

# THE MINERAL INDUSTRY OF SAUDI ARABIA

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The Kingdom of Saudi Arabia achieved a significant diversity in its mineral industry in recent years through copper and gold mining operations, cement, fertilizer, and steel manufacturing facilities. Newly developing bauxite, iron ore, and polymetallic base metal mining operations were expected to further embellish this diversity. The bulk of revenues and export earnings continued to be generated by the hydrocarbon industries, including downstream refining and petrochemicals. Saudi Arabia remained the world's largest producer of crude oil and the third largest producer of natural gas.

The gross domestic product (GDP) was \$123.4 billion;<sup>2</sup> nominal GDP growth was reported at 0.6% in 1994. The oil sector accounted for 37% of GDP, 75% of Government revenues, and 90% of total exports, which were valued in excess of \$40 billion.

## Government Policies and Programs

The Economic Development Plan for 1990-95 emphasized the maintenance of national economic stability through careful management of Government expenditures. The plan also placed emphasis on the diversification and expansion of the economic base while securing a more balanced allocation of resources among the different regions of the country. The Directorate General of Mineral Resources (DGMR) focused on technical and economic assessments of resources of bauxite, gold, iron ore, phosphate rock, and zinc. The Government continued to encourage private capital to participate in the Kingdom's economic development.

## Environmental Issues

Saudi Arabia created a ministerial committee to set standards and procedures relating to environmental protection, such as emission controls and the monitoring of air and water pollution. The committee drew its membership from 12 ministries. Each ministry carried out its own environmental audit under the guidance of the Central Department on the Environment and the Department of Meteorological Observation and Environment.

## Production

The average production of crude oil, the Kingdom's principal mineral commodity, was nearly 8.2 million barrels per day (Mbbbl/d) in 1994. The 5-year petroleum production

expansion project was virtually completed, increasing production capacity by 500,000 barrels per day (bbl/d) from the offshore Marjan Field. Similar expansion work was conducted at the Abqauq, Hawiyah, Safaniya, and Zuluf Fields. Additional capacity was brought on at three new fields south of Riyadh, adding a further 200,000 bbl/d capacity. Saudi Aramco attained a sustainable capacity of 10 Mbbbl/d by early 1994, well ahead of its 1995 target. (*See table 1.*)

## Trade

Exports were dominated by hydrocarbon products and derivatives. Crude oil exports averaged 6 Mbbbl/d while product exports averaged 850,000 bbl/d. The value of petroleum exports in 1994 was estimated at \$39 billion.

The geographical distribution of crude oil exports changed dramatically during the past decade. In the early 1980's, more than 50% of annual crude oil exports was delivered to the Far East, particularly Japan, and less than 10% to North America. In 1994, about 35% of crude oil shipments was directed to Europe, 25% to North America, and 25% to the Far East. During 1994, Europe imported 2.1 Mbbbl/d and Japan imported 1.3 Mbbbl/d. Petroleum imports by the United States totaled 1.4 Mbbbl/d, including 105,000 bbl/d of petroleum products, mostly unfinished oils, liquefied petroleum gases, jet fuel, and motor gasoline. Saudi Arabia remained the leading supplier to the United States, accounting for 16% of the U.S. petroleum imports in 1994.

The value of nonoil exports increased rapidly during the past decade. In 1983, they were valued at about \$1 billion, rising to \$6.2 billion in 1994, representing a 12.5% increase from 1993. As more industries come on-stream, this trend was expected to continue.

According to the Ministry of Finance and National Economy, the Kingdom's total imports were valued at \$23.3 billion in 1994, a drop of 17.2% from the previous year. The United States remained the largest supplier to the Kingdom, and accounted for 21% of Saudi Arabia's imports. Japan was second with 12% of the market share, followed by the United Kingdom and Germany at 8% of the market share.

Most imports were subject to customs duties at rates ranging from 12% to 20%. Imports from members of the Gulf Cooperation Council (GCC) were exempted, provided that at least 40% of the value added was effected in GCC countries and at least 51% of the capital of the producing

firm was owned by citizens of GCC-member countries.

The monetary authorities and all other residents, including private persons, could freely and without license purchase, hold, and sell gold in any form, at home or abroad. They could also, without license and without payment of any customs duty or tax, trade gold in any form with the exception of gold of 14 carats or less, the import of which was prohibited.

### Structure of the Mineral Industry

All minerals, including vast petroleum and natural gas reserves, were owned by the Government. Their exploitation was predominantly controlled by Government organizations. (See table 2.) The government-owned Saudi Aramco was the only company authorized to engage in oil exploration and development in the Kingdom.

