



2005 Minerals Yearbook

ALGERIA

THE MINERAL INDUSTRY OF ALGERIA

By Philip M. Mobbs

The continued increase of international crude oil and natural gas prices resulted in a significant increase in the value of Algerian exports. In 2005, Algerian exports of goods and services were valued at \$48.8 billion,¹ of which hydrocarbons accounted for about \$45.6 billion, compared with 2004, when exports of goods and services were about \$34.1 billion, of which hydrocarbon exports accounted for about \$31.6 billion. In addition to hydrocarbons, which accounted for 76% of Government income and more than 30% of the nation's gross domestic product (GDP), modest volumes of minerals and mineral-based commodities, such as ammonia, clays, cement, gold, helium, iron ore, methanol, phosphate rock, salt, steel, and zinc, also were produced in Algeria. Nonfuel mineral operations fell under law No. 01-10 of July 3, 2001 (The Mining Law), and Decree No. 02-65 of June 2, 2002. In 2005, law No. 05-07 of April 28 (the new hydrocarbon law) was promulgated (Energie & Mines, 2005; Banque d'Algeria, 2006§²; Ministère de l'Énergie et des Mines, 2006b§).

The International Monetary Fund (2006§) estimated that the Algerian GDP based on purchasing power parity was about \$237.7 billion in 2005 and the GDP per capita based on purchasing power parity was \$7,189. With an area of about 2.4 million square kilometers, this northern African nation was the second largest country in Africa. Most of the population of Algeria, which was estimated to be about 32.8 million in 2005, lived in the northern coastal region of the country. Most of the rest of the country was covered by the Sahara desert (U.S. Central Intelligence Agency, 2005§; World Bank Group, 2006§).

Trade

Most Algerian exports were shipped through the country's eight main seaports or by pipeline. In 2005, total hydrocarbon exports included crude oil and condensate, which were valued at about \$25.6 billion compared with \$17.4 billion in 2004; natural gas (by pipeline), about \$7.3 billion; liquefied natural gas (LNG), \$5.4 billion; refined petroleum products, about \$4 billion; and liquefied petroleum gas, \$3.3 billion. The value of crude oil exports increased by 47% from 2004 to 2005; by volume, the increase was 7% to about 467 million barrels exported in 2005 compared with about 435 million barrels in 2004. Other mineral commodity exports included phosphate rock, \$20.8 million; methanol, \$20.3 million; and salt, about \$1.2 million (Ministère de l'Énergie et des Mines, 2006b§).

¹Where necessary, currency values have been converted from Algerian dinars (DA) to U.S. dollars (US\$) at the average rate of DA73.44=US\$1.00 for 2005 and DA74.15=US\$1.00 for 2004.

²References that include a section mark (§) are found in the Internet References Cited section.

Commodity Review

Metals

Investors were invited to bid on exploration permits by the Ministère de l'Énergie et des Mines (Ministry of Energy and Mines). Permits offered in 2005 included those for the Gara Djebilet and the Mechri Abdelaziz iron ore and the Achab Tiri lead-zinc deposits.

Aluminum.—Dubai Aluminium Co. Ltd. of the United Arab Emirates proposed to build a 600,000-metric-ton-per-year (t/yr)-capacity aluminum products plant in the Bellara Industrial Park in Jijel. Most of the production from the proposed plant would be exported (Ansa Mediterraneo, 2005§).

Gold.—Enterprise d'Exploitation des Mines d'Or s.p.a. mined 65,718 metric tons (t) of ore with an average grade of 11.35 grams per metric ton gold from the Amesmessa, the Tirek, and the Zita area deposits in southern Algeria. Tirek was located about 400 kilometers (km) southwest of Tamanrasset; Amesmessa, 60 km south of Tirek; and the Zita area, between Amesmessa and Tirek. In 2005, a feasibility study for a 300,000-t/yr processing plant at Amesmessa was completed (GMA Resources Plc, 2005, 2006).

In 2005, Sahara Resources Inc., which was a private Canadian company, acquired the four-concession Timgaouine gold property, which is located about 170 km southwest of Tamanrasset. In September, Landmark Minerals Inc., which was a publicly owned Canadian company, announced that it had signed a letter of intent to acquire 70% interest in the Timgaouine property from Sahara Resources.

Lead, Silver, and Zinc.—The Ministère des Ressources en Eau [Ministry of Water Resources] proposed to increase the volume of water pumped from the aquifer at Kherzet Sidi Youcef for local agriculture operations. A side effect of the expected water table drawdown would be the reduction of water influx into the lower levels of the Chabet El Hamra zinc mine.

