

RUSSIA

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Russia remains one of the world's largest mineral producers, accounting for 9% of world oil production, 24% of natural gas production, 20% of nickel and cobalt production, 5-7% of coal and iron ore production, and also a large share of the output of some non-ferrous and rare earth metals, platinum group metals, diamonds, apatite and potassium salts. The country also holds 12% of the world's oil reserves, 32% of the gas, 11% coal, 31% of potassium salts, 21% cobalt, 25% iron, 15% zinc and 10% of the lead reserves. Russia also contains important reserves of nickel, gold, silver, platinum group metals and diamonds.

The mineral and raw material sector plays a leading role in the economy, contributing more than one-third of GDP. Minerals and the products of primary refinement provide more than 65% of Russia's hard currency revenue. The mineral and raw material sector, and related enterprises, constitute a substantial part of Russia's production potential. The sector accounts for nearly 20% of the country's industrial fixed assets, and employs more than 32% of production personnel.

The Russian economy continues to grow, although its pace is slowing down and GDP rose by only 5% in 2001. The State Statistics Committee reported that production of goods and services in the five core sectors of the Russian economy (industry, construction, agriculture, transport and retail trade) grew 5.7% in 2001, compared with a growth of 10.2% in 2000. Industrial production in 2001 rose 4.9%, agricultural output grew 6.8%, capital investment was up by an estimated 8.7%, freight turnover increased by 3.1% (including a growth of 4.9% for rail freight) and retail sales rose 10.8%.

However, Russian ferrous metallurgy decreased its output by 0.2% in 2001. Russia

produced 44.98 Mt of pig iron (including blast-furnace ferroalloys), up 0.3%, and 58.97 Mt of raw steel, up 0.3%. Russia produced 47.1 Mt of rolled ferrous metals in 2001, just 0.9% less than in 2000.

Russian nonferrous metals output grew 4.9% in 2001. Domestic consumption of aluminium grew 7%, copper 40.6% and nickel 38.6%. Russia's aluminium smelters were running at near total capacity, copper smelters at 97.2%, zinc 92.5% and nickel 84.4%.

Ferrous exports fell in value by 2.2% to US\$7.53 billion, of which exports to the CIS by US\$1.33 billion and exports to the rest of the world US\$6.2 billion. Russia exported more in the way of primary commodities and low-value goods like pig iron and semi-finished steel. Finished roll, mainly sheet, decreased from 68.6% to 61.6% as a share of these exports.

Russian nonferrous metals exports in 2001 fell tentatively by US\$1.8 billion year-on-year to US\$7.24 billion. Aluminium accounted for 49.7%, copper 13% and nickel 14.4% of the nonferrous exports. Exports of aluminium, copper and nickel fell by 5%, 2.5% and 10%, respectively, and average contract prices were down by 8.5%, 10.7% and 31.5%.

Breakdown of Key Minerals and Fuels by Value of Proven and Estimated Reserves

Minerals and Fuels	% Value
Fuel	71.9%
Nonmetallic minerals	13.6%
Ferrous metals	6.6%
Non-ferrous metals	6.1%
Precious metals and diamonds	1.1%
Rare, rare earth metals, dispersed elements	0.7%

** A+B+C1+C2 categories (Russian classification)*

Source: State Duma Committee for Natural Resources and Resource Use

Improving the development of mineral resources remains one of the most important geological and economic tasks in Russia. Specialists have said that the failure properly to develop complex fields results in the loss of 20% - 30% of the mineral reserves. For example, just 10% of the nepheline produced at apatite fields is made into alumina, which results in the loss of some 2 Mt/y of alumina. Moreover, nearly 40% of the gold found in copper, lead and zinc, and copper and nickel fields is not extracted. The waste material from the mining and processing industries is also very poorly utilised. These tailings are believed to hold about 8 Mt of copper, 1 Mt of lead, 9 Mt of zinc, 2.5 Mt of nickel, 130,000 t of tungsten, and 100,000 t of lithium.

The federal programme 'The Ecology and Natural Resources of Russia' passed in December 2001 should help solve the problems facing the mining and metallurgy. The objective of the programme, which will run until 2010, is to achieve a balanced development of the raw material base to cover demand for fuel and energy, mineral, water, timber, and biological resources and defend the constitutional rights of Russians to a clean environment. The programme will be carried out in two stages, from 2002 - 2004 and from 2005 -2010. The end results of the programme will be an increase in oil and gas reserves by nearly 4,000 Mt of fuel equivalent, coal and uranium reserves worth Rb22,400 billion, and other strategic mineral reserves worth at least Rb4,000 billion, achievement of the best correlation in the increase in reserves and production of minerals, and an increase in reserves of various minerals by 5,000 Mt.

In 2001, the State Duma passed a section of the mineral production tax code in an effort to improve mineral production laws. Under the new law, a unified tax will be introduced for the production of minerals to replace excise, royalties and payments for the restoration of the mineral base. Starting in 2005, the tax for ferrous metal ores will be 4.8% (of the cost of minerals produced), 4% for coal, 4% for peat, 6.5% for precious metals other than gold, 6%

for gold, 8% for non-ferrous metals, and also for diamonds and other precious and semi-precious stones, 16.5% for natural gas and gas condensate from gas condensate fields, and 16.5% for oil. The tax base in 2002 - 2004 for oil will be based on the amount of production in natural terms and will be Rb340/t.

The Ministry of Natural Resources last year made a probe into the fulfillment of licence terms, and announced plans to change the procedures for issuing licences for the use of subsurface resources. A full inventory of licences revealed that just 13,890 of the 27,408 licences issued to date remained in effect, and 11% of the licences were annulled due to violations of terms. The Russian Natural Resource Ministry is to hold its next large-scale inventory of licences (for subsoil operations) in the third or fourth quarter of 2002.

Russia will continue exploring new mineral deposits in 2002, a process that has seen a positive trend during the past two years. Development of two of the world's biggest deposits, the Sukhoi Log gold deposit in Irkutsk and the Udokanskoye copper deposit in Chita is expected to be offered at auction in 2002. A preliminary evaluation of reserves at the new platinum group metals province in the Kola Peninsula, which will ensure the formation of a world-class resource base in Russia, should be completed this year.

The Ministry of Natural Resources also expects to see the localisation and preliminary evaluation of a gold deposit in the Kola Peninsula with predicted resources of around 700 t. A geological and economic evaluation of manganese ore deposits in Krasnoyarsk and Kemerovo is also planned, which should enable Russia's ferrous metals industry to rely considerably less on imports of manganese.

The Ministry will speed up of the development of the unique resource potential of the Baikal-Amur area, with preparatory work on the discovery of iron ore, titanium and vanadium at the Chiney deposit in Chita region. The

Chineiskoye deposit has proven reserves of 1,500 Mt, and is promising not just in terms of its reserve size but also in the ore content. The deposit's ore contains up to 90% of the iron, titanium and vanadium used in the steel industry and is expected to produce up to 10 Mt/y of ore. The Elgin coal deposit in Yakutia will also be launched.

