



# 2015 Minerals Yearbook

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**MALI AND NIGER [ADVANCE RELEASE]**

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# THE MINERAL INDUSTRIES OF MALI AND NIGER

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## MALI

Mali's economy continued to be largely dependent on gold exports, which historically have accounted for the majority of the country's total export earnings from mining. In addition to gold, Mali also produced small amounts of colored gemstones, diamond, iron ore, phosphate rock, salt, sand and gravel, and silver (as a byproduct of gold mining), but information was inadequate to make reliable estimates of output. Mali's undeveloped mineral resources included bauxite, chromium, copper, granite, gypsum, iron ore, kaolin, lead, lithium, manganese, marble, nickel, niobium, palladium, phosphate rock, rutile, silver, talc, thorium, tin, titanium, tungsten, uranium, and zirconium.

### Minerals in the National Economy

In 2015, Mali's real gross domestic product (GDP) was estimated at about \$7.3 billion.<sup>1</sup> Tax revenue from the gold industry was estimated to have accounted for 1.3% of the country's gross domestic product and for about 8.0% of total Government revenue compared with 1.5% and 10.2%, respectively, in 2014. Gold exports were estimated to have accounted for 67.2% of the total tax revenue from exports compared with 66.8% in 2014. The Government agency responsible for the mineral sector in Mali is the Direction Nationale de la Géologie et des Mines, which is part of the Ministère des Mines de l'Énergie et de l'Eau. Mali's mineral sector was regulated by law No. 2012-015 of February 27, 2012 (International Monetary Fund, 2016, p. 20, 22, 24; 2017).

### Production

Gold produced from industrial mining operations was estimated to be unchanged in 2015 from the 40,900 kilograms (kg) (revised) produced in 2014; this total did not include gold produced by artisanal miners. Gold output from artisanal mining operations was estimated to be more than 6,000 kg. Data on mineral production are in table 1.

### Structure of the Mineral Industry

Mining operations in Mali were privately held, although the Government held a minority interest in all gold mining ventures. Table 2 is a list of major mineral industry facilities.

<sup>1</sup>Where necessary values have been converted from West African CFA francs (XOF) to U.S. dollars (US\$) at an average annual exchange rate of XOF603.6=US\$1.00 for 2015.

## Commodity Review

### Metals

**Gold.**—Companies with significant gold production in Mali in 2015 were AngloGold Ashanti Ltd. of South Africa, Avnel Gold Mining Ltd. of the United Kingdom, Endeavour Mining Corp. of the United Kingdom, IAMGOLD Corp. of Canada, Randgold Resources Ltd. of the United Kingdom, and Resolute Mining Ltd. of Australia. Industrial gold production came from seven mines, which included the Kalana Mine, the Loulo-Goukoto Mine complex, the Morila Mine, the Sadiola Mine, the Syama Mine, the Tabakoto-Segala Mine complex, and the Yatela Mine. Gold was also produced by artisanal miners at various locations throughout the country.

The Kalana underground mine was jointly owned by Avnel Gold Mining (80%) and the Government (20%). Underground gold resources at the Kalana Mine were expected to be depleted by the end of 2015. Upon depletion, the company planned to continue to process stockpiled ore, which was expected to be depleted by the end of 2016 (Avnel Gold Mining Ltd., 2016a, p. 17; 2016b, p. 64).

The Loulo-Goukoto Mine complex was jointly owned by Randgold Resources (80%) and the Government (20%). Total gold production from the Loulo-Goukoto Mine complex decreased by 1.4% to 19,600 kg from 19,882 kg in 2014; the complex has been the largest gold operation in Mali since 2010. The Loulo Mine produced nearly 56% of the complex's total production, or about 10,905 kg of gold, and the Goukoto Mine produced 8,695 kg. At the end of 2015, total proved and probable ore reserves of gold from the Loulo Mine and the Goukoto Mine decreased by nearly 3% to about 193,000 kg from about 199,000 kg in 2014. The decrease in gold reserves was primarily owing to a decrease in mineral reserves at the Loulo Mine (Randgold Resources Ltd., 2016, p. 36–42).

