

# 2008 Minerals Yearbook

**SYRIA** 

### THE MINERAL INDUSTRY OF SYRIA

### By Mowafa Taib

Oil and phosphate rock were Syria's significant contributions to the world supply of minerals in 2008. Syria, which produced about 2% of the world's phosphate rock output, was the world's eighth ranked phosphate rock producing country (Jasinski, 2009). The Government-owned oil and gas companies, along with several small oil and gas companies from Canada, China, and the United Kingdom (in the absence of U.S. companies because of the sanctions that were imposed on Syria by the U.S. Government in 2004) carried out substantial exploration, development, and production activities in 2008. There was significant activity in the cement industry, which included the entry of private investors (Al Badia Cement JSC) and foreign investors (Lafarge Cement Syria S.A.) to the cement market for the first time. Other minerals and mineral-related materials that were produced in Syria included asphalt, fertilizer, gypsum, marble, rock salt, silica sand, steel, and volcanic tuff. Except for crude oil and phosphate rock, which were both exported and consumed locally, most of the production of other minerals was solely for domestic use.

#### Minerals in the National Economy

In 2008, Syria's gross domestic product (GDP) grew at a rate of 5.2% compared with a rate of 4.2% in 2007. The 2008 level of oil production was the same as in 2007 [380,000 barrels per day (bbl/d)]. A preliminary estimate of the revenue of the hydrocarbon sector in 2008 was 5.2% of the GDP, which was slightly more than that of 2007 (4.9% of the GDP) but much less than the revenue in 2004, which was 11.2% of the GDP. Exports of crude oil in 2008 were estimated to be about 100,000 bbl/d, which was significantly less than the 153,200 bbl/d exported in 2007. The reduction in crude oil exports was attributable to the increase in local consumption. About 3 million metric tons (Mt) of washed and unwashed phosphate rock was sold mainly to foreign fertilizer manufacturers (International Monetary Fund, 2009a, p. 39; 2009b, p. 10; 2009c, p. 5).

#### **Production**

In 2008, production of gypsum increased by 28% compared with that of 2008; natural gas plant liquids, by 21%; and volcanic tuff, by 13%. Marble block production decreased by 43%; phosphate rock, by 12%; and asphalt, by 11% compared with that of 2007 (table 1).

#### **Structure of the Mineral Industry**

Most mining activity was carried out by the Ministry of Petroleum and Mineral Resources (MoPMR) through state-owned companies and organizations. These included the General Company for Marble and Asphalt, which produced asphalt, gypsum, marble blocks, and volcanic tuff; the General Company for Phosphate and Mines, which produced phosphate

rock, silica sand, and rock salt; the Syrian Petroleum Co., which produced crude oil; and the Syrian Gas Co., which was responsible for the natural gas subsector. The Ministry of Industry was responsible for cement production, which continued to be dominated by the state-owned company General Organization for Cement and Building Materials. Several private and international investors were also able to acquire permits for cement production in areas designated by the General Establishment for Geology and Mineral Resources as locations that had sufficient primary material for cement production. Fertilizers were produced by the General Fertilizers Co., which was one of the state-owned enterprises of the Ministry of Industry's General Organization for Chemical Industries. State-owned General Company for Iron and Steel Products, which was also known by its Arabic name Hadeed Hama, produced rolled steel and billets. Private beneficiated steel producers included Arab Steel Co., Joudco Steel Ltd., Middle East Steel Industries, and Syria Metal Industries.

#### **Commodity Review**

#### Metals

**Iron and Steel.**—Imports of steel products had been increasing in recent years to meet the needs of commercial, industrial, and residential construction projects in the country. Syria's steel imports in 2007 (the latest year for which data were available) totaled 2.8 million metric tons per year (Mt/yr) compared with 1.8 Mt/yr in 2003, which was about a 15% annual increase from 2003 to 2007. In 2008, Hadeed Hama produced 54,363 metric tons (t) of crude steel from its scrap melting plant compared with 68,502 t in 2007. The company used its crude steel output and imported iron ore to produce 63,040 t of steel bars in 2008 compared with 70,008 t in 2007. In June, Hadeed Hama awarded Apollo Metalex Pvt. Ltd. of India a turnkey contract worth \$34 million to upgrade its scrap melting plant; the contract was expected to increase the plant's capacity to produce billets to 300,000 metric tons per year (t/yr) from 70,000 t/yr by 2010 (Arab Steel, 2008; Syrian Enterprise Business Center, 2008).

