



2010 Minerals Yearbook

ALGERIA

THE MINERAL INDUSTRY OF ALGERIA

By Mowafa Taib

Algeria was a globally significant producer and exporter of hydrocarbons in 2010. It was the world's 10th ranked producer of natural gas and 16th ranked producer of crude oil in terms of volume of production and accounted for 2.5% and 2.0% of the world's natural gas and crude oil output, respectively. Algeria was Africa's leading producer of natural gas and the third ranked producer of crude oil after Nigeria and Angola in terms of the volume of production. Algeria held 4.5 trillion cubic meters of proved natural gas reserves, which was 2.4% of the world's total proved reserves, and 12.2 billion barrels of proved crude oil reserves, which accounted for 0.9% of the world's total reserves (BP p.l.c., 2011, p. 6, 8, 22, 24).

In addition to hydrocarbons, Algeria produced barite, bentonite and other clays, cement, crushed stone, diatomite, dolomite, gold, gravel, gypsum, helium, iron ore, limestone, marble, nitrogen fertilizer, phosphate rock, pozzolan, quartz, salt, sand, silver, and steel. Other minable mineral resources in Algeria, which were not being produced in 2010, included diamond and other gemstones, fluorite, niobium, perlite, rubidium, tantalum, tin, and uranium (Ministry of Energy and Mining, 2011b).

Minerals in the National Economy

The Algerian economy grew in real terms at a rate of 3.3% in 2010 compared with 2.4% in 2009. The value of hydrocarbon sector activity, which composed 34.7% of Algeria's gross domestic product (GDP) in 2010 compared with 31.0% of the GDP in 2009, decreased in real terms by 2.6% compared with a decrease of 6% in 2009. Crude oil prices for Algeria averaged \$80.35 per barrel compared with \$62.35 per barrel in 2009 and \$98.96 per barrel in 2008. The metal and industrial minerals industries decreased in value by 3.3% in 2010 compared with an increase of 3.4% in 2009. The chemical industry decreased in value by 10.6% compared with an increase of 2.0% in 2009. The construction sector contracted by 10.6% compared with an expansion of 2.0% in 2009. The flow of foreign direct investment into Algeria decreased by 19% to \$2,050 million in 2010 from \$2,540 million in 2009, and Algerian investments abroad decreased by 2.8% to \$309 million in 2009 (the latest year for which data were available) from \$318 million in 2008 (Banque d'Algérie, 2011, p. 160–161).

Government Policies and Programs

The Ministère de l'Énergie et des Mines (MEM) [Ministry of Energy and Mining] was responsible for regulating the activities of the mineral industry through its numerous agencies. Agence Nationale du Patrimoine Minier (ANPM) [Algerian Mining Authority] and Agence National de la Géologie et du Contrôle Minier (ANGCM) [National Agency of Geology and Mining Control] were created by Mining law No. 01–10 of July 3, 2001

(Mining Law). ANPM was responsible for awarding mining licenses. ANPM awarded 1,093 mining permits in the period 2000–09, which generated more than \$95 million in revenue for the national treasury (Energie & Mines, 2010b; Ministry of Energy and Mining, 2010, p. 43).

Ordinance No. 06–10 of July 29, 2006, which regulates natural gas and petroleum operations, is a supplement to law No. 05–07 of April 28, 2005. The law grants Sonatrach S.p.A. 51% ownership of all hydrocarbon projects in the country. Environmental laws applicable to the mineral industry include law No. 03–10 of July 19, 2003, and associated decrees, and law No. 05–12 of September 4, 2005. Ordinance no. 07–02 of March 1, 2007, amends and supplements the Mining Law. The Mining Law guarantees parity for all investors; allows separate surface and underground mine tenure; ensures that disputes can be appealed to international arbitrators; gives incentives for importing equipment for mining operations; and provides custom-tax exemption and rebates on mineral extraction royalties.

In 2010, the Government upheld its policy on foreign investment in Algeria by introducing the “golden share,” which gives the state a majority stake in the local operations of new companies operating in Algeria as well as a seat on the company's board of directors but not the right to vote. Because of this policy, the maximum of ownership share that any new foreign company operating in Algeria, including in the mineral industry, would be 49% (Niell, 2010).

Agence Nationale pour la Valorisation des Ressources en Hydrocarbures (Alnaft) [National Agency for Hydrocarbon Resources Valuation] launched a third bidding round for 10 hydrocarbon exploration blocks in September. The company prequalified 81 international oil companies, of which 45 companies expressed interest in participating in the bid (Alexander's Gas & Oil Connections, 2010; Energie & Mines, 2010a).

Production

Mineral commodities for which production increased most significantly in 2010 compared with that of 2009 were crushed marble, output of which increased by 78%; calcite, by 53%; phosphate rock, by 50%; crude steel, by 27%; feldspar, by 25%; diatomite, by 21%; iron ore, by 12%; and barite, by 11%. Those with the most significant decreases in production were tuff, output of which decreased by 76%; salt, by 30%; silica sand, by 29%; gold and pozzolan, by 28% each; silver, by 27%; kaolin, by 19%; and natural gas plant liquids, by 12% (table 1).

Structure of the Mineral Industry

Entreprise Nationale des Produits Miniers Non Ferreux et des Substances Utiles S.p.A. (ENOF) was a state-owned company that operated 18 mines and quarries in Algeria that

produced nonferrous metal mineral commodities through six subsidiaries. These subsidiaries were La Société des Feldspaths d'Algérie (SOFELD), Société Algérienne des Granulats S.p.A. (ALGRAN), Société des Bentonites d'Algérie S.p.A. (BENTAL), Société des Diatomites d'Algérie (DIATAL), Société des Kaolins d'Algérie S.p.A. (SOALKA), and Société des Mines de Baryte d'Algérie S.p.A. (SOMIBAR).

