

THE MINERAL INDUSTRY OF

IRAQ

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Minerals, particularly petroleum, continued to dominate Iraq's economy in 1996 as they have for decades. Prior to Iraq's invasion of Kuwait in August 1990, which caused the United Nations (U. N.) to impose economic sanctions, Iraq was one of the world's top 10 oil producers. Iraq's crude oil reserves of more than 100 billion barrels (Gbbl) were the world's next largest after those of Saudi Arabia (Penn Well Publishing Co., 1996). Iraq was also an important regional producer of cement and sulfur, as well as phosphate and urea (nitrogen) for fertilizers.

Before 1990, the value of Iraq's exports were estimated to be about \$15 billion per year, with oil accounting for about 90% of the total. By 1995, exports were valued at about \$570 million with oil accounting for about 80% of the total. Following international sanctions, Iraq was only officially allowed to export to Jordan (Arab Petroleum Research Center, 1997).

Pending Iraq's full compliance with the U.N. resolutions, the trade embargo on everything except humanitarian needs (oil for food) remained a severe restriction on the country's mineral production, as well as the entire economy. Thus, the country's industrial production during 1996 was mostly limited to satisfying domestic consumption.

After nearly 6 years of strict international sanctions, Iraq reached an agreement on May 20, 1996, with the U. N. allowing limited oil exports for humanitarian needs. The U. N.-Iraqi agreement, under U. N. Resolution 986, permits Iraq to sell up to \$2 billion worth of oil during a 6-month period. Exports under the agreement began in December. The volume of oil that can be sold under the agreement is dependent on the price of oil. If the price of oil goes up, then the volume of Iraqi exports will decrease, and if the price goes down, then the volume of exports will increase, which could contribute to a weakening of the world oil market. Iraq's sales strategy was to sign a large number of small contracts in hopes of renewing contacts with as many of its former customers as possible. During December, the U. N. approved 16 contracts signed by Iraq's State Oil Marketing Organization.

The structure of the mineral industry was not fully defined in available sources, but most mineral commodity production facilities were apparently owned by the Government. (*See table I*).

Iron and steel facilities were located at Khor al Zubair, southwest of Basrah in southern Iraq. The facilities included two natural gas-based direct-reduced iron units for sponge iron production and four electric arc furnaces for steel production.

Cement plants in operation totaled about 12, of which 7 had

a capacity of about 2 million metric tons per year or more. Most of the plants were spaced at intervals along the Euphrates River from Basrah to the Syrian border. Several plants were in the north near Mosul and Kirkuk.

Ammonia plants were situated at five locations—three near Basrah in the south, one at Baiji in the middle north on the Tigris River, and one at Al Qaim in the west on the Euphrates River.

Phosphate rock was produced from the Akashat open-pit mine in the west and, after some beneficiation, shipped by rail about 140 kilometers (km) northeast to a fertilizer complex at Al Qaim and other fertilizer plants at Baiji and near Basrah.

Salt was produced from seawater at the northern end of the Gulf and from salt lakes in the middle south.

Sulfur was produced from underground deposits at Mishraq on the west bank of the Tigris River about 50 km south of Mosul in the north. Additional byproduct sulfur came from processing oil and gas at several locations.

Natural gas produced in Iraq was mostly associated gas, most of which was used for domestic purposes. Main sources of associated gas are Ain Zalah, Butma, Kirkuk, and Bai Hassan in the north and Rumaila and Zubair in the south. Gas reserves were estimated to be about 3.4 trillion cubic meters (Arab Petroleum Research Center, 1997).

By 1990, Iraq had increased its crude oil production capacity to about 4.5 million barrels per day (Mbbbl/d) with output at about 2.8 Mbbbl/d. After sanctions were imposed, Iraq's oil production was restricted mostly to meet domestic needs with the exception of U.N. authorized exports to Jordan for processing in its Zarqa refinery. In 1996, Iraq's estimated production capacity was about 2.5 Mbbbl/d. Exports to Jordan totaled about 88,000 barrels per day (bbl/d). Prior to the Gulf crisis and subsequent sanctions, Iraq's exports totaled about 2.3 Mbbbl/d. In June 1996, the Organization of Petroleum Exporting Countries (OPEC) increased Iraq's production quota by 800,000 bbl/d to 1.2 Mbbbl/d (Arab Petroleum Research Center, 1997).