The joint venture of Maghreb Minerals PLC of the United Kingdom (85% interest) and Gold and Industrial Minerals [GOLDIM] [which was a subsidiary of the Government-owned Office National de la Recherche Géologique et Minière (ORGM) (National Office of Geological and Mining Research) (15%)] acquired the rights to the Tan Chaffao polymetallic project and formed the Tan Chaffao Mining Co. S.A.R.L. In November, Tan Chaffao Mining initiated exploration of the Tan Chaffao deposit, which is located about 250 km northwest of Tamanrasset.

In 2005, the Government again requested bids for rights to develop the zinc resources at Oued Amizour. The development project had been tendered, but not awarded, in 2002.

Mercury.—Mercury production had ended in 2004. In 2005, the Ministère de l'Énergie et des Mines reported that eight flasks of mercury were recovered during the mine site rehabilitation and plant closure operations (Ministère de l'Énergie et des Mines, 2006b§).

Industrial Minerals

The Ministère de l'Énergie et des Mines invited bids from investors for development or exploration permits on 77 deposits, which included aggregate, clay, construction sand, diatomaceous earth, dolomite, dimension stone, gypsum, limestone, quartzite and silica sand, salt, and volcanic material. The Enterprise Nationale des Produits Miniers Non-Ferreux et des Substances Utiles, s.p.a. [National Company for Non-ferrous Products] requested bids for the development of bentonite and kaolin deposits and ORGM requested bids for the right to develop a marble deposit.

Cement.—During the construction of the second cement line at its M'Sila facility, Algerian Cement Co. (a subsidiary of Orascom Construction Industries of Egypt) increased the line's capacity to 2.5 million metric tons per year (Mt/yr) from the initial design of 2.2 Mt/yr. Algerian Cement also increased the capacity of its first cement line, which was opened in 2004, to 2.5 Mt/yr from 2.2 Mt/yr. In 2005, Orascom formed Ciment Blanc d'Algerie to manage the construction and eventual operation of a 550,000-t/yr-capacity white cement plant that was to be located 60 km east of Oran. Initial production was expected in 2007. Domestic white cement demand was less than 300,000 t/yr; excess production would be exported (Orascom Construction Industries, 2006, p. 13, 17).

In 2005, the Government offered 35% interest in the state-owned cement plants to investors. Pharaon Commercial Investment Group Ltd. of Saudi Arabia acquired 35% interest in the Beni Saf plant; other international companies entered into negotiations with the Government for interest in several other cement plants.

Mineral Fuels

The new hydrocarbon law changed the procedures required to acquire natural gas and oil exploration and development concessions in Algeria. A tax and royalty system replaced the negotiated production-sharing agreements that companies formerly had signed. The new system included sliding-scale royalty payments that were to be paid monthly; area (land) taxes and taxes on profits, to be paid annually; and an oil income tax, to be paid monthly. The new system also included taxes on flared natural gas and drinking water; a tax on the use, transfer, or assignment of greenhouse gas emission credits; and a 1% tax on the assignment of exploitation or research contract rights. Société Nationale pour la Recherche, la Production, le Transport, la Transformation, et la Commercialisation des Hydrocarbures s.p.a. (Sonatrach), which was the Government organization formerly responsible for the hydrocarbon sector, retained the option to acquire a 20% to 30% equity stake in each hydrocarbon project compared with the 50% interest in production-sharing ventures that it formerly was eligible to acquire. For new exploration and development contracts, Sonatrach was tasked to act as a commercial organization. The Agence Nationale pour la Valorisation des Ressources en Hydrocarbures [National Agency for the Development of Hydrocarbon Resources] was formed to negotiate, award, and monitor hydrocarbon exploration and development contracts.

The Autorité de Régulation des Hydrocarbures [Hydrocarbon Regulatory Authority] was formed to regulate environmental, health, and safety issues and pipeline operations.

Natural Gas.—An explosion and the subsequent fire that took place on January 19, 2004, had damaged three LNG trains and destroyed another three trains at the Sonatrach LNG facility at Skikda. In mid-2005, the third damaged 1-billion-cubic-meter-per-year-capacity LNG train at Skikda was brought back online. Sonatrach awarded a construction contract for a planned 4.5-billion-cubic-meter-per-year-capacity LNG train that was to replace the destroyed LNG trains. Initial production from the new LNG facility was expected to begin in 2009 (Middle East Economic Digest, 2006a).

Sonatrach continued negotiations with Spanish companies Gas Natural Group and Repsol YPF on an agreement to build a 4-billion-cubic-meter-per-year-capacity LNG train at Arzew as part of the Gassi Touil Integrated Gas Project. Sonatrach also signed a memorandum of understanding with Statoil ASA of Norway for the possible development of a second integrated gas project that would include an LNG plant (Rigzone.com, 2006§).

