



# 2013 Minerals Yearbook

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## PAKISTAN

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# THE MINERAL INDUSTRY OF PAKISTAN

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Pakistan is rich in mineral resources, including clays (china clay and fire clay), copper, dolomite, gypsum, iron ore, limestone, marble (onyx), salt, sand and gravel, and silica sand; energy resources, including coal, natural gas, and oil; and precious and semiprecious stones. The country is among the world's 20 leading producers of cement and 5 leading exporters of cement. Pakistan ranked 3d in world production of iron oxide pigments, 15th in world production of barite, and 16th in world production of cement. Pakistan exported cement to Afghanistan, Djibouti, India, Iraq, Kenya, Mozambique, South Africa, Sri Lanka, Sudan, and Tanzania (Ministry of Finance, 2013c, p. 43; Miller, 2014; van Oss, 2014).

## Minerals in the National Economy

Pakistan's real gross domestic product (GDP) increased by 3.6% in 2013 compared with an increase of 4.4% in 2012; the slower growth rate was owing to power outages, gas shortages, heavy rains, increases in power and transportation costs, and political instability in the country. Pakistan's industrial sector accounted for 21.4% of the GDP. Manufacturing output, which accounted for 63% of the overall industrial sector and 13.2% of the GDP, increased by 3.5% compared with that of 2012. The mining and quarrying sector accounted for 14.7% of the industrial sector and 3.1% of the GDP; the rate of growth of the mining and quarrying sector was 7.6% compared with 4.6% in 2012. The electricity generation and distribution and gas distribution sector had a negative growth rate of 3.2% in 2013 compared with a negative growth rate of 2.7% in 2012. The negative growth was owing to outdated technology and limited investment in exploitation of energy resources and in the development of cost-effective and energy-efficient infrastructure (Yusuf, 2012; Mahr, 2013; Ministry of Finance, 2013b, p. 11; 2013d, p. iv–v, vii; Asian Development Bank, 2014, p. 181).

Private investment decreased by 18.7% compared with that of 2012 owing to decreased investment in the manufacturing sector because of the power shortages and low investor confidence in the country's economic prospects. Foreign direct investment (FDI) increased to \$1.31 billion<sup>1</sup> in 2013 from \$859 million in 2012. Oil and gas exploration was of major interest to foreign investors (Ministry of Finance, 2013b, p. 13; Asian Development Bank, 2014, p. 181; United Nations Conference on Trade and Development, 2014, p. 206).

## Government Policies and Programs

The National Mineral Policy of 1995 (NMP) was amended and implemented by the Ministry of Petroleum and Natural Resources in February. Minerals, not including nuclear

<sup>1</sup>Where necessary, values have been converted from Pakistani rupees (PKR) to U.S. dollars (US\$) at an average rate of PKR105.15=US\$1.00 for 2013 and PKR97.2=US\$1.00 for 2012.

minerals (uranium), are located in special federated units, such as federally administrated tribal areas, the Islamabad Capital Territory, and the International Offshore Water Territory. The NMP states that Provincial governments and federated units are responsible for the regulation, detailed exploration, mineral development, and safety of these operations and for making decisions related to the activities mentioned above. Federal responsibilities include geologic and geophysical surveying and mapping as well as national and international coordination and formulation of national policies and plans. The Federal Government provides support and advice to the Provinces. The royalties on mineral commodities produced are determined and regularly updated by the respective government, and the updated royalty is sent to the Provincial governments and federated units and to the Federal Government (Ministry of Petroleum and Natural Resources, 2013, p. 8, 18).

In 2012, the Home Department within the government of Sindh Province had imposed a ban on illegal excavation of sand and gravel and precious stones within Thatta District under section 144 of the Criminal Procedure Code. Police were directed to take strict action against violators and were authorized to register complaints under section 188 of the Pakistan Penal Code for violations of section 144 of the Criminal Procedure Code (OnePakistan News, 2012; Pakistan Newswire, 2012).

In January 2013, the Mines and Minerals Department of Punjab Province awarded 110 fireclay exploration licenses. The license awardees used modern equipment to dig for and identify new areas of fireclay resources (Associated Press of Pakistan, 2013).

## Mineral Trade

Pakistan's total exports increased by 3.6% to \$24.46 billion in 2013 from \$23.62 billion in 2012. Pakistan's major export partners were, in order of value, the European Union (21.8%), the United States (14.4%), China (10.7%), the United Arab Emirates (8.75%), and Afghanistan (8.45%). The decrease in economic growth and demand for goods in Europe and the United States had a substantial effect on Pakistan's economic growth. Exports of manufactured marble (onyx) accounted for 9.7% of all exports; chemicals and chemical products, 3.57%; and cement, 2.36%. The value of exports of gem and jewels increased to \$1.3 billion in 2013 from that in 2012 (Ministry of Finance, 2013d, p. ii, x; 2013e; Pakistan Bureau of Statistics, 2013; Ministry of Commerce, 2014).

Imports were nearly unchanged at \$44.91 billion in 2013 compared with \$44.95 billion in 2012. The main import categories were, in order of value, manufactured iron and steel (\$319 million), fertilizer (\$245 million), iron and steel scrap (\$175 million), gold (\$28 million), petroleum products (\$2.7 million), and refined petroleum (\$1.3 million) (Ministry of Finance, 2013d, p. ii, iii, x, iv; Pakistan Bureau of Statistics, 2013; Ministry of Commerce, 2014; Trade Development Authority of Pakistan, 2014, p. 23, 28, 31–33, 39).

## Structure of the Mineral Industry

Table 2 is a list of major mineral industry facilities.