Refining capacity was estimated at about 603,000 bbl/d. The major refineries were Baiji in the north (290,000 bbl/d), Basrah in the south (126,000 bbl/d), and Daurah in central Iraq (100,000 bbl/d). No new plans to increase current refining capacity were indicated other than the upgrade of existing plants to produce higher quality products and to address environmental concerns. Iraq's State Company for Oil Projects was, however, building a 290,000-bbl/d lube oil refinery at Babylon, 160 km south of Baghdad. The refinery will produce asphalt, some petroleum products, and lube oils.

Crude oil reserves were estimated to be more than 100 Gbbl as of January 1, 1997. The two largest producing oilfields, Kirkuk in the north and Rumaila in the south, had combined reserves of about 22 Gbbl. Other reserves for major producing fields are as follows: East Baghdad (central), about 11 Gbbl; Zubair (south), about 4.5 Gbbl; Bai Hassan (north), about 2 Gbbl; Buzurgan (east-central), about 2 Gbbl; Khabbaz (north), about 2 Gbbl; and Abu Ghirab (east-central), about 1.5 Gbbl. Of the 73 known oil prospects in the country, only 15 have been developed. Negotiations with foreign companies for production-sharing contracts to develop new oil fields are, however, ongoing, but are not likely to be initiated until the lifting of international sanctions.

The outlook is for increased energy and nonfuel mineral production once sanctions are removed.

References Cited

- Arab Petroleum Research Center, 1997, Arab oil & gas directory, 1997, Iraq: Paris, Arab Petroleum Research Center, p. 151-178.
PennWell Publishing Co., 1996, International petroleum encyclopedia, 1996: Tulsa, PennWell Publishing Co., p. 84-88.

Major Sources of Information

- Ministry of Industry, P.O. Box 2075, Baghdad.
Ministry of Oil, P.O. Box 6178, Al Mansoor City, Baghdad.

TABLE 1
IRAQ: ESTIMATED PRODUCTION OF MINERAL COMMODITIES 1/

(Thousand metric tons unless otherwise specified)

Commodity 2/	1992	1993	1994	1995	1996	
METALS						
Iron and steel: Steel crude	100	300	300	300	300	
INDUSTRIAL MINERALS						
Cement, hydraulic	2,000 r/	2,000 r/	2,000 r/	2,000 r/	2,100	
Nitrogen, N content of ammonia	200	500	500	500	500	
Phosphate rock:						
Beneficiated 3/	600	800	1,000	1,000	1,000	
Phosphorus pentoxide content	180	240	300	300	300	
Salt	250	300	300	250	250	
Sulfur, elemental:						
Native, Frasch	250	250	250	250	250	
Byproduct 4/	100	200	225	225	225	
Total	350	450	475	475	475	
MINERAL FUELS AND RELATED MATERIALS						
Gas, natural:						
Gross	million cubic meters	2,480	5,000	5,000	5,000	5,000
Dry	do.	1,400	3,000	3,000	3,000	3,000
Natural gas plant liquids	thousand 42-gallon barrels	6,000	10,000	10,000	10,000	10,000
Petroleum:						
Crude (including lease condensate)	do.	155,000 r/	187,000 r/	200,000	205,000 r/	213,000
Refinery products	do.	150,000 r/	160,000 r/	160,000 r/	160,000 r/	160,000

r/ Revised.

1/Includes data available through Dec. 15, 1997.

2/ In addition to commodities listed, the following also were produced but information is inadequate to reliably estimate output: gypsum for cement, plaster, mortar and other products; limestone for cement (about 1.3 tons per ton of finished cement), lime, and construction stone; clay and/or shale for cement (about 0.4 ton per ton of finished cement); other construction materials (e.g., clays for brick and tile, sand and gravel, stone); uranium and fluorine compounds from phosphate rock processing; industrial sand for foundry use and glass manufacture; and clays for ceramics and refractories.

3/ Estimated to contain 30% phosphorous pentoxide.

4/ Presumably from petroleum and natural gas processing.