The formation of a PSA legislative base will be completed in the first half of 2002. According to Economic Development and Trade Ministry, total investment in the implementation of signed production sharing agreements in Russia will amount to US\$30 billion. By November 2001, 27 PSA licences had been issued.

In January 2002, Russian President Vladimir Putin endorsed amendments and additions to Article 20 of the Federal Law on Precious Metals and Gemstones which permit the export of mineral raw materials containing precious metals in a manner to be prescribed by the President. The amended article allows producers "to remove from (and bring into) Russia precious metal ores mined from lode deposits and sands mined from placer deposits, ore and sand from tailings dumps, concentrates containing precious metals, predominantly platinum and gold concentrates, dore bullion, precious metals in the form of cathode and zinc residue, nonferrous metal ash and nonferrous metal byproducts in instances and in a manner to be prescribed by the Russian president." The amendments will enable small producers which are not technologically fully integrated to have concentrates processed abroad if this can not be done in Russia and so guarantee themselves markets and ensure they operate at a profit. Exports of such mineral raw material will not exceed US\$20 million per year.

Iron ore

The Russian steel industry seems to be adequately supplied with iron ore in the long term. However, Russia's iron ore reserves are not evenly distributed on a regional scale. Over 70% of them are in central and northern

areas of European Russia. Competitive deposits do not exist in the major steel-producing regions that require iron ore most. Thus, over 60% of Russia's capacity to mine iron ore and around 75% of its iron ore reserves at commercial developments are in central and northwest European Russia.

Russia produced 82.8 Mt of iron ore in 2001, down 4.6% year-on-year, because of a general drop in demand from the steel industry. Mining companies produced 77.7 Mt of iron ore concentrate, down 4.2%, and 27.87 Mt of iron ore pellets, down 9.4%. Lebedinsky GOK, the leading Russian iron ore producer, decreased output by 3.1% to 17.61 Mt.

Mikhailovsky GOK, a major iron ore producer from Russia's Kursk region, produced 13.63 Mt of iron ore commodities in 2001, 22.1% less than in 2000. The company produced 11.2 Mt of concentrate, down 11.6%; 5.78 Mt of pellets, down 15.7%; and 5.78 Mt of pellets, a decrease of 15.4%. Investment projects absorbed Rb170.2 million, of which the mine transport system accounted for Rb22.3 million, construction of an explosives factory Rb76 million, renovation of the crushing and beneficiation plant and the pelletising plant Rb26.7 million and a concentrate thickener Rb12.6 million.

Stoilensky GOK, a major iron ore producer from Russia's Belgorod region, maintained output at 12.11 Mt in 2001, decreasing concentrate production to 10.54 Mt, down 4.2%. The company plans to raise iron ore concentrate production to 14 Mt in 2005. This will be achieved thanks to a long-term equipment supply contract for 2001-2005 signed with the Uralmash-Izhora group.

Karelsky Okatysh, an iron ore producer and member of the Severstal steel group from the Republic of Karelia, produced 6.6 Mt of iron ore pellets in 2001, down 2% year-on-year. The company produced 6.95 Mt of iron ore concentrate, also 2% less, and 18.97 Mt of ore. Kachkanarsky GOK reduced output of ore by 1.6% to 7.60 Mt in 2001.

Aluminium

Russia is among the world's leading producers of primary aluminium, and is the biggest producer in the CIS. Production by the aluminium industry alone rose 1.9% in 2001. Figures were up 7% for alumina and 1.7% for primary aluminium, including silumin, but down 3.9% for bauxites. The aluminium plants of Siberian Bratsk, Krasnoyarsk, Sayansk and Novokusnetsk, and the SUAL company (which operates the Irkutsk and Uralsky aluminium plants) account for over 85% of Russian aluminium production.

Russian Aluminium Co. continues to control more than 70% of the Russian aluminium market. RusAl plans to invest nearly US\$500 million in development by 2005. It will use the money to expand alumina production at the Achinsk alumina combine and the Nikolayev alumina plant (in Ukraine), improve technology at the Bratsk and Krasnoyarsk aluminium plants, and invest in projects to process aluminium.

Smelters controlled by SUAL-Holding produced about 620,000 t of primary aluminium in 2001, 4.3% more than in 2000. The production increased by 3% to 1.7 Mt of alumina and 5.1% to 51,000 t of silicon. The SUAL runs Russia's Irkutsk, Urals, Bogoslovsky and Kandalaksha aluminium smelters, which produce aluminium and alumina, and silicon producer Kremnii in Irkutsk region. In total, SUAL controls 18 aluminium companies located in eight Russian regions. These account for around 20% of the Russian primary aluminium market and around 40% of the alumina production capacity.

SUAL plans structural changes this year to form five divisions: ore (Sevuralbauxitruda, Timan Bauxite), aluminium (the Irkutsk, Bogoslovsky, Kadalaksh and Urals aluminium plants), cable (Irkutsk and Kirsinsky cable plants), silicon (Kremnii, SUAL-Silicon-Ural), and roll (Kamensk-Urals Metallurgical Plant, Mikhalyum, Demidovsky Plant and SUAL-Poroshkovaya Metallurgy). The enterprises within each division will switch to a single

stock, which has already been done at the companies in the aluminium division.

Despite steady growth in output, the raw mineral base remained in an unsatisfactory state, and the sector was still relying heavily on raw material imports. Russia is currently producing only 40% of its aluminium from its own raw material.

The situation could change for the better when the Sredne-Timan bauxite deposit comes on stream. SUAL will invest US\$33 million in the development of the Sredne-Timan bauxite deposit in the Komi Republic in 2002. The project has absorbed about US\$80 million of SUAL's investments since 1997. Although aluminium prices have fallen, the company does not plan to curtail financing for the Komi bauxite project in 2002. By September 2002, it intends to finish laying a 155 km rail track costing US\$72 million up to the deposit. Overall Sredne-Timan project costs are approximately US\$1 billion, of which SUAL will provide about 20%. The rest should be borrowed from Russian and western banks.

Sredne-Timan contains a proven 260 Mt of bauxites, 95% of which can be open-cast mined. Sredne-Timan field is capable of producing 2.55 Mt of bauxite annually, a rail track (155 km long) and other infrastructure should be in place in 2003. This will be the project's first stage. Eventually, the mine's capacity will be increased to 4-6 Mt per year. Plans to build an aluminium smelter capable of producing 500,000-600,000 t/y of aluminium also exist.

Sevuralboksitruda, a bauxite producer from the Sverdlovsk region, reduced output in 2001. However, it overshot its production target and met all of its contractual supply obligations.

