

AFGHANISTAN AND PAKISTAN

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AFGHANISTAN

The landlocked Islamic State of Afghanistan is an extremely poor country with rugged terrain and a seasonally harsh climate. It encompasses approximately 652,000 square kilometers (km²). For almost one-quarter of a century, the country has endured extreme political upheaval, civil strife, and outright war (Afghanistan Online, undated a§¹). Most of the major administrative, agricultural, communication, education, government, heavy- and small-scale industries, social services, and transportation systems have been seriously damaged or utterly destroyed. An estimated 4 million to 5 million of the population of 26 million has been displaced within and outside the country. Additionally, natural catastrophes such as drought and earthquakes, have afflicted the country in the past few years (Afghanistan Online, undated b§; BBC News, 2002§).

From the mid-1990s until late 2001, the Taliban (originally a group of Islamic scholars derived from the Pashtun ethnic majority community) controlled about 90% of the country. Because of the Taliban's extreme version of Islam, they were opposed by an alliance of factions drawn mainly from Afghanistan's minorities based in the north called the Northern Alliance. Additionally, the Taliban was recognized as the legitimate Government by only Pakistan, Saudi Arabia, and United Arab Emirates (BBC News, 2002§; U.S. Department of State, 2002§).

Following about 2 months of pressure from U.S. air power and ground forces that ended in the collapse of the ruling Taliban, Afghan factions under United Nations sponsorship and that were opposed to the Taliban agreed on a political process to restore stability and governance to the country. At yearend, the Interim Authority was attempting the establishment of Government ministries and necessary social services that would lead to a restructuring of Government to be apportioned toward a balance of the different ethnic groups (U.S. Department of State, 2002§).

The country has economic potential owing to natural resources that range from exotic minerals, such as lapis lazuli and other fine gems for which Afghanistan has been an important source for many centuries, to more-standard ore deposits, such as copper, gold, and iron ore (Geotimes, 2002; Shroder, 1983). The precious and semiprecious stone deposits are numerous. Some of the main gemstones that have been produced are aquamarine, emerald, kunzite, lapis lazuli, ruby, and tourmaline (Colored Stone, 2001§). Additional mineral

resources include barite, coal, chromite, lead, salt, sulfur, talc, and zinc, as well as natural gas and petroleum. Some of these resources have been exploited, and others have not because the country generally lacks the infrastructure to use them and the country has limited resources under production (Afghanistan Online, undated a§; MBendi Information Services, undated§). A small copper deposit is located at Ainak, which may have the capability to be mined at a rate of 5,000 metric tons per year of ore (CountryWatch, 2000§). Cement produced from indigenous sources also was provided to local markets in minor quantities. The main fossil fuel resources in Afghanistan were coal, natural gas, and as-yet untapped petroleum (Afghanistan Online, undated a§). The country also produced hydroelectric power (CountryWatch, 2000§).

The economy was essentially agricultural, which included subsistence farming and livestock raising. Before the war that removed the Taliban regime, Afghanistan's gross domestic product was estimated to be \$6.9 billion with per capita income of about \$300. The bulk of national production consisted of agricultural and forestry products (53%) followed by light industry (28%), trade (8%), construction (6%), and other (5%) (Asian Development Bank, 2002§).

Afghanistan's economy has additional potential because of its strategic geographic position as a transit route for Central Asian hydrocarbons to the Arabian Sea. The feasibility of using the country's geographic location as a transit route was demonstrated in the late 1990s when Unocal Corp. of the United States led the multinational Central Asia Gas Pipeline consortium in evaluating construction of a pipeline from Turkmenistan through western Afghanistan to natural gas markets in Pakistan (Unocal Corp., 2002§).

For more than 30 years, the wars and violence in Afghanistan have inflicted severe physical and socioeconomic effects on the country's environment and its people and have intensified the country's environmental problems. The more-crucial ones, in addition to such natural hazards as drought, earthquakes, and flooding, are deforestation, desertification, soil erosion, and water pollution. Regulation and protection jurisdiction of the environment was within the Ministry of Agriculture and the Ministry of Water and Power, but the Taliban had suspended the activities of both organizations in 1996; fledgling interim Ministries were being organized near yearend (CountryWatch, 2000§).

