2011) production of about 2.8 Mbb/d (Howard, 2010, p. 27–29; Ministry of Oil, 2012).

As of yearend 2011, the draft of the gas and oil legislation known as the Hydrocarbon Law, which was first proposed in 2007, remained stalled because of disagreements among Iraqi parties on wider political issues, including revenue sharing. The proposed law would create an oil and gas council to oversee the country's oil and gas sector and would establish the Iraq National Oil Co. The proposed law also contains arrangements for petroleum revenue sharing through the creation of an Oil Revenue Fund and a Future Fund.

In northern Iraq, the Kurdistan Regional Government (KRG), which is the ruling body of the federated region in northern Iraq, adopted its own hydrocarbon law in 2007 and awarded some 42 crude oil and natural gas production-sharing contracts in the Kurdistan region of Iraq by yearend 2011. The Ministry of Natural Resources of the KRG approved about 55 amendments to these contracts in 2011 (Ministry of Natural Resources of Kurdistan Regional Government—Iraq, 2012).

Production

Data on mineral production are in table 1.

Structure of the Mineral Industry

The Ministry of Oil managed Iraq's hydrocarbon sector activity through a number of state-owned oil companies. The upstream companies included Iraq Drilling Co., Midland Oil Co., Missan Oil Co., North Oil Co., Oil Exploration Co., Oil Project Co., and South Oil Co. The downstream companies included Gas Filling Co., Midland Refinery Co., North Refinery Co., Oil Marketing Co., Oil Pipeline Co., Oil Products Distribution Co., Oil Tanker Co., South Gas Co., South Refinery Co., and State Oil Marketing Organization.

The Ministry of Industry and Minerals administered the activity of the hard rock minerals sector through several state-owned companies, including General Company for Phosphate, Geosurv-Iraq, Iraqi Cement Co., Iron and Steel State Co., Mishraq Sulphur State Enterprise, Northern Cement Co., Southern Cement Co., and State Company for Southern Fertilizer Industry. Geosurv-Iraq conducted geologic studies, mapping, and mineral exploration activity. It also produced industrial minerals, including bauxite, bentonite, clays, construction and silica sand, feldspar, ironstone, kaolin, and salt (Iraq Geological Survey, 2012b; Ministry of Industry and Minerals, 2012a).

Commodity Review

Metals

Iron and Steel.—The Iron and Steel State Co. signed an agreement with UB Holding Ltd. of Turkey under which UB Holding would invest \$600 million during 18 years to rebuild the Iron and Steel State Co. steel complex, which was located in Khawr az Zubayr in Al Basrah Province in southern Iraq and had been idle since 2003. The project would include the rehabilitation of the existing infrastructure in the complex, which was damaged during the war in 2003, and the entire

company workforce would be maintained. The proposed project would produce 1 million metric ton per year (Mt/yr) of steel. A 100-megawatt power station would be built by STX Heavy Industries of the Republic of Korea in the complex as part of a contract between the Government and STX to build 25 power stations in southern Iraq (Iraq Business News, 2011b; Iron and Steel State Co., 2012).

In northern Iraq, the 50-50 joint venture of ArcelorMittal of Luxembourg and Dayen Co. of Turkey planned to build a steel minimill with an electric arc furnace (EAF) in northern Iraq. The mill would have an initial production capacity of 250,000 metric tons per year (t/yr) of rebar that could be increased to between 400,000 and 500,000 t/yr. The \$100 million mill would use local scrap metal to make billet and rebar. The project had been scheduled to commence production in 2011, but production was delayed to 2013 and the site of the plant was moved to Arbil from As Sulaymaniah (Arab Steel, 2010; Steel Orbis, 2012).

Mass Global Investment Co. of Jordan was building a new 1-Mt/yr steel plant in northern Iraq. The plant would include a 120-metric-ton (t) EAF, a ladle furnace, and a five-strand continuous caster supplied by Danieli Group of Italy. The plant was expected to commence production during the first quarter of 2012 (Arab Steel, 2011).