The Morila Mine was jointly owned by AngloGold Ashanti (40%), Randgold Resources (40%), and the Government (20%). In 2015, gold produced at the mine was from stockpiled ore, pushback ore, and material from the tailings storage facility. The mine produced a total of 3,806 kg in 2015 compared with 3,430 kg in 2014, which was an increase of 11%. Owing to depleting reserves, production in 2016 was expected to decrease to a target of about 2,800 kg along with a reduction in the workforce to 781 people, down from 1,280 people in 2014 (Randgold Resources Ltd., 2016, p. 47–52).

The Sadiola Hill Mine was jointly owned by AngloGold Ashanti (41%), IAMGOLD (41%), and the Government (18%). In 2015, gold production at the mine continued to decline, falling by 18% to 5,256 kg from 6,407 kg in 2014. The decrease in output to a 5-year low was attributed to the mining of lower grade ore and depleting reserves. Oxide ore reserves at Sadiola Hill were expected to be depleted by 2016. Mining operations at the Yatela Mine ceased in 2013; however, stockpiled ore

continued to be processed. In 2015, the Yatela Mine produced 544 kg of gold. The mine was jointly owned by AngloGold Ashanti, IAMGOLD, and the Government (IAMGOLD Corp., 2015; 2016, p. 64).

The Syama Mine was jointly owned by Resolute Mining (80%) and the Government (20%). Gold production from the Syama Mine continued to increase in 2015, increasing by 11% to 6,758 kg (a 5-year high) from a revised estimate of 6,071 kg in 2014. The expected increase in production in 2015 was owing to the construction of an oxide circuit and higher sulfide throughput (Resolute Mining Ltd., 2016, p. 15–16).

The Tabakoto-Segala Mine Complex was jointly owned by Endeavour Mining (80%) and the Government (20%). Endeavour Mining continued to work on the expansion of production at the Tabakoto-Segala Mine complex. The complex included the Djambe and Kofi open pit deposits, the Tabakoto and Segala underground mines, and the Tabakoto mill. Production increased by about 19% to 4,699 kg in 2015 from 3,960 kg in 2014. The rampup of production at the Segala underground mine was the main reason for the increase (Endeavour Mining Corp., 2016, p. 6, 12–13).

The Yanfolila gold project was jointly owned by Hummingbird Resources plc of the United Kingdom (85%), the Government (10%), and private investors (5%). In 2014, Hummingbird Resources acquired its 85% interest from Gold Fields Ltd. of South Africa (Hummingbird Resources plc, 2016).

### **Industrial Minerals**

**Phosphate Rock.**—During 2015, Great Quest Fertilizer Ltd. of Canada (formerly known as Great Quest Metals Ltd.; name was changed on June 3, 2014) continued work on exploration activities related to developing the Tilemsi project in northern Mali. At the end of the year, Great Quest was pursuing financing for advanced engineering work. The project, which consisted of three adjacent properties prospective for phosphate rock known as Aderfoul, Tarkint Est, and Tilemsi, had been put on hold in 2012 owing to a military coup in the country (Great Quest Fertilizer Ltd., 2015, p. 17–18; 2016).

### **Outlook**

Mali was likely to remain vulnerable to fluctuations in the international price of gold. Production from the expected commissioning of the Yanfolila Mine in 2017, the planned rampup of existing gold mining operations, and the active search for new economic gold resources may counterbalance the loss of production from the depletion of gold reserves at the Morila and Yatela Mines and the soon-to-be-depleted gold reserves at the Kalana and the Sadiola Mines. In the long run, as gold mines mature and reach depletion, Mali would likely have to diversify its mineral portfolio away from gold in order to develop its mineral sector. The International Monetary Fund forecast a slight slowing in the GDP rate of growth from the 6% to 7% levels in 2014–15 down to 4% to 5% during the next several years (International Monetary Fund, 2016, p. 18).