The transport system in Afghanistan was in poor condition with almost 80% of the highways and roads unpaved. Owing to the rugged terrain in the country, the only operational rail network, which was about 25 kilometers (km) long, joined Afghanistan with Turkmenistan and Uzbekistan (MBendi Information Services, undated§).

¹References that include a section twist (§) are found in the Internet References Cited section.

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Major Sources of Information

Ministry of Mines and Industries, Kabul, Afghanistan
Ministry of Water and Electricity, Kabul, Afghanistan

PAKISTAN

The Islamic Republic of Pakistan is in South Asia in the northwestern corner of the Indian subcontinent. It borders India to the east, China to the northeast, Afghanistan to the north and west, and Iran to the southwest. The Arabian Sea along the south forms a 1,046-km coastline. Its total area of 803,940 km² is slightly less than twice the size of California (U.S. Central Intelligence Agency, 2001§; Islamic Republic of Pakistan, undated§).

Primarily owing to severe drought in the agricultural sector, the growth of Pakistan's gross domestic product (GDP) declined to a rate of 2.6% in fiscal year 2001 (July 1-June 30) from a growth rate of 3.9% in 2000. Pakistan's GDP was expected to increase by 3% in fiscal year 2002 (Asian Development Bank, 2002).

Mining and quarrying products, which included petroleum and natural gas, played a minor role in the economy of Pakistan; they accounted for only 0.5% of the GDP (Country Briefings, 2002§). The country produces a variety of minerals; the more-important of which include barite, chromite, coal, dolomite, limestone, magnesite, natural gas, gypsum, petroleum, salt, and sulfur. Additionally, recent regional geological surveys have

substantiated the potential of the metals copper, gold, iron ore, lead, platinum, silver, and zinc and of the quarry products multicolored granite, marble, and other dimension stones (Mining Magazine, 2001; Pakistan Ministry of Finance, 2002§).

In January, the Pakistani Government approved a package of offshore exploration and development incentives. The incentives would apply to new and existing leases for 5 years. Under the changes, exploration periods were increased to 5 years from 3 years, two optional renewals of 2 years each, and a maximum retention of 10 years allowed on a case-by-case basis. The import duties and taxes for exploration equipment would be waived. After the first commercial discovery, the duties would be 3%.

In addition, corporate income tax would be reduced from 50% to 40%. Investors would recover the costs of exploration and development projects, up to 85%, and thereafter share revenues with the Government. A sliding scale royalty was to be introduced with a payment holiday of 4 years; a flat 12.5% royalty applied previously.

Pakistan's offshore area is divided into 3 zones. The shallow designation applies to areas in less than 200 meters (m) of water, the deep designation to areas in 200 to 1,000 m of water, and the ultradeep designation to areas in more than 1,000 m of water.

In June, the Government amended its petroleum policy for onshore exploration. To increase the pace of onshore exploration, a 10-year plan that would gradually increase activity to 100 wells drilled per year was created. Similar to the offshore incentive package, the income tax rate was lowered to a uniform 40% from 50% to 55%; the initial terms of exploration licenses were increased to 5 years from 3 years, renewals of 2 years each versus the previous 3-year renewals, and three extensions of 1 year each. Additionally, an open-access system would be followed for pipeline infrastructure development. For tie-in pipelines constructed by a producer, buyer, or a third party, separate transmission tariffs would be allowed. A 5-year retention of significant gas discoveries would be allowed. For marginal properties, the Government withdrew the \$500,000 production bonus requirement (Oil & Gas Journal, 2001b).

The Government also approved a production-sharing agreement (PSA) that was a model for future agreements. It approved a policy to allow current (2001) holders of concessions to opt to convert to a PSA. To convert, the company must have completed its work obligations for the initial term of the exploration license and must execute the PSA within 90 days of Government approval (Oil & Gas Journal, 2001a).

In March, the Pakistani Government established a commission to investigate ways in which the country's cement and other industrial fuel users could be converted to coal rather than continuing to rely on more-expensive imported oil and gas. The aim was to reduce Pakistan's dependence on imported energy; this could save an estimated \$22 million per year in foreign exchange and provide an incentive for developing the country's domestic coal resources (Mining Journal, 2001a).