### Production

Production of barite increased by 141%; aragonite and marble; 31% bentonite, 58%; silica sand, 50%; fire clay, 15%; crude steel, 13%; dolomite and limestone, 11%; and cement, 5%. Production of lead decreased by 65%; fuller's earth, 38%; feldspar, 28%; copper, 25%; chromium, 24%; pig iron, 19%; bauxite and zinc, 16% each; talc, 15%; and coal, 12% (Ministry of Finance, 2013c, p. 45–46; State Bank of Pakistan, 2013, p. 13). Data on mineral production are in table 1.

### Commodity Review

#### Metals

**Copper and Gold.**—In 2013, gold was produced at the Saindak copper and gold mine, which was the only producing gold mine in Pakistan; however, the Government had no information on the exact volume of gold being produced. The Saindak copper and gold mine, which is located in the Chagai Hills in Balochistan Province, also produced copper. In 2013, despite having to suspend production of blister copper owing to repair work on the reverberatory furnace in the smelting plant, Metallurgical Corp. of China Ltd. (MCC) reported production of 13,500 metric tons (t) of copper content. The agreement on mining licenses between MCC and the Government for the Saindak copper and gold mine was extended until October 2017 (Metallurgical Corp. of China Ltd., 2013, p. 18; Bullion Street, 2014).

FDI in the Reko Diq copper and gold mining project was estimated to be \$3.3 billion; the project was expected to receive the largest influx of FDI of any project in Pakistan. The Reko Diq deposit is located in northwestern Balochistan Province. The joint venture of Antofagasta plc of the United Kingdom and Barrick Gold Corp. of Canada owned 75% of the Reko Diq project, and the government of Balochistan owned the remaining 25%. The total mineral resource at the deposit was estimated to be 5.81 million metric tons (Mt) at a grade of 0.41% copper and 0.22 gram per metric ton (g/t) gold. Reserves were estimated to be 2.17 Mt at an average grade of 0.53% copper and 0.30 g/t gold. Reko Diq's production capacity was expected to be 196,800 metric tons per year (t/yr) of copper and 8,040 kilograms per year (kg/yr) of gold from 560,500 t/yr of concentrate (Tethyan Copper Co., 2010a, b; Mining Weekly, 2011; Balochistan Development Authority, 2014).

Tethyan Copper Corp. (Pvt.) Ltd., which was a 50–50 joint venture of Antofagasta and Barrick Gold, conducted a feasibility study in August 2010. In February 2011, Tethyan had submitted a mining lease application, including an environmental and social impact assessment. The application was rejected by the government of Balochistan in November 2011 for unknown reasons. In 2013, Tethyan decided to seek monetary damages from the Government of Pakistan under the auspices of the International Center for the Settlement of Investment Disputes (ICSID) and the government of Balochistan under the auspices

of the International Chamber of Commerce (ICC). The hearing for the ICC was scheduled for June 23, 2014, and the hearing for the ICSID was scheduled for October 6, 2014 (Antofagasta plc, 2013, p. 159; MacDonald, 2013).

Everest Gold Inc. of Canada owned 100% of the Chagai Hills project, which is located in the western part of Balochistan Province. The Chagai Hills project consists of four subprojects—the Kabul Koh (Sard Ab) project, the Ziarat Pir Sultan and Ziarat Malik Karkam project, the Dasht-e-Kain project, and the Gajoi project. In 2008, Everest Gold started exploration at the Kabul Koh and Dasht-e-Kain projects. The company conducted drilling, sampling, and mapping of the Kabul Koh porphyry copper mineralization area. The sampling yielded resources with a copper content of 1.8%. The diamond drilling of a copper soil anomaly of 1,400 meters (m) by 500 m at the western mineralized zone of the Dasht-e-Kain property yielded a copper content of 0.29% (SlideServe, 2012, p. 11–13).

**Iron and Steel.**—According to the Ministry of Industries and Production, Pakistan Steel Mills Corp. (Pvt.) Ltd. (PSM) was the country's leading state-owned industrial complex in Pakistan in terms of output. PSM's capacity utilization decreased by 25% in May 2012 and by 19% in May 2013; by July 2013, PSM's capacity utilization had decreased by a further 12% owing to the shortage of coke feedstock, raw materials, and capital. PSM had shown a loss of \$834.7 million (PKR86.27 billion) by June 2013, and the loss increased to \$956.7 million (PKR98.57 billion). The Government decided to privatize PSM and sell 26% of its stake. The Government also planned to introduce a voluntary separation scheme at PSM to reduce the number of employees. PSM had about 4,800 employees in 2013; after layoffs, the total number would be 4,000 employees. In 2013, the Government approved a plan for the reconstruction of PSM. The Government of Russia expressed interest in investing \$1 billion to modernize and increase PSM's capacity. After modernization, the production capacity was expected to increase to 1.5 million metric tons per year (Mt/yr) or possibly 3 Mt/yr from the current 1.1 Mt/yr (Kiani, 2013; Ministry of Finance, 2013c, p. 35; Salman, 2013; Siddiqui, 2013).

**Iron Ore.**—Bolan Mining Enterprise (BME), which was one of the leading barite-producing enterprises in Pakistan, was a joint venture of the government of Balochistan (50%) and Pakistan Petroleum Ltd. (PPL) (50%) and had two iron ore mining licenses. The iron ore mines are located northwest of the Nokkundi region in Balochistan Province. BME planned to set up a beneficiation plant with production capacity of 1 Mt/yr of iron ore concentrates. The beneficiation plant was expected to begin production by 2015 or 2016. POSCO of the Republic of Korea and Al-Ittifaq Steel Production Co. (ISPC) of Saudi Arabia signed a memorandum of agreement with the Government of Pakistan for the development of the Nokkundi iron ore deposit (Pakistan Petroleum Ltd., 2013, p. 60).

