2012 Minerals Yearbook

LIBYA

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The Mineral Industry of Libya

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In 2012, Libya was ranked first in Africa and seventh in the world in terms of the size of its proved crude oil reserves, which were estimated by the Organization of the Petroleum Exporting Countries (OPEC) to be 48.5 billion barrels and to account for 2.9% of the world's total crude oil reserves. Libya, which is one of the 12 members that make up OPEC, was Africa's fourth-ranked producer of crude oil and condensate after Nigeria, Angola, and Algeria. The country also held 15 billion cubic meters of natural gas reserves, which accounted for 0.3% of the world's total, and was the fourth-ranked producer of natural gas in Africa after Algeria, Nigeria, and Egypt. Libya exported crude oil, natural gas, refined petroleum products, methanol, and urea. The country also produced modest quantities of cement, crude steel, direct-reduced iron (DRI), gypsum, lime, salt, and sulfur for domestic consumption (table 1; BP p.l.c., 2013, p. 6, 8, 22, 24; Organization of the Petroleum Exporting Countries, 2013, p. 11).

Minerals in the National Economy

The Libyan economy was highly dependent on hydrocarbon earnings and it was thus vulnerable to changes in crude oil prices and disruptions in petroleum exports. According to International Monetary Fund estimates, Libya's real gross domestic product (GDP) increased by 104.5% in 2012 compared with a decrease of 62.1% in 2011. The sharp change in both years was the result of the interruption in hydrocarbon production for most of 2011 because of armed conflict and the resumption of production operations in 2012. Activity in the hydrocarbon sector in terms of nominal value increased by 211.4% compared with a decrease of 72.0% in 2011. Hydrocarbon revenues accounted for 69% of the total Government revenue compared with about 48% in 2011 (International Monetary Fund, 2013, p. 22; Organization of the Petroleum Exporting Countries, 2013, p. 83).

In 2012, the nominal value of hydrocarbon exports, which accounted for 98% of the country's total exports, increased by about 221% to $61.0 billion from $18.7 billion in 2011 and contributed 74.4% of the Libyan GDP. The hydrocarbon sector employed only 43,000 Libyan workers and many more expatriate workers (Mirza, 2012; International Monetary Fund, 2013, p. 22).

Government Policies and Programs

The National Mining Corp. (NMC) was created by Resolution No. 161 of 2007 to invest in the country's natural resources and minerals, to ensure that national demand for minerals is met by the domestic industries (where possible), and to attract foreign investment to the mining sector. The shareholders in the NMC included state-owned producers of cement and iron and steel as well as local banks and investment agencies. In 2012, the NMC was seeking to establish joint ventures with other companies to exploit the country's mineral resources, namely clays, granite, gypsum, iron ore, marble, and silica sand (National Mining Corp., 2012).

Law No. 2 of 1971 and its amendments regulate mining and quarrying activity in Libya. Law No. 5 of 1997 regulates foreign investment in the nonoil sectors and assigns the NMC the authority to grant mining licenses, enter into investment contracts with companies, and collect revenue generated by mines and quarries. Petroleum law No. 25 of 1955, Petroleum Regulations Nos. 8 and 9, and the provisions of the regulations pertaining to production-sharing agreements between the Government and international oil companies govern the hydrocarbon sector operations in Libya. These agreements were known as the "5-year Exploration and Production-Sharing Agreement IV." Additionally, law No. 443 of 2006 also applies to international companies, including hydrocarbon and mineral production companies that intend to operate in Libya. This legislation requires foreign companies to have a local partner (either state owned or private) that holds a minimum of a 35% share in any joint venture. State-owned Al-Muassasah Al- Libiyah Lilnaft [National Oil Corp. (NOC)] played a dual role as a regulator and a production partner in the hydrocarbon sector (National Mining Corp., 2012; National Oil Corp., 2013).

