



# 2012 Minerals Yearbook

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## PAKISTAN

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# THE MINERAL INDUSTRY OF PAKISTAN

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Pakistan is rich in such mineral resources as barite, coal, copper, iron ore, limestone, and salt, and the identified resources of copper and iron ore are large. The country also produced a variety of industrial minerals and some other metallic minerals. Pakistan also has extensive energy resources and is known to have moderate oil reserves, sizable gas reserves, large coal resources, and large hydropower potential. In the past several years, gas and oil production met only about one-half of the country's energy needs, but exploitation of energy resources continued to be slow owing to a shortage of capital and to political instability. In particular, the supply of natural gas from domestic sources was expected to decline in the next 2 to 3 years, as the existing fields were nearing depletion. The Government was reviewing its gas development policy and is encouraging foreign companies to participate in gas production.

The Competition Commission of Pakistan (CCP) conducted searches and inspections at the offices of the All Pakistan Cement Manufacturers Association (APCMA) and the facilities of Kohat Cement Co. Ltd. in Lahore under Section 34 of the Competition Act 2010 to look for proof of suspected cartelization in the cement sector. It was found that the cement producers had devised a vigilance plan by which the cement dispatches were monitored. If the CCP finds the APCMA and Kohat Cement guilty of collusion, it could impose a penalty of nearly \$700 million on the APCMA and its members. The president of the APCMA was also the chief executive of Kohat Cement (Global Cement News, 2012a).

## Minerals in the National Economy

In 2012, Pakistan's economy was dominated by the services, industrial, and agriculture sectors, which accounted for 53%, 25%, and 22% of the gross domestic product (GDP), respectively. Industrial output increased by 11%, and production from mining and quarrying accounted for 15% of industrial production and increased by 20% compared with that of 2011. The value of output from the mineral industry accounted for 3.3% of the GDP, which posted a growth rate of 11% in 2012. Cement and jewelry were the country's major export items in 2012. Aluminum, crude petroleum, iron and steel, and petroleum products were the major import commodities (State Bank of Pakistan, 2013, p. 238).

## Production

In 2012, the metallic minerals mined in Pakistan included bauxite, chromite, copper, iron ore, lead, and zinc. Pakistan produced a variety of industrial minerals, including aragonite, barite, clays, dolomite, gypsum, limestone, and salt. Output of iron ore decreased by 12% compared with that of 2011. Production of pig iron increased significantly after a several years' decline, probably owing to better capacity utilization. The

production pattern for fuller's earth was similar to that of pig iron. The output of secondary lead fluctuated from year to year, which might have to do with the scrap availability. Production of kaolin also tended to fluctuate from year to year. Steady increases followed by a modest drop in 2012 were noted in the production of feldspar, gypsum, magnesite, marine salt, and phosphate rock (table 1).

## Structure of the Mineral Industry

State-owned companies controlled the production and marketing of chromite, coal, copper, iron ore, and steel. Private-sector companies were allowed to own and produce nonfuel minerals—mainly industrial minerals, including cement. Despite the Government's efforts to privatize large-scale state-owned companies, the public sector companies continued to account for a significant percentage of the country's mineral production.

The Mineral Department of the Ministry of Petroleum and Natural Resources is responsible for the exploration, planning, development, and operation of mining ventures that are controlled by the state-owned companies. The Ministry's Petroleum Department is responsible for the exploration and production of hydrocarbons and for the transmission and distribution of natural gas. Table 2 is a list of major mineral-producing facilities in the country.

## Commodity Review

### Metals

**Copper and Gold.**—The mining lease application case of 2011 between Tethyan Copper Co. (TCC) (a joint venture between Barrick Gold Corp. of Canada and Antofagasta plc of Chile) and the Balochistan Provincial government was under review by the International Court of Arbitration. If the court decides the case in favor of TCC, then the government of Balochistan would be obligated to pay for its investments in exploration and construction of the Reko Diq gold and copper mine project. TCC held a 75% interest in the project and the Provincial government had a 25% stake, which was a disputed point. Mine production was initially scheduled to begin in 2014, and the mine was estimated to have reserves of 11.65 million metric tons (Mt) of contained copper and 659,000 kilograms of contained gold. The dispute regarding the project included two issues—(a) the Provincial government's refusal to take financial responsibility for its 25% stake in the project, and (b) the purported involvement of Metallurgical Construction Corp. (MCC) of China in the project. The Government proposed that the Provincial government re-negotiate with TCC to find an amicable settlement to the dispute (Bhutta, 2012).