**Lead and Zinc.**—In 2013, production at the Duddar lead and zinc mine, which is located in the Lasbella District in Balochistan Province, was suspended owing to maintenance at the site and underground mine. Therefore, production of lead at the Duddar lead and zinc mine in 2013 decreased by 65% to 12,000 t from 34,000 t in 2012, and zinc, by 16% to 10,024 t from 12,000 t in 2012. The Duddar lead and zinc mine was a

joint-venture project between MCC (75%) and Pakistan Mineral Development Corp. (PMDC) and the government of Balochistan (25%) (Metallurgical Corp. of China Ltd., 2013, p. 19).

### **Industrial Minerals**

**Cement.**—Cement played an important role in the manufacturing sector of Pakistan. In 2013, 25 cement plants were operating in Pakistan. Owing to natural gas shortages, some cement plants transferred from using natural gas to using coal to fuel operations. Some of the cement plants increased their production in response to an increase in cement demand on local markets because of the construction of various infrastructure projects by the Government (Ministry of Finance, 2013c, p. 43).

Cherat Cement Co. Ltd. of Pakistan increased clinker production by 7% to 958,135 t in 2013 from 893,600 t in 2012, and cement production by 4% to 1 Mt in 2013 from 993,505 t in 2012. Kohat Cement Company Ltd. of Pakistan switched its plant to a coal-fueled operation, which helped to increase its production capacity. Flying Cement Company Ltd. (formerly Zaman Cement Ltd.), which was a one-kiln plant with a production capacity of 1.3 Mt/yr of cement, was shut down in 2013 so that outdated machinery and equipment could be replaced (Cherat Cement Co. Ltd., 2013; Flying Cement Company Ltd., 2013, p. 7; Kohat Cement Company Ltd., 2013, p. 13).

In 2013, Dandot Cement Co. Ltd. used only 9% of its clinker capacity owing to a complete stoppage of production at the plant for 8 months from November 2012 through June 2013. Cement production at the plant decreased by 88% to 24,131 t in 2013 from 203,558 t in 2012, and clinker production decreased by 78% to 42,212 t in 2013 from 193,924 t in 2012. Dandot Cement was facing financial problems, and the company's facilities were in disrepair (Dandot Cement Co. Ltd., 2013, p. 49; Rahman Sarfaraz Rahim Iqbal Rafiq Chartered Accountants, 2013, p. 3).

The merger of Farooqia of Pakistan (formerly Mustehkam Cement Ltd.) and Bestway Cement Ltd. of the United Kingdom was approved on May 6. The purpose of the merger was to reduce administrative, marketing, and procurement costs. Bestway Cement owned two cement plants with production capacities of 1.23 Mt/yr and 3.6 Mt/yr, respectively, near Tatal village in the Chakwal District of Punjab Province. The Farooqia plant's production capacity was 1.09 Mt/yr. As a result of the merger with Farooqia, the combined production capacity of Bestway Cement increased to 6 Mt/yr (Bestway Cement Ltd., 2013, p. 1–2; Cemnet, 2013).

### **Mineral Fuels**

**Coal.**—According to the Lahore Chamber of Commerce and Industry, coal resources in Pakistan were estimated to be 186 billion metric tons (Gt), including 175 Gt of resources at the Thar coalfields. In 2013, production of coal in Pakistan decreased by 12%. Pakistan's output of coal was 97% lignite and 3% subbituminous-to-bituminous coals. In 2013, the major consumers of coal in the country were the cement sector, which accounted for 58% of total coal consumption (an increase from that in 2012), and brick kilns, which accounted for 41% of

total coal consumption. The increase in consumption of coal by cement plants was attributed to transformation of cement plants to coal-fueled operations. The exploration for new coal deposits in Pakistan was underway (Ministry of Finance, 2013a, p. 193; Daily Times, 2014).

Coal was produced by Lakhra Coal Fields, Lakhra Coal Development Co. (LCDC), and PMDC. Lakhra Power Co. discontinued a contract with LCDC to supply the company with coal because the quality of the coal was no longer suitable for power generation. Lakhra Power was trying either to import coal or purchase coal from private contractors in Pakistan. The president of the Lakhra Employees Union said that the powerplant was built based on the specific type of coal found at the Lakhra site. The director of LCDC submitted a letter to the Water and Power Development Authority and the Ministry of Petroleum and Natural Resources requesting a review of the issue (Tunio, 2013).

Oracle Coalfields plc of the United Kingdom acquired Block IV of the Thar lignite coalfield; the block covers an area of 66.1 square kilometers and is located in Sindh Province in southeastern Pakistan. The drilling of Block IV yielded 1.4 Mt of in situ coal. The Joint Ore Reserve Committee (JORC)-compliant resources (including measured, indicated, and inferred) were estimated to be 529 Mt, and proven reserves were estimated to be 113 Mt. The open pit mine production capacity in Block IV was expected to be 5 Mt/yr. In September, Oracle Coalfields signed a joint-development agreement with China Engineering Co. for the development of the proposed mine in Block IV. In November, Oracle Coalfields signed a memorandum of understanding with SEPCO Electric Power Company of China for the development of a 600-megawatt (MW)-capacity powerplant and with Lucky Cement Ltd. of Pakistan and Thatta Cement Comp. Ltd. of Pakistan for coal supply (Oracle Coalfields plc, 2013, p. 2, 6).

