

ARGENTINA

By George Sanders and Nivaldo Rojas

Argentina is recovering from a devastating three years of deep recession, civil unrest, devaluation and default. The economy grew by 8.7% in 2003 and is projected to grow by between 5.5% and 7.0% this year, in contrast to 2002 when the economy shrank by 10.9%.

When the government lifted the highly unpopular freeze on bank deposits in 2003, most people left their deposits in their bank accounts and inflation stayed under control, and by the second half of 2003, the domestic loan market had recovered. President Nestor Kirchner and his economic advisors favoured boosting domestic consumption by keeping electricity rates and natural gas prices 'pesofied' and frozen. In this Faustian deal, however, as the Argentine economy has finally begun to grow sharply, price controls on natural gas and electricity imposed by the government are causing an unprecedented energy shortage that threatens to put the brakes on growth. The gas supply is squeezed by the refusal of companies to drill for gas until prices rise to international levels, and the long lead time to develop new resources guarantees that the problem will be worse in 2005 and beyond.

To cope with this latest crisis, the government is rationing power to households and industry, and has capped growth in Argentina's natural gas exports, a move which is affecting the entire Southern Cone, and especially neighbouring Chile, which imports 50% of its energy from Argentina via four pipelines.

Argentina's official performance in servicing its foreign debt, both public and private, and foreigners stung by past defaults are slow to invest in new projects.

The big question for the international mining industry is whether the current government will honour its commitment to tax stability for new mines made at the beginning of the 1990s which led to the mining boom of the past decade. The law grants net tax stability for a period of 30 years to a mine project under the tax regime in force at the time a feasibility study is accepted by the provincial mining authority. By all accounts, the answer to this question is a resounding 'yes', mining being one of the few bright spots in the national economy. President Kirchner, in office since May 2003, has made formal promises to the mining sector that the national government will strongly support sustainable growth of mining. However, the reality is that new mining projects face a tax regime far less favourable than that of the 1990s.

New taxes include a tax on diesel fuel, a tax on bank deposits and withdrawals, an up-front tax on export earnings and, perhaps the most onerous to foreign investors, an obligatory liquidation of export earnings into Argentine pesos. As growth resumes, there is no mechanism for these new

taxes to expire automatically. New mines coming on stream must have a guarantee that after tax profits can be expatriated, and there is the added burden of negotiating exemptions from as many of these new taxes as possible on a case-by-case basis for each project.

The biggest mining news of the year was the November 2003 groundbreaking for Barrick Gold Corp's US\$460 million Veladero project, scheduled to begin producing 550,000 oz/y of gold in late 2005. Other new projects rush towards feasibility studies and, ultimately, production, and the leader of the pack, with underground construction under way on the San José gold-silver project in Santa Cruz Province, is Minera Andes in joint venture with Peruvian miner Mauricio Hochschild Compañía SAC. The government estimates that US\$5-7 billion will be spent in this decade on about two dozen projects with estimated reserves worth some US\$50 billion. This compares favourably with the US\$7 billion invested in mining in the 1990s.

The national Mining Secretariat (under the Ministry of Production) has remained a stable and effective organisation since Argentina opened up to the mining world in the early 1990s. It is divided into three main branches, the Geological and Mining Service (Segemar), the National Mining Directorate (DNM), and the Directorate of International Relations (IRD). The Mining Secretary, Jorge Mayoral from San Juan Province, was re-appointed to another two-year term, reflecting San Juan's importance to Argentina's mining industry.

The link between national mining policy and its ultimate application in the individual provinces is Cofemin, the Federal Mining Council, made up of the heads of the individual provincial mining directorates and representatives of the National Mining Directorate. This body tackles reform of the Mining Code, the transfer of technology and information to the provinces, and the task of making mining compatible with all the economic, social and environmental issues throughout the country. Cofemin's work is critical to getting mining's story out to a public frequently opposed to mining projects, and in the aftermath of the derailing of Meridian Gold's Esquel Project by local and international activist groups on environmental and social grounds, the pendulum is swinging back towards official advocacy of responsible mining activity. The provincial governors have expressed their support for sustainable growth in the mining sector, and continued mining investment is crucial to the future of Argentina's poorest Andean and Patagonian provinces.