In late 2005, Sonatrach evaluated technical bids for the development of the hydrocarbon resources in the Tinhert basin. The proposed project would include a 36,000-barrel-per-day-capacity gas-to-liquids plant. Final commercial bids were scheduled to be submitted and evaluated in June 2006 (Middle East Economic Digest, 2005).

The locus of the Algerian natural gas pipeline system was the Hassi R'Mel gasfield. Natural gas from other fields was gathered at Hassi R'Mel and piped to liquefaction facilities at Arzew and Skikda, to Italy through the 974-km-long 27-billion-cubic-meter-per-year-capacity Trans-Mediterranean (also known as the Algeria-Italy, Enrico Mattei, or Transmed) natural gas export pipeline, or to Spain via Morocco through the 1,385-km-long Pedro Duran Farell (also known as the Maghreb-Europe) export pipeline from Algeria. The capacity of the Pedro Duran Farell pipeline was 12 billion cubic meters per year following the installation of the compression station number 3 at El Bayadh in February 2004. Eni S.p.A. and Sonatrach agreed to expand the capacity of the Transmed pipeline to 33.5 billion cubic meters per year by 2012 (Eni S.p.A., 2005; Société Nationale pour la Recherche, la Production, le Transport, la Transformation, et la Commercialisation des Hydrocarbures s.p.a., 2005, p. 16).

Proposed new natural gas pipelines included the Gasdóttó Algeria-Sardegna-Italy (Galsi), the Medgaz, and the Trans-Sahara pipelines. The 1,470-km-long 10-billion-cubic-meter-per-year-capacity Galsi pipeline would connect the Hassi R'Mel hub with Sardinia and come ashore mainland Italy near Castiglione della Pescaia and Grosseto. The Sardinia regional government would tap up to 2 billion cubic meters per year of natural gas from the Galsi line. In 2005, construction contracts were awarded for segments of the 860-km-long 8-billion-cubic-meter-per-year-capacity Medgaz pipeline that will run from Hassi R'Mel to Almeria, Spain. Initial Medgaz throughput was expected in 2009. Feasibility studies of the between \$8 billion and \$10 billion 4,300-km-long Trans-Sahara pipeline, which would link the gas production operations of southern Nigeria to coastal Algerian natural gas pipeline terminals at Beni Saf or

El Kala (La Calle), were underway. Initial pipeline operations were projected to begin by 2015 (Middle East Economic Digest, 2006b, c; Petroleum Economist, 2005).

Uranium.—In 2005, Sahara Resources acquired the two-concession Asseo uranium property, which is located about 250 km southeast of Tamanrasset. Landmark Minerals signed a letter of intent to acquire 80% interest in the Asseo property in October, and, on December 21, Landmark announced that it had entered into a strategic alliance with the Government-owned Commissariat à l'Énergie Atomique [Atomic Energy Commission]. On December 28, however, the Government's Agence National du Patrimoine Minier [Mining Estate National Agency] (ANPM) announced that it considered that, based on Landmark's press releases, Sahara Resources had transferred its mining concessions to Landmark without ANPM's approval. ANPM subsequently withdrew all permits that had been granted to Sahara Resources for the six concessions that comprised the Asseo uranium and Timgaouine gold properties. After initial protests failed to reverse the decision, Sahara Resources initiated legal action to regain the permits (Landmark Minerals Inc., 2005a–c, 2006a, b; Ministère de l'Énergie et des Mines, 2006a§, Harmen Keyser, President, Landmark Minerals Inc., written commun., April 9, 2006).

Outlook

Owing to its location close to Europe (which was the major market for its minerals) and its hydrocarbon resources and associated infrastructure, Algeria's hydrocarbon sector is expected to continue to be a magnet for foreign direct investment, although neighboring Libya is expected to siphon off some international oilfield investment interest. The Government proposes to increase oil production (subject to production quotas of the Organization of the Petroleum Exporting Countries) and to increase natural gas exports by 2010. The outcome of the ANPM-Landmark-Sahara concession permit affair could affect international interest in the development of metal deposits.