### Commodity Review

#### Metals

**Aluminum.**—Reynolds Metals of the United States was selected to supply technology, manage, and operate a new aluminum can-making plant in Dammam. The plant was scheduled to produce up to 1.2 billion cans per year and was expected to be completed in 1996.

The Al-Amoudi Brothers Co. of Saudi Arabia and the Aluminium Processing Co. of Germany signed a joint-venture agreement in November to create the Causi Aluminium Recycling Co. Located in the Al-Jubayl Industrial Estate, the plant was expected to have the capacity to recycle scrap and beverage cans amounting to 12,000 to 18,000 metric tons per year (mt/a). Production was scheduled to begin in 1996.

**Bauxite.**—The DGMR invited applications for a feasibility study focusing on the exploitation of the Az Zabirah bauxite deposit about 470 kilometers (km) northwest of Riyadh. The deposit was part of a Cretaceous paleolaterite that outcropped in three main zones covering a distance of 105 km. Minable reserves were estimated at 102 million metric tons (Mmt) of essentially monohydrate ores averaging 57.5% aluminum oxide, 5.5% silicon dioxide, and 8% ferric oxide.

**Copper.**—Even Resources of Canada signed a memorandum of understanding with the Alujain Co. of Saudi Arabia to develop a large copper deposit in the Arabian Shield about 340 km northeast of Jiddah in Jabal Sayid. The Alujain Co. projected a mining rate at 7.7 mt/a during a 12-year mine life. The deposit was defined by the Alujain Co. at 80 Mmt grading 1.5% Cu.

The copper smelter and refinery project was proceeding as scheduled, with startup anticipated by early 1998. The plant, at Madinat Yanbu Al-Sinalyah on the Red Sea coast, was

expected to produce 150,000 mt/a of copper cathode. A part of the feedstock for the smelter was expected to be concentrates derived from the Alujain Co. Jabal Sayid copper deposit and the polymetallic deposit at Al Masane under development by the Arabian Shield Co.

**Ferroalloys.**—The Gulf Ferroalloys Co. (Sabayek), owned by GCC investors, awarded a contract for construction of a ferroalloy complex at Al-Jubayl, a location accessible to high-quality quartz and inexpensive energy. The complex was expected to include a 35,600-mt/a-capacity ferrosilicon plant, one 10,000-mt/a silicon metal furnace, and a 27,600-mt/a silicomanganese and 10,000-mt/a ferromanganese production. The ferrosilicon production was expected to be exported because domestic needs did not exceed 3,000 mt/a. Silicon metal, silicomanganese, and ferromanganese production was intended for local consumption. About one-half of the financing for the \$120 million project would be supplied by the Saudi Industrial Development Fund, Sabayek's equity holders would fund 30%, and bank loans would supply the remainder. The first production line was to be operative by late 1996.

No production of ferroalloys and silicon metal occurred in the gulf region. Thus, all of these products were being imported. The ferroalloys and silicon metal output was expected to be needed for the steel and aluminum industries in the region.

**Gold.**—In 1994, gold recovery continued at the Mahd Adh Dhahab underground mine, 275 km northeast of Jiddah, and at the Sukhaybirat surface mine, about 480 km northwest of Riyadh. Production from Mahd Adh Dhahab exceeded 5 metric tons (mt) while production at Sukhaybirat approached 3 mt.

Several commercially significant gold deposits have been discovered in the Arabian Shield. The Saudi Arabian Precious Metals Co. announced the discovery of a major gold deposit adjacent to the Sukhaybirat Mine. Preliminary estimates by the Saudi Arabian Precious Metals Co. concluded that the deposit was at least comparable to the Sukhaybirat Mine, where production neared 3 mt.

The Dhahab Co. Ltd., a Saudi Arabian/French joint venture, proceeded with the construction of a gold refinery with a nominal capacity of 100 mt/a. The refinery was expected to enter production by late 1995.

**Iron and Steel.**—A feasibility study by British Steel Consultants recommended construction of a 2.2 million metric ton per year (Mmt/a) pelletizing plant to process concentrates from the Wadi Sawawin deposit 60 km from the Red Sea coast and 900 km north of Jiddah. The iron content of the fine-grained-taconite ore body ranged from 42% to 45%. Pilot plant tests produced a concentrate with an iron content of 67.5% at 75% recovery. The method of beneficiation developed for the project requires 1 cubic meter (m<sup>3</sup>) of clean water for every metric ton of ore processed. The basic technology was developed using the Tilden process

pioneered by the U.S. Bureau of Mines in the 1970's. The projected startup date was expected by 1997.

