

The Mineral Industry of Pakistan

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Pakistan's minerals-based industries continued to provide only a minor component of the country's overall economy. Partition of the country in 1971 did not greatly reduce Pakistan's overall mineral output as Bangladesh (the former east wing) supplied only a small portion of the country's total mineral production. Natural gas output from the Dhulian, Māri, and Sui natural gasfields comprised the major component of the nation's minerals-based industry. Sufficient natural gas reserves are available at these fields to maintain production in the foreseeable future. In addition, Pakistan produced significant quantities of minerals such as chromite, barite, clays, gypsum, rock and marine salt, sand, stone, and lesser quantities of a few other metallic and nonmetallic minerals. Some of these commodities have been exported in sufficient quantities to earn vitally needed foreign exchange. However, this is offset by large sums of foreign exchange that Pakistan has expended to import iron and steel, crude petroleum, and partially or completely refined petroleum products.

Pakistan Government statistical sources showed that for the fiscal year ending June 30, 1971, the mining and quarrying

of crude minerals provided \$18.5 million² in current dollars to the nation's gross national product (GNP) of \$3,744 million. For the fiscal period ending June 30, 1972, the mining and quarrying of crude minerals increased 13% to \$20.9 million, while the GNP increased 7% to \$4,014 million. These data are not comparable with those presented in previous Minerals Yearbooks because of the removal of the contribution of the former east wing of Pakistan (Bangladesh) and the decreased value of the Pakistani Rupee.

Official government data does not provide information on the value added by the processing of both native and imported mineral commodities. However, it must be assumed that the processing of crude minerals adds significantly to their value. The petroleum and natural gas industry alone earns a large amount of money for the Government from the levy of duties and other special taxes on raw and processed fuels. In addition, the nation's use of native fuel and minerals allows the retention of large quantities of foreign exchange that would be required to import these commodities for domestic use.

PRODUCTION

Government sources reported production of a large number of mineral commodities in Pakistan's four provinces. The following minerals were produced in appreciable quantities during 1972: Sand and gravel, natural gas, rock and marine salt, barite, soapstone, chromite, marble, fluorite, and sulfur. Pakistan also continued to produce finished mineral products such as chemical

fertilizers, chemicals, and cement. Some manufacturers of these products consumed indigenous raw minerals. Mineral and mineral-based production not required for domestic consumption was exported.

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² Where necessary, values have been converted from Pakistani Rupees (PRs) to U.S. dollars at the rate of PRs 11.031=US\$1.00.

Table 1.—Pakistan: Production of mineral commodities

(Metric tons unless otherwise specified)

Commodity	1970	1971	1972 ^p
METALS			
Aluminum, bauxite, gross weight	795	283	533
Antimony ore:			
Gross weight	143	157	223
Metal content ^e	30	31	45
Arsenic ore (orpiment), gross weight	305	NA	NA
Chromium, chromite, gross weight	29,084	24,163	32,207
Iron and steel, mild steel products ¹	174	^p 180	^e 220
Lead ore:			
Gross weight	6	12	^e 10
Metal content ^e	3	^e 6	5
Manganese ore, gross weight	12	91	127
NONMETALS			
Abrasives, natural, emery stone	2,905	566	2,246
Barite	1,869	2,962	2,402
Cement, hydraulic	2,571	2,621	2,694
Chalk	599	925	1,089
Clays:			
Bentonite	291	108	481
Fire clay	28,281	27,608	26,566
Fuller's earth	6,947	10,737	11,246
Kaolin (china clay)	9,144	2,732	4,260
Other ²	^e 70,000	^e 50,000	24,625
Feldspar	133	305	237
Fertilizer materials, manufactured:			
Nitrogenous:			
Gross weight ³	263,590	265,442	571,624
Nitrogen content ³	107,993	107,425	251,349
Phosphatic, gross weight	23,308	27,676	32,126
Fluorspar	528	4,770	2,332
Gypsum, crude	167,522	133,513	154,138
Magnesite, crude	472	220	294
Natron, manufactured (soda ash)	74,257	80,575	68,448
Pigments, natural mineral, ocher	2,672	1,546	4,455
Salt:			
Rock	316	345	618
Marine	221	266	234
Total	537	611	852
Sand and gravel:			
Gravel	^e 60,000	^e 71,000	69,052
Sand:			
Bajri ⁴	^e 7,500	^e 8,600	7,550
Glass ⁵	31,885	35,312	47,732
Common ⁶	43,000	27,000	14,152
Stone:			
Aragonite	22,430	11,703	17,430
Dolomite	78	2,019	330
Limestone	1,658	2,523	2,754
Marble	265	2,217	1,252
Crushed ^{6,7}	12,099	214,951	67,145
Strontium minerals, celestite	135	399	343
Sulfur ⁸	^e 2,000	2,534	3,036
Talc and related materials, soapstone	^e 3,500	^e 4,700	4,396
MINERAL FUELS AND RELATED MATERIALS			
Coal, all grades ^e	1,270	1,250	1,250
Gas, natural, sales	^r 101,608	107,630	118,630
Natural gas liquids ⁹	^e 56	NA	NA
Petroleum: ⁹			
Crude oil	3,400	3,650	^e 3,700