### **References Cited**

- Avnel Gold Mining Ltd., 2016a, 2015 Year-end results—Management discussion and analysis: Guernsey, Channel Islands [United Kingdom], Avnel Gold Mining Ltd. press release, March 30, 32 p. (Accessed February 8, 2017, at <http://avnelgold.com/wp-content/uploads/2016/03/20160330-AVK-2015-Q4-MDA-FINAL.pdf>.)
- Avnel Gold Mining Ltd., 2016b, 2016 Kalana Main NI 43–101 technical report: Guernsey, Channel Islands [United Kingdom], Avnel Gold Mining Ltd., May 6, 323 p. (Accessed February 8, 2017, at <http://avnelgold.com/investor/technical-reports/>.)
- Endeavour Mining Corp., 2016, Management's discussion and analysis of results of operations and financial condition for the year ended December 31, 2015: Vancouver, British Columbia, Canada, Endeavour Mining Corp., 88 p. (Accessed June 8, 2017, at [https://s21.q4cdn.com/954147562/files/doc\\_financials/2015/q4/Integrated-FS-MDA-Q4-2015.pdf](https://s21.q4cdn.com/954147562/files/doc_financials/2015/q4/Integrated-FS-MDA-Q4-2015.pdf).)
- Great Quest Fertilizer Ltd., 2015, Consolidated financial statements for the years ended December 31, 2014 and 2013: Toronto, Ontario, Canada, Great Quest Fertilizer Ltd., 27 p. (Accessed February 8, 2017, at <http://www.greatquest.com/pages/investors/financials>.)
- Great Quest Fertilizer Ltd., 2016, \$3 million capital infusion via social impact driven convertible loan: Toronto, Ontario, Canada, Great Quest Fertilizer Ltd., February 16. (Accessed February 8, 2017, at <http://www.greatquest.com/blogs/newz-and-events/121205-3-million-capital-infusion-via-social-impact-driven-convertible-loan#.WJtVklMrJ6s>.)
- Hummingbird Resources plc, 2016, Project—Mali—Yanfolila gold project: Hummingbird Resources plc. (Accessed February 8, 2017, at <http://hummingbirdresources.co.uk/development/mali/>.)
- IAMGOLD Corp., 2015, Operations, production summary for the year ended December 31, 2015: Toronto, Ontario, Canada, IAMGOLD Corp. (Accessed June 8, 2017, at <http://www.iamgold.com/English/operations/production-summary/default.aspx>.)
- IAMGOLD Corp., 2016, Annual information form for the year ended December 31, 2015: Toronto, Ontario, Canada, IAMGOLD Corp., 103 p. (Accessed February 8, 2017, at <http://www.iamgold.com/English/investors/regulatory-filings/default.aspx>.)
- International Monetary Fund, 2016, Mali—Sixth review under the extended credit facility arrangement, and request for modification of a performance criterion—Press release; staff report; and statement by the Executive Director for Mali: Washington, DC, International Monetary Fund Country Report no. 16/375, December, 72 p. (Accessed February 6, 2017, at <http://www.imf.org/en/Publications/CR/Issues/2016/12/31/Mali-Sixth-Review-Under-the-Extended-Credit-Facility-Arrangement-and-Request-for-44445>.)
- International Monetary Fund, 2017, World economic outlook database: Washington, DC, International Monetary Fund, April. (Accessed June 29, 2017, at <http://www.imf.org/external/pubs/ft/weo/2017/01/weodata/index.aspx>.)
- Randgold Resources Ltd., 2016, Annual report 2015: St. Helier, Jersey, Channel Islands [United Kingdom], Randgold Resources Ltd., 226 p. (Accessed February 8, 2017, at <http://reports.randgoldresources.com/report/2015/downloads>.)
- Resolute Mining Ltd., 2016, Annual report 2016: Perth, Western Australia, Australia, Resolute Mining Ltd., June 30, 132 p. (Accessed February 8, 2017, at <https://www.rml.com.au/reports.html>.)