ME Resource Corp. of Canada entered into an agreement to acquire a 70% interest in two exploration licenses in the Chagi mineral belt in Balochistan Province that are contiguous to the Reko Diq copper-gold deposit, which had resources of 5,900 Mt at grades of 0.4% copper and 0.22 gram per metric ton gold. The company's objective was to explore and develop the mineral claims and pursue additional acquisitions (ME Resource Corp., 2012).

**Iron and Steel.**—Tuwairqi Steel Mills planned to commission its 1.28-million-metric-ton-per-year (Mt/yr) direct-reduced iron (DRI) plant at Port Qasim in Karachi in July. A wastewater treatment plant and a powerplant were completed in early 2012. Kobe Steel of Japan's Midrex unit supplied the DRI plant, which required iron ore pellets of a minimum of 56.5% iron content that Tuwairqi sourced from Bahrain and Oman. Output of DRI would be sold to the domestic market, as well as to India and Malaysia. An electric arc furnace-based billet plant and an iron ore mine were also planned. A new 2-Mt/yr steel plant was expected to be constructed in 2015. Pakistan's steel consumption of 7 Mt/yr was more than its production capacity of between 4 and 5 Mt/yr (ArabSteel, 2012).

### **Industrial Minerals**

**Cement.**—Cement consumption in Pakistan had stagnated, and cement producers operated at 73% of installed capacity. The total installed capacity for cement production was 45 Mt/yr. The country's cement demand was estimated to be about 31 Mt, 70% of which was for domestic consumption and 30% of which was exports that went mostly to Afghanistan and India. Cement exports to India had decreased steadily in recent years to 590,104 t in fiscal year 2011 from 786,672 t in fiscal year 2008. They went through India's Gujarat Port to benefit the southern States. Although Pakistan had granted "most favored nation" status to India, Pakistan's cement exports were not likely to increase owing to nontariff barriers to trade, which the Government of India said were uniform for all countries and not specific to Pakistan. The volume and price of Pakistan's cement exports to Afghanistan, however, were expected to increase in 2012 (Aggregate Research, 2012).

Pakistan's cement exports to Afghanistan represented 50% of the total cement exports, by value, from Pakistan because the majority of the cement was shipped from companies located close to the border between the countries. Pakistan-supplied cement dominated cement consumption in the central and northern regions of Afghanistan where major reconstruction activities were underway. The Pakistani cement companies with the most exposure to the Afghan market included Bestway Cement Co. Ltd., Cherat Cement Co. Ltd., DG Khan Cement Co. Ltd., Fauji Cement Co. Ltd., Lafarge Pakistan Cement Ltd., and Lucky Cement Ltd. (Global Cement News, 2012b).

Arif Habib Corp. sold about a 61% share in Thatta Cement Co. Ltd. (one of Pakistan's smallest cement producers) to a consortium of four companies. Sky Pak Holding and Al-Miftah Holdings each bought 22.7% of the shares and Golden Global Holding and Rising Star Holding acquired 8.6% and 7%, respectively. Thatta Cement, which is located at Makli in the District of Thatta in Sindh Province, had the capacity

to produce 450,000 metric tons per year (t/yr) of cement. Arif Habib also owned a 75% stake in Al-Abbas Cement Industries Ltd., which would have an installed capacity of 900,000 t/yr after an expansion of the plant was completed in 2013 (Express Tribune, The, 2013).

To expand its plant, Al-Abbas Cement planned to invest in new machinery and increase its capacity utilization to become one of the most efficient cement producers in Pakistan. The company previously had a small production capacity of 750,000 t/yr compared with the Nation's installed capacity of 45 Mt/yr. Current capacity utilization rates were between 80% and 85%. The company invested in a vertical cement-grinding mill, which increased the plant's capacity by 20% to 900,000 t/yr. Al-Abbas Cement received 30% of its revenues from cement exports but planned to focus on supplying the surging demand in the domestic market that was the result of the Government's increased spending on construction and development projects (Zaheer, 2012).