See footnotes at end of table.

Table 1.—Pakistan: Production of mineral commodities—Continued

(Metric tons unless otherwise specified)			
Commodity	1970	1971	1972 ^p
MINERAL FUELS AND RELATED MATERIALS—Continued			
Petroleum: ² —Continued			
Refinery products:			
Gasoline, aviation..... thousand 42-gallon barrels ..	10 * 295	} 2,774	} NA
Gasoline, other.....do.....	10 * 2,456		
Jet fuel.....do.....	10 * 2,783		
Kerosine.....do.....	10 * 4,453		
Distillate fuel oil.....do.....	10 * 7,171		
Residual fuel oil.....do.....	10 * 10,544		
Lubricants.....do.....	10 * 491		
Other.....do.....	10 * 2,652		
Refinery fuel and losses.....do.....	10 * 1,899		
Total.....do.....	10 * 32,744		

* Estimate. ^p Preliminary. ^r Revised. NA Not available.

¹ As reported in source, types of products not specified.

² Sind Province only; additional quantities may be produced in other provinces.

³ Data are for urea and ammonium sulfate only; ammonium nitrate presumably is still produced but recent data are not available owing to Pakistan Government restrictions. In the year ending June 30, 1965 (latest data available) ammonium nitrate output totaled 76,086 tons (gross weight) with a nitrogen content of 26,630 tons.

⁴ As reported by North-West Frontier Province only, no details on the nature of this sand are available.

⁵ Punjab, Sind, and North-West Frontier Provinces only, additional quantities may be produced in Baluchistan Province.

⁶ Punjab and Sind Provinces only; additional quantities may be produced in other provinces.

⁷ Reported in source as "ordinary stone."

⁸ Produced in Baluchistan, type of sulfur not reported.

⁹ Erroneously reported as 42-gallon barrels in 1971.

¹⁰ Includes output of Chittagong refinery in Bangladesh; data inseparable from that of the three refineries in Pakistan (former west wing of Pakistan). The Chittagong refinery's rated capacity was about 29% of the total capacity for Pakistan and Bangladesh, but distribution of actual production is impossible owing to the lack of detailed information on individual plant operations.

TRADE

Official Pakistani trade data no longer include information relating to the former east wing (now Bangladesh). Thus current and future published data will not be comparable with data reported in previously published Mineral Industry of Pakistan chapters. These data indicate that the total value of exports and reexports showed a marked increase over that of the previous year while the value of imports declined slightly. During 1971-72 overall imports were valued at \$731 million and overall exports (including reexports) at \$716 million leaving a trade deficit of \$15 million.

Cement, and petroleum and petroleum refinery products constituted almost three-fourths of the total value of mineral and mineral-based exports. If the value of petroleum and petroleum related products, and cement were excluded from the total mineral export value, then mineral exports would equal only \$5.2 million for the fiscal year 1971-72.

Almost four-fifths of Pakistan's mineral and mineral based imports consisted of iron and steel, including ore and scrap, crude petroleum, and petroleum refinery products. The remainder consisted of fossil fuels, fertilizer materials, various metals, and other mineral materials.

Table 2, based on official trade information, supplies the best available quantita-

tive export data. The leading export items were cement, salt, and chromium ores and concentrates.

The following tabulations show the value of recorded mineral commodity exports and reexports, and imports, respectively.