### **NIGER**

Niger was among the world's leading producers of uranium. In 2015, Niger was the world's fourth-ranked producer of uranium, by tonnage, accounting for about 7% of world production; Kazakhstan, Canada, and Australia were the top three producing countries. Other mineral commodities produced in the country included cement, coal, crude petroleum, gold, gypsum, limestone, petroleum refinery products, salt, silver, and tin (table 1; World Nuclear Association, 2016b).

## Minerals in the National Economy

In 2015, Niger's real gross domestic product was estimated to be about \$5.4 billion. Uranium was estimated to have accounted for about 37% of the country's total export revenue in 2015 compared with about 34% in 2014. Petroleum exports were estimated to have accounted for about 14% of total export revenue in 2015 compared with about 20% in 2014. The Government agency responsible for the nonfuel mineral sector in Niger is the Ministère des Mines et du Développement Industriel. Niger's nonfuel mineral sector was regulated by law No. 2006–26 of August 9, 2006. The Government agency responsible for the mineral fuels sector in Niger is the Ministère de l'Énergie et du Pétrole; its petroleum sector was regulated by law No. 2007–01 of January 31, 2007 (International Monetary Fund, 2016, p. 25; 2017).

## Production

In 2015, Niger's largest change in mineral production was an increase of 140% in cement (hydraulic) production to 50,531 metric tons (t) from 21,052 t in 2014, likely owing to an increase in construction activity. Gold also had a significant increase in production, 67% to 1,220 kg from 732 kg in 2014, owing mainly to an increase in production by artisanal and small-scale miners. Minerals that had significant decreases in production were petroleum refinery products, by 22% to an estimated 4,499,000 barrels (bbl); coal, 14% to 221,024 t; and crude petroleum, 13% to 5,459,000 bbl. Crude petroleum and petroleum refinery production decreased in 2015 owing to a sharp decrease in global crude petroleum prices. Data on mineral production are in table 1.

## Structure of the Mineral Industry

Cement, phosphate rock, petroleum, petroleum refining, and uranium operations were privately owned. Coal and gold mining operations were owned by the Government. Gold and salt mining was carried out by artisanal miners. Table 2 is a list of major mineral industry facilities.

## Commodity Review

### Metals

**Gold.**—The Samira Hill Mine was the only industrial gold mining operation in Niger. The Government owned 100% interest in the mine through Société de Patrimoine des Mines du Niger S.A. (SOPAMIN). The National Institute of Statistics reported production to be 1,220 kg in 2015 compared with 732 kg in 2014 with the majority of the production classified as industrial gold production; artisanal and small-scale production of gold was reported to be about 346 kg in 2015 (Institut National de la Statistique, 2016, p. 40).

### Mineral Fuels and Related Materials

**Petroleum.**—Production of crude petroleum in Niger was from the Agadem oilfields, which was operated by China National Petroleum Corp. (CNPC). In 2014, CNPC reported

that significant progress had been made in the exploration of the Agadem Block; however, additional details of the progress made were not available in 2015. CNPC also operated Soraz, the country's only petroleum refinery. International Petroleum Ltd. of Australia has been involved in exploration activity in Niger during the past several years; the company noted that exploration activity was curtailed in early 2015 owing to increased threats to security along the Niger-Nigeria border (China National Petroleum Corp., 2015, p. 29; International Petroleum Ltd., 2016, p. 4).

In 2012, the Government signed an agreement with the Government of Chad for the construction of a 600-km-long crude petroleum pipeline that would connect the Agadem oilfield to an existing pipeline jointly owned by Cameroon and Chad. Technical and environmental issues have created significant delays; recent estimates indicated the completion of the pipeline was expected in 2019. Niger planned to export about 60,000 barrels per day of crude petroleum through the proposed pipeline to the Port of Kribi in Cameroon (Reuters, 2012; International Monetary Fund, 2015, p. 14–15; 2016, p. 14, 54).