Yuzhno-Uralskiye Boksitoviye Rudniki (South Urals Bauxite Mines) of Bakal, Chelyabinsk region will stop operating entirely on December 1, 2002. The mines, which supply raw materials to the Uralsky and Bogoslovsky aluminium works, will be flooded in December.

This follows a decision by SUAL, which is YUBR's largest shareholder, to liquidate YUBR. SUAL will undertake most of the financing, which is currently being assessed.

The mines will sustain output of about 25,000 t/mnth in the first half of 2002 but production will start to plummet in September. The mines are being closed because they are nearly worked out and cost too much to maintain (they ran at a loss in 2001). The mines were started in 1936 as open pit operations, with deep mines being added two years later. The company consists of the Kurgazakskaya deep mine, an open-pit section and a number of ancillaries. Its equipment consists mainly of self-propelled loaders, air-mini-bur self-propellers drilling rigs and excavators.

Russia's five alumina plants produced 3.08 Mt of alumina in 2001. In November 2001, the Federal Securities Commission registered share issue of Achinsk Alumina Combine (AGK) of the Krasnoyarsk territory. Proceeds of US\$101.5 million are expected. AGK will use the proceeds from the issue to raise capacity to 1.2 Mt/y of alumina, on new technology to produce large-grain alumina, on upgrading its heat and power plant, on the soda division of the soda and potash plant, the construction of a second slurry pond and on new gas-cleaning facilities. AGK consists of the Kiya-Shaltyrsky nephelene quarry, Mazul limestone quarry and divisions to produce alumina, soda and potash, cement, aluminium fluoride and lime-and-sand brick. It operates a slurry pond, heat and power plant and fuel oil depot. The combine produces 43.6% of Russian Aluminium's alumina.

Nickel and copper

In 2001, nickel production rose by 1.8% and cobalt by 14.9%. Copper in concentrate output rose 5% and refined copper by 5.8%.

Norilsk Nickel is the world's largest producer of nickel, cobalt and platinum group metals. The company has more than 20% of the global nickel market, more than 50% of the palladium market, and a significant share of

the market for copper, cobalt, rhodium and a number of other metals. The company produces 91% of Russia's nickel, 57% of its copper, 80% of its cobalt and 95% of its platinum group metals.

Norilsk Nickel's main resource base consists of two unique deposits in the Talnakhskoye ore formation - Talnakhskoye and Oktyabrskoye. The Talnakhskoye deposit is mined by the Mayak, Komsomolsky, Oktyabrsky, Taimyr, Skalisty and Gluboky operations (the latter is suspended). The Norilsk-1 field is also being developed from the Medveshy Ruchei quarry and Sapolyarny pit. The deposits in the Norilsk area also have industrial concentrations of platinum (Pt), palladium (Pd), iridium (Ir), rhodium (Rh), osmium (Os) and ruthenium (Ru).

Deposits developed by Pechenganickel (a division of Norilsk Nickel) form the nickel and copper ore base on the Kola Peninsula: Kotselvaara, Semiletka, Zapolyarnoye, Zhdanovskoye, Bystrinskoye and Tundrovoye. All of these fields have been explored extensively. The reserves are being extracted through the Central and West quarries at Zhdanovskoye and the Kaula-Kotselvaara pit at Kotselvaara and Semiletka, and the Severny pit at Zapolyarnoye.

Norilsk Nickel expects its modernisation drive to increase production capacity by 16% for nickel, 18% for copper and 31% for platinum group metals. The company plans to spend US\$2.5 billion over four years on developing its mineral resources base and modernising its mining and metallurgical businesses. Norilsk Nickel plans to spend US\$222 million on the Norilsk and Talnakh beneficiation plants, US\$280 million on pyrometallurgy and US\$260 million on the Nadezhdinsky mill.

Meanwhile, Norilsk Nickel will significantly reduce nickel production in 2002-2003, due to efforts to upgrade its Nadezhda metallurgical plant. The reconstruction of the Nadezhda plant is the key stage in the programme of modernisation of enterprises incorporated in

the Arctic Division, which provide for about 80% of the Norilsk Nickel group's metal production. The Nadezhda plant is Norilsk Nickel's most modern facility. Introduced in 1979, it comprises both hydrometallurgical and pyrometallurgical technology. Plans involve having all commodity nickel concentrate and rich copper by-products processed there, and for the smelting capacity to be upgraded. The plant's hydrometallurgical division will be re-profiled in 2003, and a new refining complex for commodity nickel and cobalt set up.

The Norilsk Nickel group's Norilsk enterprises are having to switch to leaner ores. They are expected to have to depend on tailings until 2003, when they will renew mine production in earnest. Preparations to mine MS-gorizont, a new section of the Zapolyarny mine that contains low-sulphide ores that are rich in platinum-group metals, are almost complete. The section should go on stream in 2002. Exploration at MS-Gorizont began in 1994 within the confines of the Zapolyarny mine. The deposit is a new category site, dubbed low-sulphide platinum, with a small amount of sulphides, a Ni and Cu content of 0.1-0.15% and a high concentration of PGMs (+10 g/t of ore).

Kola Mining and Metallurgical Co., which comprises the Severonikel and Pechenganikel combines and the Olenegorsk Mechanical Works, is the subsidiary of Norilsk Nickel Mining that controls operations on the Kola Peninsula in the Murmansk region. Kola invested about US\$14 million in the construction of the Severny Gluboky deep mine at the Zhdanvoskoye copper-nickel deposit in 2001. It spent about US\$500,000 on the mine in 2000. Financing in 2002 will be higher than in 2001. The Zhdanvoskoye deposit is being mined by two open pits (Tsentralny and Zapadny) and the Severny deep mine. The whole complex currently mines about 85% of all ore produced on the Kola Peninsula.

Severny Gluboky is an extension of the Tsentralny pit, which was started in 1956. The

first stage of the deep mine should go into action in 2004, and the second stage in 2007. The existing open pits will then be phased out. The deep mine will initially produce 2.5 Mt/y of ore, rising to 4-4.5 Mt by 2015. Overall capital costs are estimated at US\$140 million.

In December 2001, Norilsk Nickel signed an agreement with Nordic Investment Bank for the joint financing of improvements at Pechenganikel. The company mines copper-nickel ores at deposits on the Kola Peninsula and accounts for 9% of Norilsk Nickel's total commodity output. The bank, acting on the Norwegian government's behalf, had granted a soft credit of US\$30 million repayable in 10 years to Kola Mining. This credit is a supplement to a Norwegian Government grant of US\$31 million to upgrade Pechenganikel in line with an agreement signed with the Russian Government in June 2000. The combine will be upgraded in fulfillment of international obligations to reduce trans-border pollution by sulphur.