SOMIBAR produced barite from the Amin Mimoun Mine in Khenchella Province, the Boucaïd Mine in Tissemsilt Province, and the Mellal Mine in Tlemcen Province. BENTAL produced bentonite from the Maghnia Mine in Tlemcen Province and the M'Zila deposit in Mostagnem Province. ALGRAN produced aggregates and limestone from nine quarries spread throughout the country (Mining Journal, 2009, p. 5). Société des Kaolins d'Algérie S.p.A. (SOALKA), was a joint venture of Federal White Cement Ltd. of Canada (63% interest) and ENOF (37% interest). The company produced kaolin and explored for copper, diamond, lead, limestone for cement, and zinc (Société des Kaolins d'Algérie S.p.A., 2011). Entreprise d'Exploitation des Mines d'Or S.p.A. (ENOR), which was a joint venture of GMA Resources p.l.c. of the United Kingdom (52%) and Sonatrach S.p.A. (48%), was the sole gold producer in the country (GMA Resources p.l.c., 2011).

Office National de la Recherche Géologique et Minière (ORGM) [The National Office of Geologic and Mining Research] was a partner with almost all the mining companies involved in exploration, exploitation, and prospecting activities in the country. The Government-owned Entreprise Nationale de Fer et du Phosphate (Ferphos Group S.p.A.) managed Algeria's production of iron ore, phosphate rock, pozzolan, and other building materials. Its subsidiaries included Société des Mines de Phosphates S.p.A. (Somiphos), which was the state's phosphate mining company; Société des Mines de Fer d'Algérie S.p.A. (SOMIFER), which was the iron ore mining company; and Société des Pouzzolanes et des Matériaux de Construction S.p.A. (SPMC), which produced pozzolan and other building materials (Agence Nationale du Patrimoine Minier, 2010).

Sonatrach was a state-owned company that carried out diverse operations in mining and the extraction of crude oil and natural gas. It was responsible for the exploration for and the production, pipeline transportation, and marketing of hydrocarbons and byproducts. Sonatrach had 25 subsidiaries, including Entreprise Nationale de Commercialisation et de Distribution des Produits Pétroliers S.p.A. (Naftal), Helios S.p.A., L'Entreprise Nationale de Canalisations S.p.A. (ENAC), Société Nationale de Pétrochimie S.p.A., and Société Nationale de Raffinage de Pétrole S.p.A. (NAFTEC) (table 2; Sonatrach S.p.A., 2010; U.S. Energy Information Administration, 2010).

Société Nationale de l'Electricité et du Gaz S.p.A (Sonelgaz) [National Society for Electricity and Gas] was the state-owned entity responsible for the construction, distribution, generation, and transportation of electricity as well as the distribution and transportation of natural gas in Algeria. The Sonelgaz group of companies comprised 36 subsidiaries, including Sonelgaz Holding, which was the sole owner of the company. In 2010, Sonelgaz Holding issued the guidelines for the development of Algeria's national renewable energy program (Dii GmbH, 2011; Ministry of Energy and Mining, 2011b).

Mineral Trade

In 2010, the value of hydrocarbon exports, which accounted for 98% of the country's total exports, increased by 26% to \$56.1 billion from \$44.4 billion in 2009. The increase was attributable to higher oil prices in 2010, which averaged \$80.35 per barrel of Algerian Sahara Blend (an increase of 29% compared with previous year) and to a 2% increase in the volume of production. The value of nonfuel exports increased by about 27% to \$969 million from \$766 million in 2009. Industrial minerals exports (mainly ammonia and phosphate rock) accounted for 92% of nonfuel mineral exports, and precious metals exports accounted for 8% of the value of nonfuel mineral exports. The value of crude oil exports accounted for 37% of Algeria's total hydrocarbon export value, followed by natural gas, 21%; refined petroleum products, 16%; liquefied natural gas (LNG), 10%; condensates, about 8%; and liquefied petroleum gas (LPG), 7%. In terms of volume, crude oil and natural gas exports accounted for 42% each of Algeria's total primary energy exports whereas condensate and natural gas liquids each composed 8% of the total primary energy exports (Banque d'Algérie, 2011, p. 176–177; Ministry of Energy and Mining, 2011a, p. 15; Organization of the Petroleum Exporting Countries, 2011, p. 82).

In 2010, the value of Algerian imports totaled \$38.9 billion, which was an increase of 4% compared with \$37.4 billion in 2009. The value of Algeria's primary materials imports, which include minerals, increased by about 18% compared with that of 2009 and the value of industrial mineral imports increased by about 5% compared with that of 2009 (Banque d'Algérie, 2011, p. 219).

According to the World Steel Association, Algeria imported 3.8 million metric tons (Mt) of semifinished and finished steel products in 2010 compared with 5.3 Mt in 2009, which was a decrease of about 28%. Exports of pig iron and scrap decreased to 33,000 metric tons (t) and 376,000 t, respectively, compared with 64,000 t and 669,000 t in 2009. Thus, the volume of the country's apparent steel consumption decreased to 4.8 Mt from 6.4 Mt in 2009, and subsequently, Algeria's per capita steel consumption decreased to about 139 kilograms (kg) from 188 kg in 2009 (World Steel Association, 2011, p. 66, 89, 92, 105, 116).