Structure of the Mineral Industry

In 2012, the NOC was the sole owner of the following nine oil and oil-related services companies: Arabian Gulf Oil Co., Azzawiya Oil Refining Co., Brega Petroleum Marketing Co., Jwofe Oil Technology, National Oil Fields and Terminals Catering Co., National Oil Well Drilling and Workover Co., North Africa Geophysical Exploration Co., Ras Lanuf Oil and Gas Processing Co., and Sirte Oil Co. (National Oil Corp., 2013).

The NOC was also a partner in seven joint-venture companies, including Akakus Oil Operations A.G. with Repsol YPF S.A. of Spain; Eni Gas Co. and Eni Oil Co. with Eni S.p.A. of Italy; Harouge Oil Operations Co. with Petro-Canada (a subsidiary of Suncor Energy Inc. of Canada); Mabruk Oil Operations with Total E&P Libya (a subsidiary of Total S.A. of France); Waha Oil Co. with ConocoPhillips Co., Hess Corp., and Marathon Oil Corp. of the United States; and Zuweitina Oil Co. with OMV A.G. of Austria (table 2; National Oil Corp., 2013).

Twenty-eight international oil companies were working in Libya under exploration and production-sharing agreements that they had signed with the NOC. Among these companies were, in alphabetical order of their country of registration, Sonatrach S.p.A. of Algeria; Woodside Petroleum Ltd. of Australia; Petróleo Brasileiro S.A. of Brazil; Petro Canada Libya Co. of Canada; Great Wall Drilling Co. (a subsidiary of China National Petroleum Corp.) of China; Total E&P Libye (a subsidiary of Total S.A.) of France; RWE Dea North Africa/Middle East GmbH and Wintershall Holding GmbH of Germany; Inpex Corp., Japan Petroleum Exploration Co. Ltd., and Nippon Oil Exploration Ltd. of Japan; Oil India Ltd. and ONGC Videsh Ltd. of India; Pertamina E & P Libya Ltd. Co. of Indonesia; Statoil ASA of Norway; OAO Gazprom and OAO Tatneft of Russia; Turkish Petroleum Overseas Co. (TPOC) of Turkey; BG Group and Royal Dutch Shell p.l.c. of the United Kingdom; and Amerada Hess Libya Exploration Ltd., Chevron Corp., ExxonMobil Libya Ltd., and Occidental Petroleum Corp. of the United States (National Oil Corp., 2013).

Wintershall Holding operated eight oilfields in concessions 96 and 97, which are located about 1,000 kilometers (km) southeast of Tripoli. The company was also exploring for crude oil and natural gas in southeastern Libya and in the Al Jurf (Block C 137) offshore site (Wintershall A.G., 2013).

Mineral Trade

In 2012, Libya's hydrocarbon exports, which included crude oil, natural gas, and other petroleum products, recovered in both value and volume much of the losses of 2011 owing to the resumption of production and exports following the end of military operations in the country by yearend 2011. The value of hydrocarbon exports increased by 228% to $61.42 billion from $18.7 billion in 2011. The volume of crude oil exports increased by 221% to 962,000 barrels per day (bbl/d) from about 300,000 bbl/d; natural gas exports increased by 70% to 6,225 million cubic meters from 3,666 million cubic meters in 2011; and the volume of petroleum products exports increased by 94% to 40,000 bbl/d from 20,600 bbl/d in 2011. Libyan crude oil prices changed slightly in 2012 compared with those of 2011; the average price for Ess Sider crude decreased to $111.86 per barrel from $111.90 per barrel in 2011, and that of Brega crude decreased to $111.45 per barrel from $112.89 in 2011 (Organization of the Petroleum Exporting Countries, 2013, p. 11, 82–83).

Production

Hydrocarbon production rebounded partially in 2012 following the stoppage in 2011 because of the war, which lasted for most of the year. Production of crude oil, natural gas, and refinery products increased significantly in 2012 compared with that of 2012. According to the latest available statistics from the World Steel Association, Libya's crude steel production increased by 215% in 2012 compared with that of 2011, and DRI production increased by 208%. Production of some industrial minerals, such as cement, gypsum, and lime, was estimated to have increased because of the resumption of construction activity, but no verifiable data were available. According to Arab Fertilizer Association statistics, ammonia production increased slightly by 8.5% whereas the output of urea decreased by 94% in 2012 compared with that of 2011. Both ammonia and urea production and exports remained well below pre-war production levels (table 1; Arab Fertilizer Association 2013, p. 23, 28; Midrex Technologies, Inc., 2013, p. 8; World Steel Association, 2013, p. 2, 91).