Commodity or commodity group	Value of exports and reexports (million dollars)	
	1970-71	1971-72
Chromite.....	0.7	0.8
Other metallic ores.....	—	.4
Metals, including scrap.....	.1	.1
Cement.....	4.2	8.9
Gem stones except diamond.....	.2	.3
Salt.....	.4	.4
Stone, sand and gravel.....	.8	1.1
Petroleum and petroleum refinery products.....	8.4	8.6
Other.....	.5	2.1
Total.....	15.3	22.7

Commodity or commodity group	Value of imports (million dollars)	
	1970-71	1971-72
Iron and steel, including ores and scrap.....	81.0	79.3
Other metals, including ores and scrap.....	19.1	14.4
Fertilizer materials.....	28.4	11.3
Coal and coke.....	3.6	7.9
Crude and partly refined petroleum.....	34.9	35.9
Petroleum refinery products.....	20.1	17.7
Other.....	6.3	4.1
Total.....	193.4	170.6

Table 2.—Pakistan (excluding Bangladesh): Exports and reexports of mineral commodities

(Metric tons unless otherwise specified)

Commodity	1970-71	1971-72
METALS		
Aluminum metal, including alloys, semimanufactures	2	4
Chromium ores and concentrates	23,885	22,857
Copper metal, including alloys, all forms	1	13
Iron and steel:		
Pig iron	1	--
Semimanufactures	80	51
Lead metal, including alloys, all forms	--	1
Platinum	160	6,640
troy ounces		
Tin	--	(¹)
long tons		
Other:		
Ores and concentrates, n.e.s.	--	12,955
Scrap, nonferrous	216	--
NONMETALS		
Abrasives, natural:		
Dust and powder of precious and semiprecious stones	value \$1,016	\$390
Grinding and polishing wheels and stones	do \$12,390	\$57,907
Barite	856	--
Cement	307,077	569,759
Chalk, crude	16	9
Clays and products:		
Crude	23	125
Fire bricks	3,334	1,779
Other, n.e.s.	--	557
Fertilizer and fertilizer materials:		
Crude	91	--
Manufactured	--	10,584
Gem stones other than diamond	kilograms 9,878	16,024
Gypsum	20,968	--
Mica, crude and worked	r 18	--
Salt	81,301	61,977
Stone, sand and gravel:		
Dimension stone	r 8,235	8,848
Crushed and broken stone	629	6
Sand	17	--
Strontium minerals, celestite	2	--
Other nonmetals, n.e.s.	10	204
MINERAL FUELS AND RELATED MATERIALS		
Asphalt and bitumen, natural	2,923	7,588
Coal and coke	985	686
Petroleum:		
Topped crude ²	thousand 42-gallon barrels 1,088	345
Refinery products:		
Gasoline	do 1	13
Kerosine and jet fuel ¹	do r 16	6
Distillate fuel oil	do 137	962
Residual fuel oil	do 3,045	2,441
Lubricants	do 11	178
Other	do (1)	(1)

^r Revised.

¹ Less than 1/2 unit.

² Reported in source as "topped crude—naphtha."

COMMODITY REVIEW

METALS

Aluminum and Bauxite.—The production of bauxite declined sharply from 2,213 tons in 1969 to 283 tons in 1971. However, in 1972 production began to increase and almost doubled over the quantity of the previous year. The province of Punjab was the only source of bauxite. Since there are no exports of bauxite, it must be concluded that all production is consumed by domestic industry. It is conjectured that the output of bauxite is used in conjunc-

tion with domestic industries such as clays, cement, and ceramics.

No announcement was made during the year of the production of aluminum metal from any native bauxite.

Chromite.—Production remained strong during the year and showed a significant increase over the quantities produced in 1970 and 1971. The bulk of the reported production came from the province of Baluchistan, with minor production reported from the North-West Frontier Province.

During the fiscal year 1971-72, 22,357 tons were exported; 19,968 tons to the United States and the remainder to the People's Republic of China.

Iron and Steel.—Pakistan industry continued to be dependent on imports of iron and steel to produce various manufactured and semimanufactured items. Production of these items in 1972 increased over that of the previous year. Production was reported by 145 factories.

The West Pakistan Industrial Development Corp. (WPIDC) proposed the construction of a pig iron steel plant in Baluchistan Province to provide steel for Pakistan's developing heavy industry. The WPIDC expects to base its proposed plant on the Chilghazi iron ore deposits, which contain reserves of 2.4 million tons of magnetite whose iron content varies from 32% to 55%. These reserves are thought to be adequate for the operation of a 200-ton-per-day plant for a period of 12 to 15 years.