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Major Sources of Information

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TABLE 1
ALGERIA: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ^{2,3}	2001	2002	2003	2004	2005 ^p
METALS					
Cadmium, refined ^c	10	8	5	--	--
Gold kilograms	300	369	365	597	697
Iron and steel:					
Iron ore, gross weight thousand metric tons	1,291	1,202	1,378	1,554 ^r	1,579
Metal:					
Pig iron ^c do.	800 ^r	960 ^r	965 ^{r,4}	994 ^{r,4}	952 ⁴
Steel, crude do.	947 ^r	1,091	1,051	1,014	1,007
Lead:					
Concentrate, Pb content	891	1,105	--	--	-- ^c
Metal, refined ^c	6,000	6,000	6,100	5,000	5,000
Mercury kilograms	320,091	307,119	175,600	73,451 ^r	276
Silver ^c do.	1,700	1,400	500	40 ^r	800
Zinc:					
Concentrate, Zn content	10,693	8,576	2,796	231	4,463
Metal, smelter output ^c	34,000	26,136 ⁴	32,200	25,000	30,000
INDUSTRIAL MINERALS					
Barite, crude	43,020	51,773	45,649	47,945	52,813
Cement, hydraulic ^c thousand metric tons	8,300	9,000	9,000	12,000 ^r	12,800
Clays:					
Bentonite	21,286	27,178	25,346	30,319	29,029
Fuller's earth	3,254	3,521	2,573	2,284	831
Kaolin	13,356	9,505	16,591	24,299	34,386
Diatomite	2,863	3,185	2,595	2,665	1,814
Gypsum ⁵ thousand metric tons	281	322	350	1,058 ^r	1,460
Lime, hydraulic ^c	100,000	100,000	100,000	163,000 ^{r,4}	163,000
Marble					
Blocks thousand cubic meters	33	23	24	22	22
Crushed stone	109,872	108,682	105,249	120,666	153,770
Slabs thousand square meters	224	215	180	99	87
Nitrogen, N content of ammonia ⁶	486,500 ^r	563,100	578,200	542,800	550,000 ^c
Phosphate rock:					
Gross weight thousand metric tons	939	740	905	1,017 ^r	878
P ₂ O ₅ content ^c do.	280	230	280	300 ^r	260
Pozzolan ^c	421,238 ⁴	451,000	500,000	508,000 ^{r,4}	494,000
Salt, brine and sea salt	184,682	205,321	191,017	183,000	197,000
Sand thousand cubic meters	209	392	495	585	503
Sulfur, S content of sulfuric acid ^c	7,200	19,300	20,000	21,000 ^r	22,000
MINERAL FUELS AND RELATED MATERIALS					
Coke thousand metric tons	441	450 ^c	450 ^c	400	500
Gas, natural:					
Gross million cubic meters	140,740	139,998	137,634	144,281	151,775
Dry ⁷ do.	102,332	101,557	98,754	98,111	98,784
Helium, liquid ^c do.	16	17	17 ^r	17 ^r	17
Methanol	94,030	91,470	115,690	107,360	94,200
Natural gas plant liquids thousand 42-gallon barrels	99,800	100,850	98,100	99,380 ^r	99,780

See footnotes at end of table.

TABLE 1--Continued
ALGERIA: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ^{2, 3}	2001	2002	2003	2004	2005 ^P	
MINERAL FUELS AND RELATED MATERIALS--Continued						
Petroleum:						
Crude, including condensate	thousand 42-gallon barrels	464,600	499,890	580,000	589,870 ^r	611,950
Refinery products:						
Liquefied petroleum gas	do.	6,600	6,870	7,050	6,620 ^r	5,780
Gasoline	do.	17,390	16,540	16,150	15,990 ^r	17,560
Naphtha	do.	34,370	33,690	34,230	25,220 ^r	26,440
Kerosene and jet fuel	do.	11,510	10,770	10,170	7,810 ^r	8,480
Distillate fuel oil	do.	49,790	45,100	46,150	42,820 ^r	44,360
Lubricants	do.	790	875	980	1,090 ^r	1,120
Residual fuel oil	do.	42,930	38,850	41,150	37,030 ^r	33,670
Other	do.	2,850	2,690	2,120	1,860 ^r	1,920
Total	do.	166,230	155,385	158,000	138,440 ^r	139,330

^eEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^PPreliminary. ^rRevised. -- Zero.

¹Table includes data available through June 12, 2006.

²In addition to the commodities listed, secondary aluminum, secondary lead, and secondary copper may be produced in small quantities; crude construction materials for local consumption, and copper, fertilizer, marble slabs, methanol, perlite, urea, and volcanic tuff are produced, but available information is inadequate to make estimates of production levels.

³In addition to the commodities listed, about 700 metric tons per year (t/yr) of caustic soda is estimated to have been produced.

⁴Reported figure.

⁵Includes about 50,000 t/yr of plaster.

⁶Additional nitrogen was produced by Helios s.p.a., which is a helium liquids production company.

⁷Excludes gas used in flaring, reinjection, transmission losses, and venting.