Commodity Review

Metals

Iron and Steel.—The NMC reaffirmed the existence of iron ore deposits at the Wadi As Shati in southwestern Libya, which is located about 900 km from the Mediterranean coast. These deposits had the potential to feed Libyan Iron and Steel Co.'s steel complex in Misuratah, which is located on the coast of the Mediterranean Sea and had been importing its iron ore from such countries as Brazil. The deposits cover an area of 4,000 square kilometers and hold more than 5 billion metric tons of all iron types, including 900 million metric tons (Mt) of proved reserves at the Tharot lens, 750 Mt of probable reserves at the Arrwisa lens, and 500 Mt of probable reserves at the Ashkeda lens. Although the Government is interested in developing the Wadi As Shati iron ore deposits, foreign investment would likely be needed to develop the infrastructure for the mine and to construct the 900-km-long railway that would make it possible to transport iron ore to Lisco's steel complex and to the Port of Tripoli (National Mining Corp., 2012).

In April, Lisco, which was the sole iron and steel producer in Libya, resumed steelmaking operations in two of its three electric arc furnaces (EAF) in melting shop No. 1 at its complex in Misuratah, which had been idle since February 2011 (table 1). Lisco had two melting shops with a total of six EAFs, which together had the capacity to produce 1.324 million metric tons per year of liquid steel (Arab Steel, 2012).

DRI production increased to 508,000 t in 2012 from 165,000 t in 2011 and crude steel output increased to 315,000 t. Hot-rolled products output increased by 214% to 220,000 t from 70,000 t in 2011. The levels of crude steel and DRI production, however, remained significantly less than in recent years—production in 2010 was 825,000 t and 1.27 Mt, respectively. Libya's exports of semifinished and finished steel products decreased to 47,000 t from 92,000 t in 2011, whereas imports increased to 744,000 t from 154,000 t in 2011 (World Steel Association, 2013, p. 2, 32, 52, 55).

Industrial Minerals

Gypsum.—The NMC estimated Libya's gypsum resources to be 8.4 Mt. The company identified 18 locations in Libya that have significant gypsum deposits. The deposits, which belong to the Bir Al Ghanam Formation, are scattered in Bengazi, Al Gharbi, Al Jabal, and the Gulf of Sirte. The Jefren deposit is estimated to contain one of the world's highest concentrations of pure gypsum (National Mining Corp., 2012).

Nitrogen.—Production of ammonia and urea fertilizers at the Libyan Norwegian Fertilizer Co. (Lifeco)'s plant in the Marsa El Brega complex on the Mediterranean coast, which was halted for most of 2011 owing to military operations and civil unrest, resumed partial operations in 2012. The company, which was a joint venture of Yara International ASA of Norway (50% interest) NOC and LIA (25% interest each), had a combined production capacity of 2,200 metric tons per day (t/d) of liquid ammonia and 2,750 t/d of granular urea (Arab Fertilizer Association, 2013; Libyan Norwegian Fertilizer Co., 2013).

Silica.—The NMC promoted the silica sand deposit in the Idri region in southeastern Libya as a potential site for mining and development, as it held 1.69 Mt of proved reserves and 1.66 Mt of probable reserves of silica sand at two quarries. Silica sand is used to manufacture casting molds, fiberglass, optical lenses, and polishing material, as well as in cement and steel production (National Mining Corp., 2012).

Mineral Fuels

Petroleum.—Although, the country's 40 main oil and gas fields were not seriously damaged during the war in 2011, substantial damage was reported at the Es Sider and Mersa Brega oil terminals, Lisco's facilities in Misuratah, and the Ras Lanuf petroleum refinery in Ras Lanuf. Several companies, however, resumed operations in late 2011 and the first quarter of 2012. Crude oil and natural gas production resumed in many oil and gas fields around the country, and the production rate increased to 1.5 million barrels per day (Bahgat, 2012).