In May 2012, United Coal Holdings Ltd. of Canada (formerly Copper Minerals Inc. of Canada), through its subsidiary AJK Mining Company (Pvt.) Ltd., had acquired an experimental coal property in the Kotli coal district in the Pakistani-administered portion of the disputed Azad Jammu and Kashmir region. United Coal Holdings held a 60% interest in the coal property. The property is located within the Navel and Planna areas and the Karjai village in the Tehsil and Kotli Districts of the Azad Jammu and Kashmir region. By October 2012, the company had extracted 492 t of coal as a trial and sold it to local cement companies. In November 2013, the company slowed down its exploration drilling owing to limited funding. Reserves had not been estimated for the property (InfoMine, 2013, p. 1–3; United Coal Holdings Ltd., 2014).

**Natural Gas and Crude Oil.**—Pakistan's power sector and industries were heavily dependent on natural gas. Despite the increase in natural gas production by 7%, the country was experiencing a natural gas shortage owing to low growth in the natural gas supply. Petroleum production increased by 12% in 2013 compared with that of 2012. Natural gas and petroleum were produced by Pakistan Petroleum Ltd., Oil and Gas Development Co. Ltd. (OGDC), Pakistan Oilfield Ltd., and Ocean Pakistan Ltd. (Ministry of Finance, 2013a).



OGDC was the leading crude oil- and natural gas-producing and -exploring company in Pakistan. In 2013, the company contributed 54% to Pakistan's total oil production and 26% to the country's total natural gas production. In November, the joint-venture operation at the Nim Block, which was owned by OGDC (95%) and Government Holdings (Pvt.) Ltd. (5%), discovered natural gas and gas condensate during exploration of the Saand Well #01. The well is located in the Tando Allah Yar District in Sindh Province. The test for hydrocarbon potential of the Low Gory Formation at Saand Well #01 yielded 1.7 million cubic meters per day of natural gas and 65 barrels per day of condensate (Oil and Gas Development Co. Ltd., 2013a, p. x; 2013b).

## Outlook

The Government was actively trying to increase its mineral production by amending the NMP, awarding exploration licenses, and working towards privatizing industries. According to the Ministry of Finance (2013d), mineral production and exports are likely to increase and jobs are likely to be created if the infrastructure, electricity generation, technologies for processing ores to extract products of high value, and technical capacity of the mining workforce are improved. With increases in construction and improvement of infrastructure, cement production are likely to increase. The development of the Thar coalfield is expected to increase coal production. The power sector and industries in Pakistan are heavily dependent on natural gas, and new natural gas field development is likely to increase production (Ministry of Finance, 2013d, p. v).

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TABLE 1  
PAKISTAN: PRODUCTION OF MINERAL COMMODITIES<sup>1,2</sup>

(Metric tons unless otherwise specified)

| Commodity                                    | 2009                | 2010                 | 2011                 | 2012                  | 2013                  |
|--|---------------------|----------------------|----------------------|-----------------------|-----------------------|
| METALS                                       |                     |                      |                      |                       |                       |
| Antimony                                     | 75                  | 25                   | --                   | 12                    | 89                    |
| Bauxite, gross weight                        | 13,618 <sup>r</sup> | 9,031 <sup>r</sup>   | 9,033 <sup>r</sup>   | 30,223 <sup>r</sup>   | 25,288                |
| Chromium ore:                                |                     |                      |                      |                       |                       |
| Gross weight                                 | 90,000 <sup>r</sup> | 257,000 <sup>r</sup> | 148,000 <sup>r</sup> | 179,000 <sup>r</sup>  | 136,000               |
| Cr <sub>2</sub> O <sub>3</sub> content       | 40,534 <sup>r</sup> | 115,746 <sup>r</sup> | 66,655 <sup>r</sup>  | 80,617 <sup>r</sup>   | 61,251                |
| Copper, mine output, Cu content <sup>c</sup> | 19,500 <sup>r</sup> | 19,500 <sup>r</sup>  | 19,500 <sup>r</sup>  | 17,931 <sup>r,3</sup> | 13,500 <sup>r,3</sup> |
| Iron and steel:                              |                     |                      |                      |                       |                       |
| Iron ore, gross weight                       | 333                 | 418                  | 430                  | 384                   | 412                   |
| Fe content, 32%                              | 107                 | 134                  | 138                  | 123                   | 132                   |
| Pig iron                                     | 791 <sup>r</sup>    | 483                  | 433 <sup>r</sup>     | 249 <sup>r</sup>      | 201                   |
| Steel, crude <sup>e</sup>                    | 1,100               | 1,100                | 1,200                | 1,200                 | 1,359 <sup>3</sup>    |
| Lead: <sup>c</sup>                           |                     |                      |                      |                       |                       |
| Pb content in concentrate                    | 26,000              | 26,000               | 27,000               | 34,000 <sup>r</sup>   | 12,000                |
| Refined, secondary                           | 85                  | 2,900                | 919                  | 2,900                 | 2,000                 |
| Zinc, mine output, Zn content                | 1,000               | 10,000 <sup>r</sup>  | 15,000 <sup>r</sup>  | 12,000 <sup>r</sup>   | 10,024 <sup>r</sup>   |

See footnotes at end of table

TABLE 1—Continued  
PAKISTAN: PRODUCTION OF MINERAL COMMODITIES<sup>1,2</sup>

(Metric tons unless otherwise specified)