In early June, the Government approved \$15.7 million in development aid for the minerals sector and required the provincial governments to implement it within 30 days. The decision followed intense lobbying by the minerals sector, which told the Central Government that the provincial authorities were resisting implementation of the 1995 minerals policy primarily owing to lack of funding. The bulk of the funds

was assigned to the Geological Survey of Pakistan to complete a geologic mapping survey of the entire country at a scale of 1:50,000 within 5 years. Also included in the funding was an initiative for the Provincial governments to establish mine departments at their Provincial level (Mining Journal, 2001c).

On November 30, the Governments of China and Pakistan signed a \$350 million contract for reviving the development of the Saindak copper-gold project in Balochistan Province, it had been shut down in early 1996 owing to the lack of working capital. The contract was awarded on a lease basis to the China Metallurgical Construction Corp. (MCC) for a period of 10 years. The Balochistani Provincial government was to receive a royalty of \$700,000 per year. MCC initially would invest \$39 million as working capital to make the project viable. The project was scheduled to start production by December 2002. During the 6-month initial production period of operation in 1995-96, Saindak produced more than 1,500—metric tons (t) of blister copper that contained about 10 kilograms (kg) of gold and 200 kg of silver. Once in full production, Saindak was scheduled to produce 45,000 t/yr of copper, which would offset the 30,000 t/yr of copper imports, 1.5 t/yr of gold, and 2.8 t/yr of silver (Pakistan & Gulf Economist, 2002b; Dawn, 2001§).

Pakistan Steel was Pakistan's only integrated steel plant. It was located near Port Muhammad Bin Qasim, which is 25 km east of Karachi, and had a capacity of 1.1 million metric tons per year (Mt/yr). It was constructed with technical assistance from the Soviet Union. The coking coal, iron ore, and manganese for the plant were imported. It produced billets, coke, galvanized sheets, hot- and cold-rolled coils and sheets, and pig iron.

In 2001, Pakistan had 24 cement plants that had a total installed capacity of 16.3 Mt/yr. Of these, 20 plants that had a total of 14.4 Mt/yr of capacity were in the private sector, and the remaining 4 plants that had a total of 1.9 Mt/yr capacity were in the public sector (Pakistan Ministry of Finance, 2002§).

Early in the year, producers of high-quality marble in Sindh Province were forced to stop their operations owing to increases in freight cost, abnormal utility charges, and load shedding by the Karachi Electric Supply Corp., which together led to high production costs and unacceptable delays to export consignments. Some leading producers claimed that Pakistani marble was no longer competitive in world markets and that foreign buyers of high-quality marble were turning to China, Egypt, and India for their supplies (Industrial Minerals, 2001).

Pakistan has vast untapped coal deposits, which according to some estimates, may be adequate for up to 100 years. Sindh Province alone has sufficient coal resources to meet national requirements for decades. The Sindh Coal Authority (SCA) was planning to build a 450-megawatt integrated powerplant to meet anticipated demand by 2005; it would burn coal supplied from the Province's Dadu District. The SCA also delineated a 50-km² area for leasing to private parties. The Government launched a bankable feasibility study of the substantial Thar coal resources in Sindh Province's Tharparkar Desert with plans to develop the coal through international competitive bidding (Asian Mining Journal, 2001; Mining Journal, 2001b).

Because Pakistan consumed more than 5 times its domestic production, it continued to depend on imported oil and natural gas in 2001. Although the country will probably never attain self-sufficiency in oil and gas, the Government encouraged private firms, which included foreign owned, to develop

domestic production capacity. Despite the development of the necessary infrastructure to transport and distribute its gas and petroleum adequately, net imports were projected to increase substantially, at about 7% per year, in coming years, which may present burdens. The country had about 7,400 km of transmission pipeline (U.S. Energy Information Administration, 2002§; Pakistan Ministry of Petroleum and Natural Resources, undated§).

In 2001, most of the foreign-owned oil exploration and production companies active in Pakistan were small independents. The most prominent were two United Kingdom-based companies—Lasmo Oil Plc, which was acquired by Italy's Eni in 2001, and BP Pakistan Exploration and Production Inc. (a subsidiary of BP Plc) (BP Plc, 2002§; Eni, 2002§). Pakistan's producers were centered on the Potwar Plateau in Punjab and Sindh Provinces (Iran Daily, 2001).