In 2010, exports from the United States to Algeria increased slightly by 1% to \$1,120 million from \$1,108 in 2009. U.S. imports from Algeria increased by about 35.5% to \$14.5 billion from \$10.7 billion in 2009 but remained less than the peak of \$19.4 billion in 2008. The value of crude oil imports was \$9.5 billion (about 59% of total Algerian imports); fuel oil, about \$3.0 billion (about 21%); LPG, \$1.7 billion (about 12%), and other petroleum products, \$0.3 billion (2%). The European Union and the United States were the leading importers of Algerian oil exports and accounted for 49% and 24% of the total exports, respectively. Other top importers included Brazil, Canada, and Turkey (United Nations Statistics Division, 2010; U.S. Census Bureau, 2011).

Commodity Review

Metals

Aluminum.—In April, Rio Tinto Alcan Inc. of Canada said that it planned to build a new aluminum smelter in Algeria. The smelter would have an initial capacity of 460,000 metric tons per year (t/yr) of aluminum. In October, Emirates Aluminum Co. Ltd. (Emal) of the United Arab Emirates put its plan to construct an aluminum smelter at Beni Saf in northwestern Algeria on hold. The proposed 1.5-million-metric-ton-per-year (Mt/yr)-capacity smelter would be owned by Sonatrach (51% interest) and Emal (49%). The decision by Emal to put the smelter project on hold was attributed to corruption charges against Sonatrach and subsequent investigations that surrounded Sonatrach in 2010 (Baxter, 2010d, e).

Copper, Lead, and Zinc.—Western Mediterranean Zinc S.p.A. (WMZ) moved forward with development of the Tala Hamza lead and zinc project at Oued Amizour, which is located 15 km southwest of the Port of Bejaia in northeastern Algeria. WMZ was a joint venture of Terramin Australia Ltd. (65% interest), state-owned ENOF (32.5% interest) and ORGM (2.5% interest). The results of the feasibility study, which began in 2009, were released by ENOF in October. The results indicated that an investment of \$285 million would be needed to develop the Tala Hamza lead and zinc deposit. The company announced a new resource model in November and used it as a base for the design of the lead-zinc mine at Oued Amizour. As of yearend 2010, the total resources (measured, indicated, and inferred) of the Tala Hamza Mine, based on analyses of data from 88 diamond holes, were 68.6 Mt at grades of 1.1% lead and 4.6% zinc. The company designed the Oued Amizour zinc project to include initially a 2-Mt/yr processing plant that would produce 100,000 t/yr of zinc in concentrate and 25,000 t/yr of lead in concentrate. Production would increase to 200,000 t/yr of zinc in concentrate grading 53% zinc at a 90% recovery rate and 40,000 t/yr of lead in concentrate grading 60% lead at a 72% recovery rate. The project's design also included an expansion plan that would treat 4 Mt/yr of ore to achieve annual zinc output of about 400,000 t. The mining method would be block caving with twin production and ventilation declines that could be upgraded to a conveyor system (Melly, 2010; Terramin Australia Ltd., 2011).

Celamin Holdings NL of Australia was planning to sign an agreement with Groupe Faïenceries Algériennes (FA) to develop the Oued El Kebir base-metals project. Celamin expected to have a 49% stake in the project, which was the maximum share allowed for a foreign investor in Algeria. Oued El Kebir deposit would be mined for barite, copper, lead, silver, and zinc (Celamin Holdings NL, 2011).

SOALKA explored for copper, lead, and zinc at the Kef Oum Tboul deposit, which is located 15 km from the City of El Kala in eastern Algeria. The company also explored for copper and gold in the northwestern coast of Algeria in the Tifrouine area (Société des Kaolins d'Algérie S.p.A., 2011).

Gold.—Production of gold from the Amesmessah Gold Mine by ENOR decreased by 28% to 728 kg in 2010 from 999 kg in 2009 (GMA Resources p.l.c., 2011, p. 3–7). Cancor Mines Inc.

of Canada had two exploration permits for gold and silver at the 6,528-hectare (ha) Ouzzal North property and for copper and gold at the 20,000-ha Tan Chaffao East property. The company had one more exploration permit for copper and gold at the 44,580-ha Tan Chaffao West property and one for gold and silver at the 98,990-ha Tirek North property. All four properties were located in the Hoggar region in southern Algeria about 2,000 kilometers (km) south of Algiers (Cancor Mines Inc., 2011).

Iron and Steel.—Production of iron ore in Algeria increased in 2010 to about 1.5 Mt from 1.3 Mt in 2009. The volumes of iron ore production in 2009 and 2010 were the lowest in more than 10 years. The volume of crude steel production averaged 626,000 t/yr in 2008 through 2010, which was about 43% less than the average output of 1,094,000 t/yr in the previous 5 years. ArcelorMittal Annaba S.p.A. (a subsidiary of ArcelorMittal of Luxembourg), which was the main producer of iron ore and steel in Algeria, did not achieve its goal of producing 1 Mt of crude steel in 2010 owing to a labor dispute, which resulted in a strike by workers at El-Hadjar steel plant. The strike ended on June 29 following a court decision that ruled the strike illegal and ordered workers to go back to work (Baxter, 2010b, c).

In May, the Government put on hold a plan by Ezz Steel Rebars S.A.E of Egypt to build a \$750 million steel plant in Jijel in northeastern Algeria, which had been proposed in 2007. In June, ArcelorMittal put its plan to build a \$2.5 billion 5-Mt/yr steel plant in Jijel on hold (Baxter, 2010a; Ould Ahmed, 2010).