The expansion program at the Saudi Iron and Steel Co.'s (Hadeed) complex at Al-Jubayl was completed in 1993, raising capacity to 2.3 Mmt/a. Further upgrading was expected to include the installation of a transformer in each of the plant's three electric arc furnaces by mid-1995. The plant's feedstock was a combination of sponge iron and scrap. A preliminary feasibility study was commissioned for a proposed flat products complex at Hadeed. The Saudi Arabian market for flat products was projected at 800,000 mt by mid-decade.

**Zinc.**—The Arabian Shield Development Co. of Dallas, Texas was issued a lease to develop the Al-Masane polymetallic base metals sulfide deposit in southwestern Saudi Arabia containing demonstrated reserves of 7.2 Mmt averaging 5.33% zinc, 1.44% copper, 1.2 grams per metric ton (g/mt) gold, and 43 g/mt silver, according to the Arabian Shield Development Co. Mine construction was scheduled for 1995. Output was anticipated at 58,000 mt/a of zinc concentrates. The Saudi Industrial Development Fund loaned one-half of the \$81 million required to start up the mine. The remaining financing was expected to be derived from commercial banks and through equity offerings.

### **Industrial Minerals**

**Cement.**—The domestic cement industry accelerated its expansion programs to meet a greater portion of the growing demand, currently estimated at 18 Mmt/a. The Yanbu Cement Company expansion contract was awarded in October 1994. The project was expected to add 7,000 metric tons per day (mt/d) to capacity. The project was scheduled for completion by mid-1996.

The Tabuk Cement Co., proceeded with plans to construct a 1.1-Mmt/a-capacity cement plant at Duba on the Red Sea coast. Investment was projected at \$240 million. Development was to be partially funded by offering more than 7 million shares to the public.

**Fertilizers.**—A reorganization of the Kingdom's fertilizer industry was implemented by the merger of three state-owned companies, Ibn Al Baytar, Safco, and Samad. These companies have the combined capacity to produce more than 3 Mmt/a of fertilizers. The merger was intended to increase efficiency and boost earnings as a part of a general effort to reduce the budget deficit.

Abundant reserves of low-cost feedstocks formed the basis of the Arabian Gulf fertilizer industry. The regional fertilizer producers were poised to become a predominant supplier of nitrogen fertilizers in the international market.

**Phosphate.**—In 1994, bids were invited to exploit phosphate rock deposits in Al-Jalamid, about 120 km from Turayf, near the Jordanian border. DGMR reported proven reserves as 213 Mmt of ore averaging 21% diphosphorus pentoxide. Eleven companies submitted bids for the project,

including surface mining, beneficiation, pipeline transport, and the building of a 2.9-Mmt/a diammonium phosphate plant in Al-Jubayl. The beneficiation process was expected to involve the manufacture of 4.5 Mmt/a of phosphate concentrate that will be transported by a 1,200-km slurry pipeline to Al-Jubayl. The DGMR projected the total investment at \$147 million for mining and beneficiation, \$887 million for the fertilizer plant, and \$714 million for associated infrastructure. Development work on the mine was scheduled to start in early 1996.

### **Mineral Fuels**

**Natural Gas.**—There were 64 gas-oil separation plants in the country. The Kingdom's master gas system had the capacity to process 45 billion m<sup>3</sup> of natural gas. This amount was associated with a crude oil production of about 8.2 Mbbl/d. With the completion of an expansion program bringing sustainable crude oil production to 10 Mbbl/d, Saudi Aramco's focus shifted to the expansion of natural gas processing installations and distribution networks. Among the major projects under consideration were the expansion of the Ju'aymah natural gas liquids plant and the augmentation of the Uthmaniya natural gas handling capacity.

The production of natural gas liquids (NGL) substantially increased during the past few years with output exceeding 200 million barrels per year (Mbbl/a). Most of this production was exported. Saudi Arabia remained the world's largest exporter of NGL with fractionation plants at Yanbu, Ras Tanura, and Ju'aymah.

Saudi Arabia was the largest producer of ammonia and methanol in the Arabian Gulf, the largest methanol exporter, and the third largest ammonia exporter. Natural gas remained an inexpensive feedstock at \$0.45 per million British thermal units. Ammonia production capacity was 1.6 Mmt/a.