In 2012, the number of crude-oil-producing wells in Libya increased by 1,301 wells to 1,910 wells from 609 wells in 2011, and the number of wells completed, including development and exploration wells, decreased by 8 wells to 68 wells from 76 wells. Libya had 72 active oil rigs in 2012 compared with 55 rigs in 2011 (Organization of the Petroleum Exporting Countries, 2012, p. 25–27).

Outlook

Crude oil output was expected reach pre-conflict levels in 2013, but worker strikes and civil conflict caused interruptions in crude oil production that could prevent the Government from achieving its production target for the year. Reconstruction and continuation of infrastructure projects, such as a coastal highway, are expected to the increase demand for nonfuel minerals. The mineral industry of Libya is likely to grow significantly in the next 5 years as the infrastructure and facilities that were damaged or destroyed during 2011 are rebuilt.

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TABLE 1

LIBYA: PRODUCTION OF MINERAL COMMODITIES[1]

(Thousand metric tons unless otherwise specified)

Commodity[2]		2008	2009	2010	2011	2012
METALS						
Iron and steel, metal:						
Direct-reduced iron[3]		1,569	1,097	1,270	165 r	508
Crude steel		1,137	914	825	100	315
INDUSTRIAL MINERALS						
Cement, hydraulic[e]		6,000	6,500	7,000	3,500	4,000
Gypsum[e]		250	250	250	125	150
Lime[e]		250	250	250	125	150
Nitrogen:						
N content of ammonia		417	530	580	71	79
N content of urea		277	358	414	53	3
Salt[e]		40	40	40	20	30
Sulfur, byproduct of petroleum and natural gas[e]		142	130	132	65	100
MINERAL FUELS AND RELATED MATERIALS						
Gas, natural:						
Gross	million cubic meters	30,310	29,289	30,257	9,861	23,435
Dry	do.	15,900	15,900	16,814 r	7,855 r	18,118
Natural gas liquids	thousand 42-gallon barrels	29,200	29,200	29,200	7,300	15,000 e
Methanol		669	664	638	85 r	350 e
Petroleum:						
Crude	thousand 42-gallon barrels	664,300	602,980	605,535	174,835	550,785
Refinery products:						
Liquefied petroleum gas	do.	2,117 r	2,409 r	2,409 r	2,372 r	2,400
Gasoline	do.	6,643	6,424	5,913	4,855 r	5,242
Kerosene and jet fuel	do.	12,520	15,294	15,805	6,216 r	7,203
Naphtha	do.	21,203 r	20,336 r	20,196 r	5,332 r	11,081
Distillate fuel oil	do.	30,806	32,631	35,186	11,354 r	16,791
Residual fuel oil	do.	51,538	47,924	51,502	14,932 r	20,797
Other	do.	3,873 r	2,732 r	3,284 r	1,739 r	3,372
Total	do.	128,700 r	127,750 r	134,295 r	46,800 r	66,886

[e]Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. [r]Revised. do. Ditto.

[1]Table includes data available through August 31, 2013.

[2]In addition to the commodities listed, a variety of clay, dolomite, limestone, sand, and crushed construction stone was produced, and natron (soda ash) may have been produced, but available information is inadequate to make estimates of output. Natural gas liquids also were produced but were blended with crude petroleum and reported as part of that total.

[3]Includes hot-briquetted iron.

