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2012 Minerals Yearbook

ISRAEL

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The Mineral Industry of Israel

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In 2012, Israel played a significant role in the world's production of bromine, magnesium metal, phosphate rock, and potash. The country's share of the world's estimated bromine production amounted to 34%; potash, 6%; magnesium metal, 4%; and phosphate rock, 1%. Israel also accounted for 6% of the value of the world's polished diamond production. Other domestically significant mining and mineral processing operations included the production of cement, crushed stone, natural gas, and petroleum products. Israel consumed substantial amounts of bromine, phosphate rock, and potash in downstream processing operations; most of the final products of these operations were exported (Even-Zohar, 2013; Jasinski, 2013a, b; Kramer, 2013; Ober, 2013).

Minerals in the National Economy

In 2012, the mining and quarrying and the nonmetallic mineral products sectors combined accounted for about 1.3% of the gross domestic product (GDP), and the manufacture of iron, steel, and other metals, about 0.3%. The remainder of the manufacturing sector (which included diamond cutting and polishing, fertilizer production, and petroleum refining) accounted for 14.6% of the GDP. The nonmetallic minerals sector employed about 9,900 workers; mining and quarrying, about 4,000; and diamond cutting and polishing, about 2,800. Israel's total exports amounted to $54 billion in 2012, of which diamond accounted for 15.5%, and mining and quarrying, 3%. Total imports were valued at about $72.3 billion, of which mineral fuels accounted for 22.3%, and diamond, 10.4% (Central Bureau of Statistics, 2013, p. 620, 678, 756, 778, 782–783, 877–879).

Production

In 2012, the production of gypsum increased by 122%; potash, by 16%; phosphate rock, by 13%; and complex fertilizers (which contained at least two out of the following three elements: nitrogen, phosphorus, and potassium), by an estimated 11%. Dry natural gas production decreased by 42%; phosphatic fertilizers, by 24%; magnesium chloride, by 17%; and bromine, by 14% (table 1).

Structure of the Mineral Industry

Most of Israel's mining and mineral processing operations were privately owned, including the producers of aggregates, bromine, cement, lime, magnesium, natural gas, phosphate rock, potash, and salt. Bromine, cement, lead, magnesium, phosphate rock, potash, potassium nitrate, and sulfuric acid were produced by only one domestic company each. The diamond cutting and polishing industry was composed of many small producers.

Commodity Review

Metals

Copper.—Altos Hornos de México S.A. de C.V. (AHMSA) planned to reopen the Timna copper mines near Eliat and to build a new solvent extraction and electrowinning plant with a capacity of 24,000 metric tons per year (t/yr). In 2012, the company started construction on its new plant (Altos Hornos de México S.A. de C.V., 2013, p. 2).

Magnesium.—Dead Sea Magnesium Ltd. (DSM) [a subsidiary of Israel Chemicals Ltd. (ICL)] was a producer of magnesium metal and magnesium alloys. In 2012, DSM produced 27,292 metric tons (t) of magnesium metal compared with 26,284 t in 2011 and was reportedly engaged in debottlenecking operations that were expected to increase its capacity of 34,000 t/yr by between 7% and 10%. As of late August 2012, it was unclear whether the expansion had taken place (Waite, 2012).

Industrial Minerals

Bromine.—Brines and carnallite from the Dead Sea were extracted by Dead Sea Bromine Company Ltd. (DSBC) (a subsidiary of ICL) at DSBC's plant at Sdom, which had a capacity of 280,000 t/yr. Bromine production decreased to about 174,000 t in 2012 from 202,313 t in 2011. DSBC consumed about 76% of its bromine for the manufacture of bromine compounds at its plants in China, Israel, and the Netherlands. Bromine compounds produced by DSBC were used in such applications as flame retardants, natural gas and crude petroleum production, pharmaceuticals, and water treatment (Israel Chemicals Ltd., 2013b, p. 61–62, 66–67).

Diamond.—Israel did not produce rough diamond, but the country was one of the world's leading diamond cutting and trading centers. Domestic diamond cutting and polishing companies specialized in large, high-value gemstones. In 2012, the value of Israel's cut and polished diamond exports decreased to $5.6 billion from $7.2 billion in 2011; of that amount, the value of Israel's cut and polished diamond exports produced from domestic cutting and polishing operations decreased to $1.3 billion from $1.5 billion in 2011. The United States received 36% of Israel's polished diamond exports; Hong Kong, 28%; Belgium, 8%; and Switzerland and the United Kingdom, 5% each (Even-Zohar, 2013; Israel Diamond Institute Group of Companies, 2013; Rabinovich and Cohen, 2013).