A 30,000-barrel-per-day (bbl/d) oil refinery was under construction by Bosicor Pakistan Ltd. near Karachi, Balochistan Province. The \$50 million refinery will produce almost all types of petroleum products from crude oil supplied by France's TotalFinalElf from Qatar. The products will be purchased by Pakistan State Oil Co. Ltd. A refurbished unit previously owned by a U.S. petroleum company was being used in the construction of the refinery (Pakistan & Gulf Economist, 2002a; U.S. Energy Information Administration, 2002§).

In February, the Pak-Arab Refinery Co. Ltd. (Parco) commissioned its greenfield Mid-Country Refinery (MCR) complex at Mahmood Kot, Punjab Province. The \$886 million complex consisted of 11 main process units and treatment and recovery units along with a full complement of residential housing. There also were numerous offsite/utilities units and other permanent facilities, which included 46 crude oil; intermediate feeds stock; and other finished products storage tanks. The refinery had a throughput capacity of 100,000 bbl/d that consisted of light Arabian crude from Saudi Arabia and crude from Abu Dhabi. Parco was a joint venture among the countries of Austria, Abu Dhabi, and Pakistan; the Government of Pakistan held a 60% interest, and Abu Dhabi Petroleum Investment and OMV of Austria held the remaining 40% interest (Parco Ltd., 2001a§, b§).

In October, the Asian Development Bank announced that it would provide a \$1 million technical assistance grant to restructure Pakistan's natural gas sector to make it more efficient and attractive for investments from the private sector. The Pakistani Government approved its own funding of \$1.5 million in corresponding support. Heretofore, the public sector had been unable to improve its infrastructure because of underfunding, and, therefore, natural gas discoveries have remained undeveloped, thus keeping the country heavily reliant on imports. The Ministry of Petroleum and Natural Resources was to implement the program (Asian Development Bank, 2001).

Pakistan's natural gas producers included the State-owned producers Pakistan Petroleum Ltd. and Oil and Gas Development Corp., as well as the foreign companies Atlantic Richfield of the United States, BHP Billiton Plc of Australia, Lasmo Oil, and OMV areas (Iran Daily, 2001). These were operating the following gasfields: Adhi Field, Punjab Province; Shikarpur Field, Sindh Province; Kandhkot Field, Sindh Province; and Sui Field, Balochistan Province (Pakistan Petroleum Ltd., 2002).

The transportation infrastructure of Pakistan was moderately developed. Of the 247,811 km of roads, 141,252 km was paved, which included 339 km of expressways, and 106,559 km was unpaved. Pakistan has no inland waterways. The public sector railway system consisted of 7,718 km of broad gauge (1.676 m track, 293 km of which was electrified and 1,037 km of which was double track, and 445 km of narrow gauge (1.000- m) track. Of the 117 airports, 82 had permanent-surface runways. International shipping ports included Karachi and Port Muhammad bin Qasim. The merchant marine fleet of 17 ships included 1 petroleum tanker. Pipelines included 4,044 km for natural gas, 250 km for crude oil, and 885 km for petroleum products (U.S. Central Intelligence Agency, 2001§).

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Major Sources of Information