Industrial Minerals

Bentonite.—Geosurv-Iraq signed an agreement with Beijing Trading and Development Co. of China to build a bentonite-activation plant at Fallujah in Al Anbar Province. The plant would convert calcium-based bentonite into sodium-based bentonite for use as a drilling mud for oil and gas wells. The plant would tap into Iraq's 22-Mt reserves of bentonite, which are calcium based and are located in the Traifawi area in the Western Desert. The plant would have an initial capacity of 75,000 t/yr of sodium-activated bentonite that could be increased to 100 t/yr. The plant was expected to be completed in April 2013 (Iraq Geological Survey, 2012a).

Cement.—Consumption of cement had been increasing in recent years, as demand was growing at an annual rate of 10%. The volume of Iraqi cement imports had been increasing steadily for the past 5 years owing to massive construction activity in the country's commercial, industrial, and residential sectors. Iraq, which imported about 65% of local consumption of cement in 2011, was the leading importer of cement in the Middle East; it imported about 11.7 Mt of cement in 2011, mainly from Iran (7.0 Mt), Turkey (2.5 Mt), and Saudi Arabia (2.0 Mt), and smaller quantities were imported from Jordan, Lebanon, Oman, and the United Arab Emirates (Annous, 2012, p. 22). State-owned cement plants, most of which had outdated equipment and lacked an owned electricity supply, produced only 1.4 Mt in 2011, which was a decrease of 28% compared with the 2.0 Mt produced in 2010. The rest of the local cement production was carried out mainly by Lafarge S.A. of France, which became Iraq's leading producer of cement by investing about \$1 billion in the country's cement market, and by private grinding plants. Lafarge operated three plants at Bazian and Tasluja in As Sulaymaniyah in northern Iraq, and at Karbala in southern Iraq (Annous, 2012; Ministry of Industry and Minerals, 2012a; O'Sullivan, 2012).

A joint venture of Lafarge and Merchant Bridge and Co. of the United Arab Emirates signed a 15-year lease agreement with Southern Cement to rehabilitate the plant, which is located in Karbala Province in southern Iraq. The joint venture, of which Lafarge owned 51% interest and MerchantBridge owned the remaining 49% interest, completed a \$200 million rehabilitation and capacity expansion project. The plant's capacity was increased to 1.8 Mt/yr of cement from 576,000 t/yr (Annous, 2012).

In August, China National Building Material Co. Ltd. (CNBM) was awarded a contract to build a second cement plant near the city of As Samawa, which is located in Al Muthanna Province in southern Iraq. The plant would have an initial cement production capacity of 1 Mt/yr, which could be doubled within 3 years. Al-Doh Investment Co. of Jordan would provide financing to CNBM for the project, which would be completed in 2014 and would cost \$200 million to build (Thomson Reuters, 2010).

Nitrogen.—The MIM called for investing in three new urea plants in the Provinces of Al Anbar, Al Basrah, and Ninawa, respectively. The suggested capacity of the new plants would each be between 500,000 t and 1 Mt/yr of urea at a cost of between \$800 million and \$900 million per plant. Natural gas needed as a feedstock for these plants would be available in all locations (State Company for Fertilizers, 2011; Ministry of Industry and Minerals, 2012b).

Phosphate Rock.—Most of Iraq's phosphate rock deposits are found in the Paleocene Akashat Formation in Iraq's Western Desert. The deposits are located about 15 to 20 kilometers (km) northeast of the Akashat Mine and cover an area of 40 square kilometers (km²). Geosurv-Iraq estimated Iraq's phosphate reserves and resources to be 9,529 Mt. The Akashat deposit was estimated to hold 430 Mt of proved phosphate rock reserves grading 21.52% P₂O₅. Other indicated resources included the Swab deposit, which held an estimated 3,503 Mt of phosphate rock grading 21.71% P₂O₅, followed by the Dawima site, 2,758 Mt grading 20.56% P₂O₅; the Marbat deposit, 2,114 Mt grading 21.17% P₂O₅; the Ethna site, 430 Mt grading 17.50% P₂O₅; the H3 site, 313 Mt grading 17.50% P₂O₅; and the Hirri site, 193 Mt grading 21.94% P₂O₅ (Al-Bassam and others, 2012, p. 18).