The upgrades will turn Pechenganikel into a highly productive, energy-efficient metallurgical complex by 2006 (utilising with the Vanyukov furnaces that are in use throughout Norilsk Nickel). The emphasis of the metallurgical and sulphuric acid production upgrades is on the environment. Sulphuric anhydride recycling will increase to 95%, which will clean up the environment considerably along the border between Russia and Norway, as well as in other countries from the region. Sulphur will be dried rather than burned, and the ore mined in Norilsk, which is high in sulphur, will not be used at Pechenganikel. The small amount of concentrated sulphuric gases emitted by the Vanyukov furnaces will be used to make sulphuric acid.

Russia's second biggest refined copper producer is Uralektromed from Sverdlovsk region, in the Urals, which operates a local copper mine named Safyanovskaya. Uralektromed produced 327,755 t of refined copper in 2001, up 5% from the 312,049 t

produced in 2000. Uralelektromed also produced 90,839 t of copper wire rod, up 35.3%, and 5,815 t of copper powders, an increase of 29.9%. Figures grew 150% for gold bars and doubled for silver bars. Output was up 14.4% to 47.9 t of selenium, 6.9% to 11.8 t of tellurium and 27.1% to 15,302 t of aluminium alloys.

The third-largest Russian refined copper producer is Kyshtym Copper Electrolyte Works of Russia's Chelyabinsk region. Kyshtym Copper produced 82,125 t of refined copper in 2001, up 6.6% from 2000. The works also produced 830 t of copper wire (up 196%), which it started to make in May 2000; and 10,282 t of copper vitriol (up 1%). In the year as a whole, foil output fell 24.6% to 924 t. The operation also produced a total of 100 kg of platinum and palladium powders. In December, the palladium and platinum powder factory worked at a third of its capacity and full capacity will be achieved by August 2002.

Urals Mining and Metallurgical Co. produced 207,450 t of blister copper in 2001, or 0.1% less than in 2000. UGMK's Svyatogor unit produced 55,254 t, or 2.4% less. Kirovgrad Metallurgical Co. produced 46,615 t, down 6.5%. But the Sredneuralsk copper smelter increased production 2% to 105,581 t. UGMK represents a total of 21 companies, among them Uralelektromed, a refined copper producer, Kirovgrad Metallurgical Co., Gaisky GOK copper mines, Safyanovskaya med, the Svyatogor and Sredneuralsk smelters, Kirov nonferrous metals plant, Sibkabel, KATUR-invest, Shadrinsky engine plant and Radiator, Uralelektromed-Vtortsvetmet, Bogoslovskoye mine amalgamation and the Verkh-Neivinsky nonferrous metals plant.

Urals Mining and Metallurgical Co. plans to invest in expanding its ore reserves. Capacity at the core provider, Gaisky GOK, will increase to 80,000 t of copper in concentrate per year. Gaisky's ore mill, which has a projected capacity of 5 Mt/y, is being upgraded. In 2000, UGMK brought the Letneye deposit, with overall reserves of 230,000-240,000 t of

copper, into commercial production. In 2001 it plans to start mining the Oseneye deposit, with reserves 350,000 t. Other priorities include the Northern group of deposits - Shemur, Novo-Shemur and Tarnyer, close to the city of Ivdel - and the Volkovskaya group of deposits. UGMK has started to build an ore mill in Rezh, close to the Safyanovskoye deposit, with the capacity for 1 Mt/y of ore. The mill should go into operation at the end of 2002. UGMK estimates the capital cost of putting the big Udokan deposit with reserves of 20 Mt of copper, and the Chiney copper-sulphide deposit, which contains 8 Mt of copper, into production will be US\$220 million-US\$230 million.

Processing facilities at Sredneuralsk Copper Works (SUMZ) are being upgraded to recycle up to 1 Mt of waste per year. Another facility in Kirovgrad will have its capacity to process slag doubled to 600,000 t/y. The Svyatogor smelter's ore mill will also be augmented to 2.5 Mt. The mill already processes ore mined at the Volkovskoye and Turinskoye mines and the Valentorskoye deposit, and will eventually process ore from the Northern group of deposits.

UGMK's full programme calls for the annual production of 350,000 t of refined copper, 65,000-70,000 t zinc, 10,000 t of lead, 10,000 t of lead alloys, 30,000 t of aluminium, 3,000-3,500 t of vanadium pentoxide, 1,000 t of tin, 8 t of gold, 200 t of silver plus platinum, palladium and other metals of the platinum group.

Karabashmed, a copper smelter from Karabash in the Chelyabinsk region, produced 41,738 t of blister copper in 2001, 14.6% more than in 2000, when it produced 36,421 t. The company, though, fell short of its 2001 target (of 46,000 t) due to disruptions with the supply of scrap metal, which Karabashmed uses in addition to ore. Production of briquette ore concentrate, which Karabashmed supplies to the Kyshtym Copper Electrolyte Works grew 8% from 135,000 t to 147,000 t.

Uchalinsky GOK, a mining complex at Uchaly in Bashkortostan, produced 232,348 t of

copper concentrate in 2001, which was 20.2% more than in 2000. The concentrate contained 33,502 t of copper, 691 kg of gold and 24 t of silver. The GOK also produced 197,404 t of zinc concentrate, up 4.9%. The zinc concentrate contained 88,832 t of zinc, 488 kg of gold and 18,784 t of silver. Uchalinsky mined 3.62 Mt of ore, up 4.5%. The main consumers of the GOK's concentrates are the Krasnouralsk copper smelter and Chelyabinsk Electrolytic Zinc Works.

In 2002, the Government of Bashkortostan plans to hold a commercial tender with investment terms for the development of two copper deposits; Yubileynoye and Podolskoye. Both deposits are in the south of Bashkortostan, around 100 km from Sibaya, where the Bashkortostan Copper-Sulphur Combine is located. Each deposit has proven reserves of from 8 to 10 Mt of copper ore and can be developed using open-cast mining.

Verkhneural'skaya Ruda, a mining company from the Chelyabinsk region, said it would not be feasible to develop the Sabanovskoye copper-pyrite deposit in the Verkhneural'sky district. Based on six drill holes, geologists last year found the ore to be too low in copper and other metals to be worked at a profit. The ore also had a high sulphur content, making it even less commercially attractive. Babarykinskoye is thought to be more viable, with a probable 400,000 t of copper from ore grading an average of 1.6% Cu, and 500,000 t of zinc with 2% Zn. Verkhneural'skaya Ruda received licences to both properties in 2000 as the result of a tender conducted by the Chelyabinsk region's natural resources committee.