Co-operative mineral exploration programmes with Canada and smaller programmes with other nations and universities continue, but the long-running Regional Mineral Exploration programme in northwest Argentina with Japan International Co-operative Agency has come to an end.

Work continues on a Bolivia-Argentina cross border mining treaty modelled along the lines of Argentina's highly successful and progressive treaty with Chile.

The mineral potential of Argentina can be divided into five main regions:

- The Puna region (northwest Argentina provinces of Jujuy, Salta, Tucumán, Catamarca and La Rioja) hosts potential for large copper, gold, silver, tin, lead and zinc deposits and ferrous minerals; and its salars (playas) have potential for large deposits of borates, sulphates, common salt and lithium brines.
- The northeast (provinces of El Chaco, Formosa, Entre Rios, Corrientes, Misiones and Buenos Aires) has potential for diamonds, nickel, amethyst, limestone and ornamental stone.
- The centre (provinces of Santiago del Estero, Cordoba, San Luis and the north portion of La Pampa), has potential for gold, porphyry copper, nickel-platinum and manganese deposits, beryl and other precious stones, ornamental stone, silica, feldspar and common salt.
- The Central Cordillera and Precordillera (provinces of San Juan, Mendoza, and Neuquén) have proven potential for large porphyry copper and gold deposits, and also chromium and talc, potash, aluminium sulphates, sulphur, gypsum and limestone.
- Patagonia (beginning in the southern part of La Pampa-Neuquén and continuing to Rio Negro, Chubut, Santa Cruz and Tierra del Fuego provinces), has potential for large epithermal gold and silver deposits, polymetallic lead-zinc deposits, bentonite, kaolin and ornamental stone.

Puna

The Puna region of Argentina has been relatively quiet recently, but given its proximity to giant copper deposits in neighbouring Chile, many consider the Puna region to be the sleeping giant of Argentina's mining. Infrastructure projects (discussed later) seem to be stalled, but the region is poised to take off as increased Brazilian trade with Asia is routed via Argentina, Bolivia and Chile.

Jujuy Province: Mina Aguilar, the oldest continually operating metal mine in Argentina, was to close at the end of 1990, but discovery of the distal Esperanza orebody and deeper reserves at the Aguilar deposit gave the mine a new lease on life and enabled an investment of US\$12 million to be made last year for a new processing plant, a diesel-to-gas generator conversion and a 40 km gas pipeline. The 75-year-old mine, owned by the Bolivian company Comsur SA, produces approximately 2,000 t/d of combined 11% Pb-Zn ore averaging approximately 3.2% Pb, 7% Zn and 85 g/t Ag, and has a reserve plus resource base of approximately ten years. Jujuy Province allows an exploration expense deduction of up to 1% of the 3% mine-mouth (after cost) royalty due the province under federal guidelines.

Silver Standard Resources Inc continues to hold the Pirquitas mine on a care-and-maintenance basis until such time as the silver price warrants development. The project is operated by Silver Standard (43.4% minority interest) with majority ownership by affiliates of investment fund managers Highwood Partners of New York (56.6% interest) who received the project upon the bankruptcy of Sunshine Mining and Refining Co. Silver Standard has recently done some clean-up at the site from the previous underground mine which operated from 1935 until the 1980s. A feasibility study in 1998 stated 30.4 Mt of proven and probable open-pit reserves averaging 128 g/t Ag, 0.17% Sn and 0.81% Zn at a 40 g/t Ag cut-off grade. Pirquitas is fully permitted for production and is unencumbered by any royalties other than the 3%, mine-mouth (after cost) royalty due to Jujuy Province following federal guidelines.