The MIM and Geosurv-Iraq announced two investment opportunities to extract and concentrate phosphate deposits in partnership with the General Company for Phosphate by building a phosphate rock processing plant at Akashat in Al Anbar Province. The plant would have the capacity to produce 1 Mt/yr of phosphate fertilizer and phosphoric acid and would cost \$50 million to construct. The proposed plant would produce phosphoric acid and phosphogypsum as a byproduct from treating phosphate concentrates with sulfuric acid. Phosphate rock would be supplied from the Wadi Al Hirri deposit at Akashat in Al Anbar Province. Sulfuric acid would be produced from the hydration of native sulfur at the Mishraq deposit in Ninawa Province (Ministry of Industry and Minerals, 2011, 2012b; Watts, 2011).

Silica.—The MIM invited interested companies to invest in mining silica sand deposits in Al Anbar Province, which could be the site of a 150,000-t/yr-capacity silica plant at a

cost of \$4 million to \$6 million. The silica sand produced would supply the ceramic and glass industries as well as a proposed white cement plant. The MIM also proposed to build a 100,000-t/yr-capacity flat glass plant in Al Anbar Province. The materials needed for the plant, which include alumina oxide, limestone, silica sand, sodium carbonate, and sodium sulfate, were available at several sites in western Iraq. The proposed flat glass plant was estimated to cost \$150 million to build, and the flat glass produced would be used to supply the local market (Ministry of Industry and Minerals, 2011).

Mineral Fuels and Related Materials

Asphalt.—Berkeley Petroleum Mesopotamia Asphalt Ltd. and Sonoro Energy Iraq (a subsidiary of Sonoro Energy Ltd. of Canada) signed an exploration and production-sharing agreement with the government of Salah ad Din Province to build a plant for asphalt production in Salah ad Din Province (Rigzone.com, 2010b; Thomson Reuters, 2010).

Natural Gas.—According to the Organization of Arab Oil Exporting Countries' statistics, Iraq produced 9 billion cubic meters of marketed natural gas in 2011 compared with 8.6 billion in 2010. The BP Statistics review, however, reported that Iraq produced 1.9 billion cubic meters of natural gas (excluding nonflared or recycled natural gas) in 2011 compared with 1.3 billion cubic meters in 2010 (BP p.l.c., 2012, p. 22; Organization of Arab Oil Exporting Countries, 2012, p. 34).

As of yearend 2011, no final contract had been signed by the Government and Royal Dutch Shell plc (Shell) of the United Kingdom for the \$17 billion South Gas Project. An initial agreement to establish the joint-venture Basrah Gas Project was signed by the Government and Shell in 2008. The South Gas Project was proposed as a 25-year joint venture of South Gas Co. (51% interest), Shell (44% interest), and Mitsubishi Corp. of Japan (5% interest) to capture flared gas from a 19,000-km² area in the Al Basrah Province in southern Iraq. The project area was extended to include the Majnoon, the Rumaila, the West Qurna 1, and the Zubair fields. Natural gas would be captured, treated, and processed for use locally or exported as liquefied natural gas. Natural gas production from the project was expected to reach 70.8 million cubic meters per day (Basrah Gas Co., 2012).

In the Kurdistan region of Iraq, natural gas production by Pearl Petroleum Co. Ltd. from the Chemchamel and Khor Mor fields averaged more than 2 million cubic meters per year. The project began in 2007 as a joint venture of Dana Gas PJSC (40%) and Crescent Petroleum (50%), both of the United Arab Emirates, and MOL Hungarian Oil and Gas Co. p.l.c. (MOL) and OMV Aktiengesellschaft of Austria (OMV) (5% interest each). The project supplied two gas-fired power stations at Chemchamel and Erbil and planned to transport surplus gas to Europe through the Nabucco gas pipeline, which would be built in the near future (Dana Gas P.J.S.C., 2012).