Israel's cut and polished diamond production declined in recent years because of competition from Chinese and Indian producers that have lower labor costs. The domestic diamond cutting and polishing industry also faced problems, including an aging workforce and prices of rough diamond increasing faster than those of polished diamond. In 2012, the industry employed

2,800 workers compared with 2,900 in 2011 and 4,900 in 2002. The Government planned to assist the diamond cutting and polishing industry with recruiting and paying workers, export grants, and marketing support (Central Bureau of Statistics, 2003, p. 12.62; 2013, p. 620; Rabinovich and Cohen, 2013).

Magnesium Compounds.—Dead Sea Periclase Ltd. (a subsidiary of ICL) produced about 42,000 t of magnesia from brines in the Dead Sea in 2012; the capacity was 53,000 t/yr. ICL also produced magnesium chloride for use in deicing (Israel Chemicals Ltd., 2013b, p. 62, 66–67).

Phosphate Rock.—Rotem Amfert Negev Ltd. (a subsidiary of ICL) produced phosphate rock at the Arad, the Oron, and the Zin Mines in the Negev Desert. Mining of phosphate rock increased to 3.51 million metric tons (Mt) in 2012 from 3.11 Mt in 2011. Rotem consumed 69% of its output for the manufacture of phosphate fertilizers and phosphoric acid at its plants in Israel and European countries (Israel Chemicals Ltd., 2013a, p. 8; 2013b, p. 42).

Potash.—Dead Sea Works (DSW) (a subsidiary of ICL) used carnallite from the Dead Sea as raw material for its potash plants. The company planned to increase capacity in increments by removing bottlenecks and improving technology at existing plants. By the end of 2014, the total planned increase in capacity was expected to be between 300,000 and 500,000 t/yr. DSW's production increased in 2012; output was constrained in 2011 by a labor dispute (Israel Chemicals Ltd., 2013a, p. 8; 2013b, p. 47).

Global consumption (excluding China) of potassium nitrate for agricultural use amounted to about 1 Mt in 2012; Haifa Chemicals Ltd. had an estimated 34% market share. Most of Haifa's production was in Israel; the company used 0.8 metric ton of potash for every metric ton of potassium nitrate produced. Haifa also produced potassium nitrate for industrial applications (Gabison, 2009; Sociedad Quimica y Minera de Chile S.A., 2013, p. 37).

Mineral Fuels

Coal and Natural Gas.—Noble Energy Inc. of the United States and Delek Energy Group produced natural gas at the Mari-B offshore gasfield in the Mediterranean Sea. In 2012, Noble and Delek's production of dry natural gas decreased to about 1.04 billion cubic meters from 1.79 billion cubic meters in 2011 as Mari-B approached the end of its life. The companies discovered the Tamar prospect in 2009 and the Leviathan prospect in 2010. At the end of 2012, reserves at Leviathan and Tamar were estimated to be about 480 billion cubic meters and 64 billion cubic meters, respectively (Petroleum Economist, 2012; Noble Energy, Inc., 2013, p. 6, 11, 15, 18–20).

Noble and Delek planned to start production at Tamar in April 2013. The companies planned to produce at Mari-B until production started at Tamar. The planned capacity at Tamar was 10.2 billion cubic meters per year; the operation could be expanded to 15.5 billion cubic meters per year. Noble and Delek also could start production at Leviathan as early as 2016; capacity was expected to be 16.5 billion cubic meters per year (Noble Energy, Inc., 2013, p. 15–16).

In 2012, the state-owned utility Israel Electric Corporation Ltd. (IEC) consumed 1.85 billion cubic meters of natural gas in power generation compared with 3.49 billion cubic meters in 2011. The decrease was attributable to the depletion of the Mari-B field and the shutdown of the pipeline that supplied natural gas from Egypt following repeated sabotage in 2011 and early 2012. IEC increased its consumption of coal to 14 Mt in 2012 from 12.7 Mt in 2011 (Israel Electric Corporation Ltd., 2013, p. 61, 64–65, 68).

Adira Energy Ltd. of Canada planned to drill its first well in the Gabriella offshore prospect by the end of June 2013, and at Yitzhak, by the end of October 2013. Zion Oil & Gas Inc. of the United States engaged in exploration at its Elijah #3 well in 2012 (Adira Energy Ltd., 2012).