Joudco Steel, which was a private steel production company whose headquarters were located in Latakia, produced 133,000 t of reinforcement bars in 2008, of which 15,740 t was exported. The company was building a new 512,000-t/yr-capacity plant in the Adra Industrial City northeast of Damascus for the production of hot-rolled billets (Joudco Steel Ltd., 2007; Syrian Enterprise Business, Center, 2008).

In 2007, Syria Metal Industries (a subsidiary of Hamsho International Group Ltd.), which was headquartered in Latakia, placed an order with SMS Meer p.l.c. of Italy to supply a 300,000-t/yr-capacity wire rod and bar mill, which would be used in producing low- and medium-carbon-content rebar. The mill began production at yearend 2007. Syria Metal

Industries planned to build a new billets plant in Adra Industrial City, which would have a nominal capacity of 630,000 t/yr, and expected Daniel Centro Metal Co. of Italy to supply the electric arc furnace, the ladle furnace, and a four-strand billet continuous-casting machine (Steel News, 2007; Syrian Enterprise Business Center, 2008; Hamsho International Group Ltd., 2009).

#### **Industrial Minerals**

Cement.—Demand for cement had been exceeding production for many years. In 2008, Syria's cement consumption was estimated to be more than 7.3 Mt/yr whereas production of the six state-owned plants totaled 5.3 Mt/yr. The country resolved its difference between consumption and production by importing 1.7 Mt/yr of cement from Lebanon and Turkey. Thus, the Government considered it crucial to increase local cement production levels to satisfy current and future demand caused by the construction boom, which resulted from expanded commercial, industrial, and residential projects (Lafarge Cement Syria S.A., 2009).

In 2008, Lafarge S.A. entered the Syrian cement market through its acquisition of Orascom Industries S.A. of Egypt, which was a major shareholder (80% interest) along with Mas Economic Group of Syria (20% interest) in the joint venture Syrian Cement Co. Syrian Cement, which was also known as Lafarge Cement Syria, was building a new plant in Manbej, which is located 160 kilometers (km) northeast of Aleppo and 25 km south of the border with Turkey. In July 2008, Banque Audi, which was a private bank operating in Syria, offered \$380 million as a bridge loan to finance the plant, which would have a production capacity of 3 Mt/yr and would begin production in the first quarter of 2010 (Orascom Construction Industries, 2007; Thomson Reuters, 2008).

Al-Badia Cement Co. JSC, which was one of the first private companies to secure a license to build a cement plant, signed a memorandum of understanding (MOU) with CBMI Construction Co. Ltd. of China to construct a new 3.2-Mt/yr-capacity plant at Abu As-Shamat, which was located east of Damascus. Production at the plant was expected to commence in late 2010. Al-Badia made 15% of its shares available to individual investors (AMEinfo.com, 2008a).

**Phosphate Rock.**—Syria's phosphate rock industry, which employed more than 2,000 people, produced 3.2 Mt in 2008 compared with 3.7 Mt in 2007, or 12% less than in 2007 and 15% less than the General Company for Phosphate and Mines' production target for 2008. Several reasons were given by the company for the significant decrease in production, including insufficient mining equipment and technical difficulties, which caused interruption in the washing process, and the "intentional 25% reduction in exports during the first half of 2008 to force a higher price for rock phosphate," according to an official report. The price of phosphate rock from Syria reached \$70 per metric ton in early 2008 compared with \$30 per metric ton in 2006. Of the phosphate rock produced in 2007, about 650,000 t was used by General Fertilizers Co. for manufacturing phosphate fertilizer and about 900,000 t was exported to Lebanon; the remainder was exported to 12 other countries. The decrease in phosphate

rock production was considered a setback for recovery efforts by the mining industry and to the Government policy of using phosphate reserves to offset the loss of revenue caused by the expected reduction in hydrocarbon exports (Ministry of Petroleum and Mineral Resources, 2009).