Saudi Arabia was one of two Arabian Gulf countries to produce methanol. The Al-Razi plant production capacity of 1,320 mt/a, was the largest in the world, and Saudi Arabia's second methanol plant, the Ibn-Sina plant, had a production capacity of 770 mt/a. In addition to marketing methanol from these two domestic facilities, Sabic also marketed methanol from Bahrain, bringing total marketing to 2.4 Mmt/a.

**Petrochemicals.**—Sabic ranked as the world's third largest producer of petrochemicals, and most of its output was delivered to world markets. Sabic reported profits of \$1 billion in 1994, nearly doubling the previous year's output. The principal markets for these products were the Far East, Western Europe, and Southeast Asia. Plans continued for the construction of new facilities, while upgrading and expansion were underway on many of the company's existing facilities. Total production capacity was projected to reach 20 Mmt/a by 1995.

Affiliates of Sabic were expected to have a total production capacity of 2.6 Mmt/a of methyl tertiary butyl ether (MTBE) by 1996. Two production units came on-stream in 1994 at

the Saudi European Petrochemical Co., more than doubling capacity from 500,000 mt to 1.2 Mmt. The National Methanol Co. (Ibn Sina) commenced production in July at its 700,000 mt/a-capacity MTBE unit at Al-Jubayl. The Saudi Petrochemical Co. (Sadaf) was concluding financing for a major expansion that is expected to include the construction of a MTBE unit. An MTBE manufacturing unit also was under construction at the Aramco-Mobile Refinery Co.

**Petroleum.**—Production.—Saudi Arabia maintained an average production level slightly more than 8.1 Mbb/d in 1994. Production consisted of about 700,000 bbl/d of Extra Light Crude, almost 5 Mbb/d of Arabian Light, about 1.2 Mbb/d of Arabian Medium, and about 1.2 Mbb/d of Arabian Heavy.

During 1994, Saudi Aramco completed a 5-year expansion program, raising its maximum sustainable capacity to 10 Mbb/d. The majority of Saudi Aramco's expansion projects were in the Eastern Province, where new development and exploratory wells were sunk and older wells worked over. In the north, extra platforms were in place in the Berri Field, gas-oil separators plants were commissioned, and pipeline networks reactivated. About 60 wells have been recompleted in Safaniya, the world's largest offshore field. The seven fields in the Hawtah group, discovered in 1989-90, are about 100 to 200 km south of Riyadh. Crude oil from these fields were piped northward to an East-West pipeline junction, affording Saudi Aramco the option to switch the flow either eastward to the Ras Tanura refinery and to export terminals on the Gulf or westward to the expanded facilities at Yanbu on the Red Sea.

As part of its field development operations, Saudi Aramco has drilled more than 20 horizontal wells. Most wells were drilled at the offshore fields of Safaniya, Zuluf, Marjan, and Berri. Horizontal onshore wells were successfully completed at the Ghawar and Abqaiq Fields.

In 1994, Saudi Aramco introduced its fifth crude grade, Arab Super Light, extracted from the new central province fields. The decision was reached to develop the Shaybah oilfield in the Rub Al Khali. When that field comes on-stream in 1999, Shaybah is expected to add 500,000 bbl/d of light sweet 42° API crude.

The Organization of Petroleum Exporting Countries (OPEC) quotas were extended for the full year of 1994 limiting Saudi Arabian production to 8 Mbb/d. Saudi Arabia was the only OPEC member with considerable spare capacity.

**Refining.**—The combined capacity of eight refineries, including the 30,000-bbl/d Khafji refinery in the Divided Zone, was reported at 1,625 Mbb/d. (*See table 2.*)

During 1993, Saudi Aramco downsized its ambitious 10-year refinery upgrade and expansion of its Ras Tanura refinery from a planned \$12.5 billion upgrade to a more modest \$1.7 billion upgrade and expansion. The revised upgrade plans called for the installation of a 100,000-bbl/d hydrocracker, a 40,000-bbl/d continuous catalytic reformer,

a visbreaker, a sulfur recovery unit, a hydrogen plant, and a sour water treatment plant. The upgrades were scheduled to come on-line in mid-1998. The project manager was U.S.-based Brown and Root.

Saudi Arabia continued to acquire a worldwide network of refining, storage, and distribution facilities. In addition to its position in the United States through Star Enterprise, Saudi Aramco acquired interests in downstream oil activities in South Korea. In early 1994, Saudi Aramco finalized an agreement for the acquisition of a 40% holding at the cost of \$502 million in Petron, the refining and distribution subsidiary of the Philippines National Oil Co. Negotiations for positions in China, France, Indonesia, and Italy continued. Direct investment in foreign refining, marketing, and distribution operations established for Saudi Arabia a guaranteed market for crude oil and provided stability in the face of inevitable market fluctuations.