Uranium.—The Pakistan Atomic Energy Commission continued its search for uranium ore and has commenced a drilling program in the Sulemanki mountain range in the Dera Ghāzi Khān area. Previous drilling operations in the area indicated several hundred tons of uranium ore.

On November 28, 1972, the Karachi nuclear powerplant was dedicated. The plant is the first nuclear powerplant in the country and is located on the beach, almost 27 miles west of Karachi. This facility was constructed with Canadian and Japanese assistance. This and similar plants that will be constructed in the future are expected to assist in supplying Pakistan's current and future power demands.

NONMETALS

Barite.—Although barite production remained strong, production declined below the level of the previous year. According to official government sources no exports of barite were reported. The lack of exports may indicate increased domestic demand for barite as a well-drilling medium. Production occurred primarily in the North-West Frontier Province. A minor quantity was produced in Baluchistan Province.

Cement.—Nine cement plants were in operation during the year with production

showing a small increase over that of 1971. Exports of cement in the fiscal year 1971-72 almost doubled that of the previous fiscal period. Major recipients of Pakistan cement were Abu Dhabi, Dubai, Saudi Arabia, Somalia, Kuwait, and Muscat.

As of August 1972, all cement plants in Pakistan were using natural gas as a fuel to produce cement. The WPIDC's Maple Leaf plant in Duadkhel was the last cement plant to convert from coal to natural gas as an operating fuel. The cement industry was the nation's second largest consumer of natural gas. The industry currently has a production capacity in excess of 3 million tons per year.

Fertilizer Materials.—Five plants produced fertilizer materials such as urea, superphosphate, and ammonium sulfate during the year. The output of fertilizer materials was almost doubled the production of 1970 and 1971. Urea was the bulk of the chemical fertilizer production. Increased domestic production may decrease Pakistan's requirement for imported chemical fertilizers in the future.

The Dawood-Hercules plant near Lahore, with a urea production capacity of 345,000 tons per year, was the largest producer. This was followed by the plant at Daharki, with a capacity of 173,000 tons of urea per year, and the WPIDC's plant at Multan, with a capacity of 59,200 tons of urea per year and 103,000 tons of ammonium compounds. These plants use domestic natural gas for the production of fertilizers.

Salt.—Salt production was derived by solar evaporation of sea water and mining of rock salt. Sixteen facilities for the evaporation of salt were reported in operation during 1972. The major portion of the rock salt output was supplied by the province of Punjab, with a small quantity from the North-West Frontier Province. Total salt production increased 37% over that of 1971. The increase was primarily due to the increased output of rock salt. A significant quantity of salt was exported, primarily to Singapore.

MINERAL FUELS

Pakistan's consumption of all forms of commercial fuels in 1972 was estimated to be 6.4 million tons of fuel oil equivalent.

During 1972 the breakdown of national energy requirement by source was estimated as follows: Oil, 42%; natural gas, 34%; hydroelectric power, 13%; coal, 10%; and nuclear power, 1%.

Coal.—Production remained stable during the year and was unchanged from that of the previous year. The bulk of production was used to meet indigenous demand. Only a minor quantity was exported to other Asian countries.

Natural Gas.—The output of the Dhulian oilfield and Māri and Sui gasfields in 1972 increased 10% over that of the previous year. The industrial and other demands for this fuel continued to increase with the continued development of major gas transmission lines. The generation of electric power consumed almost 42 billion cubic feet of natural gas. In addi-

tion, almost 26 billion cubic feet was used for the manufacture of chemical fertilizers.

Petroleum.—Estimates of crude oil production indicated that production remained near that of 1971. The output of domestic crude oil was inadequate to meet domestic demand and large quantities were imported for processing to refined petroleum products in plants near Karachi and Rawalpindi. Large quantities of refined petroleum products were also imported to meet consumer demand.

The Pakistan Government continued negotiations with various oil companies for oil exploration concessions. Interest was greatest in the offshore Baluchistan coastal area. The West German oil firm Winterhall A.G. has drilled an exploratory well to a depth of 8,000 feet in this area and is expected to continue drilling to a depth of 16,000 feet.