Fauji Cement planned to acquire Askari Cement Co. Ltd., which had a 1.1-Mt/yr-capacity cement plant at Wah and a 1.6-Mt/yr-capacity cement plant at Nizampur. Askari Cement's capacity utilization rate was only 45%. If the deal moves forward, Fauji Cement would become the second-ranked cement producer in Pakistan, and its cement production capacity would increase to 6.1 Mt/yr from 3.4 Mt/yr (International Cement Research, 2012).

**Talc.**—Microcrystalline talc associated with magnesite and dolomite is found at Sherwan, which is located west of Abbottabad. Mines in the four areas, including Bandi Sadique and three others where talc was mined, had a total output capacity of 165,000 t/yr. CapriCorn Minerals produced 20,000 t/yr from its Bandi Sadique deposit. The company operated a 5,000-t/yr plant in Lahore to process high-quality white pure talc, all of which was exported (Industrial Minerals, 2012).

### **Mineral Fuels**

**Coal.**—Oracle Coalfields plc of the United Kingdom, which explored for and developed a lignite property located in Sindh Province, performed a feasibility study on Block VI of the Thar coalfield. The exploration license was for a 66.1-square-kilometer (km<sup>2</sup>) area that was held by Oracle Coalfields' 80%-owned subsidiary Sindh Carbon Energy Ltd. Coal resources (measured and indicated) in the 20-km<sup>2</sup> mining area were estimated to be 459 Mt (wet basis) with ash content of 5.89% and sulfur content of 0.91%, and were suitable for power generation. Inferred resources for the license area were 70 Mt. The total capital expenditure for mine development was estimated to be \$610 million. Lignite production of 5 Mt/yr by the opencast method would extend the mine life to 23 years (Oracle Coalfields plc, 2012).

### **Outlook**

Full production of copper and gold from the mining operation at Reko Diq is expected to be delayed until after 2014 because of the dispute involving the government of Balochistan Province

and MCC. Pakistan's cement industry is expected to increase its capacity utilization rate to nearly 90% to meet the increased cement demand as rising domestic cement prices reflect a tightening market in the near future. Cement production is expected to increase at an average of 3.2% per year. Cement demand from Afghanistan and India is also expected to be on the rise. Development and mining of coal resources, including lignite, in the Thar District in Sindh Province is expected to proceed as planned.

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

(Metric tons unless otherwise specified)

Commodity	2008	2009	2010	2011	2012 <sup>c</sup>
METALS					
Bauxite, gross weight	25,000 <sup>c</sup>	11,300	9,576	12,997 <sup>r</sup>	12,000
Chromium ore:					
Gross weight	104,000	133,000	252,000	240,000 <sup>r</sup>	260,000
Cr <sub>2</sub> O <sub>3</sub> content	46,800	59,900	113,400	112,000	114,000
Copper, mine output, Cu content <sup>c</sup>	18,700	18,500	18,000	19,000	19,000
Gold, mine output, Au content <sup>c</sup>	1,600	1,600	1,600	1,600	1,600
Iron and steel: <sup>c</sup>					
Iron ore, gross weight	250	333 <sup>2</sup>	418 <sup>2</sup>	430 <sup>r,2</sup>	380
Pig iron	1,000	700	483 <sup>2</sup>	232 <sup>r,2</sup>	450
Steel, crude	1,100	1,100	1,100	1,200	1,200
Lead: <sup>c</sup>					
Pb content in concentrate	--	26,000	26,000	27,000	27,000
Refined, secondary	3,000	85 <sup>2</sup>	2,889 <sup>2</sup>	919 <sup>r,2</sup>	2,900
Silver, mine output, Ag content <sup>c</sup>	2,800	2,800	2,800	2,800	2,800
Zinc, Zn content in concentrate	--	1,000	10,000	15,000	12,000
INDUSTRIAL MINERALS					
Abrasives, natural, emery <sup>c</sup>	150	150	150	150	150
Barite	56,500	56,333	49,038	56,202 <sup>r</sup>	52,000
Cement, hydraulic <sup>c</sup>	30,800 <sup>r,2</sup>	32,800 <sup>r,2</sup>	30,000	32,000	33,000
Chalk	5,000 <sup>c</sup>	8,343	1,322	1,422 <sup>r</sup>	1,500
Clays:					
Bentonite	31,500	33,300	42,100	44,500 <sup>r</sup>	41,000
Fire clay	359,500	359,200	307,300	333,900 <sup>r</sup>	340,000
Fuller's earth	10,500	11,055	6,370	4,761 <sup>r</sup>	9,000
Kaolin, china clay	24,500	15,318	27,265	16,481 <sup>r</sup>	25,000
Other <sup>c</sup>	220,000	250,000	240,000	260,000	250,000

See footnotes at end of table.