Saudi Aramco moved ahead with its program to upgrade the Ras Tanura Refinery, which should help supply the Kingdom's growing demand for gasoline and distillate products when it is scheduled to come on-line in 1997. The company also was engaged in major revamping of its domestic distribution network that involves laying product pipelines from the refineries to the Kingdom's major consumption and export areas. Saudi Aramco's purchase of Motor Oil Hellas of Greece introduced the company to its first downstream presence in Europe. Added to existing interests in Star Enterprise in the United States with a 600,000 bbl/d refining capacity and in Ssangyong in South Korea where capacity was expanded to 500,000 bbl/d, Saudi Aramco had a direct interest in downstream refining and market ventures that can process up to 1.4 Mbb/d of the Kingdom's crude exports. The company's long-term goal was to refine and market one-half of its crude output through companies in which it has an ownership interest.

### **Reserves**

Saudi Arabia's subsoil has the world's largest known concentration of oil. Proven oil reserves were reported at 260.8 billion bbls, representing more than 26% of total world proven reserves. This figure did not take into account the central oilfields because appraisal and delineation work was still underway in the area. At the present accelerated rate of output, Saudi Arabia enjoys a reserve-production ratio sufficient to last 86 years at current production levels. The bulk of the Kingdom's reserves were contained in a few massive fields. These included Ghawar, the world's largest onshore field with remaining reserves of about 70 billion bbl; Safaniya, the world's largest offshore field with 19 billion bbl; Abqaiq, with 17 billion bbl; Berri, with 11 billion bbl; Manifa, with 11 billion bbl; Zuluf, with 8 billion bbl; Shayba, with 7 billion bbl; Abu Saafa, with 6 billion bbl; and Khursaniya, with 3.5 billion bbl.

Natural gas reserves were reported at 5.3 trillion m<sup>3</sup>. Most of the Kingdom's reserves were in the form of associated gas contained in the country's oilfields. The giant Ghawar Field

was thus the largest source of natural gas, and accounted for approximately 35% of the total gas reserves.

## Infrastructure

Saudi Arabia had a substantial electric generating capacity from power units attached to its string of desalination plants. The Kingdom was the world's largest producer of desalinated water, having an installed capacity of 1.9 million cubic meters per day. Electric power generation capacity was 16,500 megawatts.

Extensive port and harbor facilities served Al-Jubayl on the east coast and Yanbu on the west coast. Al-Jubayl had an industrial port with a 10-km-long causeway for dry and liquid bulk cargo and a commercial port for general cargo. A fertilizer terminal was completed consisting of two jetties for loading vessels from 5,000 to 50,000 deadweight tons (dwt). In Yanbu, the 15-km-long King Fahd Industrial Port was the largest oil port on the Red Sea and one of the longest in the world. The oil terminal at Yanbu was expanded to handle 6.6 Mbbbl/d and could accommodate tankers from 80,000 to 500,000 dwt.

## Outlook

Saudi Arabia emerged from the Gulf War not only in a strong political position but also with a vibrant private sector and renewed prominence as the world's largest oil producer and exporter. The Kingdom's business climate had developed favorably since the Gulf War, contributing to a significant construction boom. Both state and private companies were expanding, although the former has somewhat scaled down its programs in view of the downturn in petroleum prices.

At the same time, Saudi Aramco's expansion program placed the Kingdom in a position to take advantage of the expected growth in world oil demand later in this decade. Saudi Arabia was eager to secure an outlet for its crude oil in markets with consumer proximity.

Because most of the national income was dependent upon markets outside the Kingdom, the economy remained vulnerable to sudden changes in volume and pattern of worldwide trade in crude and refined petroleum and petrochemicals. Purchasing equities in refining, marketing, and distribution companies in the United States, South Korea, the Philippines, and Europe eased that vulnerability.

The Kingdom of Saudi Arabia and the Republic of Yemen reached an understanding over the demarcation of their mutual frontier, which was a region of crude oil production potential.

Despite the downturn in the public sector, private sector investments were flourishing. Business confidence remained solid because the private sector, which accounted for more than two-thirds of economic activity, was liquid and continued to invest.

The Government announced a partial freeze in capital spending programs, and efforts were being made to restrain recurrent spending. The Kingdom planned to maintain total

oil production at no less than 8 Mbbbl/d. The Kingdom affirmed that it would support measures by oil exporters that were equitable and effective but it would no longer make unilateral cutbacks. The Kingdom was committed to a prudent fiscal policy by holding output at present levels, taking a realistic view of oil prices and slashing the deficit.