Petroleum.—At the end of 2011, Oil Refineries Ltd. and Paz Oil Company Ltd. had petroleum refineries with capacities of 197,000 barrels per day (bbl/d) and 95,000 bbl/d, respectively. Paz Oil increased its capacity by nearly 16% by 2012; production decreased in 2012 because of scheduled maintenance (Paz Oil Company Ltd., 2013, p. A-133, A-134).

In 2012, IEC's consumption of diesel fuel amounted to about 39,800 bbl/d compared with 13,000 bbl/d in 2011. In previous years, natural gas consumption had increased as diesel consumption decreased (Israel Electric Corporation Ltd., 2013, p. 64–65).

Outlook

The production of potash is likely to increase from 2013 to 2015 because of ICL's expansion. Natural gas production is expected to increase from 2013 to 2017 with the opening of Leviathan and Tamar. The output of petroleum products is likely to increase in 2013. Refined copper production could also start in the near future. The production trends for the cement, crushed stone, and sand industries will depend on the strength of the domestic economy. The outlook for bromine, diamond, and phosphate rock and fertilizers will depend on market conditions in the world economy.

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TABLE 1
ISRAEL: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity[2]		2008	2009	2010	2011	2012[e]
METALS						
Iron and steel, steel, crude[e]		480,000	380,000	430,000	430,000	430,000
Lead, refined secondary		27,000	26,000	27,000	27,000	27,000
Magnesium metal		32,051	19,405	23,309	26,284 r	27,292 3
INDUSTRIAL MINERALS						
Bromine, elemental		164,042	127,689	184,696	202,313 r	173,940 3
Cement, hydraulic	thousand metric tons	4,819	4,759	5,139	5,480 r	5,900
Clays:						
Brick clay[4]		63,499	53,581	58,896	57,908 r	53,000
Common clay		1,017,000	578,000	677,900	1,220,379 r	1,120,000
Flint clay		NA	NA	NA	300,000	280,000
Kaolin		151	--	--	--	-- 3
Diamond[5]	thousand carats	400 e	299	245	230 r, e	200
Gypsum		9,975	9,152	99,730	20,437 r	45,407 3
Lime		480,554	428,552	657,897	715,487 r	770,000
Magnesium chloride		108,852	132,636	135,930	126,988 r	105,610 3
Phosphate:						
Phosphate rock, mine output:						
Beneficiated	thousand metric tons	3,088	2,697	3,135	3,105	3,513 3
P_2O_5 content	do.	850	740	860	850	960
Fertilizers:[6]						
Phosphatic	do.	1,000 e	726	917	787	602 3
Complex[7]	do.	470 e	580	875	1,538	1,700
Potash, K_2O equivalent	do.	2,170	2,548 r	2,636 r	2,642 r	3,060 3
Salt, marketed	do.	421	357	421	410 r	415 3
Sand:						
Silica sand		194,771	163,206	197,699	232,909 r	210,000
Other[e]	thousand metric tons	6,000	5,000	4,000	3,500 r	3,200
Stone:[e]						
Crushed	do.	46,000	45,000	45,000 r	49,000 r	45,000
Dimension, marble		75,000	68,000	72,000	72,000	66,000
Sulfur:						
Byproduct from petroleum	thousand metric tons	50	50	55 e	60 e	60
Sulfuric acid:[e]						
Gross weight	do.	1,900	1,600	1,930	1,930	2,100
S content	do.	620	520	630	630	680

See footnotes at end of table.

TABLE 1—Continued
ISRAEL: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity[2]		2008	2009	2010	2011	2012[e]
MINERAL FUELS AND RELATED MATERIALS						
Gas, natural:						
Gross	million cubic meters	3,436	2,825	3,234	4,318 [r]	2,556 [3]
Dry	do.	1,437	1,178	1,344	1,788 [3]	1,044 [3]
Petroleum:						
Oil shale[8]	thousand 42-gallon barrels	218 [r]	228 [r]	221 [r]	213 [r]	210
Crude	do.	16 [r]	15 [r]	12 [r]	34 [r]	32 [3]
Refinery products:						
Liquefied petroleum gas	do.	6,252 [r]	6,009 [r]	6,554 [r]	6,600 [r]	6,600
Gasoline	do.	24,473 [r]	25,454 [r]	23,261 [r]	23,048 [r]	23,000
Naphtha	do.	5,031 [r]	3,025 [r]	3,609 [r]	5,713 [r]	5,700
Kerosene	do.	11,104 [r]	9,652 [r]	10,595 [r]	10,521 [r]	10,500
Distillate fuel oil	do.	27,826 [r]	28,258 [r]	28,162 [r]	26,573 [r]	26,500
Residual fuel oil	do.	14,352 [r]	16,224 [r]	16,790 [r]	16,523 [r]	16,500
Other[e]	do.	7,900 [r]	6,700 [r]	7,000 [r]	7,000 [r]	7,000
Total	do.	96,900 [r]	95,300 [r]	96,000 [r]	96,000 [r]	95,800

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

[1]Table includes data available through November 13, 2013.