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

(Metric tons unless otherwise specified)

Commodity	2008	2009	2010	2011	2012 <sup>e</sup>	
INDUSTRIAL MATERIALS—Continued						
Feldspar	28,300 <sup>r</sup>	46,000 <sup>r</sup>	102,000 <sup>r</sup>	107,000 <sup>r</sup>	62,000	
Fluorspar <sup>e</sup>	1,700	1,400	1,500	1,600	1,700	
Gypsum, crude	730,000	856,000	946,000	1,215,000 <sup>r</sup>	952,000	
Magnesite, crude	3,500	3,918	8,330	16,826 <sup>r</sup>	7,500	
Nitrogen, N content of ammonia <sup>e</sup>	2,300,000	2,350,000	2,400,000	2,450,000	2,500,000	
Phosphate rock:						
Gross weight	3,900	30,467	87,807	126,194 <sup>r</sup>	82,000	
P <sub>2</sub> O <sub>5</sub> content	700	5,480	15,800	22,700 <sup>r</sup>	14,800	
Pigments, mineral, natural, ocher	51,417 <sup>r</sup>	55,985 <sup>r</sup>	50,220 <sup>r</sup>	40,932 <sup>r</sup>	40,000	
Salt:						
Rock	thousand metric tons	1,883	1,941	2,058	2,028 <sup>r</sup>	1,900
Marine	do.	50 <sup>e</sup>	93	190	315 <sup>r</sup>	180
Total	do.	1,930 <sup>e</sup>	2,034	2,248	2,343 <sup>r</sup>	2,080
Sodium compounds, n.e.s. <sup>e,3</sup>						
Caustic soda	240,000	250,000	172,000 <sup>r,2</sup>	162,000 <sup>r,2</sup>	150,000	
Soda ash, manufactured	250,000	260,000	378,000 <sup>r,2</sup>	335,000 <sup>r,2</sup>	410,000	
Stone:						
Aragonite and marble	1,341,000	1,223,387	1,471,014	1,816,254 <sup>r</sup>	1,800,000	
Dolomite	305,000	150,619	306,940	283,768 <sup>r</sup>	300,000	
Limestone	thousand metric tons	32,488	35,375	17,984	33,285 <sup>r</sup>	30,000
Other, as "ordinary stone" <sup>e</sup>	do.	6	7	7	8	8
Strontium minerals, celestite	1,000	--	--	--	--	
Sulfur, native <sup>e</sup>	27,400 <sup>r</sup>	26,200 <sup>r</sup>	27,100 <sup>r</sup>	26,600 <sup>r</sup>	26,000	
Talc and related materials, soapstone	26,000	40,792	121,800	114,100 <sup>r</sup>	110,000	
MINERAL FUELS AND RELATED MATERIALS						
Coal, all grades	thousand metric tons	3,691	3,292	3,429	4,026 <sup>r</sup>	4,000
Coke	do.	310	320	302 <sup>r</sup>	175 <sup>r</sup>	180
Gas, natural:						
Gross production	million cubic meters	41,261	41,658	42,000 <sup>e</sup>	43,000 <sup>e</sup>	43,000
Marketed production, sales <sup>e</sup>	do.	38,000	39,000	40,000	41,000	41,000
Natural gas liquids <sup>e</sup>	thousand 42-gallon barrels	750	750	760	760	770
Petroleum:						
Crude	do.	24,818	23,870	70,800 <sup>r</sup>	61,300 <sup>r</sup>	65,000
Refinery products: <sup>e</sup>						
Gasoline	do.	11,152 <sup>2</sup>	11,161 <sup>2</sup>	11,000	12,000	12,000
Jet fuel	do.	7,868 <sup>2</sup>	7,584 <sup>2</sup>	6,631 <sup>r,2</sup>	5,204 <sup>r,2</sup>	5,500
Kerosene	do.	1,527 <sup>2</sup>	1,217 <sup>2</sup>	903 <sup>r,2</sup>	912 <sup>r,2</sup>	1,000
Distillate fuel oil	do.	32,000	31,000	32,000	31,000	32,000
Residual fuel oil	do.	21,369 <sup>2</sup>	18,615 <sup>2</sup>	20,000	21,000	22,000
Lubricants	do.	3,759 <sup>2</sup>	3,689 <sup>2</sup>	1,393 <sup>r,2</sup>	1,358 <sup>r,2</sup>	1,500
Other	do.	15,000	16,000	17,000	18,000	19,000
Total	do.	92,700	89,300	88,900 <sup>r</sup>	89,500 <sup>r</sup>	93,000