In January 2002, exploration resumed at the Chebachye copper-pyrite deposit (located in the Verkhny Uralsky district of the Chelyabinsk region), which had stalled in October 2001 due to financial constraints. Unipromed, a Yekaterinburg R&D institute, is close to unveiling plans to put the deposit into production. The plans state that the mine would have the capacity for 800,000 t/y and a life of 20 years. The ore would be extracted by

underground mining and the projected capacity would be achieved within three years of the start of commercial mining. Overall project costs are about US\$17 million. In 2002, Verkhneural'skaya Ruda intends to finalise the plan, procure equipment and start sinking the mine shafts. Chebachye holds a proven resource of just over 15 Mt of copper-pyrite ore. This contains 255,000 t of Cu, plus 6.13 Mt of sulphur, 374,000 t of zinc (Zn 2.35%), 25 t of gold (Au 1.64 g/t), 565.5 t of silver (Ag 39.2 g/t), 29,300 t of lead, 1,020 t of selenium, 970 t of tellurium, 41 t of indium, 855 t of barium and 1,249 t of cadmium. The ore lies at depths of between 250 and 460 m.

Lead, zinc, tin

Lead-zinc output grew by 1.7% in 2001. Russia produced 248,737 t of zinc against 241,025 t in 2000, with output of zinc in concentrate falling by 8.6% but rising 3.2% for metallic zinc. Output of lead decreased to 59,020 t in comparison with 51,501 t of lead in 2000. Lead metal output was up 14.6%, including secondary lead, but production of lead in concentrate was down 7.2%. In 2001, Russia saw a dramatic decline in tin production, and output fell 16.3%. Tin in concentrate dropped 19.6%, and metallic tin (including secondary tin output) fell 3%.

The Chelyabinsk electrolyte zinc plant, the biggest Russian zinc producer, announced an output of 155,000 t of zinc in 2001, up 6.3% from the 145,700 t achieved in 2000. The zinc plant exported 20% of its production last year, and plans to produce 160,000 t of zinc in 2002 (linked to customer orders). Around 300 of Russia's metallurgical and machine building companies buy zinc from the plant, including the Magnitogorsk, Novokuznetsk and Novolipetsk metallurgical combines.

A new automated zinc and alloy smelting complex will be launched at the plant in the first half of 2002 with the capacity to produce 200,000 t/y. The old complex will be closed because it does not correspond to current production and environmental standards. The company's main shareholders are Euromin SA

of Switzerland with 51.74%, plant employees with 6.2% and Chelindbank with 6.15%.

Meanwhile, Dalpolimetall Mining and Metallurgical Complex from Russia's Primorye territory is designing a lead smelter with capacity of 70,000 t/y. A site for the smelter, which will cost about US\$10 million and take until 2004 or 2005 to build, is being selected. The smelter will produce refined lead, zinc, silver, gold, bismuth and sulphuric acid. About US\$10 million will be set aside to keep mines in working order and re-equip the ore mill.

GMK Dalpolimetall was set up in August 2001 and is an amalgamation of Dalpolimetall Co. (51%) and Svintsovy Zavod - Dalpolimetall (49%; Dalpolimetall spun its lead smelter off in 1999). The company produces more than 70% of Russia's lead concentrates and more than 14% of its zinc concentrates.

An ore mill launched by Alexandrinskaya Mining Co. at the Alexandrinskoye copper-zinc deposit in the Nagaibak district of Chelyabinsk region in July 2001 attained projected capacity of 15,000 t of copper concentrate and 16,000 t of zinc concentrate per month. The copper concentrate was intended mainly for the Karabashmed and Kyshtym copper smelters. All of the zinc concentrate is being supplied to the Chelyabinsk Electrolytic Zinc Works. In time, the Alexandrinskaya mill will process ore mined at the Sabanovskoye and Katabuksokoye copper-zinc deposits, which are under appraisal. The Alexandrinskoye copper-zinc deposit, which went on stream in May 1996, holds 6.4 Mt of ore containing copper, zinc, lead, gold and silver. The ores are currently being mined at a depth of 80 m.

Urals Mining and Metallurgical Co. is planning to build facilities to process metallurgical dust and cake on Kirovgrad copper smelter. Up to 50,000 t of zinc, 10,000 t of lead, more than 1,000 t of tin and up to 400,000 t of iron are lost in this waste every year. The Kirovgrad copper smelter will be adapted to process byproducts containing zinc and lead. In 2002, the first

stage of a division with capacity for 8,000 t of lead and 7,000 t of zinc will be launched.

The R&D Institute for Nonferrous Metals has started to design a lead recycling plant in the Khabarovsk territory for a battery factory in Komsomolsk-on-Amur. Work on the smelter, which would recover 8,000-10,000 t/y of lead, could begin early 2002. At present, the factory has to ship its scrap and waste all the way to Ryazan in European Russia to be recycled, and it has to buy metal in European Russia as well. Yet large stockpiles of scrap have built up in Komsomolsk.

Titanium and magnesium

Russia does not mine titanium-containing ores for titanium production and has to import ilmenite concentrates from Ukraine. Russia, however, has several titanium deposits, both alluvial and lode. Some of them are being prepared for commercial development, but preparation works are hampered, above all, by severe lack of finance. The ilmenite-rutile deposits closest to reaching commercial production are Turganskoye (Tomsk region), Tarskoye (Omsk region), the eastern section of the Tsentralnoye deposit (Tambov region) and the Itaman section of the Lukoyanov deposit. These deposits also contain a large amount of zirconium and are capable of meeting most of Russia's requirement for this mineral, which is up to 60,000 t/y.

Verkhnyaya Salda Metallurgical Production Association (VSMPO), which is one of the world's leading milled titanium producers, plans this year to reduce titanium production 20% (compared with 2001). VSMPO forecasts that demand for titanium by the aircraft manufacturing industry will shrink by 20% due to the financial hardships being suffered by major airlines in the wake of the terror attacks on the US.

VSMPO sells 65%-70% of its output under long-term contracts, with major aerospace and aviation companies such as Boeing, Airbus Industries, General Electric Aircraft Engines and Rolls-Royce. Exports accounted

for 70.1% of sales. In particular, VSMPO plans to supply US\$200 million to US\$300 million worth of titanium commodities to European aircraft maker Airbus Industries between 2002 and 2007. VSMPO and Airbus signed a five-year contract mid-June 2001 at the Le Bourget air show in France under which the Russian company will fill 65% to 70% of Airbus titanium needs. For some types of products, supplies from VSMPO will reach 80% to 100% of Airbus requirements.

In January 2002, the Russian Ministry of Natural Resources and the Stavropol territory of southern Russia called a tender for the right to study and develop the Beshpagirskoye titanium-zirconium deposit. The deposit is in the Grachevsky district, 30 km from Stavropol. It is thought at this stage that the 45 million m³ of sand, which has an average ilmenite content of 36.2 kg/m³, leucoxene 5.7 kg/m³, rutile 8.8 and zirconium 11.1 kg/m³, can be mined commercially. The deposit contains an overall probable resource of 63.4 million m³ of sand with an overall titanium-zirconium content of 61.6 kg/m³.

Magnesium is produced in Russia by AVISMA and Solikamsk Magnesium Plant (SMS) from the Perm region in the Urals. In 2001, total production of magnesium and its alloys increased by 11.6%. AVISMA reported that its sales of magnesium and alloys had risen by 20% to 22,092 t.