Cardero Resource Corp received somewhat encouraging Ag values with associated Pb-Zn from diamond drilling in lower Tertiary conglomerate and sandstone at La Providencia silver mine and the adjacent Chingolo prospect. The Providencia deposit was discovered during an UN-sponsored regional exploration programme in the 1970s, and high-grade silver was mined underground from 1988 until 1996.

Mansfield Minerals recently optioned the Loi Loi Cu property near the Chilean border.

Salta Province: Iron oxide copper-gold (IOCG) prospects are gaining increased attention in the Andean Cordillera, and three have been defined at Rio Grande, Arizaro Lindero and El Camino in the Puna region. Mansfield Minerals commissioned an independent scoping study on its Rio Grande property drilled by former partner Rio Tinto. The independent study concludes that at a cut-off of 0.6 g/t Au, Rio Grande contains an inferred open-pit resource of 29 Mt at 1.08 g/t Au. Inferred low grade gold resources reported by Mansfield are on a similar scale and grade at Arizaro Lindero, where Rio Tinto drilled eight holes. Iamgold Corp recently took an option from Mansfield to explore the high sulphidation gold-silver bearing system at Aguas Calientes.

The thick, barren leached cap over the Taca Taca porphyry copper prospect has not deterred Lumina Copper Corp from taking another look at the property which has had 156 holes drilled in it by a succession of companies. Taca Taca has an inferred resource of 106 Mt at 0.66% Cu and 0.13 g/t Au at a cut-off of 0.4% Cu, and a larger inferred low-grade resource of 240 Mt at 0.4% Cu at a cut-off of 0.2% Cu.

Junior company Salta Minerals is conducting grassroots exploration in the Puna region.

Catamarca Province: Minera Alumbra operates the Bajo de la Alumbra copper-gold mine now owned by Xstrata plc (50%), Wheaton River Minerals Ltd (37.5%) and Northern Orion Explorations Ltd (12.5%). Mining of the deposit takes place under a JV with the owner of the mineral rights,

Yacimientos Mineros de Aguas de Dionisio (YMAD), a statutory corporation with representatives from the provincial government of Catamarca, the National University of Tucumán and the National Government of Argentina. Minera Alumbrera pays a 3% royalty on mine-mouth value to Catamarca Province as per applicable under federal and provincial legislation. The JV provides YMAD with a 20% net (pre-tax) proceeds royalty once the project capital plus interest has been repaid. Minera Alumbrera made advance net proceeds royalty payments to YMAD of US\$2 million per year for the mine's first five years as provided in the contract.

Pilot production began in 1997, and full commercial production was achieved in 1998 after expenditure of US\$1.23 billion. The mill was expanded to process 37 Mt/y of ore in 2002 at an additional cost of less than US\$28 million. The project began with reserves of 767 Mt at an average grade of 0.51% Cu and 0.64 g/t Au, and reserves were restated in June 2001 at significantly lower tonnage owing to technical and financial reasons during the recent period of low metals prices. As of December 31, 2002, proven and probable reserves using a recoverable, payable copper equivalent grade of 0.32% were 257 Mt grading 0.66 g/t Au and 0.57% Cu. Stockpiled low-grade ore consists of 111 Mt at 0.41 g/t Au and 0.36% Cu. Full production will continue until 2010, with two more years of residual production from stockpiled ore. For the next seven years (2004-2010), Bajo de la Alumbrera is projected to produce an annual average of 561,000 oz of gold (in concentrate and doré) and 185,000 t of copper (in concentrate).

Northern Orion Explorations Ltd now owns 100% of the Agua Rica porphyry copper prospect located 34 km east of Bajo de la Alumbrera. Agua Rica is richer in copper than Bajo de la Alumbrera, but engineering challenges have so far prevented this project from moving forward despite BHP's expenditure of almost US\$50 million in exploration and pre-feasibility work (including a bulk-sampling adit completed in 1999 just before the project was terminated). Reserves at Agua Rica are 750 Mt averaging 0.66% Cu, 0.23 g/t Au and 0.037% Mo at a cut-off grade of 0.4% Cu. The reserves include a high-grade portion of 167 Mt at 0.99% Cu, 0.32 g/t Au and 0.036% Mo at a cut-off of 0.7% Cu.