<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, 2013.

<sup>2</sup>Reported figure.

<sup>3</sup>Not elsewhere specified.

TABLE 2  
PAKISTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2012

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>e</sup>
Barite		Bolan Mining Enterprises	Khuzdar, Balochistan Province	24
Do.		Razvi Mining (Private) Ltd.	Gandori, Kalan, and Retri	30
Cement		Al-Abbas Cement Industries Ltd.	Karachi	900
Do.		Askari Cement Co. Ltd.	Nizampur and Wah	2,700
Do.		Attock Cement Pakistan Ltd.	Hub Chowki	800
Do.		Bestway Cement Co. Ltd.	Chakwal and Hattar	3,000
Do.		Cherat Cement Co. Ltd.	Nowshera	750
Do.		Dandot Cement Co. Ltd.	Dandot	500
Do.		Fauji Cement Co. Ltd.	Jhang Bahtar	1,170
Do.		do.	do.	2,200
Do.		Gharibwal Cement Ltd.	Jhelum	540
Do.		Javedan Cement Ltd.	Karachi	600
Do.		D.G. Khan Cement Co. Ltd.	Chakwal and Dera Ghazi Khan	1,650
Do.		Kohat Cement Co. Ltd.	Kohat	700
Do.		Lafarge Pakistan Cement Ltd.	Chakwal	2,500
Do.		Lucky Cement Ltd.	Karachi	3,750
Do.		do.	Pezu	4,000
Do.		Maple Leaf Cement Factory Ltd.	Daudkhel	1,500
Do.		Mustehkam Cement Ltd.	Haripur	600
Do.		Pakistan Cement Co.	Between Islamabad and Lahore, Punjab Province	2,200
Do.		Pioneer Cement Ltd.	Chenki	1,300
Do.		Thatta Cement Co. Ltd.	Thatta	450
Do.		Zeal Pak Cement Factory Ltd.	Hyderabad	1,080
Chromite		Pakistan Chrome Mines Ltd.	Gwal, Khanozai, Muslim Bagh, and Nisai, Balochistan Province	20
Coal		Sindh Coal Authority	Dadu, Sindh Province	4,000
Do.		do.	Tharparkar, Sindh Province	NA
Copper, mine		Saindak Metals Ltd. [Metallurgical Construction Corp. (MCC), operator]	Chaghi, Balochistan Province	22
Gas, natural	million cubic meters per day	Pakistan Petroleum Ltd. (PPL)	Adhi, Punjab Province; Kandhkot and Mazarani, Sindh Province; and Sui, Balochistan Province	24
Do.	do.	Oil and Gas Development Co. Ltd. (OGDC)	37 oilfields and gasfields, including Mari, Sindh Province	31
Lead and zinc, ore		MCC Duddar Minerals Development Co. Pvt.	Duddar, Balochistan Province	660
Petroleum:				
Crude	42-gallon barrels per day	Pakistan Petroleum Ltd. (PPL)	Adhi, Punjab Province	1,600
Do.	do.	Oil and Gas Development Co. Ltd. (OGDC)	37 oilfields and gasfields	46,000
Refined	do.	Bosicor Pakistan Ltd.	Karachi	30,000
Do.	do.	Pak-Arab Refinery Co. Ltd. (joint venture of the Governments of Pakistan and the Emirate of Abu Dhabi)	Mahmood Kot, Punjab Province	100,000
Phosphate rock		Pakistan Mining Co. Ltd.	NA	90
Steel, crude		Pakistan Steel Mills Corp. (Pvt) Ltd. (PSM)	Karachi	1,100
Talc		CapriCorn Minerals	Bandi Sadique	20

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