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TABLE 1
AFGHANISTAN AND PAKISTAN: ESTIMATED PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Country and commodity	1997	1998	1999	2000	2001
AFGHANISTAN 3/					
Barite	2,000	2,000	2,000	2,000	2,000
Cement, hydraulic	116,000	116,000	120,000	120,000	120,000
Coal, bituminous	185,000	190,000	190,000 r/	190,000 r/	185,000
Copper, mine output, Cu content	5,000	5,000	5,000	5,000	5,000
Gas, natural:					
Gross million cubic meters	2,700	2,600	3,000	3,000	3,000
Marketed do.	2,300	2,200	2,500	2,500	2,500
Gypsum	3,000	3,000	3,000	3,000	3,000
Natural gas liquids thousand 42-gallon barrels	40	40	45	45	45
Nitrogen, N content of ammonia	5,000	5,000	5,000	5,000	5,000
Salt, rock	13,000	13,000	13,000	13,000	13,000
PAKISTAN					
Metals:					
Aluminum, bauxite, gross weight	4,934	4,954	11,216	8,668	9,000
Chromite ore:					
Gross weight	23,763	8,885	16,279	26,844	26,000
Cr ₂ O ₃ content	10,693	3,998	7,325	12,080	12,000
Iron and steel:					
Pig iron e/ thousand tons	1,400	1,500	1,500	1,500	1,500
Steel, crude do.	479	494	500 e/	500 e/	500
Lead, refined, secondary e/	2,000	2,000	2,000	2,000	2,000
Industrial minerals:					
Abrasives, natural, emery e/	150	150	150	120 4/	150
Barite	23,390	20,657	20,505	21,234	25,000
Cement, hydraulic thousand tons	9,001	8,901	9,600 r/ e/	9,900 r/ e/	9,900
Chalk	5,350	4,357	6,283	7,711	7,700
Clays:					
Bentonite	16,450	14,196	15,349	27,700	28,000
Fire clay	111,145	66,672	152,379	143,643	145,000
Fuller's earth	12,307	14,659	15,565	15,288	15,000
Kaolin (china clay)	66,235	70,777	64,692	49,574	50,000
Other e/	200,000	200,000	200,000	200,000	200,000
Feldspar	25,169	31,191	29,235	43,186	45,000
Fluorspar	1,050	1,000 e/	220	997	1,000
Gypsum, crude	464,942	243,978	244,538	377,000	380,000
Magnesite, crude	4,057	3,157	2,175	4,192	4,200
Nitrogen, N content of ammonia	1,548,600	1,797,200	1,998,900	1,884,300	1,966,100 4/
Phosphate rock: e/					
Gross weight	11,045 5/	11,000	11,500	11,000	11,000
P ₂ O ₅ content	1,880	1,870	1,950	2,000	2,000
Pigments, mineral, natural, ocher	2,600 e/	3,180	3,200 e/	4,747	4,800
Salt:					
Rock thousand tons	1,042	1,038	1,019	1,313	1,500
Marine do.	19	15	16	20	20
Total do.	1,061	1,053	1,035	1,333	1,520
Sand: e/					
Bajir and common	170,000	175,000	175,000	212,120 4/	215,000
Glass	165,000	122,000 4/	130,000	162,000 4/	165,000
Sodium compounds, n.e.s.:					
Caustic soda	263,300	216,000	220,000 e/	220,000 e/	220,000
Soda ash, manufactured e/	220,000	220,000	230,000	230,000	230,000
Stone:					
Aragonite and marble	314,309	354,818	391,754	582,000	585,000
Dolomite	176,096	99,741	188,573	287,962	290,000
Limestone thousand tons	9,016	8,749	9,437	9,884	9,900
Other (as "ordinary stone") e/ do.	10	15	18	20	20
Strontium minerals, celestite	3,000 e/	598	634	1,918	2,000
Sulfur:					
Native e/	150	150	150	150	200
Byproduct, all sources	22,002	18,988	21,166	20,189	21,000
Total	22,152	19,138	21,316	20,339	21,200
Talc and related materials, soapstone	45,414	48,927	67,670	54,365	55,000

See footnotes at end of table.

TABLE 1--Continued
 AFGHANISTAN AND PAKISTAN: ESTIMATED PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Country and commodity	1997	1998	1999	2000	2001
PAKISTAN--Continued 3/					
Mineral fuels and related material:					
Coal, all grades thousand tons	4,700 r/	3,164	3,461	3,116	3,500
Coke e/ do.	720	850 4/	900	900	900
Gas, natural:					
Gross production million cubic meters	16,992	20,224	8,876	24,222	25,000
Marketed production (sales) e/ do.	14,700	17,500	7,700	20,900	21,000
Natural gas liquids e/ thousand 42-gallon barrels	1,080	1,080	564 4/	600	600
Petroleum:					
Crude do.	21,900	16,885	19,986	20,450	22,000
Refinery products e/					
Gasoline thousand 42-gallon barrels	8,800	8,900	8,589 4/	8,500	8,700
Jet fuel do.	4,600	4,700	5,255 4/	5,500	5,700
Kerosene do.	4,000	3,707 4/	2,714 4/	2,700	3,000
Distillate fuel oil do.	13,000	13,500	14,000	14,000	15,000
Residual fuel oil do.	13,500	13,419 4/	13,500	13,500	15,000
Lubricants do.	1,400	1,400	1,500	1,500	2,000
Other do.	5,100	5,000	5,000	5,000	7,000
Total do.	50,400	50,600	50,600	50,700	56,400

e/ Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. r/ Revised.