Gold

According to the Union of Russian Gold producers, Russia produced 154.5 t of gold in 2001, 8.2% more than in 2000 (a figure that included mine-output, incidental production and recoveries from scrap). Mine output was 141.5 t, which was also 8.2% higher than in 2000. Recoveries from scrap grew 25%, or by almost 400 kg. The Union of Gold Producers said that Russian gold production could rise to 170 t in 2002 as major new gold fields come on stream.

On a region-by-region basis, the biggest growth in gold production in 2001 was 4.3 t in the

Khabarovsk territory, where the Mnogovershinnoye and Amur mining companies operate. Figures were up 2.5 t in the Sverdlovsk region, where the Vorontsovskoye gold deposit has come on stream, and approximately 1 t in Buryatia and the Amur and Magadan regions. The Irkutsk region, Yakutia and Chukotka all reduced gold production.

Russia's gold-rich Magadan region produced 30.43 t of gold in 2001, which was 626 kg or 2.1% more than in 2000. The figure included 15.89 t of lode gold, compared with 15.82 t in 2000, and 14.54 t of placer gold, compared with 13.98 t. The Kolyma gold refinery, which is in the Magadan region, received 32.23 t of gold, which was 3.03 t more than in 2000. Mining companies from the Magadan region shipped 29.53 t to the refinery. As many as 325 enterprises mine gold under 600 licences in the Magadan region. The biggest producers are Omolon Gold Co., Rudnik (named after Matrosov), Susumansky GOK and Berelyokh Mining Co.

Russia's Far Eastern Khabarovsk territory will produce a forecast 16.6 t of gold in 2002. Production growth, which was 26% in 2001, would be sustained. For the first time ever, production of lode gold exceeded production of placer gold, by 30%, in 2001. Better use was made of funds deducted by mineral developers for the replenishment of the mineral-base. Geologists reported 11.8 t in new finds, 5.1 t more than in 2000.

Russia's Krasnoyarsk territory produced 19.02 t of gold, up 6.6%. Production in Yakutia decreased 1% to 16.57 t, and output in Irkutsk region fell by nearly 4% to 15.75 t.

The biggest growth among mining companies was reported by Polius Gold Mining Co., which mines the big Olimpiada gold lode in the Krasnoyarsk territory. From operations in the Krasnoyarsk territory, Polius produced 16 t of gold in 2001, 1.53 t or 10.6% more than in 2000. This year, Polius plans to mine 25-30 t of gold. The increase will be achieved thanks to stage two of a mill at the major Olimpiada

gold lode that was commissioned in October 2001. The mill uses a biological method to oxidise the ores (taking just 120 hours, and is much quicker than more conventional methods). The recovery plant should achieve full capacity of 50 kg/day of gold in 2002. The Russian Ministry of Natural Resources said the Olimpiada lode contains more than 700 t of gold, and Polius claims more than 1,000 t. Either way the lode is one of Russia's biggest gold deposits. Its ore has an average grade of 8 g/t for gold.

Omolon Gold Mining Co., the Russian-Canadian joint venture that is developing Kubaka, one of the Magadan region's (and Russia's) biggest gold lodes, produced 12.8 t of gold in 2001, 830 kg or 6% less than in 2000. The company plans to produce 12.7 t of gold in 2002. Omolon would finish strip mining at Kubaka, and begin mining gold underground. Omolon has continued geological exploration of the Birkachan gold lode, which is 25 km north of the Kubaka gold deposit. The area is 5 km long and 300 m wide, and includes five deposits. Omolon estimates that the area contains 35 t of gold, of which 21 t have been delineated. The company plans to spend US\$2.6 million on exploration in 2002, mainly by drilling holes. Once the reserves of the deposit are registered with the State Reserves Commission, Omolon will begin developing it.

Lenzoloto, a major gold producer from the Irkutsk region, produced 8.3 t of gold in 2001 against 8.15 in 2000. The company plans to mine 8.5 t of gold in 2002. This will be achieved if its new 2 t/y recovery plant comes into operation at Zapadnoye. This operation, which is being developed by the Nadezhdinskoye subsidiary, contains 13 t of gold. The Pervenets and Golets Vysochaishy deposits are expected to yield about 500 kg of gold between them in 2002.

In January 2002, Russian President Vladimir Putin endorsed legislation that makes the Maiskoye gold deposit in Chukotka eligible to be developed under a production-sharing

agreement (PSA). Maiskoye is in a remote Arctic district and holds a proven 24.45 Mt of ore containing 279 t of gold with an average ore grade of 9.3 g/t. The Federation Council's Committee for Economic Policy thinks that if the latest technology is used, recoveries of gold from ore could increase from 75% to over 90%, and revenue from US\$772 million to US\$878 million.

Meanwhile, the Russian Ministry of Natural Resources intends to put the giant Sukhoi Log lode gold deposit up for auction in 2002. Sukhoi Log contains a proven 1,029 t of gold with an average ore grade of 2.7 g/t. Sukhoi Log, which is in the Bodaibo district of Irkutsk region, had its reserves listed in 1977. The ores are also known to contain platinum, palladium and rhodium. Lenzoloto held a licence to develop the deposit between 1994 and 1998, but the governor of the Irkutsk region ordered that the licence be revoked as he claimed that the company had not honoured the agreement.

Silver

More than 90% of silver in Russia is currently produced as a byproduct of nonferrous metals production, and almost no silver deposits are being developed. One of the country's biggest producers of incidental silver is Norilsk Nickel. Russia's biggest silver producing regions are the Krasnoyarsk territory, Bashkortostan, Chelyabinsk region, Orenburg region and Primorye territory, which are home to major nonferrous metals producers. Russia exported 462 t of silver in 2001, 150% more than in 2000.

Russia has so far only one major silver deposit - Dukat in the Magadan region. Dukat contains a proven 14.3 Mt of ore at an average grade of 655 g/t Ag and 1.39 g/t Au, of which 10.3 Mt are graded at 667 g/t Ag and 1.4 g/t Au. The deposit contains about 15,000 t of silver and at least 35 t of gold.

In February 2001, the Magadan regional arbitration court extended receivership at Dukatsky GOK, which was built to develop the

big Dukat silver field, until August 1, 2002 to give it another opportunity to sell its assets. A different company, the Russian-Canadian joint venture Serebro Magadana (Silver of Magadan), now holds the licence to develop the deposit.

Serebro Magadana has begun the second phase of the renovation of the Omsukchan gold recovery mill. Serebro Magadana has submitted a declaration of intent to the Magadan region's natural resources committee to build a processing mill for gold-silver concentrate at the Omsukchan gold recovery mill. A comprehensive processing cycle for Dukat ore will be built to produce ingots from the mill's flotation-gravitation gold-silver concentrate. The complex will be able to process 40,000 t of concentrate annually using technology that includes a number of mechanical, chemical, electrochemical and thermal processes, the end product of which will be finished ingots and dore alloy ingots. These will then be sent to other Magadan region enterprises for further processing. The recovery plant, which has idled for more than four years, should be renovated by the start of the second quarter of 2003. It will recover 500 t of silver and 1 t of gold from some 700,000 t/y of ore.