The investment required to develop a mine at Agua Rica will be substantial owing to the rugged topography. The majority-owner of Minera Alumbrera, Xstrata plc, has studied the possibility of building infrastructure to transport ore as slurry via a 7-15 km tunnel to the Alumbrera mill as a way to lower infrastructure costs. However, this remains only one of several options. Unlike Bajo de la Alumbrera, Agua Rica was staked on open ground and has no underlying free-carried interest and will only pay 3% mine-mouth (after cost) royalty to Catamarca Province.

Silver Standard Resources' Diablillos project near Salar del Hombre Muerto on the Salta side of the Salta/Catamarca border is also on a care-and-maintenance basis awaiting a higher silver price. Open-pit resource estimates by Pacific Rim Resources on this volcanic-hosted epithermal precious metals prospect stand at 49.5 Mt at 68.3 g/t Ag and 0.42 g/t Au at a cut-off grade of

0.4 g/t Au-equivalent. At the 0.8 g/t Au-equivalent cut-off grade required for a standard milling operation, Diablillos contains a resource of 30.7 Mt at 92.7 g/t Ag and 0.60 g/t Au. Additional infill drilling in Diablillos has confirmed this and has also generated new exploration targets in neighbouring properties. Near Diablillos (and just south of the provincial border in Catamarca) is Condor Yácu, being explored by Maximus Ventures Ltd (formerly Essex Minerals) in an option agreement with Cardero Resource Corp. Drilling at Condor Yácu and the adjacent Los Corderos prospect optioned from Silver Standard has returned encouraging values of gold and silver.

Yacimientos Mineros de Aguas de Dionisio (YMAD), operates the Farallón Negro gold mine, the only active mine remaining from the days when the Argentine state controlled both mining and oil production. The recent run up in the gold price has given YMAD some breathing room after the advance payments from its free carried interest in the Bajo de la Alumbra mine ran out in 2002. A production increase last year from 11,000 to 17,000 oz/y of gold is now providing enough cash flow to justify some improvements to the mine's infrastructure. Under federal law, provincial mining companies are prevented from acquiring any additional mining rights.

La Rioja Province: The Famatina District, mined for gold in the first half of the 20th century, has not seen exploration activity since 2000 when Corriente Resources gave up on its option with Yacimientos Mineros La Rioja SA, a private company that controls mining rights over this former Provincial Reserve Area. Famatina has gold mineralisation in high-sulphidation epithermal veins in the area of La Mejicana and porphyry copper-molybdenum potential elsewhere on the large claim block. CRA explored here from 1992 until 1996 without success. Barrick has expressed its interest in exploring the Famatina district and is reviewing information on the various prospects within the claim group. Golden Peaks Ltd is continuing to drill for gold and silver on its Sierra de las Minas property, in the southeast.

Central Cordillera and Precordillera

San Luis Province: BHP Billiton is conducting ground and airborne geophysics and diamond drilling for nickel and PGM in a 100 km-long ultramafic complex at Vilorco-Las Aguilas in an exploration agreement with Marifil Mines Ltd. Geocom Resources is planning to drill new gold targets in the volcanic-hosted La Carolina district on ground optioned from TNR Gold Corp. This is an old placer and lode gold district that was explored by Anglo American in the first wave of modern gold exploration in the late 1980s, following up on low-grade gold prospects generated by the Dirección General de Fabricaciones Militares.

