

## PAKISTAN

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The drastic political changes in Pakistan at the end of 1999 had a favourable impact on the economy of the country during the year 2000 and most sectors showed marked improvement. Agriculture grew by 5.54%, mining and quarrying by 7.67%, construction by 6.24% as compared with 1.97%, 3.64% and 6.25% respectively in the previous year. The manufacturing sector showed a decline of 2.61%. However, GDP increased from 3.15% in 1998-99 to 4.46% in 2000. The growth rate in all sectors of the economy is expected to improve further during 2001.

Geological Survey of Pakistan (GSP) completed regional geological mapping of 2,540 km<sup>2</sup> on a scale of 1:50,000 in the Mastung and Kalat districts of Balochistan. Compilation of geological maps on 1:250,000 scale for the Marri-Bugti areas, which offer excellent potential for hydrocarbon deposits, has been completed and is expected to be published in colour by the end of 2001. A regional geological survey of Quetta valley for groundwater resources and investigation of the Reshian-Lamnian and Treri areas in Azad Kashmir have been completed. Gravity and magnetic surveys were carried out in Jhelum, Gujrat and Sialkot districts to confirm observation points, and in the Makki Dhora area of Kalat district to confirm sulphide mineralisation. Geological mapping of about 2,000 km<sup>2</sup> in the Kala Chitta Range and about 20,4080 km<sup>2</sup> in the Dera Ghazi Khan district (both in Punjab) have been completed. The maps are being processed for printing.

To enhance further the reserve estimates of over 186,000 Mt six holes were drilled in Tharparkar coalfield, and 143 samples were analysed (2,880 determinations). Also, 167 core samples of coal have been collected for further chemical analysis. GSP's chemical laboratory analysed 270 samples (4,136

determinations) of rocks and minerals and more than 50 water samples were analysed for saline and toxic elements.

Drought conditions prevailing in the country were particularly severe in the Quetta valley. As a result of the GSP's state-of-the-art geological and geophysical surveys, a number of hard rock (limestone) aquifers with good potential were identified. About one dozen tube wells were drilled on these anomalies and are supplying good quality water without effecting the overlying aquifers. The first ever discovery of dinosaur fossil by the GSP in the Vitakeri area of Barkhan district (Balochistan) evoked wide international interest. Teams from US Universities have already visited the sites.

Pakistan Mineral Development Corp. (PMDC) continued prospecting work on its already identified prospective base metal areas in the north of Pakistan. Its efforts to attract foreign investors have not met with success, however. The Duddar zinc-lead deposit (indicated reserves 14.3 Mt with 8.6% Zn and 3.2% Pb), proved by a joint venture of Pasmenco (Australia), PMDC and Balochistan Development Authority, has not attracted any investors. Interested parties may visit PMDC's website [www.pmdc.gov.com](http://www.pmdc.gov.com) for further details. During 2000 PMDC produced 302,305 t of coal and 568,550 t of rock salt.

Efforts by Saindak Metals Ltd (SML) to lease out the Saindak-copper gold project continued during the year. As a result of repeated invitations by the Government of Pakistan for leasing out the project, three bids were received, two from Australia, and one from China. After detailed examination of the bids one Australian and the Chinese company are left in the field. Their bids are being evaluated and a decision is expected by the middle of 2001.

Lakhra Coal Development Co. (LCDC) holds a mining lease over 621 km<sup>2</sup> with proved reserves of 150 Mt and estimated reserves of 2,000 Mt. It is operating 69 small mines which produced 96,806 t of coal during 2000. All the coal was supplied to captive Water and Power Development Authority's (WAPDA) thermal power plants located at the mine sites. The mines and the power plants are available for sale or lease to private parties.

Punjab Mineral Development Corp. (PUNJMIN) completed a prefeasibility study of Chiniot iron ore deposits (with reserves of 110 Mt of medium-quality ore) for supporting a mini steel mill. The adjoining areas offer prospects of an additional 500 Mt. PUNJMIN is seeking foreign collaboration for developing these deposits. PUNJMIN produced a total of 421,030 t minerals including coal, gypsum, bauxite, dolomite, fire clay and silica sand, and sold 417,174 t of these minerals.

Frontier and Tribal Areas Development Corp. (FATADC) carried out further geological investigations over 575 km<sup>2</sup> area in Bajur/Mohmand and Urakzai in south Waziristan. In the Shinkai area of north Waziristan about 80 Mt at 0.9% Cu has been proved and a further 27 Mt is inferred. Geophysical exploration over the adjoining areas is planned. FATADC earned PR6.38 million as royalty and granted two prospecting licences for coal, one mining lease for limestone and one for chromite.

Sarhad Development Authority (SDA) continued its systematic stream sediment sampling under an Australian assistance programme and covered an area of 40,000 km<sup>2</sup> at a reconnaissance scale of 1:250,000, and selected 40 areas for further detailed investigations. SDA has signed a memorandum of understanding with Toronto International Trade Corp. (TITC) of Canada and Lake Resources of Australia for detailed exploration over 7,500 km<sup>2</sup> in Chitral and 2,100 km<sup>2</sup> in Kohistan districts respectively for platinum group minerals. SDA is also engaged in research and development work

for identification, evaluation, categorisation and treatment of coloured semi-precious and precious stones. Bench and pilot plant scale studies for the extraction/beneficiation of base metals are in progress. A Geographic information systems (GIS) for mineral exploration in the northwest Frontier Province has been installed.

