



2011 Minerals Yearbook

TUNISIA

THE MINERAL INDUSTRY OF TUNISIA

By Mowafa Taib

Production by the Tunisian mineral industry, which included mineral fuels production, phosphate rock mining, and phosphate-based commodities manufacturing, decreased significantly in 2011. The decrease was mainly because of political unrest and labor strikes that took place across the country after the “Jasmine Revolution” in December 2010 and resulted in the overthrow of the Government and the election of a new Government in 2011. Other factors that affected production included the fallout from the war in neighboring Libya and reduced demand for mineral commodities from the European Union. Tunisia produced aluminum fluoride, cement, common clays, crude oil, gypsum, iron and steel, iron ore, lime, natural gas, phosphate rock and phosphate-based fertilizers, refined petroleum products, and salt (table 1; Central Bank of Tunisia, 2012, p. 20).

Minerals in the National Economy

In 2011, Tunisia’s gross domestic product decreased by 1.8% in real terms compared with an increase of 3.0% in 2010. The mineral sector’s contribution to the country’s economic growth was -2% compared with 0.6% in 2010. The added value of the mining sector in the country’s economic growth in real terms was -71% compared with 13% in 2010; the hydrocarbon sector’s contribution was -21% compared with 3.5% in 2010; and that of the chemical industries was -38% compared with 6.8% in 2010. The value of phosphate rock and phosphate-based products exports decreased by about 40% in 2011 compared with that of 2010. Hydrocarbon exports increased in value by 10% (which was -19% in constant prices) compared with that of 2010 (Central Bank of Tunisia, 2012, p. 21, 24).

Government Policies and Programs

Mineral exploration and production activities are regulated by the Mining Code (law No. 2003–30 of April 28, 2003). Mines are state-owned properties in Tunisia, and they are regulated by the National Office of Mines, which also conducts geologic research, prepares geologic and geophysical maps, and promotes private operations of mines. The mining code sets a tax rate of 25% on profits from mining activity but includes a 5-year tax holiday that starts at the beginning of exploitation. The Government introduced steps to stimulate and sustain exports, including paying 50% of employer contributions to the nation’s social security fund in case companies were to lay off workers temporarily or reduce their work to part time from full time (National Office of Mines, 2012).

Crude oil and gas production are governed by the Hydrocarbons Code (law No. 99–93 of August 17, 1999) and its supplement (law No. 2002–23 of February 2002). The Hydrocarbons Code allows 1 year for prospecting, a maximum of 5 years for exploration, and 30 years for production. The

law reduces the tax rate to 50% from 75% if the state oil company of Tunisia—Entreprise Tunisienne d’Activités Pétrolières (ETAP)—holds a 40% share of the concession (Entreprise Tunisienne d’Activités Pétrolières, 2012).

Production

The production volumes of most mineral commodities produced in 2011 decreased compared with those of 2010, including the production of phosphate rock, which decreased by about 70%; phosphate-based fertilizers, by 45%; salt and white cement, by 35% each; refined petroleum products, by 27%; lime, by 18%; aluminum fluoride and dry gas, by 13% each; and crude oil, by 11%. Gypsum production however, increased by 23% compared with that of 2010 (table 1).

Structure of the Mineral Industry

Government-owned Compagnie des Phosphates de Gafsa (CPG) carried out all phosphate mining and fertilizer manufacturing activities in Tunisia. Group Chimique Tunisien (GCT), which was merged with CPG in 1996, produced phosphate-based fertilizers. Much of the cement production was carried out by private companies, which included local, European, and regional companies. State-owned Société Tunisienne de Sidérurgie [Tunisian Steel Manufacturing Co.], which was also known as El-Fouladh, was the sole steel billet producer in the country. Privately owned steel mills, such as Intermetal S.A. and Tunisacier Steelworks, produced rebar (table 2; Arab Fertilizers Association, 2012).