The Government planned to further curb expenditures and bolster revenues by doubling the price of gasoline consumed in the Kingdom and by raising the prices of diesel fuel and electricity available in the Kingdom.

Since Saudi Aramco intends to maintain a maximum sustainable capacity of 10 Mbbbl/d, less profitable fields will be shut down as new producing fields come on-stream. Revenue increases can be anticipated through cutting back on the sale of Arabian heavy in favor of its lighter premium crudes.

The Saudi Aramco shipping subsidiary, VELA, completed the acquisition of 15 very large crude carriers (VLCC), averaging 300,000 dwt each, affording Saudi Aramco the capacity to carry one-half of its crude oil exports in its own tanker fleet.

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<sup>1</sup>Text prepared Aug. 1995.

<sup>2</sup>Where necessary, values have been converted from Saudi riyals (SRIs) to U.S. dollars at the rate of SRIs3.7450=US\$1.00.

## Major Sources of Information

Directorate General of Mineral Resources

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Jiddah, 21191 Saudi Arabia

Ministry of Petroleum and Mineral Resources

Jiddah, Saudi Arabia

General Organization Petroleum and Mineral Resources

(PETROMIN)

P.O. Box 67

Dhahran, Saudi Arabia

Saudi Arabian Oil Co. (Saudi Aramco)

Dhahran 31311, Saudi Arabia

Telephone: [966] (3) 875-5830

Fax: [966] (3) 873-7664

Al-Jubayl Fertilizer Co. (SAMAD)

P.O. Box 10046

Al-Jubayl, Saudi Arabia

Telephone: [966] (3) 341-6488

Fax: [966] (3) 341-5894

National Chemical Fertilizer Co.(IBN AL-BAYTAR)

P.O. Box 10283

Al-Jubayl 31961, Saudi Arabia

Telephone: [966] (3) 341-9988

Fax: [966] (3) 358-7385

Saudi Arabian Basic Industries Corp. (SABIC)

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Riyadh 11422, Saudi Arabia

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Saudi Iron and Steel Co. (Hadeed)

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Exxon Middle East Industries Inc.

P.O. Box 4584  
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Fax: [966] (1) 478-8878

Foster Wheeler Saudi Arabia Co. Ltd.

P.O. Box 601  
Dhahran, Saudi Arabia  
Telephone: [966] (3) 864-9107

McDermott Saudi Arabia

P.O. Box 188  
Dhahran 31932, Saudi Arabia  
Telephone: [966] (3) 895-0094, 895-1591

Mobil Saudi Arabia, Inc.

P.O. Box 40228  
Riyadh 11499, Saudi Arabia  
Telephone: [966] (1) 477-7341  
Fax: [966] (1) 478-7682

Texaco Saudia Inc.

P.O. Box 5572

Riyadh 11432, Saudia Arabia  
Telephone: [966] (1) 465-9077 and 476-2521  
Fax: [966] (1) 464-1992

## **Publications**

Kingdom of Saudi Arabia,  
Ministry of Finance and National Economy,  
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Saudi Arabian Monetary Agency,  
Research and Statistics Department,  
Statistical Summary, annual.

Kingdom of Saudi Arabia  
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Kingdom of Saudi Arabia  
Directorate General of Mineral Resources  
Atlas of Industrial Minerals  
Jiddah, 1993.

Kingdom of Saudi Arabia  
Directorate General of Mineral Resources  
Mineral Resources of Saudi Arabia  
Jiddah, 1994.