In January 2002, Serebro Territorii, the St Petersburg-based subsidiary of MNPO Polimetall, produced its first 1.5 t of silver and 8 kg of gold at the Lunnoye gold-silver lode in the Magadan region. The mill should achieve full capacity (processing 300,000 t/y of ore by the end of the second quarter). Annual production should amount to 130 t of silver and 1 t of gold. Studies carried out in 1992-1995 indicate that Lunnoye will yield just over 13 t of gold and about 3,000 t of silver during its life. Polimetall started preparing the site for commercial production in 1999.

Russia and Mongolia plan to form a joint venture to mine the Asgat polymetals deposit, which contains 8,000 t of silver and straddles the border between Mongolia and Russia. Most of the deposit is on Mongolian territory,

in the Bayan-Ulgi district, however it continues into the Kosh-Agach district of the Altai territory, which is in Russia. Both countries want to develop the site on a joint basis, but Mongolia insists that a joint venture be registered in Mongolia itself. The deposit's ore contains silver, bismuth, cadmium and copper. However, the development would be capital-intensive, with costs of about US\$10 million, and the experts do not think it will be viable. A facility might be built to process 150,000 t of ore and produce 10,000-12,000 t of bulk concentrate per year.

Platinum Group Metals

Russia is the world's biggest producer of platinum-group metals (PGMs). Russia provides over 70% of the world's palladium, 20% of its platinum and a considerable volume of rhodium.

Norilsk Nickel produces most of Russia's PGMs. The key facility of the group, Norilsk Combine, makes platinum and PGM concentrates which are refined into bullion at the Krasnoyarsk nonferrous metals plant. Norilsk Nickel produces around 40%-60% of the world's PGMs. Palladium and rhodium account for around 80% of the company's PGM sales, and platinum makes up the other 20%.

Koryakgeoldobycha, Russia's second biggest platinum producer after metals giant Norilsk Nickel, produced 3.85 t of placer platinum in 2001, 25% more than in 2000. In 2002, Koryakgeoldobycha, which is from the Koryak Autonomous District in Russia's Far Eastern Kamchatka region, intends to keep production on a par with 2001, however this might change depending on prices.

Kola Mining and Geological Co. is expected to receive a licence to study the eastern section of the Pana tundra intrusion on the Kola Peninsula, Murmansk region, which is thought to be rich in PGMs. (The licence does not, in itself, give the company the right to mine any minerals.) The Russian Ministry of Natural Resources has said that the eastern section of the intrusion contains occurrences of low-

sulphide PGM ores that grade an average of between 2 and 24 g/t for gold and PGMs. The ores also contain a small amount of nickel, copper and cobalt. Preliminary findings by the Ministry indicate that the site could one day serve as an important source of these metals. The Ministry thinks the Pana tundra or Fyodorovo-Pansky intrusion as a whole could be Russia's richest PGM deposit, with probable reserves as high as 1,600 t of PGMs in shallow, enriched ores graded at up to 50 g/t.

In 2001, the UK's Eurasia Mining Plc launched its search for alluvial platinum at the Deneshkin Kamen complex in the Sosvinsky district of Sverdlovsk region. Eurasia Mining was formed in 1993 to implement precious metals projects in the Urals region of Russia. The drilling work is designed to study the previously unexplored part of the Sosva River basin, an area of over 100 million m³ of rock. Eurasia Mining hopes to obtain the first geological results during 2002.

Meanwhile, Russia is seeking ways to increase the efficiency of its PMG exports. Norilsk Nickel, the world's largest PGMs producer, is planning to sell larger amounts of the highly valuable metal under long-term contracts, looking thereby to quash the metal's market price volatility and reduce speculation. Analysts with Johnson Matthey, one of the world's leading buyers of PGMs, estimate that Russia put 32.6 t of platinum onto the world market last year, 4.7% less than it did the year before, and 143.1 t of palladium, 11.5% less.

Diamonds

Almasy Rossii-Sakha (Alrosa) accounts for nearly 100% of Russia's uncut diamond production. Alrosa accounts for around 20% of the world's rough diamond production, and mined (and sold) around US\$1.6 billion worth of rough diamonds in 2001. The company met its targets in terms of both carats and costs, but Alrosa failed to meet its diamond-cutting objective. In 2000, the company mined US\$1.54 billion worth of rough diamonds and produced US\$89 million worth of cut diamonds.

The company plans to increase the pace of capital investment in its raw material base, including at the Nakhinsky deposit, and the Mir and Aikhal underground mines. The International underground mine will reach peak production in 2002, and Nyurba GOK will begin to produce diamonds at the Nakhinsky deposit in 2002 (costing US\$75 million). The company will spend US\$36.5 million in 2002 to finance geological exploration (70% more than in 2001). The company also plans to increase financing of scientific research.

Alrosa plans to continue working in Angola during 2002 because it considers the country to be of great potential for diamonds. Other potential diamond regions are Karelia, Murmansk, Arkhangelsk and also Finland.

Alrosa has built its stake in Severalmaz, the company that holds the licence to develop the big Lomonosov diamond field in Russia's Arkhangelsk region, up to 71%. Alrosa bought 27% of the shares from Soglasie, a Moscow company, and 4% from minority holders. Lomonosov contains an estimated US\$12 billion worth of diamonds, more than half of them of gem quality. It will cost something like US\$740 million to bring the mine into production.

In December 2001, Alrosa signed a new five-year trade agreement with De Beers. Under the new deal, Alrosa will annually deliver rough diamonds worth US\$800 million to De Beers, and the same amount to the domestic market. Over the next five years, the Russian company will sell De Beers about US\$4 billion worth of rough diamonds. Under the previous, four-year, trade agreement, Alrosa delivered US\$3.5 billion worth of diamonds to De Beers.

Arkhangelskgeoldobycha drafted a feasibility study for the development of the Grib diamond pipe in Russia's Arkhangelsk region. The study states that it will cost US\$300-350 million to bring the mine to production. The investment will be recouped in 11.5 years. The Grib pipe is estimated to contain 76 Mct of diamonds. Unusually, the diamond deposit will

first be mined from underground, followed by an open pit. The Grib diamond pipe, the main deposit at the Verkhotinsky field was discovered in 1996. De Beers, having explored to a depth of 500 m, announced reserves of kimberlite amounting to 98 Mt, containing about 67 Mct of diamonds worth US\$79/ct. The average diamond content of the rock is 69 ct/100 t.