Mineral Trade

In 2011, the value of Tunisian exports of goods decreased by about 41% to \$8.5 billion from \$14.4 billion in 2010. The share of mineral commodity exports, including phosphate rock and phosphate-based products, in the country’s total exports decreased to 5.2% from 9.2% in 2010. Exports of phosphate rock decreased in value by 66% to \$40 million from \$117 million in 2010, and phosphoric acid exports decreased in value by 36% to \$500 million from \$778 million in 2010. Exports of diammonium phosphate decreased in value by about 57% to \$500 million from \$1.15 billion in 2010. Exports of triple superphosphate decreased in value to \$450 million from about \$540 million in 2010. The value of salt exports decreased to about \$63 million from \$78 million in 2010 (National Institute of Statistics, 2012).

Exports of energy and oil products, which accounted for 14% of the country’s total exports, increased in value by 10% compared with that of 2010. Imports of coke, crude oil, natural gas, and refined petroleum products, which made up 14% of total imports in 2011, increased in value by 26% compared with

that of 2010. Imports of sulfur were valued at \$288 million compared with \$310 million in 2010, and those of ammonia were valued at \$180 million compared with \$319 million in 2010 (National Institute of Statistics, 2012).

Commodity Review

Metals

Iron and Steel.—El-Fouladh, which had the capacity to produce 200,000 metric tons per year of steel, produced about 119,000 metric tons (t) of steel billet in 2011. Tunisia's rebar production increased by 6% to 563,000 t in 2011 from 532,000 t in 2010 (table 1).

Lead and Zinc.—A joint venture of Celamin Holdings N.L. of Australia and Tunisian Mining Services S.A. (TMS) was created to produce lead and zinc from dumps and old mine tailings at four old mine sites. Celamin expected that the project would have the potential to produce between 2.5 million metric tons (Mt) and 3.0 Mt grading between 2.4% and 2.8% lead and 2.6% and 3.0% zinc. The joint venture of these two companies was also awarded three exploration permits in northern Tunisia in areas with existing lead and zinc mineralization (Celamin Holdings N.L., 2012c, d).

Industrial Minerals

Cement.—The Carthage cement plant was expected to commence production in 2012 but startup of the plant was delayed to 2013 because of financial problems and change of ownership. The new greenfield plant at Djebel Ressas, which is located 40 kilometers (km) southwest of Tunis, was operated by Les Ciment de Carthage (Carthage Cement). Carthage Cement was established by Bina Holding and Global Investment House of Kuwait. The plant was expected to have the capacity to produce 2.3 million metric tons per year (Mt/yr) of cement. The Government held about a 40% interest in the plant, and the remaining shares were held by investors through the alternative investment market of the Tunisia Stock Exchange (Clémençot, 2012).

Phosphate Rock.—In January, CPG ceased phosphate rock production because of political unrest and strikes by workers in the mining and transportation sectors. Phosphate production at the level of 20,000 metric tons per day was stopped because of a strike by the railway workers and labor disputes at the mines. Phosphate rock production by CPG during the first half of 2011 was at 30% of the normal production level, and GCT's production of phosphoric acid and fertilizer was at only 50% of capacity (Feytis, 2011a–c).

Commencement of phosphoric acid production at Skhira by Tunisian Indian Fertilizers S.A. (TIFERT) was delayed until the second half of 2012 because of the country's political and social shakeup during 2011. TIFERT was a joint venture of CPG and GCT (35% interest each), and of Indian companies Coromandel Fertilizers Ltd. (CFL) and Gujarat State Fertilizers and Chemicals Ltd. (GSFC) (15% interest each). TIFERT's plant was built alongside the existing phosphoric acid plant operated by GCT at Skhira, which is located 50 km north

of the town of Gabes in mideastern Tunisia. The plant had been scheduled to commence operations in early 2011 with a production capacity of 1.3 Mt/yr of phosphoric acid. The entire production of the plant would be exported to India through a long-term purchasing agreement (DKL Engineering Inc., 2011; Duncan's Fertiliser, 2011).