TABLE 1  
SAUDI ARABIA: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity	1990	1991	1992	1993	1994 e/
Copper: Cu content of concentrate and bullion 3/	895	900	868	925	1,200
Cement, hydraulic	12,000	11,400	15,300	15,300	15,000
Gold:					
Mine output, gross weight:					
Ore	146,000	450,000	806,000	860,000	900,000
Concentrate 3/	7,000	7,800	3,900	4,500	4,500
Bullion, crude, gross weight	5,630	6,400	9,340	9,250	9,300
Au content of concentrate and bullion	3,540	4,300	5,630	7,520	7,630
Gas, natural: 3/					
Gross	51,300	52,000	66,100	67,200	67,200
Dry	30,800	31,500	34,000	35,900	35,900
Gypsum e/	375,000	375,000	375,000	375,000	375,000
Iron and steel:					
Direct reduction iron	1,090	1,120	1,600	2,010 r/	2,110 4/
Iron and steel: Metal, steel, crude	1,830	1,790	1,830	2,320 r/	2,410
Lead: Pb content of concentrate e/ 3/	250	250	250	250	50
Lime e/	12,000	12,000	12,000	12,000	12,000
Natural gas liquids:					
Propane	91,300	109,000	114,200	120,500	120,500
Butane	57,000	57,000	59,500	56,600	56,600
Natural gasoline and other	46,700	41,600	43,400	40,100	56,600
Total	195,000	258,000	263,800	265,000	265,000
Nitrogen: N content of ammonia	942	827	741	900 r/	1,900 4/
Petroleum:					
Crude 5/	2,350,000	2,960,000	3,100,000	2,990,000	2,970,000 4/
Refinery products:					
Liquefied petroleum gas	7,320	8,380	8,000	8,000	8,000
Gasoline and naphtha	136,000	129,000	141,000	146,000	146,000
Jet fuel	37,800	39,900	40,000	40,000	40,000
Kerosene	51,900	42,000	30,000	25,000	25,000
Distillate fuel oil	124,000	112,000	162,000	165,000	165,000
Residual fuel oil	184,000	162,000	172,000	171,000	171,000
Unspecified	18,000	22,501	32,000	30,000	30,000
Total	561,000	517,000	585,000	585,000	585,000
Silver: Ag content of concentrate and bullion 3/	16,200	16,400	17,800	18,000	16,900
Sulfur: Byproduct, hydrocarbons	1,440	2,000	2,400	2,400	2,400
Urea	568	598	644	650	650
Zinc: Zn content of concentrate 3/	2,470	2,480	2,480	2,450	2,450

e/ Estimated. r/Revised.

1/ Previously published and 1994 data are rounded by the U.S. Bureau of Mines to three significant digits; may not add to totals shown.

2/ Table includes data available through Aug. 15, 1995.

3/ Mahd Adh Dhahab final products include a bulk flotation concentrate containing gold, silver, copper, lead, and zinc and a crude bullion containing gold, silver, and copper. Ore containing gold and silver from the Sukhaybirat surface mine included since 1991.

4/ Reported figure.

5/ Includes Saudi Arabian one-half share of production in the Kuwait-Saudi Arabia Divided Zone.

TABLE 2  
SAUDI ARABIA: STRUCTURE OF THE MINERAL INDUSTRY FOR 1994

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of facilities	Annual capacity
Cement		Saudi Consolidated Cement Co. (Government, majority shareholder)	Ayn Dar, 75 kilometers southwest of Dammam	1,300
Do.		do.	Al-Hufuf	1,800
Do.		Saudi-Kuwait Cement Co. (Saudi Arabia, 55%; Kuwait, 45%)	Al-Kharsaniyah, 64 kilometers northwest of Al-Jubayl	
Do.		Arabian Cement Co. Ltd. (Government, 100%)	Rabigh	1,500
Do.		Southern Province Cement Co. (Government, 100%)	Suq al-Ahad, 10 kilometers northeast of Jizan	2,500
Do.		Yanbu Cement Co. (Government, 100%)	Yanbu	3,500
Do.		Yamama Cement Co. (Government, 100%)	Riyad	3,000
Do.		Qasim Cement Co. (Government, 100%)	Buraydah	1,320
Ferroalloys		Gulf Ferroalloys Co. (Sabayek) (United Gulf Industries Corp., 26%; Sabc, 15%; Demetal Aussenhandels-gesellschaft, 7%; remainder owned by Arab investors and financial institutions)	Al-Jubayl	--
<b>Fertilizer:</b>				
Urea		Al-Jubayl Fertilizer Co. (Samad)	do.	632
Amonia		(Sabic, 50%; Taiwan Fertilizer Corp., 50%)		300
Urea		National Chemical Fertilizer Co. (Ibn al-Baytar)	do.	500
Amonia		(Sabic, 50%; Safco, 50 %)		500
NPK				800
TSP				200
DAP				350
Liquid fertilizer				10
Urea		Saudi Arabian Fertilizer Co. (Safco) (Sabic, 41%; Saudi Arabian private interests, 59%)	Dammam	330
Amonia				200
Sulfuric acid				100
Melamine				20
<b>Gold:</b>				
Ore	kilograms	General Organization for Petroleum and Mineral Resources (Petromin) (Government, 100%)	Mahd Adh Dhahab, 270 kilometers northeast of Jiddah	180
Metal				5,000
Ore	kilograms	The Saudi Company for Precious Metals (Petromin, 50%; Boliden International Mining, 50%)	Sukhaybirat, 480 kilometers northwest of Riyadh	700
Metal				2,600
Natural gas	million cubic meters	Saudi Aramco (Government, 100%)	All oilfields, Eastern Province	35,000
Do.	do.	do.	Khuff Zone, Eastern Province	20,150
Do.	do.	do.	Abqaiq Gas Cap, Eastern Province	4,600
Natural gas liquids 1/	million barrels	do.	Ju'aymah, 33 kilometers northwest of Ras Tanura	145
Do.	do.	do.	Yanbu	110
Do.	do.	do.	Shedgum, 150 kilometers southwest of Dammam	55
			Uthmaniya, 30 kilometers west of Al Hufuf	110
			Berri, 15 kilometers north of Al-Jubayl	20
<b>Petrochemicals</b>				
Ethylene		Saudi Petrochemical Co. (Sadaf)	Al-Jubayl	760
Ethylene dichloride		(Sabic, 50%; Pecten Saudi Arabia, 50%)		560
Styrene				360
Industrial ethanol				300
Caustic soda				450
Methanol		National Methanol Co. (Ibn Sina) (Sabic, 50%; Celanese Arabian, 25%; Texas Eastern Arabian, 25%)	do.	770
Do.		Saudi Methanol Co. (Al-Razi) (Sabic, 50%; Japan Saudi Arabia Methanol Co., 50%)	do.	1,200
Ethylene		Arabian Petrochemical Co.	do.	650
Polystyrene		(Sabic, 100%)		100
Methyl-tertiary-butyl-ether		Saudi European Petrochemical Co. (Ibn Zahr) (Sabic, 70%; Ecofuel, 10%; Neste Oy, 10%; Arab Petroleum Investments Corp., 10%)	do.	1,200
Polypropylene		do.	do.	200
Petroleum, crude	million barrels	Saudi Aramco (Government, 100%)	Eastern Province and offshore	3,000