TABLE 2
LIBYA: STRUCTURE OF THE MINERAL INDUSTRY IN 2012

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Cement		Joint Libyan Cement Co. (JLCC) (Libyan Manufacturing Joint Venture Co., 90%, and plant employees, 10%)	Benghazi	1,000
Do.		do.	El Fataih, Derna	1,000
Do.		do.	El Hawari	1,000
Do.		Arab Union Contracting Co.	Burj Cement 1 at Zliten	1,400
Do.		do.	Burj Cement 2 at Zliten	1,600
Do.		Alahliya Cement Co. [National Investment Co., 64.9%; Economic and Social Development Fund (ESDF), 32.8%; others, 2.3%]	Lubda	1,000
Do.		do.	Souk el Khamis	1,000
Do.		do.	Zliten	1,000
Do.		do.	El Margueb	300
Gypsum		Alahliya Cement Co.	Ghadames	100
Do.		do.	Souk el Khamis	9
Do.		Arab Union Contracting Co.	Burj Cement 1 at Zliten	35
Iron and steel:				
Iron:				
Hot-briquetted iron		Libyan Iron and Steel Co. (Government, 100%)	Misuratah	650
Sponge iron		do.	do.	1,100
Steel:				
Crude		do.	do.	1,241
Rolled:				
Bar and rod		do.	do.	800
Cold-rolled strip		do.	do.	140
Hot-rolled strip		do.	do.	580
Methanol		Sirte Oil Co. [National Oil Corp. (NOC), 100%]	Marsa El Brega	680
Natural gas, liquefied		do.	do.	700
Nitrogen:				
Ammonia		Libyan Norwegian Fertilizer Co. (Lifeco) [Yara International ASA, 50%; National Oil Corp. (NOC), 25%; Libyan Investment Authority, 25%]	do.	726
Urea		do.	do.	895
Petroleum:				
Crude	thousand 42-gallon barrels	Mellitah Oil Co. [National Oil Corp. (NOC), 85%, and Eni S.p.A., 15%]	Oilfields include the Bhar Essalam, the Bouri, the Bu Attifel, the El Feel, KK, NC–125, NC–169, NC–174, OO–82, the Rimal, UU–82, XX–82, the Wafa	72,700
Do.	do	Arabian Gulf Oil Co. [National Oil Corp. (NOC), 100%]	Oilfields include the Sarir and the Nagoora Augila	11,820
Do.	do	Akakus Oil Operations A.G. [National Oil Corp. (NOC), 88%, and Repsol YPF S.A., 12%]	NR–186 oilfield in Murzuq Basin	107,300
Do.	do.	Waha Oil Co. [National Oil Corp. (NOC), 59.2%, and ConocoPhillips Co., Marathon Oil Corp., and Hess Corp., 40.8%]	Oilfields include the Dahra, the Gialo, the Samah, and the Waha	107,800
Do.	do.	Sirte Oil Co. [National Oil Corp. (NOC), 100%]	Oilfields include the Assumud, the Attahadi, and the Raguba	23,700
Do.	do.	Wintershall Holding GmbH (operator)	Oilfields include the As-Sarah, the Hamid, the Jakhir, the Nakhla, and the Tauma	30,500
Do.	do.	Harouge Oil Operations Co. [National Oil Corp. (NOC), 88%, and Petro-Canada, 12%]	Oilfields include the Amal, the En Naga North, the En Naga West, and the Tibisti	3,000

See footnotes at end of table

TABLE 2—Continued
LIBYA: STRUCTURE OF THE MINERAL INDUSTRY IN 2012

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Petroleum—Continued:				
Crude—Continued				
Do.	thousand 42-gallon barrels	Zuweitina Oil Co., [National Oil Corp. (NOC), 88%, and OMV A.G., 12%]	Oilfields include the Al Fedaa, the Al Hakeem, the Al Sabah, the Zella, 29C, 103A, 103B, 103C, and 103D	15,400
Do.	do.	Mabruk Oil Operations [National Oil Corp. (NOC), 73%; Total S.A., 20.25%; Wintershall Holding GmbH, 6.75%]	Mabruke oilfield	24,700
Refined	do.	Ras Lanuf Oil and Gas Processing Co. [National Oil Corp. (NOC), 100%]	Ras Lanuf	80,300
Do.	do.	Azzawiya Oil Refining Co. [National Oil Corp. (NOC), 100%]	Az Zawiya	44,000
Do.	do.	Arabian Gulf Oil Co. [National Oil Corp. (NOC)]	Tobruk	7,300
Do.	do.	do.	Sarir	3,650
Do.	do.	National Oil Corp. (NOC)	Marsa el Brega	3,000

Do., do. Ditto.