The Bir El Afou phosphate project was a joint venture of Celamin (80% interest) and TMS (20% interest) to produce and export 1.5 Mt/yr of phosphate rock grading 32% P_2O_5 from the Bir El Afou deposit. The Bir El Afou deposit is located in northeastern Tunisia near the Algerian border and had estimated resources of 23 to 27 Mt of phosphate rock grading 14% to 16% P_2O_5 . In 2011, Celamin conducted a prefeasibility study for the project. Production at Bir El Afou was expected to begin by yearend 2013 (Celamin Holdings N.L., 2012a).

Celamin (80% interest) and TMS (20% interest) also held the Chaketma phosphate rock exploration permit; the permit covers an area of 56 square kilometers and a target potential of 150 to 200 Mt of phosphate rock grading 17% to 22% P_2O_5 . Celamin planned to develop this project following the completion of the first stage of the Bir El Afou phosphate rock project (Celamin Holdings N.L., 2012b).

Mineral Fuels

Natural Gas and Petroleum.—Tunisia's proved hydrocarbon reserves at the end of 2011 were estimated to be 430 million barrels of crude oil and 65 billion cubic meters of natural gas. Fifty-seven international and local companies were conducting exploration and production activities and held 54 exploration licenses for crude oil and natural gas in Tunisia. Four crude oil discoveries and one natural gas discovery were reported in Tunisia in 2011 compared with one crude oil and four natural gas discoveries in 2010 (Entreprise Tunisienne d'Activités Pétrolières, 2011; Organization of Arab Petroleum Exporting Countries, 2012, p. 8, 14, 20, 22).

Seven seismic surveys were carried out in Tunisia in 2011. These surveys covered the Borj El Khadra permit, which was operated by Eni S.p.A. of Italy; the Anaguid, the Jenein North and the Jenein South permits, which were operated by OMV A.G. of Austria; the Hammamet Offshore permit, which was operated by Storm Ventures International Inc. of Canada; the Nabeul permit, which was operated by Cooper Energy Ltd. of Australia; and the Azmour and the Rafrat permits, which were operated by Societe Shell Tunisia S.A. (a subsidiary of Royal Dutch Shell plc. of the United Kingdom) (Entreprise Tunisienne d'Activités Pétrolières, 2012).

Outlook

The volumes of phosphate rock and phosphate fertilizers production and exports are likely to rebound in the near future. The completion of the Celamin and the TIFERT projects are expected to increase the production capacity for phosphate rock and phosphate-based fertilizer in the country. Tunisia is likely to export more industrial mineral commodities, such as cement, to neighboring Algeria and Libya to satisfy the increased demand for construction materials in both countries.