In 2011, Dana Gas produced liquefied petroleum gas (LPG) through two LPG trains at the Khor Mor gas processing plant. Dana Gas supplied LPG and condensates by way of pipeline to powerplants at Chemchamel and Erbil from the Khor Mor field (Dana Gas P.J.S.C., 2012).

OMV began a drilling program at the Bina Bawi 3 exploration well in January and encountered several hydrocarbon-bearing layers. The company planned to drill an exploration well in the Mala Omar Block and to make progress in the appraisal of the Bina Bawi Block, test the Rovi and the Sarta Blocks, and evaluate the extended well tests programs (OMV Aktiengesellschaft, 2012, p. 10, 38).

Petroleum.—In October 2010, Iraq's Ministry of Oil increased the country's proved crude oil reserves by 24% to 143.1 Gbbl from the 2001 estimates of 115 Gbbl. This increase came primarily from revised estimates at 12 oilfields and included a 71% increase in the proved reserves of the southern oilfields of Al Basrah Province, a 20% increase in the northern oilfields of Kirkuk Province, and a 9% increase in the central fields in eastern Baghdad Province (Rigzone.com, 2010a).

Production from the first phase of the Al-Ahdab oilfield, which was being developed by China National Petroleum Corp. (CNPC) (75% interest) and North Oil Co. (25%), began in June. The production capacity of the field, which has an estimated 1 billion barrels of oil reserves, would be 25,000 barrels per day (bbl/d) in the first 3 years and 115,000 bbl/d after 6 years as the field becomes fully developed (Iraq Business News, 2011a; Watkins, 2011).

A consortium of Exxon Mobil Corp. of the United States (80%) and Shell (20%) was responsible for developing and operating the West Qurna I oilfield. ExxonMobil Iraq Ltd. contracted Halliburton Co. of the United States to use three drilling rigs to provide oil-drilling services to 15 wells. In March, crude oil production at the West Qurna 1 oilfield reached 285,000 bbl/d, which was more than a 10% increase in production from the initial production level of 244,000 bbl/d (AME Info FZ L.L.C., 2011).

In the Kurdistan region of Iraq, about 40 companies were exploring for crude oil and natural gas based on production-sharing contracts with KNOC, which included an initial 5-year exploration period followed by a 20-year development period. These companies included, in order of the number of licenses held, Genel Enerji A.S. of Turkey (seven licenses), KNOC (five licenses), and Marathon Petroleum Corp. of the United States, Hungarian Oil and Gas Public Ltd. Co. (MOL), Petroleum Products International Exploration and Production Inc. (PETOIL) of Turkey, and OMV (four licenses each). DNO International ASA (DNO) of Norway and ShaMaran Petroleum Corp. of Canada (three licenses each). Crescent Petroleum and Dana Gas (both of the United Arab Emirates), Doğan Enerji of Turkey, Komet Group of Moldova, Oil Search Ltd. of Papua New Guinea, Pet Prime International Oil Co. Ltd. of the United Kingdom, and Reliance Industries Ltd. of India held two licenses each. One license each was held by Groundstar Resources Ltd., Heritage Oil plc, Longford Energy Inc., Vast Exploration Inc., and Western Zagros Resources Ltd. (all of Canada); Daesung Corp., Le Meilleur Co. Ltd., Majuko Corp., Samchully Co., SK Energy Co. Ltd., and UI Energy Corp. (all of the Republic of Korea); First Reserve Corp., Niko Resources Ltd., Norbest Ltd., Perenco Oil and Gas, and Sterling Energy plc (all of the United Kingdom); and Hillwood Oil & Gas Group LLC, Hunt Oil Co., Impulse Energy Corp., Texas and Keystone Inc. (all of the United States) (Howard, 2010, p. 15).