[2]In addition to the commodities listed, caustic soda, secondary refined zinc, and semimanufactured steel are produced, but available information is inadequate to make reliable estimates of output.

[3]Reported figure.

[4]Includes flint clay from 2008 to 2010.

[5]Imported diamond cut in Israel.

[6]Reported exports.

[7]Contain at least two of the following elements: nitrogen, phosphorus, and potassium.

[8]Converted from metric tons of oil equivalent.

TABLE 2
ISRAEL: 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
Aggregates		Lime & Stone Production Company Ltd. [Housing & Construction Holding Company Ltd., 50%, and Readymix (Israel) Ltd., 50%]	Modiim	6,000[e]
Do.		do.	Dragot, Ein Harod, Eliat, Golani Junction, Kadarim, Revivim, Segev, and Shefar'am	5,000[e]
Do.		Hanson Israel (subsidiary of HeidelbergCement AG)	Migdal Zedeka and other quarries	8,000[e]
Bromine		Dead Sea Bromine Company Ltd. (DSBC) [Israel Chemicals Ltd. (ICL), 100%]	Sdom	280
Cement		Nesher Israel Cement Enterprises Ltd. (Clal Industries and Investments Ltd., 75%)	Plant at Ramle	5,800
Do.		do.	Plants at Haifa and Hartuv	2,000
Lead, refined, secondary		Hakurnas Lead Works Ltd.	Ashdod	25
Lime		Lime & Stone Production Co. Ltd.	Shefeya	100
Do.		Negev Industrial Minerals Ltd.	Mishor Rotem	90
Magnesium:				
Magnesia		Dead Sea Periclase Ltd. [Israel Chemicals Ltd. (ICL), 100%]	do.	53
Magnesium, refined		Dead Sea Magnesium Ltd. (DSM) [Israel Chemicals Ltd. (ICL), 100%]	Sdom	34
Natural gas	million cubic meters	Delek Energy Group, 53%, and Noble Energy Inc., 47%	Mari-B gasfield	6,200
Petroleum:				
Crude	thousand 42-gallon barrels	Lapidoth Israel Oil Prospectors Corp.	Heletz-Brur	8
Do.	do.	do.	Kochav	3
Refined	do.	Oil Refineries Ltd. (Israel Corp., 45.1%)	Haifa	71,900
Do.	do.	Paz Oil Company Ltd.	Ashdod	40,200
Phosphate:				
Phosphate rock		Rotem Amfert Negev Ltd. [Israel Chemicals Ltd. (ICL), 100%]	Arad, Oron, and Zin	4,500
Phosphatic fertilizers		do.	Mishor Rotem	1,800
Do.		Haifa Chemicals Ltd.	Haifa	NA
Phosphoric acid[1]		Rotem Amfert Negev Ltd.	Mishor Rotem	640
Do.		Haifa Chemicals Ltd.	Haifa	NA
Potash		Dead Sea Works (DSW) (Israel Chemicals Ltd. (ICL), 100%]	Sdom	3,200
Salt		do.	do.	700
Do.		Israel Salt Industries Ltd. (subsidiary of Danker Group)	Eliat	150
Do.		do.	Atlit	14
Silica sand		Negev Industrial Minerals Ltd.	Mactesh Htira	300
Steel:				
Crude		Hod Metal Products & Manufacturing Co. Ltd.	Akko	300
Do.		Yehuda Steel Ltd.	Ashdod	180
Billet		do.	Bene Ayish	200
Do.		do.	Ashdod	180
Do.		Hod Metal Products & Manufacturing Co. Ltd.	Akko	300
Rebar		Yehuda Steel Ltd.	Bene Ayish	200
Do.		do.	Ashdod	120
Do.		Hod Metal Products & Manufacturing Co. Ltd.	Kiryat Gat	300
Sulfur		Oil Refineries Ltd.	Ashdod	40
Do.		Paz Oil Company Ltd.	Haifa	33
Sulfuric acid		Rotem Amfert Negev Ltd.	Mishor Rotem	2,400
Zinc		Numinor Chemical Industries Ltd.	Maalot	NA

[e]Estimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto. NA Not available.
[1]P_2O_5 equivalent.