The Russian Ministry of Natural Resources has decided to re-register the licence to study and develop diamond deposits at the Ilezskaya property in the name of ZAO Vologdageolrazvedka, a new company set up by the former licensee, ZAO Kraton. The latter has been prospecting, exploring and mining diamonds, gold, nonferrous and rare metals in the Vologda and Arkhangelsk regions since 1994. The Ilezskaya area takes in the southern part of the Dvina-Pinega potential kimberlite province which is at a junction between the Arkhangelsk, Vologda and Kirov regions and the Komi republic. The area is typical of all well-known kimberlite provinces, and there is a good chance of kimberlite pipes containing diamonds being found.

Coal

Russia's current commercial coal reserves exceed 200,000 Mt, about half of which are bituminous and 38,000 Mt coking coal. Deposits are characterised by complex mining and geological conditions, such as disrupted and flooded seams, a high gas content and risk of explosion, a tendency to self-ignition and a significant share of reserves with inclined seams.

Coal companies in Russia produced 269 Mt of coal in 2001, up 4.2% year-on-year. The launch of new production capacities in 2001 amounted to 21.45 Mt of coal, including 5.95 Mt from new construction (2.44 Mt at four mines and 3.51 Mt at 10 pits); and 15.5 Mt from technical upgrades (7.2 Mt at mines and 8.3 Mt at open pits).

Russia plans to build 10 new deep mines and 47 new strip mines and open-pit workings in

the coal sector in 2002-2005. The country plans during the period to introduce new capacity to mine 49.33 Mt of coal - 16.18 Mt of it at deep mines and 33.15 Mt at strip mines - and to process 3.3 Mt, as per a federal programme on energy efficiency for 2002 to 2005 and the outlook until 2010, which the government approved in November 2001. The new capacity will include 21.2 Mt at the Kuznetsk basin, 11.6 Mt at the Kansk-Achinsk basin, 9.8 Mt in the Far East and 1 Mt in the North Caucasus.

Oil

The Russian oil industry holds a prominent place in the world economy with proven reserves of 9%-12% of total world reserves by various estimates. Russia's extractable oil reserves of around 19,000 Mt (138,100 Mbbbl) are spread over 1,900 oil fields, of which only 170 can be classified as major fields (where the bulk of resources are located).

The extraction of oil, including gas condensate, in Russia grew 7.7% in 2001 against the previous year to nearly 348.10 Mt. Without gas condensate, extraction amounted to 336.99 Mt, a 7.7% increase. The biggest oil producers were LUKOIL with 62.92 Mt (101.2% of the 2000 level), Yukos 58.01 Mt (116.5%), Surgutneftegaz 44.03 Mt (108.4%), Tyumen Oil Co. 32.97 Mt (115.3%) and Tatneft - 24.60 Mt (101.1%).

Russia's hydrocarbon potential is expected to increase 18,000-20,000 Mt of fuel equivalent by 2010, according to figures in a federal natural resources programme that the government confirmed in January 2002.

Natural gas

In 2001, Russia extracted 550.83 billion m³ of natural gas, or 99.22% of the 2000 amount. Russia's Gazprom produced tentatively 512 billion m³ of gas in 2001, nearly 11 billion m³ less than the 523.2 billion m³ it achieved in 2001.

Gazprom's proven reserves as of January 1, 2002, totaled 26,000 billion m³ of gas, and other organisations that Gazprom owns

reported reserves of 3,600 billion m³. Gazprom plans to increase gas production to 520 billion m³ in 2002, and 530 billion m³ in 2003. Priorities for Gazprom in 2002 will be to keep up reliable gas supplies to domestic and foreign consumers, implement long-term export contracts, replenish the company's mineral base, and stabilise and further increase gas extraction.

According to the investment programme for 2002, Gazprom plans to put Rb48.4 billion into gas production, which mainly concerns the further development of the Zapolyarnoye (Transpolar) oil and gas condensate field. Investments in the development of the gas transportation system will total Rb67 billion, and Rb15 billion will be put into its modernisation. Another Rb2.9 billion are to be spent on expanding underground gas storage capacity.

Others

Steel giant Severstal launched a facility to process niobium ore mined at the Tatarskoye deposit in Russia's Krasnoyarsk territory. The factory is in the Severoyeniseisk district and can produce up to 5,600 t of mill concentrate per year. By 2004, the company should be meeting Russia's entire demand for the alloy, which is used to make special grades of steel. Total project costs, including putting the deposit on stream and commissioning the ore mill, were about US\$9.5 million. The Tatarskoye deposit has reserves (including probable reserves) of 612,000 t Nb2O₅, 991,800 t phosphorus and 2.28 Mt of vermiculite.

In December 2001, the Sverdlovsk region and TVEL (Russia's nuclear fuel corporation) signed an agreement designed to rescue the Malyshevo uranium mines, which produce uranium concentrate and rare-earth metals. Malyshevo is currently being run by the state-owned Atomredmetzoloto which, like TVEL, is controlled by the Ministry of Atomic Energy. Malyshevo's mill in the early 1990s also

produced titanium-molybdenum concentrate and beryllium. The company then started to produce fluorspar and mica concentrates for the glass-earthenware industry. Malyshevo produced uranium concentrate from ores mined at the Dalmatovskoye deposit in the Kurgan region. However, the ore supplies dried up in the mid-1990s. Dalmatovskoye holds a proven 11,000-12,000 t and a probable 100,000 t or more of uranium.

A major barite deposit has been found in the Krasnoarmeisk district of Russia's Far Eastern Primorye territory. It is thought the deposit holds some 600,000 t of barite that can be mined by the open-cast method. Once the future mine attains full capacity, it will meet the whole of the Siberia and Far Eastern regions' needs for barite.

Selected Mineral Production in Russia (^{'000 t except where specified)}

Commodity	1997	1998	1999	2000	2001
Aluminium:					
Alumina	2,380	2,465	2,687	2,889	3,091
Bauxite	3,988	4,092	4,513	5,000	4,805
Metal	2,906	3,010	3,149	3,247	3,302
(smelter, primary)					
Copper (refined)	640	656	737	824	871
Gold (t, Au content)	123	114	126	143	155
Iron and Steel (Mt):					
Iron ore	70.8	72.3	81.5	86.6	82.5
Pig iron	37.3	34.8	40.1	44.6	45.0
Steel	48.4	43.8	51.5	59.1	58.9
Rolled stock	37.8	34.1	40.9	46.0	47.1
Pipe	3.5	2.8	3.3	4.8	5.4
Lead (metal)	47	33	55	52	60
Tin (metal)	9	4	4	5	5
Zinc (metal)	190	196	231	241	249
Coal (Mt)	229	247	250	258	269
Gas, natural (Bm ³)	571	591	576	584	551
Petroleum	297	294	305	323	337
(crude Mt)					

Source: the State Statistics Committee, the Ministry of Trade and Industry, Interfax-CNA's estimates