The Governments of India and Syria signed an MOU in 2008 to establish a joint venture to explore and mine Syria's rock phosphate deposits to meet India's needs for phosphate fertilizers in general, and diammonium phosphate (DAP) in particular (Sharma, 2008).

Stone, Crushed (Volcanic Tuff).—Volcanic tuff occurs throughout eastern Syria, including in the region between Abu Ashamat and Sababiar, which is located south of the Baghdad-Damascus highway. Reserves were estimated to be 600 Mt, which was sufficient to support production of 10 Mt/yr of pozzolan cement for 60 years. The production cost of pozzolan cement in Syria was estimated to be 25% lower than that of portland cement (Buildex, 2009). The General Company for Marble and Asphalt produced 901,226 t of volcanic tuff in 2008 compared with 810,000 t in 2007 (Ministry of Petroleum and Mineral Resources, 2009).

#### Mineral Fuels

Natural Gas.—In 2008, production commenced at the Dubayat oilfield at a rate of 44,000 cubic meters per day. First gas from the Arak gasfield started in February 29, 2008, at a rate of 45,000 cubic meters per day. Production from the Abu Rabah gasfield, which is located in the Homs Governorate, started in late 2008. It was expected to produce 1.5 to 2.0 million cubic meters per day of gas and 1,200 to 1,400 bbl/d of condensates.

Syria's natural gas production in 2008 amounted to 7.6 billion cubic meters. Syrian Gas produced about 5.6 billion cubic meters of dry and associated gas and international companies working in Syria produced close to 2.0 billion cubic meters. Sixty-five percent of the gas produced was put into the country's gas network for local consumption.

The construction of Phase 1 of the Arab Gas Pipeline (AGP) by Stroytransgaz PJSC of Russia for Syrian Gas was completed in 2008. It comprised a 320-km-long pipeline that runs from the Jordanian-Syrian border to the Al Rayan gas collection station in Homs. Construction of Phase 2 of the AGP was also awarded to Stroytransgaz by Syrian Gas to construct a 62-km-long pipeline that would extend from the Syrian city of Aleppo to the town of Kilis on the Syrian-Turkish border, thus allowing for AGP to be connected with the planned network of gas pipelines (Nabucco) that would transmit gas from Azerbaijan, Iran, and Iraq to Austria, Bulgaria, Hungary, and Romania and through Turkey. The cost of the project was \$60 million, and it was expected to be completed in 18 months (Organization of Arab Petroleum Exporting Countries, 2008b, p. 13; U.S. Energy Information Administration, 2008).

The Governments of Iran and Syria signed a 25-year agreement in January 2008 by which Iran would supply natural gas during the summer months to Syria. The gas was planned to flow through the Tabriz-Ezrurum gas pipeline, which would be connected with AGP from the south. The flow of Iranian gas

into Syria was set to begin in 2009 (Aneja, 2007; U.S. Energy Information Administration, 2008).

In March 2008, Petrofac Ltd. of the United Kingdom was awarded a \$454 million lump-sum contract by Hayan Petroleum Co. to build a gas treatment plant on the Jihar oilfield in the Hayan Block. The Hayan oilfield is located near the city of Palmyra in the central part of Syria. Hayan Petroleum Co. was a 50-50 joint venture between Syrian Petroleum and INA Industrija Nafte d.d. Naftaplin of Croatia (Petrofac Ltd., 2008b).

In April 2008, Petrofac was chosen by Petro Canada Palmyra to build a natural gas treatment plant for the Ebla project at a cost of \$477 million. The Ebla project, which was operated by Petro Canada, was a production-sharing agreement to develop and produce natural gas from the Ash Shaer and the Cherrife oilfields. The first gas was expected in 2010, and the daily production capacity of the project was expected to be 2,492 t (88 million cubic feet) of salable gas and 150 t of liquefied petroleum gas (Petrofac Ltd., 2008a).

**Petroleum.**—Crude oil production in Syria averaged 380,000 bbl/d in 2008, which was the same level as in 2007. It included 196,000 bbl/d (206,000 bbl/d, including condensates) by Syrian Petroleum and 184,000 bbl/d by the international companies working in Syria.