| Commodity                                   | 2009                       | 2010                 | 2011                   | 2012                   | 2013                |                    |
|---|----------------------------|----------------------|------------------------|------------------------|---------------------|--------------------|
| <b>INDUSTRIAL MINERALS</b>                  |                            |                      |                        |                        |                     |                    |
| Abrasives, natural, emery                   | 2,150 <sup>r,e</sup>       | -- <sup>r</sup>      | -- <sup>r</sup>        | -- <sup>r</sup>        | --                  |                    |
| Barite                                      | 63,000 <sup>r</sup>        | 57,000 <sup>r</sup>  | 32,000 <sup>r</sup>    | 49,000 <sup>r</sup>    | 118,000             |                    |
| Cement, hydraulic                           | thousand metric tons       | 28,380 <sup>r</sup>  | 31,358 <sup>r</sup>    | 28,716 <sup>r</sup>    | 29,557 <sup>r</sup> | 31,098             |
| Chalk                                       | 8,343                      | 1,322                | 1,422 <sup>r</sup>     | 1,500                  | 1,600               |                    |
| Clays:                                      |                            |                      |                        |                        |                     |                    |
| Bentonite                                   | 33,300                     | 42,100               | 44,500 <sup>r</sup>    | 16,520 <sup>r</sup>    | 26,077              |                    |
| Fire clay                                   | 389,493 <sup>r</sup>       | 329,055 <sup>r</sup> | 274,042 <sup>r</sup>   | 340,000                | 390,000             |                    |
| Fuller's earth                              | 11,055                     | 6,370                | 4,761                  | 6,906 <sup>r</sup>     | 4,259               |                    |
| Kaolin, china clay                          | 17,000 <sup>r</sup>        | 23,000 <sup>r</sup>  | 16,000 <sup>r</sup>    | 22,000 <sup>r</sup>    | 23,000              |                    |
| Feldspar                                    | 46,000                     | 102,000              | 107,000 <sup>r</sup>   | 53,235 <sup>r</sup>    | 38,218              |                    |
| Fluorspar <sup>c</sup>                      | 1,400                      | 1,500                | 1,600                  | 1,700                  | 1,800               |                    |
| Gypsum, crude                               | 800,000 <sup>r</sup>       | 854,000 <sup>r</sup> | 885,000 <sup>r</sup>   | 1,260,000 <sup>r</sup> | 1,249,967           |                    |
| Magnesite, crude                            | 2,639 <sup>r</sup>         | 5,159 <sup>r</sup>   | 4,908 <sup>r</sup>     | 5,444 <sup>r</sup>     | 6,705               |                    |
| Nitrogen, N content of ammonia <sup>c</sup> | 2,700 <sup>r</sup>         | 2,800 <sup>r</sup>   | 2,700 <sup>r</sup>     | 2,300 <sup>r</sup>     | 2,700               |                    |
| Phosphate rock:                             |                            |                      |                        |                        |                     |                    |
| Gross weight                                | 30,467                     | 87,807               | 30,950 <sup>r</sup>    | 69,400 <sup>r</sup>    | 58,204              |                    |
| P <sub>2</sub> O <sub>5</sub> content       | 5,480                      | 15,800               | 5,567 <sup>r</sup>     | 12,484 <sup>r</sup>    | 10,469              |                    |
| Pigments, mineral, natural, ocher           | 56,617 <sup>r</sup>        | 55,352 <sup>r</sup>  | 36,517 <sup>r</sup>    | 81,884 <sup>r</sup>    | 68,673              |                    |
| Salt:                                       |                            |                      |                        |                        |                     |                    |
| Rock  | thousand metric tons       | 1,917 <sup>r</sup>   | 1,944 <sup>r</sup>     | 1,954 <sup>r</sup>     | 2,136 <sup>r</sup>  | 2,160 <sup>r</sup> |
| Marine                                      | do.                        | 93                   | 190                    | 315                    | 292                 | 297                |
| Total                                       | do.                        | 2,010 <sup>r</sup>   | 2,134 <sup>r</sup>     | 2,269 <sup>r</sup>     | 2,428 <sup>r</sup>  | 2,457 <sup>r</sup> |
| Sand and gravel                             | 17,780                     | 37,604               | 38,215                 | --                     | --                  |                    |
| Silica sand                                 | 369,773                    | 411,262              | 300,501                | 270,000                | 406,000             |                    |
| Sodium compounds, n.e.s. <sup>c</sup> :     |                            |                      |                        |                        |                     |                    |
| Caustic soda                                | 245 <sup>r</sup>           | 182 <sup>r,3</sup>   | 172 <sup>r,3</sup>     | 179 <sup>r</sup>       | 183                 |                    |