**Uranium.**—Areva Group of France operated the Compagnie Minière d'Akouta (COMINAK) and the Société des Mines de l'Air (SOMAIR) uranium mines. Combined production at the COMINAK Mine and the SOMAIR Mine increased by about 7% in 2015 to an estimated 4,900 t (U<sub>3</sub>O<sub>8</sub> content). Areva's COMINAK and SOMAIR mining licenses were renewed at the end of 2014. A new mining contract, based on Niger's 2006 Mining Law, was signed in May 2014. The contract included a new provision stipulating the potential increase of the company's royalty rate to 12% from 5.5%, depending on profitability. Areva, which in 2009 had also been granted a mining license for the development of the Imouraren uranium project, announced that the project was placed on care-and-maintenance status in 2014 owing to the decrease in the international price of uranium. The Société des Mines d'Azelik S.A. operated the Azelik uranium mine. In 2015, the mine was closed and also placed on care-and-maintenance status (World Nuclear Association, 2016a).

## Outlook

Niger's mineral sector was likely to remain vulnerable to fluctuations in the price of its two key mineral commodities, petroleum and uranium. The construction of the crude petroleum pipeline to Chad could provide a boost to the construction sector and mineral production in the coming years. Whereas the GDP growth in Niger slowed to 3.5% in 2015 after having achieved growth rates of 5.3% and 7.0% in 2013 and 2014, respectively, the IMF forecast a rebound in GDP growth, with growth rates in excess of 5.0% during the next several years (International Monetary Fund, 2016, p. 21).

## References Cited

China National Petroleum Corp., 2015, 2014 annual report: Beijing, China, China National Petroleum Corp., 52 p. (Accessed February 8, 2017, at [http://www.cnpc.com.cn/en/ar2014/AnnualReport\\_list.shtml](http://www.cnpc.com.cn/en/ar2014/AnnualReport_list.shtml).)

International Monetary Fund, 2015, Niger—Sixth and seventh reviews under the extended credit facility arrangement, request for waivers of nonobservance of performance criteria, request for augmentation of access, and extension of the current arrangement: Washington, DC, International Monetary Fund Country Report no. 15/342, December, 76 p. (Accessed February 8, 2017, at <https://www.imf.org/en/Publications/CR/Issues/2016/12/31/Niger-Sixth-and-seventh-Reviews-Under-the-Extended-Credit-Facility-Arrangement-Request-for-43462>.)

International Monetary Fund, 2016, Niger—Eighth review under the extended credit facility arrangement and request for waivers of nonobservance of performance criteria and for modification of performance criteria—press release: Washington, DC, International Monetary Fund Country Report no. 16/247, July, 81 p. (Accessed February 8, 2017, at <http://www.imf.org/external/pubs/cat/longres.aspx?sk=44110.0>.)

International Monetary Fund, 2017, World economic outlook database: Washington, DC, International Monetary Fund, April. (Accessed June 29, 2017, at <http://www.imf.org/external/pubs/ft/weo/2017/01/weodata/index.aspx>.)

International Petroleum Ltd., 2016, Half-year financial report for the period ended June 30, 2015: Perth, Western Australia, Australia, International Petroleum Ltd., August 12, 26 p. (Accessed June 8, 2017, at <https://internationalpetroleum.com.au/wp-content/uploads/2017/03/30June2015HalfYearReport.pdf>.)

Institut National de la Statistique, 2016, Bulletin Trimestriel de Statistique—Edition du Premier Trimestre 2016 [Quarterly statistical bulletin—First quarter edition]: Niamey, Niger, Institut National de la Statistique, May, 65 p. (Accessed February 8, 2017, at [http://www.stat-niger.org/statistique/file/IHPC/ihpc/BTS\\_1T16.pdf](http://www.stat-niger.org/statistique/file/IHPC/ihpc/BTS_1T16.pdf).)