In September 2008, the MoPMR and Syrian Petroleum signed a 10-year extension of their production service contract with Syria Shell Petroleum Development B.V. Total S.A. also signed three agreements that were intended to strengthen Total's long-term presence in the country. The first agreement renewed the Deir Azzor oil license, which was wholly owned by Total and jointly operated by Total and Syrian Petroleum as the Deir Ezzor Petroleum Co. The second agreement was about enhancing the output from the Tabiyeh gas and condensates field. The third agreement was an MOU between Total, Syrian Petroleum, and Syrian Gas to set up a strategic partnership for the development of joint projects among the three companies (Organization of Arab Petroleum Exporting Countries, 2008a, p. 12).

Gulfsands Petroleum p.l.c. of the United Kingdom, which announced an oil and gas discovery in 2007 at Block 26 of the Khurbet East field located northeast of Syria, started oil production in 2008 with an average of 10,500 bbl/d from five wells that were estimated to have 2 million barrels (Mbbl) of cumulative production. Gulfsands, which was the operator and a 50-50 equity shareholder with Syrian Petroleum, conducted an open-hole-stem test at the Yousefieh-1 well and an appraisal for the Yousefieh-2 well in 2008 (Gulfsands Petroleum p.l.c., 2009).

China Petroleum and Chemical Corp. (Sinopec), which was a state-owned oil company of China, bought Tanganika Oil Co. of Canada for \$2 billion in September 2008. Tanganika Oil had been developing with Syrian Petroleum the Oudeh, the Sheik Mansour, and the Tishrine concessions (which are located in northeastern Syria) since 2003. The concessions were reported to hold 180 Mbbl of oil reserves and to have produced 12,800 bbl/d in 2008. China National Petroleum Corp. (another state-owned company of China) held a stake in Al-Furat Petroleum Co., which produced 170,000 bbl/d in 2008 from its 36 oilfields (AMEinfo.com, 2008b).

#### Outlook

The Government has been trying to halt the decline of oil production by developing its hydrocarbon resources and entering into production-sharing agreements with companies from Canada, China, and Russia. In the next 5 years, Syria is expected to be connected with neighboring countries through a network of gas pipelines that will allow the flow of natural gas from Egypt to Turkey through Jordan and Syria. Thus, the country expects to import gas from Azerbaijan and Iran through Turkey after the connecting pipelines are completed in 2010. Production of fertilizer and phosphate rock is expected to increase significantly following the establishment of joint ventures between the Government-owned phosphate mining company and international fertilizer companies. Such companies could be more capable of applying advanced mining technologies and investing in the logistics and transportation of phosphate rock from the production mines to the Port of Tartus for export. The entry of private local and international producers would likely increase the country's production capacity of cement and steel. The Government invited international companies to invest in its reserves of asphalt, bentonite, volcanic tuff (pozzolan), and zeolite.

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## $\label{eq:table1} \textbf{TABLE 1} \\ \textbf{SYRIA: PRODUCTION OF MINERAL COMMODITIES}^1$

(Metric tons unless otherwise specified)