| Soda ash, manufactured                      | 365 <sup>r</sup>           | 410 <sup>r,3</sup>   | 378 <sup>r,3</sup>     | 371 <sup>r</sup>       | 366                 |                    |
| Stone:                                      |                            |                      |                        |                        |                     |                    |
| Aragonite and marble                        | 1,223,387                  | 1,471,014            | 1,816,254 <sup>r</sup> | 1,800,000              | 2,360,114           |                    |
| Dolomite                                    | 250,000 <sup>r</sup>       | 130,000 <sup>r</sup> | 240 <sup>r</sup>       | 198 <sup>r</sup>       | 219                 |                    |
| Limestone                                   | thousand metric tons       | 33,186 <sup>r</sup>  | 37,137 <sup>r</sup>    | 32,021 <sup>r</sup>    | 35,016 <sup>r</sup> | 38,932             |
| Strontium minerals, celestite               | 470 <sup>r</sup>           | 160 <sup>r</sup>     | -- <sup>r</sup>        | -- <sup>r</sup>        | --                  |                    |
| Sulfur, native <sup>c</sup>                 | 26,200                     | 27,100 <sup>r</sup>  | 28,000 <sup>r</sup>    | 26,000                 | 21,000              |                    |
| Talc and related materials, soapstone       | 40,792                     | 121,800              | 114,100                | 110,000                | 93,214              |                    |
| <b>MINERAL FUELS AND RELATED MATERIALS</b>  |                            |                      |                        |                        |                     |                    |
| Coal, lignite, bituminous                   | thousand metric tons       | 3,697 <sup>r</sup>   | 3,536 <sup>r</sup>     | 3,292 <sup>r</sup>     | 3,179 <sup>r</sup>  | 2,813              |
| Coke  | do.                        | 424 <sup>r</sup>     | 343 <sup>r</sup>       | 302 <sup>r</sup>       | 193 <sup>r</sup>    | 203                |
| Gas, natural:                               |                            |                      |                        |                        |                     |                    |
| Gross production                            | million cubic meters       | 51,600 <sup>r</sup>  | 52,400 <sup>r</sup>    | 52,000 <sup>r</sup>    | 50,400 <sup>r</sup> | 53,900             |
| Marketed production, sales <sup>c</sup>     | do.                        | 49,200 <sup>r</sup>  | 49,400 <sup>r</sup>    | 49,600 <sup>r</sup>    | 48,040 <sup>r</sup> | 51,400             |
| Natural gas liquids <sup>c</sup>            | thousand 42-gallon barrels | 2,016 <sup>r,3</sup> | 2,020 <sup>r</sup>     | 2,020 <sup>r</sup>     | 2,020 <sup>r</sup>  | 2,020              |
| Petroleum, crude                            | do.                        | 23,870 <sup>3</sup>  | 24,000 <sup>r</sup>    | 24,000 <sup>r</sup>    | 25,000 <sup>r</sup> | 28,000             |
| Refinery products: <sup>c</sup>             |                            |                      |                        |                        |                     |                    |
| Gasoline                                    | do.                        | 11,161 <sup>3</sup>  | 11,000                 | 12,000                 | 12,000              | 12,000             |
| Jet fuel                                    | do.                        | 7,584 <sup>3</sup>   | 6,631 <sup>r,3</sup>   | 5,204 <sup>r,2</sup>   | 5,500               | 6,000              |
| Kerosene                                    | do.                        | 1,217 <sup>3</sup>   | 903 <sup>r,3</sup>     | 912 <sup>r,2</sup>     | 1,000               | 1,210              |
| Distillate fuel oil                         | do.                        | 31,000               | 32,000                 | 31,000                 | 32,000              | 32,000             |
| Residual fuel oil                           | do.                        | 18,615 <sup>3</sup>  | 20,000                 | 21,000                 | 22,000              | 23,000             |
| Lubricants                                  | do.                        | 3,689 <sup>3</sup>   | 1,393 <sup>r,2</sup>   | 1,358 <sup>r,3</sup>   | 1,500               | 1,150              |
| Other                                       | do.                        | 16,000               | 17,000                 | 18,000                 | 19,000              | 20,000             |
| Total                                       | do.                        | 89,266               | 88,927 <sup>r</sup>    | 89,474 <sup>r</sup>    | 93,000              | 95,360             |
| Uranium, processed:                         |                            |                      |                        |                        |                     |                    |
| U <sub>3</sub> O <sub>8</sub> content       | 50                         | 45                   | 45                     | 45                     | 45                  |                    |
| U content                                   | 42                         | 38                   | 38                     | 38                     | 38                  |                    |

<sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. <sup>r</sup>Revised. do. Ditto. -- Zero.

<sup>1</sup>Table includes data available through August 12, 2014.

<sup>2</sup>In addition to the commodities listed, secondary aluminum was produced, and the Saindak copper mine produced gold, and silver, but available information is inadequate to make reliable estimates of output

<sup>3</sup>Reported figure.

TABLE 2  
PAKISTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(Metric tons unless otherwise specified)

| Commodity                    | Major operating companies and major equity owners   | Location of main facilities                                  | Annual capacity <sup>6, 1</sup> |
|------------------------------|---|--|---------------------------------|
| Aluminum smelters, secondary | Alcop   | Karachi  | 1,500                           |
| Do.                          | do.   | Lahore   | 1,200                           |
| Do.                          | Alpha Aluminium Co.   | do.  | 1,100                           |
| Do.                          | Canon Metal Works   | Gujranwala   | NA                              |
| Do.                          | Chauhan Industries  | Lahore   | 120                             |
| Do.                          | Chawala Chemical & Metal Industries   | do.  | NA                              |
| Do.                          | China Industries  | do.  | 150                             |
| Do.                          | Craft Aluminium   | do.  | 300                             |
| Do.                          | H. Gulam Qadir & Sons   | Gujranwala   | NA                              |
| Do.                          | Hyder Industries  | Sahiwal  | NA                              |
| Do.                          | Japan Metal Industries  | Karachi  | 1,500                           |
| Do.                          | Jilani Industries   | do.  | NA                              |
| Do.                          | Khan Aluminum Industries  | Karachi  | 2,700                           |
| Do.                          | Khuram Industry   | Lahore   | 300                             |
| Do.                          | Kruddson Pvt Ltd.   | Karachi  | 1,200                           |
| Do.                          | Lucky Industries  | do.  | 1,200                           |
| Do.                          | M. Siraj Din Mohammed Shafi   | Gujranwala   | NA                              |
| Do.                          | Noor Aluminium Co.  | Karachi  | NA                              |
| Do.                          | Pakistan Alco Products  | Lahore   | NA                              |
| Do.                          | Pakistan Cabled Ltd.  | Karachi  | 2,500                           |
| Do.                          | Pakistan Metal Industries   | do.  | 4,000                           |
| Do.                          | Punjab Metal Works  | Gujranwala   | NA                              |
| Do.                          | Sana Aluminium Industries   | Peshawar   | NA                              |
| Do.                          | Shaheen Industries  | Lahore   | NA                              |
| Do.                          | Standard Aluminium  | Karachi  | NA                              |
| Antimony                     | MTEQ Pakistan (Pvt.) Ltd. (mining and manufacturing)  | Vashouk and Dalbadin, Balauchistan Chitral                   | 12,000                          |
| Barite                       | Bolan Mining Enterprises (Government of Balochistan, 50%, and Pakistan Petroleum Ltd., 50%) | Khuzdar, Balochistan Province                                | 437,000                         |
| Do.                          | Razvi Mining (Pvt.) Ltd.  | Gandori, Kalan, and Retri                                    | 30,000                          |
| Bauxite                      | MTEQ Pakistan (Pvt.) Ltd. (mining and manufacturing)  | Warehouses in Karachi  | 12,000                          |
| Cement                       | A.C. Rohi Cement Ltd.   | Den Nando Kohistan, Sindh District                           | NA                              |
| Do.                          | Askari Cement Co. Ltd.  | Nizampur and Wah   | 8,925                           |
| Do.                          | Bestway Cement Co. Ltd.   | Chakwal and two plants in Hattar                             | 6,000,000                       |
| Do.                          | Cherat Cement Co. Ltd.  | Nowshera   | 912,500                         |
| Do.                          | D.G. Khan Cement Co. Ltd.   | Dera Ghazi Khan and Khairpur Districts                       | 4,221,000                       |
| Do.                          | Dadabhoi Cement Industries Ltd. (M.H. Dadabhoi Group)                                       | Dadu, Sindh District, Karachi                                | 2,800,000                       |
| Do.                          | Dandot Cement Co. Ltd.  | Dandot   | 42,890                          |
| Do.                          | Dewan Cement Ltd. (A Yousuf Dewan Co.)  | Hattar and Dhabeji   | 750,000                         |
| Do.                          | Falcon Cement/Attock Cement Pakistan Ltd.   | Hub Chowki, Karachi  | 1,710,000                       |
| Do.                          | Fauji Cement Co. Ltd.   | Jhang Bahtar, Attock District                                | 3,434,000                       |
| Do.                          | Fecto Cement Ltd.   | Sangjani   | 819,000                         |
| Do.                          | Flying Cement   | Lilla, Mangowal, Khushab District, Punjab Province           | 1,260,000                       |
| Do.                          | Gharibwal Cement Ltd.   | Jhelum   | 2,446,000                       |
| Do.                          | Javedan Cement Ltd.   | Karachi  | 600,000                         |
| Do.                          | Kohat Cement Co. Ltd.   | Kohat District   | 2,950,000                       |
| Do.                          | Lafarge Pakistan Cement Ltd.  | Chakwal  | 2,500,000                       |
| Do.                          | Lucky Cement Ltd.   | Indus Highway, Karachi                                       | 7,628,000                       |
| Do.                          | do.   | Pezu   | 4,000,000                       |
| Do.                          | Maple Leaf Cement Factory Ltd.  | Daudkhel   | 3,360,000                       |
| Do.                          | Pioneer Cement Ltd.   | Chenki   | 1,300,000                       |
| Do.                          | Power Cement Ltd. (Arif Habib Group)  | Arif Habib Centre, Karachi                                   | 577,160                         |
| Do.                          | Thatta Cement Co. Ltd. (Arif Habib Group)   | Thatta   | 450,000                         |
| Do.                          | Zeal Pak Cement Factory Ltd.  | Hyderabad  | 1,080,000                       |
| Chromite                     | Pakistan Chrome Mines Ltd.  | Gwal, Khanozai, Muslim Bagh, and Nisai, Balochistan Province | 20,000                          |
| Do.                          | Ghani Corp. (Ghani Mines (Pvt.) Ltd.)   | NA   | NA                              |

See footnotes at end of table



TABLE 2—Continued  
PAKISTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(Metric tons unless otherwise specified)