See footnotes at end of table.

TABLE 2--Continued  
SAUDI ARABIA: STRUCTURE OF THE MINERAL INDUSTRY FOR 1994

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of facilities	Annual capacity
Petroleum, crude--continued:	million barrels	Arabian Oil Co., (AOC) (Japan Petroleum Trading Co., 80%; Kuwait, 10%; Saudi Arabia, 10%)	Khafji Al Hout	90 10
Do.	do.	Saudi Arabian Texaco (former Getty Oil Co.) (Neutral Zone production shared by Saudi Arabia and Kuwait)	Wafra South Fawaris South Umm Gudair	(2/) (2/) (2/)
Petroleum products	million barrels	Saudi Aramco (Government, 100%)	Ras Tanura	95
Do	do.	Rabigh Petroleum Refining Co. (Saudi Aramco, 50%; Petrola, 50%)	Rabigh	115
Do.	do.	Jubail Petroleum Refining Co. (Saudi Aramco, 50%; Shell, 50%)	Al-Jubayl	115
Do.	do.	Yanbu Petroleum Refining Co. (Saudi Aramco, 50%; Mobil, 50%)	Yanbu	110
Do.	do.	Saudi Aramco (Government, 100%)	do.	60
Do.	do.	Jiddah Oil Refinery Co. (Saudi Aramco) (Government, 100%)	Jiddah	40
Do.	do.	Riyadh Oil Refinery Co. (Saudi Aramco) (Government, 100%)	Riyadh	50
Do.	do.	Arabian Oil Co. (Japan Petroleum Trading Co., 80%; Kuwait, 10%; Saudi Arabia, 10%)	Al-Khafji	10
Steel		Saudi Iron and Steel Co. (Hadeed) (Sabic, 95%)	Al-Jubayl	2,300
Do.		Jiddah Steel Rolling Mill (Sulb) (Government, 100%)	Jiddah	NA
Titanium dioxide		The National Titanium Dioxide Co. (Cristal) (Shairco for Trading and Contracting, 25%; National Industrialization Co., 24%; Gulf Investment Corp., 24%; Kerr-McGee Chemical Corp., 25%; private individuals, 2%)	Yanbu	52

NA Not available.

1/ Natural gas is pumped through the Master Gas System to three processing plants at Berri, Shedgum, and Uthmaniya. Part of their NGL output is

2/ These fields were severely damaged during the Gulf crises and even partial production was not resumed at Wafra until Mar. 1992, while production from the South Fawaris and South Umm Gudair Fields resumed by yearend. Combined production from all three fields did not exceed 50,000 bbl/d by the close of 1992 and attained combined productions levels of 200,000 bbl/d in 1994.