Industrial Minerals

Cement.—The Government was in the process of consolidating its 12 cement plants, which together had the capacity to produce 11.5 Mt/yr of cement and accounted for 65% of the country's cement sales, into one holding company. Ministère de l'Industrie et la Promotion de l'Investissement [Ministry of Industry and Investment Promotion] planned to invest \$2.4 billion in the new cement holding company during the next 2 years to bring its production to 20 Mt/yr, thus increasing its share in the Algerian cement market to between 75% and 80%. The Government intended to compete with Lafarge Algeria, which controlled 35% of the domestic cement market through its wholly owned subsidiary Algerian Cement Co., and Ciment Blanc d'Algérie S.p.A. (Global Cement Magazine, 2010; Nield, 2010, p. 15; Lafarge S.A., 2011, p. 31).

ASEC Cement of the Citadel Group of Egypt was a majority shareholder in ASEC Algeria Cement Co. S.p.A. ASEC Algeria was building a 3.2-Mt/yr-capacity greenfield cement plant at Zahana in Djefla Province about 300 km south of Algiers. In June, the International Finance Corp. of the World Bank Group approved a \$24 million investment in the project. The project included two production lines; the first production line would have the capacity to produce 1.5 Mt/yr of cement and would be completed in 2011 at a cost of \$300 million. The second production line would increase the capacity to 3.2 Mt at a cost of \$250 million and would be constructed 1 to 2 years after the first production line was completed. The limestone for the cement plant would come from the Djellal El Gharbi deposit, which is located about 1 km from the plant and had resources

sufficient to supply the plant for 80 years (International Finance Corp., 2010; World Cement Magazine, 2010, p. 19; ASEC Cement, 2011, p. 18).

Clay and Shale.—SOALKA produced kaolin at two locations in Algeria. SOALKA operated the El Milia Mine in Jijel Province, which had a 50,000-t/yr-capacity kaolin treatment complex and more than 15 Mt of kaolin reserves, and the Jebel Debbagh Mine in Guelma Province, which held an estimated 200,000 t of ore reserves. SOALKA explored for kaolin at the Tabelballa site in Bechar Province, which had estimated reserves of 1 Mt of kaolin ore (Société des Kaolins d'Algérie S.p.A., 2011).

Diamond.—SOALKA explored for diamond at Jebel Aberraz, which is located in the Bled el Mass Valley in southern Algeria. The company identified 50 million carats of gem-quality diamond (Société des Kaolins d'Algérie S.p.A., 2011).

Nitrogen.—Asharika El Djazairia El Omania lil Asmida S.p.A. [Algeria Oman Fertilizer Co.] (AOA), which was a joint venture of Suhail Bahwan Group (Holding) LLC (SBGH) of Oman (51% interest) and Sonatrach (49% interest), moved forward with building a nitrogen fertilizer plant in Algeria. The \$2.4 billion plant would have the capacity to produce 2.6 Mt/yr of urea. The project was located on the Mediterranean coast in the Arzew Industrial Zone, which is located near Oran in western Algeria. Sonatrach committed to supply natural gas for the project under a long-term arrangement. Construction of the project commenced under an engineering, procurement, and construction contract with a consortium of Mitsubishi Heavy Industries Ltd. of Japan and Daewoo Engineering & Construction Co. of the Republic of Korea. The plants would adopt process technologies from Haldor Topsøe A/S of Denmark, Snamprogetti S.p.A. of Italy, and Uhde Fertilizer Technology B.V. of the Netherlands. The plant was expected to begin production in 2012 (Suhail Bahwan Group LLC, 2011).

Sofert Algeria, which was a joint venture of Orascom Construction Industries of Egypt (51% interest) and Sonatrach (49% interest), was building a fertilizer complex that would have the capacity to produce 800,000 t/yr of anhydrous ammonia and 1.2 Mt/yr of granulated urea at the Arzew Industrial Zone. The plant, which was expected to begin production in 2011, would supply 1.1 Mt/yr of urea to the domestic market and 700,000 t/yr of ammonia for export (Orascom Construction Industries, 2011).

Mineral Fuels and Other Sources of Energy

Natural Gas and Petroleum.—In 2010, Sonatrach's primary production of hydrocarbons amounted to about 214 Mt of oil equivalent, including 412 million barrels (reported as 55.3 Mt) of crude oil and 143.8 billion cubic meters of natural gas. Seventy-five percent of the country's hydrocarbon output came from the Hassi Messaoud and the Hassi R'Mel fields. Natural gas accounted for 64% of the country's total primary production in terms of volume, followed by crude oil, 26%; condensates, 6%; and LPG, 4%. Sonatrach was responsible for 72% of hydrocarbon production in Algeria in terms of volume, including 82% of the natural gas, 80% of the condensates, and 71% of the LPG. The remaining output was

achieved by international companies working in Algeria under production-sharing agreements, such as Anadarko Petroleum Corp. and ConocoPhillips Co. of the United States; BP Algeria of the United Kingdom; Eni Algeria Production BV of Italy; GDF Suez and Total Algeria S.p.A. of France; Maersk A/S of Denmark; and Talisman Energy Inc. of Canada (Sonatrach S.p.A., 2011, p. 18).

Sonatrach reported 29 oil and gas discoveries in 2010, 27 of which were discovered by Sonatrach and 2 were reported by Sonatrach's exploration partners OAO Gazprom of Russia and E. ON Rhurgas AG of Germany. These discoveries, which included 14 gas and gas condensate discoveries, 12 crude oil discoveries, and 3 oil and gas discoveries, identified 212 Mt of oil equivalent of probable and proven reserves. Thirteen of these discoveries were made in the Berkine Basin in eastern Algeria, 10 in the Illizi basin, 4 in the central region of the Amguid Messaoud basin, and 2 in the Oued Mya basin (Organization of Arab Petroleum Exporting Countries, 2011, p. 20, 22; Sonatrach S.p.A., 2011, p. 17).