Reuters, 2012, Niger signs MOU with Chad on oil pipeline: Thomson Reuters, June 30. (Accessed June 8, 2017, at <http://www.reuters.com/article/ozabs-niger-chad-oil-idAFJ0E85T01I20120630>.)

World Nuclear Association, 2016a, Uranium in Niger: World Nuclear Association, June. (Accessed February 8, 2017, at <http://www.world-nuclear.org/information-library/country-profiles/countries-g-n/niger.aspx>.)

World Nuclear Association, 2016b, World uranium mining production: World Nuclear Association, July. (Accessed February 8, 2017, at <http://www.world-nuclear.org/info/Nuclear-Fuel-Cycle/Mining-of-Uranium/World-Uranium-Mining-Production/>.)

TABLE 1  
MALI AND NIGER: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Country and commodity		2011	2012	2013	2014	2015
MALI <sup>2,3</sup>						
Gold, mine output, Au content <sup>4</sup>	kilograms	38,208	41,016	41,392	40,900 <sup>r</sup>	40,900
NIGER <sup>5</sup>						
Cement, hydraulic		66,468 <sup>r</sup>	75,267 <sup>r</sup>	29,135	21,052	50,531
Coal, bituminous		246,016	235,072	241,792	255,936	221,024
Gold, mine output, Au content <sup>6</sup>	kilograms	1,957	1,677 <sup>7</sup>	1,150 <sup>7</sup>	732 <sup>7</sup>	1,220 <sup>7</sup>
Gypsum		6,058	600	--	--	--
Salt <sup>c</sup>		30,000	30,000	30,000	30,000	30,000
Silver, mine output, Ag content	kilograms	197	329	300 <sup>e</sup>	300 <sup>e</sup>	300 <sup>e</sup>
Petroleum:						
Crude <sup>7</sup>	thousand 42-gallon barrels	680	4,642	6,498	6,256	5,459
Refinery products <sup>7</sup>	do.	459	4,550	6,335	5,800 <sup>e</sup>	4,499 <sup>e</sup>
Tin, mine output, Sn content		10 <sup>8</sup>	--	--	--	--
Uranium, U <sub>3</sub> O <sub>8</sub> content		5,100	5,500	5,300	4,800	4,900

<sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits. <sup>r</sup>Revised. do. Ditto. -- Zero.

<sup>1</sup>Table includes data available through February 9, 2017.

<sup>2</sup>In addition to the commodities listed, Mali also produced small amounts of clinker, diamond, colored gemstones (amethyst, epidote, garnet, prehnite, and varieties of quartz), iron ore, phosphate rock, sand and gravel, salt, and silver (as a byproduct of gold mining), but available information was inadequate to make reliable estimates of output.

<sup>3</sup>Information on phosphate rock output, which had been estimated to be 18,600 metric tons (t) in 2011, and 20,000 t in 2012 and 2013, was unavailable in 2014 and 2015.

<sup>4</sup>Excludes artisanal gold production, which was estimated to be more than 6,000 kilograms.

<sup>5</sup>In addition to the commodities listed, Niger also produced phosphate rock, sulfuric acid produced from imported sulfur, tungsten ore, and a variety of construction materials (clays, sand and gravel, and stone), but available information was inadequate to make reliable estimates of output.

<sup>6</sup>Includes artisanal and small-scale production of gold, which was reported as 481 kilograms (kg) in 2011, 113 kg in 2012, 73 kg in 2013, 64 kg in 2014, and 346 kg in 2015.

<sup>7</sup>Reported by the Institut National de la Statistique.

<sup>8</sup>Production of tin was by artisanal miners.

