

PAKISTAN

*By Nusrat K. Siddiqui, Senior Manager Exploration
Pakistan Petroleum Ltd (PPL), Karachi*

Most sectors of the economy continued to show an upward trend during 2003, raising real GDP growth to 5.1%, with strong contributions from all three major sectors of the economy. Harvest of key crops improved significantly; from a negative growth of 0.1% in 2002, it rose to 4.1% in 2003 due to improved water availability. Industrial growth rose to a seven-year high, exports increased to a record US\$11.1 billion, and the current-account surplus jumped to an all time-high of US\$4 billion. Livestock (including poultry) contributed almost 28% to the growth in agriculture, and the forestry sector registered 8.8% growth during 2003.

There has been an exponential increase in internet users over the past three years, from a mere 350,000 users in 2001, to one million in 2002 and three million in 2003 - one of the highest rates of growth in the Asian countries.

The Geological Survey of Pakistan (GSP) mapped an area of 12,150 km² during 2003/04 and updated mapping over 8,000 km², all on a 1:50,000 scale. Compilation work for geological mapping of the Mari-Bugti area covering 20,000 km² was completed at 1:50,000, and maps are being published. The geological map of the Quetta Valley on a scale of 1:50,000 was also completed. The presence of a hard-rock aquifer has been confirmed in the Quetta Valley, and of the planned 50 wells, 29 were drilled and 23 were successful.

Induced polarisation and resistivity surveys for copper in the Reko Diq area in Balochistan were conducted by the GSP at the request of Tethyan Copper Co (TCC) of Australia. TCC plans to invest US\$150 million to develop the deposit and to start production within the next two years. The deposit, discovered by the GSP in 1978/79, contains a resource of more than 800 Mt averaging 0.64% Cu and also containing an estimated 9 Moz of gold.

Geophysical surveys were also carried out for lead and zinc at Mangochar and for copper at Uthal near Lasbela, both in Balochistan. Also, a total of 205 shallow evaluation holes were completed at the Dilband iron ore deposit in Kallat district on behalf of Bolan Mining Enterprises.

The GSP is currently sinking a 2.4 m diameter shaft in the Tharparker coalfield to a depth of 150 m for bulk sampling of about 2,000 t of coal for combustion/technological tests. The shaft has reached a depth of 120 m and water problems are hindering the progress; the coal seam is expected at 130 m. A bankable feasibility study is being carried out by Rheinbraun Engineering Wasser GMBH (RE). Under a contract with RE, GSP has so far drilled 30 holes with geological and geophysical logging. Piezometers have also been installed to test groundwater levels.

Saindak Metals Ltd (SML) had leased its Saindak copper-gold mine to China's Metallurgical and Construction Corp and Resources Development Ltd (MRDL). The smelter at Saindak was inaugurated by the Federal Minister of Petroleum & Natural Resources on August 6, 2003, and a total of 4,000 t of blister copper had been exported by December 31, 2003. An MoU was signed between SML, the Government of Pakistan and MRDL during a recent visit by the President of Pakistan to China, concerning a 30% increase in production capacity which would raise blister copper production to 20,000 t/y.

The Sindh Coal Authority (SCA) is encouraging the private sector to accelerate development of the Tharparker coalfield, and RE was commissioned to prepare a bankable feasibility for a 5 Mt/y mine, and a 1,000 MW mine-mouth power plant. The report is expected soon. Separately, Shenhua Group Corp Ltd (SGCL) of China continued its preliminary work for a feasibility study in the Tharparkar coalfield for two mine-mouth 300 MW coal-fired power plants. The cost of the plants would be around US\$700-800 million. SGCL has completed its detailed geological investigations and is now in the process of conducting detailed hydrological Investigations. This will be completed within six months and will be followed by the feasibility report for the development of a coal mine and the construction of power plant.

In August 2003, Pakistan Mineral Development Corp (PMDC) signed two joint-venture agreements with the Frontier and Tribal Areas Administration (FATA) for the development of soapstone deposits in Kurram Agency and coal deposits in Orakzai Agency. Work on both projects will start in 2004. In November 2003, PMDC entered into an agreement with China Metallurgical Construction Corp (MCC) for the development of the Duddar zinc-lead deposits in Khuzdar, Balochistan, where there are proven reserves of 14.1 Mt averaging 8.6% Zn and 3.2% Pb. MCC will invest about US\$72 million for mine development and the installation of a concentrator. During 2003, PMDC produced 738,528 t of rock salt, 348,172 t of coal and 3,663 t of silica sand.

Bolan Mining Enterprises (BME), a 50:50 joint venture between the Government of Balochistan (GoB) and Pakistan Petroleum Ltd (PPL) is involved in two projects, one for mining, grinding and marketing barytes from the Gunga deposits in Khuzdar District, and the other for developing the Dilband iron-ore deposit in Mastung District. During 2003, BME sold a record 36,570 t of API grade barytes to petroleum exploration companies in the country.

As noted, the GSP, under a contract with BME, drilled 205 shallow holes, and cores were obtained for evaluation of the iron-ore deposit at Dilband. The first phase of exploration has indicated 167 Mt of iron ore averaging 35-40% Fe. A sale/purchase contract with Pakistan Steel has been signed to supply 100,000 t/y of iron ore. Mining and crushing activities commenced in July and September 2003, respectively. The supply of crushed ore to the steel mill began on December 1, and 4,431 t were dispatched during the month. BME also plans to install a beneficiation plant for the enrichment of iron ore during 2004/05 for which a feasibility study is being undertaken.