The Government planned to expand its petroleum refining capacity to 50 Mt/yr by 2014 from the current 32 Mt/yr. Société Nationale de Raffinage de Pétrole S.p.A (NAFTEC). (a subsidiary of Sonatrach) had an ongoing \$400 million project to the rehabilitate the oil refinery at Arzew. Sonatrach moved forward with upgrading the Hassi Messaoud and the Skikda oil refineries. Construction of a fourth refinery at Tairt, which would be located 300 km southwest of Algiers and would have the capacity to produce 300,000 barrels per day (bbl/d), was delayed indefinitely (U.S. Energy Information Administration, 2010; Zawya, 2011).

Sonatrach reported an 11% increase in the value of its investments in 2010, which amounted to \$14.4 billion. Most of the investments were in the development of 242 exploration wells. Sonatrach completed construction of a crude oil treatment and stabilization plant at Hassi Messaoud; an LPG plant expansion project at Arzew; an NK1 oil pipeline from Haud Al Hamra to Skikda; phase 2 of the Hassi R'Mel boosting unit and LPG pipeline from Hassi R'Mel to Arzew; the Salah gas compression facilities, which was a joint venture with BP and Statoil; and the Skikda condensate topping refinery.

Sonatrach moved forward with several projects, including construction of a processing plant at Gassi Touil and a crude oil and natural gas treatment plant at Rhourde Nous; development of the Groupement Berkine-El Merk oilfield, which was a joint venture of Sonatrach (37.70%), Anadarko (18.10%), ConocoPhillips Algeria (16.90%), and Maersk Olie Algeriet, Eni Oil Algeria, and Talisman Algeria (9.10% combined); development of the Menzel Ledjmet East field in association with ENI; and the building of two LNG mega-trains in Arzew and Skikda. Among other projects that were initiated in 2010 were the rehabilitation of LPG trains 100 and 300 of Rhourde Nous; the Timimoun gasfield development project, which was a joint venture of Sonatrach (51% interest), Total (37.75% interest), and Compañía Española de Petróleos, S.A.U. (CEPSA) of Spain (12.25% interest); development of the Touat gas processing plant and pipeline (a joint venture of Sonatrach and GDF-Suez); and the rehabilitation of the country's oil refineries by signing engineering, procurement, and construction contracts valued at \$970 million (Sonatrach S.p.A., 2011, p. 4; Zawya, 2011).

Solar Energy.—Algeria’s solar energy potential was estimated to be 169,440 terawatt-hours per year, which was estimated to be equivalent to 5,000 times the country’s current energy consumption and 60 times the current energy consumption of the European countries. Algeria was a stakeholder of the Desertic Industrial Initiative, which was proposed by the Desertic Foundation and the 12-company Dii GmbH consortium to generate power from solar and wind sources in the Middle East and North Africa and to export it to Europe. The project was expected to create 100 gigawatts of renewable energy capacity and would cost \$550 billion to build by 2050.

The Government announced an ambitious objective of fulfilling 40% of the country’s electricity needs from renewable energy sources by 2030 (37% from solar energy and 3% from wind energy) (Dii GmbH, 2011; Ministry of Energy and Mining, 2011c, p. 4). Sonelgaz moved forward with building the country’s first photovoltaic modules plant as part of an integrated solar combined-cycle power station at Hassi R’Mel. The \$100 million powerplant would combine a 25-megawatt (MW)-capacity parabolic concentrating solar power array, which would cover an area of 180,000 square meters, with a 130-MW-capacity gas turbine plant. The plant was being built by Chinese Government-owned China Electric Equipment Group (CEEG) and was expected to be completed in April 2011 (Energie & Mines, 2010c, p. 39; Nield, 2011).

Outlook

The Government promised to invest \$298 billion as part of a 5-year stimulus plan for the country’s housing, infrastructure, and transportation sectors. As a result, consumption and production of construction and building materials, such as cement and steel reinforcing bar, is expected to increase considerably. The Government, which has been developing the country’s crude oil and gas reserves on its own and in partnership with major international oil companies, was working on maintaining the current level of hydrocarbon production. The Government was also diversifying the national economy by tapping into the country’s vast nonfuel mineral resources through joint ventures with international mining companies to explore and exploit the country’s mineral reserves of metals, such as gold, iron ore and zinc, as well as phosphate rock. The MEM issued a renewable energy and energy efficiency program to direct the development of the country’s industrial capacity for photovoltaic solar energy, solar thermal energy, and wind energy (Arab Steel, 2011).

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TABLE 1
ALGERIA: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity ²	2006	2007	2008	2009	2010
METALS					
Gold, metal kilograms	377	236	647 ^r	999 ^r	723
Iron and steel:					
Iron ore, gross weight	2,340	1,982	2,077	1,307	1,469
Metal:					
Pig iron	1,093	1,193	690	680 ^r	696
Steel, crude	1,158	1,278	646	543 ^r	688
Lead, metal, refined ^c	5	--	--	--	--
Mercury kilograms	--	--	--	--	--
Silver, metal do.	63	46	114	200	147
Zinc:					
Concentrate, Zn content metric tons	572	--	--	--	--
Metal, smelter output ^e	30	30	30	30	30
INDUSTRIAL MINERALS					
Barite, crude	65	63	60	38	42
Cement, hydraulic	14,702	15,886	17,397	18,732	19,100
Calcite	191	206	254	221	339
Clays:					
Bentonite	27	33	31	32	34
Common	7,308	9,529	10,973	10,973	10,973
Dolomite (industrial)	8	1	2	2	2
Fuller's earth	20	30	23	23	23
Kaolin	33	107	51	88	71
Diatomite metric tons	1,800	1,902	1,668	1,847	2,231
Feldspar	66	83	116	131	164
Gypsum ³	1,033	1,198	1,672	1,757	1,610
Lime, hydraulic	28	46	64	65	63
Nitrogen, N content of ammonia	470	500	500	500	500
Phosphate rock:					
Gross weight	1,510	1,800	1,805	1,017	1,525
P ₂ O ₅ content ^c	450	536	542	305	458
Pozzolan	433	570	491	328	237
Salt, brine and sea salt	260	183	202	269	187

See footnotes at end of table.