DNO continued with its exploration and drilling of areas covered by the Tawke production-sharing contract (PSC) and the Dohuk PSC in the Kurdistan region in northern Iraq in 2011. DNO, which was the operator for three licenses in Kurdistan, resumed crude oil production from the Tawke field in February after it was suspended in September 2010 at the request of the KRG. Production from the Tawke oilfield reached 75,000 bbl/d, and the company estimated crude oil and natural gas reserves of the Tawke field to exceed 500 million barrels. DNO, which was the first company in northern Iraq to export oil from the Tawke field, produced 75,000 bbl/d in 2011 (DNO International ASA, 2012).

In November, ExxonMobil became the first major international oil company to sign an agreement with the KRG to explore for petroleum in six blocks in northern Iraq despite the opposition of the central Government of Iraq. The blocks were the Al-Qhosh, the Arbat, the Arbat North, the Khanki, the Marathon, and the Perimam Blocks. The central Government of Iraq, which had prolonged disputes with the KRG with respect to oil and land, deemed the contract between ExxonMobil and the KRG illegal and considered it a breach of ExxonMobil's contract with the Ministry of Oil to develop the West Qurna phase I oilfield in southern Iraq (Thomson Reuters, 2011; Cutler, 2012).

In July, Afren plc of the United Kingdom purchased stakes in two Kurdistan operations for \$588 million. The deal was expected to generate 75,000 bbl/d within 5 years from the Barda Rash PSC, which is located 55 km of Erbil and operated by Afren, which held a 60% working interest. The company also acquired a 20% working interest in the Ain Sifni PSC, which is located 70 km northwest of Erbil and operated by Hunt Oil Co. of the United States (Afren plc., 2012).

In 2011, Iraq's crude oil refining capacity averaged 924,000 bbl/d. The output of petroleum products increased by 19.5% to 613,200 bbl/d in 2011 from 513,200 bbl/d in 2010. The Government planned to increase the country's refining capacity to 1.5 Mbbbl/d by 2017, including building four new refineries at Kerbala, Kirkuk, Missan, and Nassiriyah. Iraq had 59 active rigs, which was 23 more rigs than that were active in 2010. The number of crude oil producing wells in Iraq increased to 1,695 compared with 1,526 wells in 2010, and the number of completed wells increased to 76 from 71 wells in 2010 (BP p.l.c., 2012, p. 16; Organization of the Petroleum Exporting Countries, 2012, 25–27, 36, 41).

Outlook

The mineral industry in Iraq is expected to develop considerably in the next 5 years to meet the increased demand for mineral commodities needed for the rehabilitation of the country's infrastructure and for the development of the country's hydrocarbon sector. Production volumes of such mineral commodities as bentonite, limestone (for cement), phosphate and nitrogen fertilizers, phosphate rock, steel, and sulfur are expected to increase in the next few years. The Government, which has set a target of increasing crude oil production to 12 Mbbbl/d by yearend 2016 from about 2.8 Mbbbl/d produced in 2011, faces several challenges that need to be resolved for the

optimistic target to be realized. These challenges include the approval of the Hydrocarbon Law by the Parliament, resolution of the issue of deals made between the KRG and international oil companies, and moving forward with the South Gas Project.