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TABLE 1
TUNISIA: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity ²	2007	2008	2009	2010	2011
METALS					
Iron and steel:					
Iron ore:					
Direct shipping ore and concentrate, gross weight	180	206 ^r	151	180 ^r	171
Fe content ^e	94	110	79	94 ^r	90
Metal:					
Steel, crude	61	82	155	115 ^r	119
Concrete-reinforcing bar	454	426	337	532 ^r	320
INDUSTRIAL MINERALS					
Cement, hydraulic:					
Gray	6,730 ^r	7,255 ^r	7,186 ^r	7,561 ^r	7,200
White	313 ^r	304 ^r	328 ^r	509 ^r	330
Total	7,043	7,559	7,514	8,070 ^r	7,530
Clays:					
Common	5,800	6,160	6,450	6,450	6,450
Mosaic tile	22,000	23,200	24,200	24,200	24,200
Earthenware tile	26,000	28,000	30,000	30,000	30,000
Fertilizers:					
Ammonium nitrate	25	124	155	169 ^r	116
Compound fertilizers	25	23	28	28	17
Diammonium phosphate	1,008	1,017	1,124	1,277	420
Dicalcium phosphate	88	72	64	77 ^r	55
Hyperphosphate	31	36	7	29 ^r	17
Phosphoric acid	1,140	1,009	1,115	1,214	518
Sodium tripolyphosphate	143	112	112	144 ^r	78
Triple superphosphate	806	863	747	740	350
Fluorine, aluminum fluoride	42	43	40	40	35
Gypsum ³	157	177	360	435 ^r	535
Lime	395	369	366	343 ^r	283
Phosphate rock, washed, gross weight	8,002	7,692	7,409	8,149 ^r	2,480
Salt, marine	933	1,063	1,280 ^r	1,804 ^r	1,181
MINERAL FUELS AND RELATED MATERIALS					
Gas, natural:					
Gross ^c	2,500 ^r	3,200 ^r	3,200 ^r	3,400 ^r	3,500
Dry	2,200 ^r	3,000 ^r	3,000 ^r	3,200 ^r	3,300
Petroleum:					
Crude	35,100	32,485	30,295 ^r	28,762 ^r	25,500
Refinery products:					
Liquefied petroleum gas	1,212	1,569	1,766	1,239 ^r	1,065
Gasoline	2,372 ^r	2,372 ^r	2,372 ^r	2,372 ^r	2,226
Kerosene and jet fuel	8,030 ^r	7,264 ^r	7,702 ^r	11,169 ^r	9,636
Distillate fuel oil	4,140	4,110	4,387	4,387	3,796
Residual fuel oil	4,320	4,450	4,330	4,307 ^r	1,533
Paraffin oil	928	859	621	621	621
White spirit	102	110	102	102	102
Total	21,104 ^r	20,734 ^r	21,279 ^r	24,197 ^r	18,979

^cEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^rRevised. do Ditto.

¹Table includes data available through December 31, 2012.

²In addition to the commodities listed, a variety of crude construction materials (sand and gravel and stone) was produced, but available information is inadequate to make reliable estimates of output.

³Does not include phosphatic gypsum (waste product) generated during fertilizer production.