Efforts by Sindh Coal Authority (SCA) to attract foreign investment for developing its enormous (over 186,000 Mt) coal reserves in Tharparkar Coalfield have not met with success. However, recently the Chinese have offered assistance in developing the coalfield.

Azad Kashmir Mineral and Industrial Development Corp. (AKMIDC) has met with considerable success in its exploration of fault-related hydrothermal mineralisation in agglomeratic slate horizons of the Punjal group. Random samples contain lead and zinc (5-10%), (silver (10-216 ppm) and gold (5-21 ppm). Drilling to prove the extent of mineralisation is in progress. In the Gummot shear zone, arsenopyrite veins with varying contents of gold and silver are being investigated in detail. High quality white marble has been proved (18 Mt) in Jhugian Nauseri area. Leasing of the area to private sector for exploitation is under negotiation. Encouraging results from the pilot-scale mining of the Nangimali ruby deposits have attracted foreign mining companies and a joint venture company will be set up for its development. Evaluation of industrial mineral deposits (marble, bauxite, fire clay, dolomite and bentonite) has been completed and they are being offered to the private sector for development. The corporation completed regional geological mapping of 250 km<sup>2</sup> which will help in further exploration of precious metals showings in the Khilla, Lamnian and Treri areas of Muzaffarabad district, and for commercial exploitation of ruby deposits.

### **Production**

Of the 21 minerals for which data are reported, 10 showed increases in production:- aragonite (up 42.2%), argillaceous clay (6%),

chalk (18%), coal (31%), feldspar (72.8%) gypsum (32.7%) and magnesite (2.9%). With the expected overall improvement in the economy of the country, the minerals sector should perform better during 2001.

### Oil and Gas

Hydrocarbon Development Institute of Pakistan (HDIP) undertook 2000 Research and Development Projects including re-appraisal of petroleum potential of sedimentary basins of Pakistan with focus on frontier regions such as Pishin Basin. 7,000 samples of imported and local crude oil were analysed. Also, the corporation maintains National Energy Data Base and other vital technical information related to the oil and gas sector.

During the year 2000 Oil and Gas Development Corp. (OGDC) carried out 1,309 line km of seismic and 177 line km of geological reconnaissance surveys and drilled four wells (22,335 m). OGDC's four major development projects Kunar, Sadkal, Panjpir and Enchanced Oil and Gas Recovery, were completed during the year. The corporation produced 7.75 Mbbbl of oil, 694.3 Mm<sup>3</sup> of natural gas, 64,117 t of LPG and 16,635 t of sulphur. OGDC's updated estimates for the remaining recoverable oil and gas reserves as of January 2001 stood at 139 Mbbbls of oil and 310.120 Mm<sup>3</sup> of natural gas. Privatisation of OGDC has been approved by the government and Merrill Lynch has been appointed as financial advisors.

During the year, 22 oil companies drilled 36 wells (exploratory - 15, development - 21) of which 14 exploratory wells were abandoned as dry holes. Twenty five wells were under production at the end of the

year. Total exploratory and development drilling was 119,937 m. Crude oil produced during the year was 20.45 Mbbbl. Natural gas and LPG produced during the year were: 254.22 Mm<sup>3</sup> and 139,910 t respectively.

<b>Output of Principal Pakistani Minerals, Fertilisers, Cement and Steel ('000 t)</b>			
	<b>1997-98</b>	<b>1999</b>	<b>2000</b>
Aragonite/marble	335.00	408.00	582.00
Agr. Clay	1,157.00	1,200.00	1,275.00
Barytes	29.92	20.51	21.23
Bauxite	5.01	9.18	8.67
Bentonite	13.33	15.60	13.850
China Clay	66.08	58.34	49.57
Chromite	25.11	13.94	7.71
Coal	3,094.00	3,203.00	3,117.00
Dolomite	116.05	326.66	287.96
Feldspar	26.36	24.99	43.19
Fire Clay	92.66	165.89	143.64
Fluorite	0.14	0.76	0.99
Fuller's Earth	14.86	18.99	15.29
Gypsum	307.00	284.00	377.00
Limestone	9,941.00	9,870.00	9,884.00
Magnesite	3.35	4.93	3.61
Rock Salt	961.00	1,275.00	1313.00
Silica Sand	130.00	176.00	162.00
Soapstone	49.03	56.59	54.36
Sulphur	22.38*	21.95*	20.19*
Urea	3,284.42	3,758.98	3,887.63
Superphosphate	n.a.	104.17	129.14
Ammonium Nitrate	316.32	335.95	377.44
Nitrophosphate	293.24	258.72	271.31
Cement	9,364.00	10,121.00	907.50
Coke	667.70	676.61	725.30
Pig Iron	1,015.83	11,40.44	11,31.61
Billets	348.00	325.52	389.97

Source :Central Statistical Bulletin Vol. 49. No. 3.

Figures for 1997-98: from July 1-June 30 but for 1999 and 2000 for calendar year.

NA. Not available.

\*From oil and gas refining.