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TABLE 1
IRAQ: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity	2007	2008	2009	2010	2011	
INDUSTRIAL MINERALS						
Bauxite	metric tons	NA	4,928	250	3,350 ^r	--
Bentonite ²	do.	570	1,605	3,959	6,127	6,472
Cement, hydraulic: ^e		4,500	6,453	7,000 ^r	8,000 ^r	10,000
Clay		1,019	1,777	2,283	2,283	2,283
Gravel ²		7,823	9,708	9,708 ^r	10,000	10,000 ^e
Gypsum		1,285 ^r	1,279 ^r	272 ^r	728 ^r	713
Iron oxide pigments		40	3	3	3	3
Kaolin		4	2	2	20	20
Limestone		642	275	2,005	986	986
Nitrogen:						
N content of ammonia		10	10	30	126	143
N content of urea		NA	NA	NA	100	129
Phosphate rock		NA	NA	NA	139	185
Phosphate fertilizer		NA	NA	NA	331	429
Salt ^e		153	109	113	102	136
Sand and gravel ²	metric tons	32	26	1,126	10,139	10,139 ^e
Sand, feldspathic ²	do.	543	--	--	--	--
Silica sand ²	do.	165	19,921	17,514	232	232 ^e
Sulfur		30	30	20	20	20 ^e
MINERAL FUELS AND RELATED MATERIALS						
Gas, natural:						
Gross	million cubic meters	13,596	14,781	16,577	16,885	18,692
Dry	do.	1,460	1,880	1,149	1,303	877
Natural gas plant liquids	thousand 42-gallon barrels	11,000	11,000	11,000	11,000	11,000
Petroleum:						
Crude, including lease condensate	do.	782,560	886,220	891,330	905,200 ^r	897,900
Refinery products:						
Liquefied petroleum gas	do.	6,315	11,060	18,177	14,177	14,177
Gasoline	do.	17,703	21,864	21,937	26,207	27,521
Kerosene and jet fuel	do.	9,855	17,119	17,447	19,892 ^r	31,901
Distillate fuels	do.	18,871	30,551	31,208	37,339 ^r	47,486
Residual fuels	do.	58,400	76,468	76,979	89,973	79,278
Other	do.	64,356	8,358	914	13,907 ^r	23,455
Total	do.	175,500	165,420	166,660	201,495 ^r	223,818

^eEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^rRevised. do. Ditto. NA Not available. -- Zero.

¹Table includes data available through September 30, 2012.

²Reported in cubic meters and converted to metric tons.