TABLE 2
TUNISIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2011

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity ¹
Aluminum fluoride		Industries Chimiques du Fluor	Ghannouch, near Gabes	46
Cement:				
Portland		Société des Ciment d'Enfidha (Cementos Portland Valderrivas, S.A., 88%)	Enfidha	2,000
Do.		Société des Ciment de Jbel Oust (Cimentos de Portugal SGPS, S.A., 100%)	Jbel Oust	1,560
Do.		Société des Ciment de Gabès (Secil-Companhia Geral de Cal e Cimento, S.A., 99%)	Gabes	1,250
Do.		Société des Ciment d'Oum el Kébil (Government, 100%)	Le Kef	1,250
Do.		Les Ciment de Bizerte	Bizerte	1,000
Do.		Société des Ciments Artificiels Tunisiens (Colacem S.p.A., 100%)	Ben Arous	1,000
White		Société Tuniso-Andalouse de Ciment Blanc S.A. (Grupo Prasa, 100%)	Feriana	350
Fertilizer:				
Ammonium nitrate		Group Chimique Tunisien (GCT) (Government, 100%)	Ghannouch, near Gabes	330
Diammonium phosphate		do.	do.	1,300
Triple superphosphate		do.	M'dhilla	465
Do.		do.	Sfax	330
Gypsum		Les Plâtres Tunisiens (Knauf Gips KG)	Maknassy	100
Iron and steel:				
Iron ore		Société de Djebel Djerissa (Government, 91%)	Djerissa Mine	107
Do.		do.	Tamera-Douaria Mine	73
Steel, crude		Société Tunisienne de Sidérurgie (El-Fouladh) (Government, 91%)	El Fouladh	200
Steel, rolled, bar and rod		Intermetal S.A. (private, 100%)	Ben Arous	300
Do.		Tunisacier Steelworks (private, 100%)	Bizerte	100
Natural gas	million cubic meters	BG Group plc, 100%	Miskar field	523
Do.	do.	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 50%, and Perenco Ltd., 50%	Franig field	170
Do.	do.	Eni Tunisia B.V., 50%, and Entreprise Tunisienne d'Activités Pétrolières (ETAP), 50%	Oued Zar/Hammouda field	150
Do.	do.	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 50%, Eni Tunisia B.V., 25%; Pioneer Natural Resources Co., 20%; Talisman Energy Inc., 5%	Adam field	130
Do.	do.	Eni Tunisia B.V., 50%, and Entreprise Tunisienne d'Activités Pétrolières (ETAP), 50%	El Borma field	80
Do.	do.	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 55%, and Petrofac Ltd., 45%	Chergui field	70
Do.	do.	Eni Tunisia B.V., 50%, and Entreprise Tunisienne d'Activités Pétrolières (ETAP), 50%	Djebel Grouz field	40
Do.	do.	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 50%, and Perenco Ltd., 50%	Baguel/Tarfa field	40
Do.	do.	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 55%, and Winstar Resources Ltd., 45%	Sabria field	14
Do.	do.	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 55%, and Société MARETAP S.A., 45%	Ezzaouia field	10
Do.	do.	Lundin Petroleum A.B.	Zinnia field	2
Do.	do.	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 50%, and British Gas Tunisia Ltd., 50%	Hasdrubal field	NA
Petroleum:				
Crude	thousand 42-gallon barrels	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 50%; Eni Tunisia B.V., 25%; Pioneer Natural Resources Co., 20%; Talisman Energy Inc., 5%	Adam field	6,500
Do.	do.	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 51%, and Eni Tunisia B.V., 49%	Baraka field	4,000
Do.	do.	PA Resources A.B., 100%	Didon field	3,750

See footnotes at end of table

TABLE 2—Continued
TUNISIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2011

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity ¹
Petroleum—Continued:				
Crude—Continued	thousand 42-gallon barrels	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 50%, and Société de Recherches et d'Exploitation des Pétroles en Tunisie (SEREPT), 50%	Ashtart field	3,550
Do.	do.	Eni Tunisia B.V., 50%, and Entreprise Tunisienne d'Activités Pétrolières (ETAP), 50%	El Borma field	3,345
Do.	do.	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 50%, and Pioneer Natural Resources Co., 50%	Cheroug field	2,510
Do.	do.	Eni Tunisia B.V., 50%, and Entreprise Tunisienne d'Activités Pétrolières (ETAP), 50%	El Hajeb/Guebiba field	2,020
Do.	do.	do.	Oud Zar/Hammouda field	1,880
Do.	do.	Lundin Petroleum A.B., 40%; Atlantis Technology Service, 40%; Entreprise Tunisienne d'Activités Pétrolières (ETAP), 20%	Oudna field	1,470
Do.	do.	British Gas Tunisia Ltd., 100%	Miskar field	1,420
Do.		Ecumed Petroleum Corp., 75%, and Entreprise Tunisienne d'Activités Pétrolières (ETAP), 25%,	Al Manzah field	720
Do.	do.	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 51%, and Perenco Ltd., 49%	Franig field	780
Do.	do.	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 51%, and Thyna Petroleum Services S.A., 49%	Cercina field	560
Do.	do.	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 55%, and Tuniso-Kuwaitian Company of Petroleum, 45%	Sidi El Kilani field	460
Do.	do.	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 55%, and Société MARETAP S.A., 45%	Ezzouia field	430
Do.	do.	Lundin Petroleum A.B./EGEP	Sidi El Itayem field	390
Do.	do.	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 51%, and Thyna Petroleum Services S.A., 49%	El Ain/Gremda field	365
Do.	do.	Candax Energy Inc. and Ecumed Petroleum Corp., 74%, and PA Resources A.B., 24%	El Bibane field	350
Do.	do.	Winstar Resources Ltd.	Chouech Essaida field	300
Do.	do.	PA Resources A.B., 70%, and Société de Recherches et d'Exploitation des Pétroles en Tunisie (SEREPT), 30%	Douleb/Semmama field	190
Do.	do.	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 55%, and Winstar Resources Ltd., 45%	Sabria field	183
Do.	do.	do.	Rhemoura field	170
Do.	do.	Eni Tunisia B.V., 50%, and Entreprise Tunisienne d'Activités Pétrolières (ETAP), 50%	Djebel Grouz field	150
Do.	do.	do.	Larich field	130
Do.	do.	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 50%, and Société de Développement du Permis du Sud (SODEPS), 50%	Debbech field	73
Do.	do.	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 50%, and Société de Développement du Permis du Sud (SODEPS), 50%	Nakhil field	60
Do.	do.	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 51%, and Perenco Ltd., 49%	Baguel/Tarfa field	65
Do.	do.	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 51%	Mazrane field	45
Do.	do.	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 51%, and Circle Oil Plc, 49%	Beni Khalled field	40
Do.	do.	Petrofac Ltd., 55%, and Entreprise Tunisienne d'Activités Pétrolières (ETAP), 45%	Cherqui field	35
Do.	do.	Winstar Resources Ltd., 100%	Sanrhar field	34
Do.	do.	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 51%, and Perenco Ltd., 49%	Baguel field	20
Do.	do.	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 50%; Eni Tunisia B.V., 25%; Pioneer Natural Resources Co., 20%; Talisman Energy Inc., 5%	Abir field	10
Do.	do.	Winstar Resources Ltd., 100%	Ech-chouech field	10