| Commodity             | Major operating companies and major equity owners   | Location of main facilities   | Annual capacity <sup>e, 1</sup> |
|-----------------------|---|---|---------------------------------|
| Chromite—Continued    | Svah Resources Inc.   | Muslim Bagh and Khanozai  | 180,000                         |
| Do.                   | MTEQ Pakistan (Pvt.) Ltd. (mining and manufacturing)  | Dargai and Malakand   | 120,000                         |
| Coal                  | Sindh Coal Authority  | Dadu, Sindh Province  | 4,000                           |
| Do.                   | do.   | Tharparkar, Sindh Province  | NA                              |
| Do.                   | Lakhra coalfields [Pakistan Mineral Development Corp. (PMDC), 50%; Government of Sidh, 25%; Water and Power Development Authority, 25%] | Latifabad, Hyderabad  | 201,000                         |
| Do.                   | Lakhra Coal Development Co. (LCDC)  | Khanot near Lakhra  | NA                              |
| Do.                   | Degari-Sor-Range [Pakistan Mineral Development Corp. (PMDC)] (Government-owned)   | 35 km southeast of Quetta   | 3,000                           |
| Do.                   | do.   | 16 km east of Quetta  | 29,000                          |
| Do.                   | Shahrig-Khost-Harnai coalfield [Pakistan Mineral Development Corp. (PMDC)] (Government-owned)   | 160 km northeast of Quetta  | 159,000                         |
| Do.                   | Progressive Mining Enterprise (Ghani Mines Ltd.)  | Takwan, Chakwal District  | NA                              |
| Do.                   | Ghani Corp. (Ghani Mines Ltd.)  | NA  | NA                              |
| Do.                   | Al-Muhandus Corp. (Ghani Mines Ltd.)  | Balman and Chukki, Quaidabad, Khushb District   | NA                              |
| Do.                   | Nara Minerals   | Patala Formation, Jhelum District   | NA                              |
| Copper, mine          | Saindak Metals Ltd. [Metallurgical Corp. of China Ltd. (MCC)]   | Chagai Hills, Balochistan Province  | 22,000                          |
| Copper, manufacturing | MTEQ Pakistan (Pvt.) Ltd.   | Gilgit and Balistan   | NA                              |
| Fertilizer            | Engro Fertilizer Ltd.   | Daharki   | 2,000                           |
| Do.                   | Fatima Fertilizer Company Ltd.  | Sadiqabadm Rahim Yar Khan   | 500,000                         |
| Do.                   | Pakarab Fertilizer Ltd.   | Khanewal Road, Multan   | NA                              |
| Do.                   | Fauji Fertilizer Bin Qasim Ltd.   | Bin Qasim, Karachi  | 1,000                           |
| Gold, Au content      | Saindak Metals Ltd. [Metallurgical Corp. of China Ltd. (MCC)]   | Chagain Hills, Balochistan Province   | NA                              |
| Iron ore              | Mines and Minerals Enterprises Pakistan   | Punjab Province   | NA                              |
| Lead and zinc, ore    | Duddar lead-zinc mine project [Metallurgical Corp. of China Ltd. (MCC)]   | Duddar, Balochistan Province  | 131,000                         |
| Marble (onyx)         | Azeem Marble & Onyx Industries  | Karachi   | NA                              |
| Natural gas           | million cubic meters<br>Pakistan Petroleum Ltd. (PPL)   | Adhi, Punjab Province; Kandhkot and Mazarani, Sindh Province; and Sui, Balochistan Province | 8,760                           |
| Do.                   | do. Oil and Gas Development Co. Ltd. (OGDC)   | Balochistan, Punjab, and Sindh Provinces  | 11,500                          |
| Do.                   | do. Pakistan Oilfields Ltd.   | Balochistan Province  | 8,000                           |
| Do.                   | do. Mari Petroleum Co. Ltd.   | Sindh Province  | 6,000                           |
| Do.                   | Ocean Pakistan Ltd.   | Punjab, Balochistan, Khyber, Pakhtoonkhawa and Ratana                                       | NA                              |
| Petroleum:            |   |   |                                 |
| Crude                 | thousand 42-gallon barrels<br>Pakistan Petroleum Ltd.   | Adhi, Punjab Province (additional 10 blocks)  | 576                             |
| Do.                   | do. Oil and Gas Development Co. Ltd. (OGDC)   | 37 oilfields and gasfields (additional 29 blocks)   | 16,600                          |
| Do.                   | do. Pakistan Oilfields Ltd.   | 15 oilfields and gasfields  | 71,300                          |
| Do.                   | Ocean Pakistan Ltd.   | Punjab, Balochistan, Khyber, Pakhtoonkhawa and Ratana                                       | NA                              |
| Refined               | thousand 42-gallon barrels<br>Bosicor Pakistan Ltd.   | Karachi   | 10,800                          |
| Do.                   | do. Pak-Arab Refinery Co. Ltd. (joint venture of the Governments of Pakistan and the Emirate of Abu Dhabi in the United Arab Emirates)  | Mahmood Kot, Punjab Province  | 360,000                         |
| Do.                   | National Refinery Ltd.  | NA  | NA                              |
| Do.                   | thousand 42-gallon barrels<br>Attock Refinery Ltd.  | Rawalpindi  | 15,800                          |
| Do.                   | do. Pakistan Refinery Ltd.  | Karachi   | 16,900                          |
| Phosphate rock        | Pakistan Mining Co. Ltd.  | NA  | 90,000                          |

See footnotes at end of table

TABLE 2—Continued  
PAKISTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(Metric tons unless otherwise specified)

| Commodity    | Major operating companies and major equity owners                                      | Location of main facilities                                       | Annual capacity <sup>e, 1</sup> |
|--------------|--|---|---------------------------------|
| Salt         | Khewra Salt Mines [Pakistan Mineral Development Corp. (PMDC)] (Government-owned)       | Salt Range, south of Islamabad                                    | 435,000                         |
| Do.          | Warcha Salt Mines [Pakistan Mineral Development Corp. (PMDC)] (Government-owned)       | 276 km from Islamabad   | 613,000                         |
| Do.          | Kalabagh Salt Mines [Pakistan Mineral Development Corp. (PMDC)] (Government-owned)     | 296 km from Islamabad or 50 km from Mainwali                      | 80,000                          |
| Do.          | Jatta Salt Mines [Pakistan Mineral Development Corp. (PMDC)] (Government-owned)        | 217 km from Islamabad or from Kohat                               | 73,000                          |
| Do.          | Bahadur Khel Salt Mines [Pakistan Mineral Development Corp. (PMDC)] (Government-owned) | 265 km from Islamabad or 112 km from Kohat                        | NA                              |
| Do.          | Ghani Corp. (Ghani Mines Ltd.)   | Banda Daud Shah, Karak District                                   | NA                              |
| Do.          | Nara Minerals (Chani Mines (Pvt.) Ltd.)  | Central part of Salt Range  | NA                              |
| Do.          | Ghani Mines  | Korrian   | NA                              |
| Do.          | Al-Muhandus Corp. (Chani Mines (Pvt.) Ltd.)  | Salt Range, near village Choa, Warcha, Qaidabad, Khushab District | NA                              |
| Silica sand  | Ghani Corp. (Ghani Mines (Pvt.) Ltd.)  | NA  | NA                              |
| Do.          | MTEQ Pakistan (Pvt.) Ltd.  | NA  | 120,000                         |
| Steel, crude | Pakistan Steel Mills Corp. (Pvt) Ltd. (PSM)  | Karachi   | 1,000                           |
| Sulfur       | Pakistan Oilfields Ltd.  | 15 oilfields and gasfields  | 1,537,000                       |
| Talc         | CapriCorn Minerals   | Bandi Sadique   | 20,000                          |

<sup>e</sup>Estimated. Do., do. Ditto. NA Not available.

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