TABLE 1—Continued
ALGERIA: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity ²	2006	2007	2008	2009	2010	
INDUSTRIAL MINERALS—Continued						
Sand and gravel:						
Construction sand	thousand cubic meters	2,143	2,553	3,044	3,372	3,164
Silica sand		48	519	276	134	95
Granulates:						
Aggregates, crushed stone, and gravel	thousand cubic meters	21,220	27,230	41,604	55,294	46,304
Crushed sand	do.	3,380	5,590	10,470	13,360	12,286
Stone:						
Aragonite	do.	NA	206	254	254	254
Quartzite		6	35	136	136	136
Marble:						
Blocks	thousand cubic meters	16	11	11	9	9
Crushed		148	170	126	148	263
Slabs				63	58	58
Miscellaneous types of dressed stone	thousand cubic meters	4	12	10	10	10
Rhyolite	cubic meters	3,200	3,430	6,100	6,100	6,100
Tuff	thousand cubic meters	951	1,729	12,209	7,525	1,819
Sulfur, S content of sulfuric acid ^c		22	22	22	22	22
MINERAL FUELS AND RELATED MATERIALS						
Coke		423	419	315	315	315
Gas, natural:						
Gross	million cubic meters	194,800	198,200	201,200	196,900	194,000
Dry ⁴	do.	84,500	84,800	85,800	84,400 ^r	85,000
Helium, liquid	do.	15	20	20	20	20
Methanol	do.	130	118	130	130	130
Natural gas plant liquids	do.	409,000	423,000	442,000	430,700 ^r	379,000
Petroleum: ^c						
Crude, including condensate	thousand 42-gallon barrels	731,000	736,000	727,000	664,000 ^r	660,000
Refinery products:						
Liquefied petroleum gas	do.	6,000	6,000	6,000	9,000 ^r	8,000
Gasoline	do.	19,000	17,000	22,000	22,000	25,000
Naphtha	do.	26,000	28,000	28,000	39,000	39,000
Kerosene and jet fuel	do.	8,000	8,000	8,000	8,000	12,000
Distillate fuel oil	do.	50,000	52,000	55,000	54,000	66,000
Lubricants	do.	1,000	1,000	1,000	1,000	1,000
Residual fuel oil	do.	36,000	37,000	39,000	36,000	44,000
Other	do.	5,000	4,000	1,000	2,000 ^r	36,000
Total	do.	151,000	153,000	160,000	171,000	231,000

^cEstimated; 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 December 31, 2011.

²In addition to the commodities listed, secondary aluminum, secondary copper, and secondary lead may be produced in small quantities; also, crude construction materials for local consumption, and fertilizer, perlite, and urea are produced, but available information is inadequate to make reliable estimates of output. In addition, about 700 metric tons per year (t/yr) of caustic soda is estimated to have been produced.

³Includes about 50,000 t/yr of plaster.

⁴Excludes gas used in flaring, reinjection, transmission losses, and venting.