See footnotes at end of table

TABLE 2—Continued
TUNISIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2011

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity ¹
Petroleum—Continued:				
Crude—Continued	thousand 42-gallon barrels	Canadax Energy Inc., 80%	Robbana field	7
Do.	do.	Entreprise Tunisienne d'Activités Pétrolières (ETAP), 75%	Mahares field	1
Refined	do.	Société Tunisienne des Industries du Raffinage (Government, 100%)	Bizerte	12,775
Phosphate rock		Compagnie des Phosphates de Gafsa (CPG) (Government, 100%)	Kef Eddour Mine	1,500
Do.	do.		Kef Eschfaier Mine	2,300
Do.	do.		Jallabia Mining Center	1,300
Do.	do.		Metlaoui, Mzida, Redeye and Uom Laraies Mines	2,600
Phosphoric acid		Group Chimique Tunisien (GCT) (Government, 100%)	Ghannouch, near Gabes	470
Do.	do.		Skhira	375
Do.	do.		M'dhilla	183
Do.	do.		Sfax	131
Do.		Tunisian Indian Fertilizers S.A. (TIFERT) [Compagnie des Phosphates de Gafsa (CPG), 35%; Group Chimique Tunisien (GCT), 35%; Coromandel Fertilizers Ltd., 15%; Gujarat State Fertilizers and Chemical Ltd., 15%]	Skhira	360 ²
Salt		Compagnie Générale des Salines de Tunisie (COTUSAL)	Sfax and Zarzis	900
Do.		TUNISEL	Sebkhet Lasdhibet	350
Do.		SAIDA S.A.	Sebkhet Sidi El Heni	250
Sodium tripolyphosphate		Société Chimique (ALKIMIA) [Group Chimique Tunisien (GCT), 39.1%; IMER Co., 22.12%; Driss Group, 17.05%; Carte Insurance, 9.77%; Societe Tunisienne d'Engrais Chimiques S.A., 7.23%; others, 4.73%]	Gabès	200

Do., do. Ditto. NA Not available

¹Actual production may significantly exceed nominal capacity.

²Under construction.