1/ Table includes data available through September 30, 2002.

1/ Table includes data available through October 8, 2002.

3/ In addition to the commodities listed, asbestos, lapis lazuli, uranium, and a variety of crude construction materials (clays, stone, and sand and gravel) presumably are produced, but available information is inadequate to make reliable estimates of output levels.

4/ Reported figure.

TABLE 2
PAKISTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2001

Commodity	Location of main facilities	Comment
Barite	Balochistan Development Authority	Khuzdar, Sukkar District.
Do.	Bolan Mining Enterprises	do.
Do.	Razvi Mining Ltd.	Abbottabad, Kohistan, and Swat Districts.
Bauxite	Black Mountain Minerals	Manshera, Rawalpindi District.
Do.	Punjab Mineral Development Corp.	Khushab, Rawalpindi District.
Celestite	Industrial Mineral Enterprises	Dera Ghazi Khan, Thano Bula, and Kalu Khuhar Mines, northeast of Karachi.
Cement	Associated Cement Co. Ltd.	Wah, Rawalpindi District.
Do.	do.	Rohri, Sukkur District.
Do.	Attock Cement (Pak) Ltd.	Hub Chowki, near Karachi.
Do.	Chakwal Cement Co. Ltd.	Lahore.
Do.	Cherat Cement Co. Ltd.	Karachi.
Do.	Dandot Cement Co. Ltd.	Lahore.
Do.	D.G. Khan Cement Co. Ltd.	do.
Do.	Fecto Cement Co. Ltd.	Karachi.
Do.	Gharibwhal Cement Ltd.	Jhelom, Rawalpindi District.
Do.	Javedan Cement Ltd.	Near Karachi.
Do.	Lucky Cement Ltd.	Karachi.
Do.	Maple Leaf Cement Factory Ltd.	Lahore.
Do.	Mustehkam Cement Ltd.	Hattar, Abbottabad District.
Do.	Zeal-Pak Cement Factory Ltd.	Hyderabad.
Chromite	Numerous small companies	Mines mainly in the Hindubagh area north of Quetta.
Coal, bituminous	Government of Pakistan	West and south of Rawalpindi along Salt Range and east and south of Quetta.
Do.	Pakistani Water and Power Development Authority	do.
Fluorspar	Balochistan Development Authority	Dilband Ridge, Kolat District.
Gas, natural	Sui Northern Gas Pipelines Ltd.	Northeast of Sukkur District.
Do.	do.	East of Sukkur District.
Petroleum, crude	Occidental Petroleum Co. Ltd.	Dhurnal Oilfield, west of Islamabad.
Do.	Oil and Gas Development Corp. (Government of Pakistan)	Tando Alam Oilfield, east of Karachi.
Do.	Pakistan Oil Fields Ltd.	Morgah Oilfield, Rawalpindi District.
Do.	Union Texas	Kheskeli Oilfield, southeast of Karachi.
Do.	do.	Laghari Oilfield, southwest of Karachi.
Petroleum, refined	Attock Refinery Ltd.	Rawalpindi District.
Do.	National Refinery Ltd.	Korangi, Karachi District.
Do.	Pakistan Refinery Ltd.	Karachi District.
Phosphate rock	Sarhad Development Authority	Kakul Mine, Hazara area north of Islamabad.
Salt, marine	Numerous small companies	Along the Arabian Sea Coast, near Karachi District.
Salt, rock	Government of Pakistan	Kalabagh, Khewra, and Warcha Mines, southern escarpment of Salt Range, Rawalpindi District.
Steel, crude	Karachi Rolling Mills Ltd.	Karachi District.
Do.	Newshera Engineering Co. Ltd.	Lahore District.
Do.	Pakistan Steel Mills Corp. Ltd.	Karachi District.
Do.	Special Steels of Pakistan	do.
Talc	Black Mountain Minerals and others	Near Afghanistan border extending from Parachinar east across Peshawar District to Sherwan.