TABLE 2
ALGERIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Ammonia	Le Groupe Asmidal	Alzofert plant, Arzew	660,000
Do.	do.	Fertial plant, Annaba Province	330,000
Barite	Société des Mines de Baryte d'Algérie S.p.A. (SOMIBAR) [Entreprise Nationale des Produits Miniers Non Ferreux et des Substances Utiles, S.p.A (ENOF)]	Mizab Mine, Khenchela Province	35,000
Do.	do.	Boucaid Mine, Tissemsilt Province	20,000
Do.	do.	Amin Mimoun Mine, Khenchella Province	NA
Do.	Société des Baryte SARL (SOBAR)	Chaabet Abou Fares, Tipaza Province	7,000
Bentonite	Société des Bentonites d'Algérie S.p.A. (BENTAL) [a subsidiary of Entreprise Nationale des Produits Miniers Non Ferreux et des Substances Utiles, S.p.A. (ENOF)]	Hammam Boughrara, Tlemcen Province	18,000
Do.	do.	M'Zila, Mostaganem Province	17,000
Do.	do.	Maghnia Mine, Tlemcen Province	16,000
Cement:			
Portland	Algerian Cement Co. (ACC) (Lafarge S.A., 100%)	do.	5,000,000
Do.	Ciment Blanc d'Algérie S.p.A. (Lafarge S.A., 100%)	Oggaz, Mascara Province	2,500,000
Do.	Entreprise des Ciments et Dérivés d'Ech—Cheliff	Chlef	2,000,000
Do.	Société des Ciments de la Mitidja (Entreprise des Ciments et Dérivés du Centre, 65%, and Lafarge S.A., 35%)	Meftah	800,000
Do.	Société des Ciments de Sour El Ghozlane (Entreprise des Ciments et Dérivés du Centre, 65%, and Buzzi Unicem S.p.A., 35%)	Sour El Ghozlane	1,000,000
Do.	Société des Ciments Zahana (Entreprise des Ciments et Dérivés de l'Ouest, 65%, and ASEC Cement, 35%)	Zahana, Djefla Province	1,200,000
Do.	Société des Ciments Beni Saf (Entreprise des Ciments et Dérivés de l'Ouest, 90%, and Pharoan Group, 10%)	Beni Saf	1,000,000
Do.	Société des Ciments Saïda (Entreprise des Ciments et Dérivés de l'Ouest)	Hassasna	500,000
Do.	Société des Ciments d'Aïn-Touta (Entreprise des Ciments et Dérivés de l'Est)	Ain Touta	1,000,000
Do.	Société des Ciments d'Aïn-Kébira (Entreprise des Ciments et Dérivés de l'Est)	Ain-Kebira	1,000,000
Do.	Société des Ciments de Hamma-Bouziiane (Entreprise des Ciments et Dérivés de l'Est)	Hamma-Bouziiane	1,000,000
Do.	Société des Ciments de Hadjar Soud (Entreprise des Ciments et Dérivés de l'Est)	Bekkouche	900,000
Do.	Tabessa Cement Company S.p.A.	Tebessa	525,000
Do.	Société des Ciments de l'Algérois (Entreprise des Ciments et Dérivés du Centre)	Rais-Hamidou	368,000
White cement	Ciment Blanc d'Algérie S.p.A. (Lafarge S.A., 100%)	Oggaz, Mascara Province	550,000
Coke	ArcelorMittal Annaba S.p.A. (ArcelorMittal, 70%, and Groupe Industriel Sider, 30%)	El Hadjar, Annaba Province	1,200,000
Copper, cathode	Société Algérienne du Zinc (Entreprise Nationale de Métallurgie et de Transformation des Métaux Non Ferreux, S.p.A., 100%)	Ghazaouet	30,000
Diatomite	Société des diatomites d'Algérie (DIATAL) [Entreprise Nationale des Produits Miniers Non Ferreux et des Substances Utiles, S.p.A (ENOF)]	Tahalait Quarry, Sig	2,000
Dolomite	Société Algérienne des Granulats S.p.A. (ALGRAN)	Djebel Taioualet	8,000
Feldspar	Tufeal SARL	Bouaita	83,000
Do.	La Société des Feldspaths d'Algérie (SOFELD) [Entreprise Nationale des Produits Miniers Non Ferreux et des Substances Utiles S.p.A. (ENOF), 57%, and Entreprise de la Céramique Ouest, 43%]	Ain Barbar	NA
Fertilizers:			
Nitrogenous:			
Ammonium nitrate	Le Groupe Asmidal	Alzofert plant, Arzew	495,000
Do.	do.	Fertial plant, Annaba	330,000
Do.	do.	do.	240,000
Do.	Fertalge Industries S.p.A.	Arzew	360,000
Phosphatic ¹	do.	Fertial plant, Annaba	800,000

See footnotes at end of table.

TABLE 2—Continued
ALGERIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Gold	kilograms	Entreprise d'Exploitation des Mines d'Or S.p.A. (ENOR) (GMA Resources p.l.c., 52%, and Sonatrach S.p.A., 48%)	Tirek Mine	3,000
Do.	do.		Amesmessia Gold Mine	3
Gypsum		32 private sector units and 13 public sector units	Oran, O. El Bouaghi, Chlef, Ghardaia, Biskra, Mascara, Bouira, M'silla, Medbea Batn, Setif, Bejaia, Milla, Tiaret	1,700,000
Helium	million cubic meters	Helios S.p.A. (Sonatrach Valorisation Hydrocarbonés, 51%, and Helap S.p.A., 49%)	GI2Z complex, Arzew	17
Do.	do.	Helison Production S.p.A. (Linde AG, 50%, and Sonatrach S.p.A., 50%)	GLIK complex. Skikda	17
Iron ore		ArcelorMittal Annaba S.p.A.	Ouenza Mine	1,200,000
Do.	do.		Boukhadra Mine	525,000
Do.		Société des Mines de Fer d'Algérie S.p.A. (SOMIFER)	Khanguet Mine, Tabessa Province	50,000
Do.	do.		Anini Mine, Setif Province	170,000
Do.	do.		Rouina Mine, Ain Defla Province	140,000
Kaolin		Société des Kaolins d'Algérie S.p.A. (SOALKA) [Federal White Cement Ltd., 63%, and Entreprise Nationale des Produits Miniers Non Ferreux and et des Substances Utiles S.p.A. (ENOF), 37%]	Tamazert Mine, El Milia Province	20,000
Do.	do.		Jebel Debbagh Mine, Guelma Province	15,000
Do.		SARL Faïenceries Algériennes	Adjarda, Chekfa	95,000
Lime		SODEPAC (ERCO Group)	Hassasna	93,000
Do.		Société de Chaux de l'Ouest	Oran	65,000
Do.		Unité Chaux de Chettaba (Société des Produits Dérivés de l'Est, 100%)	Chettaba	11,000
Limestone		Mittal Steel Annaba SPA	Oued N'hal	250,000
Marble:				
Blocks	cubic meters	Entreprise Nationale du Marbre S.p.A.	Oran and Skikda Province	10,460
Do.	do.	SMS Bouhouita SARL	Skikda Province	160
Crushed		Commercialisation du Marbre et de Dérivés de Marbre S.p.A. and Entreprise Nationale du Marbre S.p.A.	Chlef, Oran, Skikda, Tizi Ouzou, and Tlemcen Provinces	17,000
Methanol		Société Nationale de Pétrochimie S.p.A. (Sonatrach S.p.A 100% owned subsidiary, through Holding Raffinage et Chimie des Hydrocarbures)	Methanol plant, Arzew	113,000
Natural gas:				
Crude	million cubic meters	Sonatrach S.p.A.	Numerous gasfields, including Adrar, Hamra, Hassi R'Mel, and Sbaa	12,000
Do.	do.	do.	Numerous gasfields	33,000
Liquefied	do.	do.	GL2Z complex, Bethioua	18,000 ²
Do.	do.	do.	GL1Z complex, Bethioua	16,000 ²
Do.	do.	do.	GLIK complex, Skikda	6,000 ²
Do.	do.	do.	GL4Z complex, Arzew	2,000 ²
Petroleum:				
Crude	42-gallon barrels per day	do.	About 50 oilfields, including Acheb West, Amassak/Tin-Yaguene, Draa Tamra, Edjeleh, El Borma, El Gassi, Gassi-Touil East, Guellala, Hassi Messaoud North and South, Ohanet North, Rhourde El Baguel, Tin-Fouye, and Zarzaitine	1,700,000
Refined	do.	Société Nationale de Raffinage de Pétrole S.p.A. (NAFTEC)	RA1K refinery, Skikda	352,700
Do.	do.	do.	RHM refinery, Hassi Messaoud	163,500
Do.	do.	do.	RA1G refinery, El Harrach	63,400
Do.	do.	do.	RA1Z refinery, Arzew	58,500
Do.	do.	do.	Adrar	14,400
Phosphate rock		Société des Mines de Phosphates S.p.A. (Somiphos) (a subsidiary of Ferphos Group S.p.A)	Djebel Onk (Djemidjema and Kef Essenoun), Tebbessa Province	2,000,000
Pozzolan		Société des Pouzzolanes et des Matériaux de Construction S.p.A. (SPMC)	Rockbet El Hassi	452,000
Do.		Société des Ciments Béni Saf (ERCO group)	Beni Saf	11,000
Do.		Entreprise Nationale de Fer et de Phosphate	do.	600,000