During the year, Azad Kashmir Mineral and Industrial Corp (AKMIDC) carried out detailed exploration in the upper parts of the Neelum Valley for precious and semi-precious stones; also, ruby occurrences located in different areas remained under evaluation. A mining feasibility study has been entrusted to the Institute of Mining Engineers of Pakistan (IMEP). This study will furnish all details regarding mining and processing methods infrastructure, machinery and equipment, and cost estimates for commercial exploitation of the ruby deposits of Nangimali. Small-scale artisanal mining continued at Nangimali during 2003 and yielded 8,500 g of ruby.

AKMIDC also completed surface and subsurface mining activities related to detailed evaluation of bentonite deposits at Dudial-Sadiqabad-Kathar in Azad Jammu and Kashmir (AJK). Reserves are estimated at 4 Mt. Studies have also been undertaken into its suitability for industrial use. Consultants are now being selected to prepare a mine feasibility report for commercial exploitation of the deposit.

Elsewhere, AKMIDC plans to complete within two years a detailed exploration and evaluation study to exploit the coal deposits at four localities in Kotli District (AJK). By the end of 2003, evaluation of deposits at two localities, Karela near Nakial and Bangang-Sumlar near Khuratta, were nearing completion.

Two new projects aided by financial assistance from the Ministry of Petroleum and Natural Resources (MPNR) have been launched to impart/give training in scientific mining, processing and evaluation of precious and semi-precious stones in AJK. These projects are scheduled for completion in three years.

AKMIDC is in the process of establishing a GIS Laboratory, for which equipment is being acquired. Consultants are providing office and field training to senior staff officers.

Finally, AKMIDC plans to attract private sector investors for developing ruby and graphite deposits in the Neelum Valley, and bentonite in the Dudial area, either independently or in joint venture with AKMIDC.

Production

Of the 20 minerals for which production is reported, large increases over 2001/2002 were recorded in 2002/2003 for barytes (90%), chromite (26%) and aragonite/marble (66%). Coal, gypsum and limestone production increased by 2.8%, 5.6% and 9.8%, respectively. However, large production falls were reported for bauxite (down by 66%), magnesite (down by 43%), fire clay (down by 32%) and china clay (down by 26%). Demand for artificial fertiliser stabilised as the drought conditions improved. However, the production of urea, ammonium nitrate and nitrophosphate remained more or less the same as for 2001/2002. Coke production increased by 11% but the output of steel billets remained almost the same as for the previous financial year.

Oil and gas

Hydrocarbon production was more or less steady in 2003 (Table 1). About 25 oil and gas, companies including 20 foreign companies, continued exploration in the country. As at December 31, 2003, there were 58 exploration licences covering 147,989 km² area, 107 production leases covering 10,333 km² area and one reconnaissance permit covering 11,342 km².

There were 27 exploratory wells and 39 appraisal/development wells drilled during 2003, with a cumulative total of 132,315 m, resulting in 10 discoveries (two oil, two gas and six condensate), at a success ratio of 1:2.7. Eight exploratory wells were under drilling or production testing at the end of the year.

By the end of 2003, the gas infrastructure stood at 8,160 km of transmission system and 59,183 km of distribution and services network, showing an overall annual growth rate of about 4%. Gas is supplied to about 3.8 million consumers. The system was supplying 2.8 bcf gas/d at its full capacity, whereas the current gas production potential is more than 3 bcf. Plans are in hand to expand the system at an accelerated pace to put the recent gas discoveries on line.

Pakistan is the largest user of compressed natural gas (CNG) in Asia and third-largest in the world after Argentina and Brazil. The Hydrocarbon Development Institute of Pakistan (HDIP) continued its activities concerning quality control of petroleum products and especially the expansion of the CNG stations network and conversion of vehicles to CNG. There is a phenomenal annual growth of 65% in the number of CNG vehicles. Currently 500,000 vehicles are running on CNG and 500 CNG stations are operating countrywide.

Table 1. Hydrocarbon production.

	2002	2003
Oil (million bbl)	24.03	22.73
	(65,833 bbl/d)	(62,278 bbl/d)
Gas (billion ft ³)	0.917	0.936
	(2.51 bcf/d)	(2.57 bcf/d)
LPG (t)	155,681	149,065
	(426 t/d)	(408 t/d)

Table 2. Mineral and metals production ('000 t).

Mineral	2001	2002	2002/2003
Aragonite/marble	468.00	401.70	1,142.00
Aggr. clay	1,130.00	1,128.20	NA
Barytes	27.15	26.10	40.75
Bauxite	5.88	8.76	4.10
Bentonite	10.65	11.22	NA
Chalk	7.700	7.54	NA
China clay	55.57	54.36	39.58
Chromite	9.92	22.32	30.66
Coal	3,262.00	3,487.00	3,609.34
Dolomite	256.80	240.39	NA
Feldspar	30.07	56.92	NA
Fire clay	152.92	153.55	116.52
Fuller's earth	13.37	14.12	14.72
Gypsum	624.00	417.00	424.11
Limestone	9,607.00	1,481.00	11,880.28
Magnesite	3.03	4.43	2.65
Rock salt	1,393.00	1,387.00	1,426.07
Silica sand	145.00	152.00	185.42
Soapstone	30.79	57.37	65.80
Sulphur	17.18	22.84	19.40
Urea	4,162.03	3,747.60	4,401.90
Superphosphate	173.327	141.28	147.15
Ammonium nitrate	360.43	292.81	335.32
Nitrophosphate	307.77	268.55	304.86
Cement	9,545.00	5,202.00*	11.02
Coke	713.55	681.95	775.19
Pig iron	1,384.46	912.72	1,140.19
Billets	400.65	427.38	408.38

Source: Pakistan Statistical Year Book 2004. Figures for Calendar Year Jan-Dec. 2001 and 2002 in first two columns, for Fiscal Year 2002-2003 in the last column.

*Figures for six months only.