Commodity	2004	2005	2006	2007	2008
METALS					
Steel: <sup>e</sup>					
Crude	70,000	70,000	70,000	70,000	70,000 <sup>2</sup>
Semimanufactured	800,000 <sup>2</sup>	800,000	800,000	80,000	100,000
INDUSTRIAL MINERALS					
Asphalt	NA	NA	NA	56.402	50,011
Cement, hydraulic thousand metric tons	4,757	4,700	4,804 <sup>r</sup>	5,104 <sup>r</sup>	5,336
Gypsum	431,561	467,000	443,800	447,900	572,886
Nitrogen:					
N content of ammonia <sup>e</sup>	115,000	120,000	120,000	120,000	120,000
N content of urea <sup>e</sup>	91,000	91,000	91,000	91,000	91,000
Phosphate:					
Phosphate rock, mine output:					
Gross weight thousand metric tons	2,883	3,500	3,664	3,678	3,221
$P_2O_5$ content do.	890	1,080	1,130	1,135	966
P <sub>2</sub> O <sub>5</sub> equivalent:					
Phosphatic fertilizers <sup>e</sup>	127,000	130,000	130,000	130,000	120,000
Phosphoric acid <sup>e</sup>	97,000	100,000	100,000	100,000	100,000
Salt, rock	141,445	110,000	133,000	81,000	88,600
Sand, industrial thousand metric tons	1,300	1,300	1,300	1,702	1,621
Stone:	,	<b>,</b>	,	,	,-
Dolomite, refractory grade <sup>e</sup> do.	5,000	5,000	5,000	5,000	5,000
Gravel and crushed rock <sup>e</sup> do.	6,000	6,000	6,000	6,000	6,000
Marble materials do.	NA	NA	NA	780	885
Marble blocks thousand square meters	340	340	340	350	198
Volcanic tuff thousand metric tons	650	650	650	810 <sup>r</sup>	901
Sulfur:	030	050	030	010	701
Byproduct of petroleum and natural gas	14,996	36,074	43,000	40,650	40,491
Sulfuric acid:	14,770	30,074	45,000	40,030	70,771
Gross weight <sup>e</sup>	362,000	360,000	360,000	360,000	360,000
S content <sup>e</sup>	118,000	117,000 <sup>e</sup>	117,000	117,000	117,000
MINERAL FUELS AND RELATED MATERIALS	110,000	117,000	117,000	117,000	117,000
Gas, natural:					
Gross <sup>e</sup> million cubic meters	9,700	8,300	8,600	7,825 r, 2	7,574 <sup>2</sup>
Dry do.	7,110	6,090	6,290	6,020	6,420
			· · · · · · · · · · · · · · · · · · ·	,	4,415 <sup>2</sup>
Natural gas plant liquids <sup>e</sup> thousand 42-gallon barrels	3,650	3,650	3,650	3,650	4,415
Petroleum:	160 620 [	157.215.	146.000 r	120.050 [	120 001
Crude do.	168,630 <sup>r</sup>	157,315 <sup>r</sup>	146,000	138,850 <sup>r</sup>	139,081
Refinery products:	2.210	2.005	2 52 4	1.600	1.600
Liquefied petroleum gas do.	3,318	3,805	3,724	1,680	1,680
Gasoline do.	11,413	12,958	12,921	12,921	12,958
Naphtha do.	7,028	7,456	7,456	7,100	7,100
Kerosene and jet fuel do.	3,139	3,248	3,248	3,248	3,250
Distillate fuel oil do.	30,758	27,341	29,348	29,346	29,346
Residual fuel oil do.	30,210	30,942	32,887	32,887	32,887
Asphalt <sup>e</sup> do.	2,500	2,500	2,500	2,500	2,500
Other <sup>e</sup> do.	900	900	900	900	900
Total do.	89,266	89,150	92,984	90,582	90,621

<sup>&</sup>lt;sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. <sup>r</sup>Revised. do. Ditto. NA Not available.

<sup>&</sup>lt;sup>1</sup>Table includes data available through March 31, 2010.

<sup>&</sup>lt;sup>2</sup>Reported figure.

### $\label{eq:table 2} {\sf SYRIA: STRUCTURE\ OF\ THE\ MINERAL\ INDUSTRY\ IN\ 2008}$

(Thousand metric tons unless otherwise specified)