See footnotes at end of table.

TABLE 2—Continued
ALGERIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Salt, crude:			
Rock	Entreprise Nationale d'Exploitation des Carrières de Sels Industriels et Domestiques et Commercialisation des Sels S.p.A. (ENASEL)	El Outaya, Biskra Province	100,000
Solar	Several private companies	Bethioua, Oran; El Meghaier, El Oued, Guergour Lamri, Setif Ouled Zouai, Oum el Bouaghi, and Sidi Bouziane, Relizane	100,000
Steel:			
Crude	ArcelorMittal Annaba S.p.A. (ArcelorMittal, 70%, and Groupe Industriel Sider, 30%)	Blast furnaces at El Hadjar, Annaba	2,100,000
Do.	do.	Electric arc furnace at El Hadjar, Annaba	400,000
Do.	do.	Hot-strip mill at El Hadjar, Annaba Province	1,800,000
Processed	do.	Cold-rolling mill at El Hadjar, Annaba Province	1,050,000
Do.	do.	Bar and wire rod mills at El Hadjar, Annaba	850,000
Do.	do.	Seamless tube mill at El Hadjar, Annaba Province	700,000
Do.	Entreprise Nationale de Tubes et de Transformation de Produits Plats (Groupe Industriel Sider, 100%)	Welded tube plant at Ghardaia	128,000
Do.	Société Algérienne de Fabrication Tubes en Spirale (Groupe Industriel Sider, 100%)	Welded tube plant at El Hadjar, Annaba Province	70,000
Stone	Société Algérienne des Granulats S.p.A. (ALGRAN) [Entreprise Nationale des Produits Miniers Non Ferreux et des Substances Utiles S.p.A. (ENOF)]	Aggregate quarries at Adrad Oufarnou, Arzew, Ghedir, Gustar, Keddara, Oued Fodda, Teioueit, and Timezrit	3,000,000
Do.	Société des Diatomites d'Algérie S.p.A. (DIATAL) [Entreprise Nationale des Produits Miniers Non Ferreux et des Substances Utiles S.p.A. (ENOF)]	Oggaz limestone quarry, near Sig	12,500
Do.	Société des Bentonites d'Algérie S.p.A. (BENTAL) [Entreprise Nationale des Produits Miniers Non Ferreux et des Substances Utiles S.p.A. (ENOF)]	Limestone quarries near Beni Saf and M'Said	12,000
Sulfuric acid	Société Algérienne du Zinc (Entreprise Nationale de Métallurgie et de Transformation des Métaux Non Ferreux, 100%)	Ghazaouet	70,000
Tuff	cubic meters CTIC-CRCC Group (China)	Annaba, Boumerdes, Sidi Bel Abbes Mustganem, Mascara, Oran, Relizane	10,300,000
Do.	6 public sector units and 59 private units	Ain Temouhent, Tipaza, Tiaret	2,000,000
Urea	Fertalge Industries S.p.A.	Arzew	400,000

Do., do. Ditto. NA Not available.

¹Capacity includes 500,000 to 600,000 metric tons per year (t/yr) of compound fertilizer [nitrogen, phosphorus, and potassium (NPK), or phosphorus and potassium (PK)], or triple superphosphate (TSP), and 240,000 t/yr of single superphosphate (SSP).

²One cubic meter of liquefied natural gas is equivalent to 584 cubic meters of natural gas. Natural-gas-equivalent capacities (in billions of cubic meters) were GL2Z—10.3, GL1Z—10.2, GL1K—4, and GL4Z—1.1.