TABLE 2  
MALI AND NIGER: STRUCTURE OF THE MINERAL INDUSTRIES IN 2015

(Metric tons unless otherwise specified)

Country and commodity		Major operating companies and major equity owners	Location of main facilities <sup>1</sup>	Annual capacity
MALI				
Gold, mine output, Au content	kilograms	Artisanal miners	Kenieba Valley	5,000
Do.	do.	Endeavour Mining Corp., 80%, and Government, 20%	Tabakoto-Segala Mine complex, Kenieba Valley	4,600
Do.	do.	Morila Ltd. (AngloGold Ashanti Ltd., 40%; Randgold Resources Ltd., 40%; Government, 20%)	Morila Mine, 280 km southeast of Bamako	4,500
Do.	do.	Sadiola Exploration Company Ltd. (AngloGold Ashanti Ltd., 40%; IAMGOLD Corp., 40%; Government, 20%)	Yatela Mine, 50 km southwest of Kayes	(2)
Do.	do.	Société d'Exploitation des Mines d'Or de Sadiola S.A. (AngloGold Ashanti Ltd., 41%; IAMGOLD Corp., 41%; Government, 18%)	Sadiola Hill Mine, 77 km south of Kayes	7,000
Do.	do.	Société d'Exploitation des Mines d'Or de Kalana S.A. (Avnel Gold Mining Ltd., 80%, and Government, 20%)	Kalana Mine, 300 km south of Bamako	900
Do.	do.	Société des Mines de Loulo S.A. (Somilo) (Randgold Resources Ltd., 80%, and Government, 20%)	Loulo-Goukoto Mine complex, 350 km west of Bamako	21,000
Do.	do.	Société des Mines de Syama S.A. (Resolute Mining Ltd., 80%, and Government, 20%)	Syama Mine, 300 km southeast of Bamako	7,800
Phosphate rock		Toguna S.A. (Toguna Groupe, 100%)	Tilemsi, northern Mali	100,000
NIGER				
Cement, hydraulic		Société Nigérienne de Cimenterie (Damnaz Cement Company Ltd.)	Malbaza Uzine, southwestern Niger	40,000
Coal, bituminous		Société Nigérienne de Charbon (SONICHAR)	Anou Araren, central Agadez region	300,000
Gold, mine output, Au content	kilograms	Société de Patrimoine des Mines du Niger S.A. (SOPAMIN), Government, 100%	Samira Hill Mine, 90 km west of Niamey	3,000
Do.	do.	Artisanal miners	Various locations.	500
Petroleum, crude	thousand 42-gallon barrels per day	China National Petroleum Corp., 60%, and Government, 40%	Agadem oilfields	20,000
Petroleum refinery products	do.	do.	Soraz refinery, city of Zinder, 900 km east of Niamey	20,000
Salt		Artisanal miners	Bilma salt pans, Tenere Desert, northern Niger	33,000
Uranium, U <sub>3</sub> O <sub>8</sub> content		Compagnie Minière d'Akouta (COMINAK) [Areva Group, 34%; Société de Patrimoine des Mines du Niger S.A. (SOPAMIN), 31%; Overseas Uranium Resources Development Co., 25%; ENUSA Industrias Avanzadas S.A., 10%]	Akouta underground mine, northern Niger	2,000
Do.		Société des Mines de l'Air (SOMAIR) [Areva Group, 63.4%, and Société de Patrimoine des Mines du Niger S.A. (SOPAMIN), 36.6%]	Arlit open pit mine, 6 km northwest of Arlit, Agadez region	3,000
Do.		Société des Mines d'Azelik S.A.	Azelik Mine	700 <sup>3</sup>

Do., do. Ditto.

<sup>1</sup>Abbreviations used for units of measure are as follows: km, kilometer.

<sup>2</sup>Mining operations at the Yatela Mine ceased in 2013; however, stockpiled ore continued to be processed.

<sup>3</sup>Mining operations at the Azelik Mine were closed in 2015 and placed on care-and-maintenance status.