Asphalt Cement  Do. Do. Do. Do. Do. Do. Do. Do. Do. Do		General Company for Marble and Asphalt (Government, 100%) General Organization for Cement and Building Materials (Government, 100%) Tartous Company for Cement and Building Materials	Al Bishri, Kafriya Damascus	100 5,200
Do. Do. Do. Do. Do. Do. Do. Do.		(Government, 100%)	Damascus	5,200
Do. Do. Do. Do. Do.		Tartous Company for Cement and Building Materials <sup>1</sup>		
Do. Do. Do. Do.			Tartous	1,802
Do. Do. Do.		Al-Shahaba Cement and Building Materials <sup>1</sup>	Aleppo	923
Do. Do.		Arabian Cement Co. for Cement <sup>1</sup>	do.	898
Do.		Adra Co. for Cement and Building Materials <sup>1</sup>	Adra	845
		Syrian Co. for Manufacturing Cement <sup>1</sup>	Hama	432
Do.		Rastan Co. for Cement and Building Materials <sup>1</sup>	Rastan	131
		Military Housing Cement Group (Government, 100%)	Musselemieh	336
Gypsum		General Company for Marble and Asphalt (Government, 100%)	Ar Reqqah, Jayrud, Lattakia	573
Natural gas mi	llion cubic meters	Syrian Gas Co. (Government, 100%)	Processing plant at Deir ez-Zor	4,750
Do.	do.	A-Furat Petroleum Co. (Syrian Petroleum Co., 50%; Petro-Canada, 19%; Royal Dutch/Shell Group p.l.c., 31%)	Processing plant at Omar	2,400
Do.	do.	Syrian Gas Co. (Government, 100%)	Abu Rabah, Al -Fayed north, Qumqum, Bilas, Al-Rasm, and Abu al-dhuhr	1,825
Do.	do.	do.	Arak	13,770
Do.	do.	do.	Dubayat	14,872
Do.	do.	Syrian Petroleum Co. (Government, 100%)	Processing plant at Palmyra	2,200
Do.	do.	do.	Processing plant at Jebissa	1,060
Do.	do.	do.	Processing plant at Suwaidiyah	240
Nitrogen:				
Ammonia <sup>2</sup>		General Fertilizers Co. (Government, 100%)	Homs	256
Urea		do.	do.	137
Fertilizers		do.	do.	109
Marble materials		General Company for Marble and Asphalt (Government, 100%)	Zobar, Lattakia, and Sabboura	90
Petroleum: Crude th	nousand 42-gallon barrels	Al-Furat Petroleum Co. ( joint venture of Syrian Petroleum Co., Syria Shell Petroleum Development B.V., Himalaya Energy Services BV)	Al Izba, Al Ward, Galban, Jarnof/Saban, Maleh/Azraq, Omar/Omar North, Sijan, Tanak, and Thayyam	43,800
Do.	do.	Syrian Petroleum Co. (Government, 100%)	Jebissa and Swaidiyah-Karatchok	73,000
Do.	do.	Deir Ezzor Petroleum Co. (Syrian Petroleum Co., 50%, and Total S.A., 50%)	al-Mazraa, Attala North, and Jafra, Qahar	10,950
Do.	do.	Sino Syrian AL Kawkab Oil Co. [Syrian Petroleum Co., 50%, and China Petroleum and Chemical Corp. (Sinopec), 50%]	Oudeh	3,650
Do.		Dublin International [Syrian Petroleum Co., 50%, and Dublin International (Syria) Ltd., 50%]	do.	7,300
Refined	do.	Banias Refinery Co. (Government, 100%)	Banias	59,090
Do.	do.	Homs Refinery Co. (Government, 100%)	Homs	58,578
Phosphate:				
Phosphate rock		General Company for Phosphate and Mines (Government, 100%)	Alsharqiya (A and B Mines)	3,050
 Do.		do.	Kneifis	800
Phosphatic fertili	zers	General Fertilizers Co. (Government, 100%)	Homs	450
Phosphoric acid		do.	do.	165
Salt		General Company for Phosphate and Mines (Government, 100%)	Deir al-Zour	72
Steel: Billet		General Company for Iron and Steel Products (Hadeed Hama)	Hama	60
D 11 1		(Government, 100%)	T	200
Rolled		Merri Family	Tartous	300
Do.		Arab Steel Co.	Lattakia	250
Do.		Joudco Steel Ltd.	do.	150
Do.		Middle East Steel Industries General Company for Iron and Steel Products	Yabroud Hama	140 78

See footnotes at the end of the table.

### $\label{thm:continued} \textsc{TABLE 2--Continued} \\ \textsc{Syria: Structure of the mineral industry in 2008} \\$

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

				Annual
Com	nmodity	Major operating companies and major equity owners	Location of main facilities	capacity
Sulfur	metric tons	Homs Refinery Co.	Homs	14,600
Do.	do.	do.	Processing plant at Suwaidiyah	7,410
Do.	do.	Syrian Petroleum Co. (Government, 100%)	Processing plant at Jebissa	7,300
Sulfuric acid		General Fertilizers Co. (Government, 100%)	Homs	560
Volcanic tuff		General Company for Marble and Asphalt (Government, 100%)	Tal Shihan	100

Do., do. Ditto.

<sup>&</sup>lt;sup>1</sup>Subsidiary of the General Organization of Cement and Building Materials, which is 100% Government owned.

<sup>&</sup>lt;sup>2</sup>Expressed in nitrogen equivalent.