TABLE 2
IRAQ: STRUCTURE OF THE MINERAL INDUSTRY IN 2011

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Cement:				
Portland		Southern Cement Co. (Government, 100%)	Al Al Basrah plant, An Najaf Al Ashraf plant, Kufa plant, Muthena plant, Nora plant, As Samawa plant	7,500,000.
Do.		Iraqi Cement Co. (Government, 100%)	Al Qaim plant, Al Qaim; Kirkuk plant, Kirkuk; Fallujah plant, Fallujah; and Kubaisa plant, Kubaisa	5,200,000.
Do.		Northern Cement Co. (Government, 100%)	Al Tamin plant, Badoosh I, II, and III plants, Mosul; Hammam Al Alil I and II plants, Mosul; and Sinjar plant, Mosul	3,740,000.
Do.		Lafarge S.A., 70%, and Faruk Group Holding, 30%	Bazian plant at Sarchinar, near Hayasi	2,700,000.
Do.		Lafarge S.A., 60%, and Faruk Group Holding, 40%	Tasluja plant, near Sulaymaniyah	2,300,000.
Do.		Lafarge S.A., 51%, and MerchantBridge Co. 49%	Karbala plant, Karbala	1,800,000.
White		Iraqi Cement Co. (Government, 100%)	Fallujah white cement plant, Fallujah	300,000.
Iron and steel ¹		Iron and Steel Co. (Government, 100%)	Khawr az Zubayr, Al Basrah Governorate	NA
Nitrogen	thousand metric tons	State Company for Fertilizers South Region-Al Basrah (Government, 100%)	Ammonia plant at Abu Al-Khasib	230 ammonia; 350 urea.
Do.	do.	State Company for Fertilizers Northern Area (Government, 100%)	Plant at Baiji	231 ammonia; 202 urea.
Do.	do.	1st Global Company for Chemical Fertilizers Production Ltd.	Al Mansour, Baghdad Governorate	369 ammonia; 323 urea.
Petroleum:				
Crude	thousand 42-gallon barrels per day	BP p.l.c., 38%; China National Petroleum Corp. (CNPC), 37%; South Oil Co., 25%	Rumaila, Al Basrah Governorate	1,350.
Do.	do.	China National Petroleum Corp. (CNPC), 75%, and North Oil Co., 25%	Al-Ahdab, Wasit Governorate	140.
Do.	do.	China National Petroleum Corp. (CNPC), 37.5%; South Oil Co., 25%; Petronas Carigali International Sdn Bhd, 18.75%; Total S.A., 18.75%	Halfaya, Maysan Governorate	70.
Do.	do.	CNOOC Ltd., 63.75%; Iraq Drilling Co., 25%, and Türkiye Petrolleri Anonim Ortaklığı (TPAO), 11.25%	Maysan, Maysan Governorate	450.
Do.	do.	DNO International ASA, 55%; Genel Enerji A.S., 25%; Kurdistan National Oil Co., 20%	Tawke, Kurdistan region	100.
Do.	do.	Eni S.p.A., 32.81%; Missan Oil Co., 25%; Occidental Petroleum Corp., 23.44%; Korean Gas Corp. (Kogas), 17.75%	Zubair, Al Basrah Governorate	270.
Do.	do.	Exxon Mobil Corp., 60%; Royal Dutch Shell plc, 15%; Oil Exploration Co., 25%	West Qurna 1, Al Basrah Governorate	400.
Do.	do.	OAO Gazprom, 30%; Oil Exploration Co., 25%; Korean Gas Corp. (Kogas), 22.5%; Türkiye Petrolleri Anonim Ortaklığı (TPAO), 7.5%	Badra, Wasit Province	170.
Do.	do.	Lukoil Oil Co., 56.25%; South Oil Co., 25%; Statoil ASA, 18.75%	West Qurna 2, Al Basrah Governorate	NA.
Do.	do.	North Oil Co. (Government, 100%)	Kirkuk, Kirkuk Governorate	280.
Do.	do.	Petronas Carigali International Sdn Bhd (PETRONAS), 45%; Japex Petroleum Exploration Co. Ltd., 30%; South Oil Co., 25%	Garraff, Dhi Qar Governorate	35.
Do.	do.	Royal Dutch Shell plc, 45%; Petronas Carigali International Sdn Bhd, 30%; Missan Oil Co., 25%	Majnoon, Al Basrah Governorate	18.
Do.	do.	Sociedade Nacional de Petróleos de Angola (Sonagol), 75%, and South Oil Co., 25%	Qiyarah, Ninawa Governorate	120.
Do.	do.	Sociedade Nacional de Petróleos de Angola (Sonagol), 75%, and North Oil Co., 25%	Najmah, Ninawa Governorate	110.
Do.	do.	Taq Taq Operating Co. Ltd. (Genel Enerji A.S., 55%, and Addax Petroleum Corp., 45%)	Taq Taq, Kurdistan region	105.
Refinery products	do.	Midland Refineries Co. (Government, 100%)	Daura refinery at Daura	142,300.
Do.	do.	Kar Oil & Gas Co. (private)	Erbil	40,000.
Do.	do.	North Refineries Co. (Government, 100%)	Baiji (Salahudin)	135,800.
Do.	do.	do.	Baiji (North)	170,000.

See footnotes at end of table.

TABLE 2—Continued
 IRAQ: STRUCTURE OF THE MINERAL INDUSTRY IN 2011

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Refinery products— Continued	thousand 42-gallon barrels per day	North Refineries Co. (Government, 100%)	Kirkuk	30,000.
Do.	do.	do.	Khanagin/Alwand	12,000.
Do.	do.	do.	Qaiyarah-Mosul	4,000.
Do.	do.	South Refineries Co. (Government, 100%)	Al Basrah Governorate	142,300.
Do.	do.	do.	An Najaf Governorate	30,000.
Do.	do.	do.	Nassiriyah-Samawah	30,000.
Do.	do.	do.	Haditha	16,000.
Do.	do.	do.	Muftiah	4,500.
Phosphate rock		General Company for Phosphate (Government, 100%)	Mines at Akashat, Al Anbar Governate	1,300,000.
Phosphoric acid ¹		do.	Plant at Al-Qaim	400,000.
Phosphatic fertilizer		do.	do.	600,000.
Sulfur		Mishraq Sulphur State Enterprise (Government, 100%)	Qaiyarah	820,000.
Sulfuric acid ¹		State Company for Fertilizers (Government, 100%)	Phosphatic fertilizer plant at Al-Qaim	1,500,000.

Do., do. Ditto. NA Not available.

¹No production has been reported since 2003.