San Juan Province: Barrick has begun construction of the US\$460 million open-pit Veladero mine, with production scheduled to begin in late 2005. The 11 Moz oxidised, heap-leachable gold deposit is in the high Cordillera, entirely within Argentina and immediately adjacent to Barrick's other major project, Pascua-Lama. This is a capital-intensive conventional sulphide milling deposit containing 28 Moz gold and 584 Moz silver within the 'mining

operations area' straddling the international border between Argentina and Chile created under the Cross Border Mining Treaty finalised in 2000. Pascua-Lama is a huge low-grade gold and silver deposit and it is an integral part of Barrick's future production profile. Its fast track progress towards production was interrupted in 2001 by the fall in the gold price, and activity on the project did not resume until late last year. Barrick will complete an optimisation study in mid-2004 on Pascua-Lama with the goal of putting the property into production in 2008. However, the company has cautioned that the escalating cost, originally estimated at US\$1.18 billion, may delay a production decision.

Barrick stated proven and probable reserves on these two properties in its 2003 annual report and also reported resources which, in themselves, would be respectable mines in their own right. Heap-leachable gold and silver reserves and resources at Veladero are as follows: using cut-off grades from 0.58-0.75 g/t Au, Veladero's proven and probable reserves are 287.7 Mt at 1.09 g/t Au and 16.5 g/t Ag. Additional mineral resources are 61.4 Mt at 0.72 g/t Au and 11.2 g/t Ag. Silver recovery is estimated to be only 6.2% in the heap-leach process.

Gold-silver reserves and resources at Pascua-Lama, using cut-off grades from 0.99-1.8 g/t Au, are 268.9 Mt at 1.77 g/t Au and 61.3 g/t Ag proven and probable, and additional resources are 105.1 Mt at 0.93 g/t Au and 47.4 g/t Ag. The milling process at Pascua-Lama will recover an estimated 78% of the silver. At full production, Pascua-Lama would become one of the largest silver mines in the world. San Juan Province will receive a production royalty of 3% of mine-mouth (after-cost) value from both these projects per federal guidelines. Production accounting will be kept separate for the respective portions of the Pascua-Lama deposit straddling the international border in the zone covered by the Chile Argentina Mining Treaty. Mining rights to the Veladero deposit are controlled by the San Juan provincial mining company, Instituto Provincial de Exploración y Explotación Minero (IPEEM). Barrick concluded an agreement with IPEEM and the province of San Juan in early 2003, setting the royalty terms for the project. The terms were not disclosed, but according to Barrick's public filings, Veladero's total royalty due to IPEEM will be equivalent to an additional 0.75%, bringing the total NSR to 3.75%. Details of the 30-year tax regime under which Veladero will operate were not disclosed.

Noranda Inc is actively updating a 1997 feasibility study of the El Pachón copper deposit, which lies along the international border. The larger Chilean portion of the mineralised system is currently being exploited by Antofagasta plc at its Los Pelambres mine. El Pachón's stated reserves are 880 Mt averaging 0.62% Cu, 0.015% Mo, 0.02 g/t Au and 2.4 g/t Ag, based on a cut-off grade of 0.4% Cu and a US\$1.00/lb copper price. El Pachón was the first 'straddle' project envisaged by the Chile-Argentina Mining Integration Treaty.

Tenke Mining Corp has increased its already extensive holdings in the Vicuña-Batidero area along the international border in northern San Juan province by optioning the José Maria property from the Juan Lirio group and

the Las Flechas property from Viceroy Explorations Ltd. These properties total over 25,000 ha and hold significant potential for gold and copper-gold deposits. Tenke has drilled 10 diamond holes ranging in depth from 300 m to 370 m, and nine out of the ten holes encountered significant copper-gold mineralisation. The best hole returned 350 m averaging 0.58 g/t Au and 0.55% Cu.

The Mogote prospect, immediately south of Vicuña, is being drilled by Amera Resources Corp, part of Grosso Group Management Ltd. This emerging copper-gold district lies between Pascua-Lama, 70 km to the south and Cerro Casale, 50 km to the north, and is just to the east of Metallica's El Morro copper-gold discovery, across the line in Chile.

Minera Andes Inc and Xstrata plc have teamed up to explore their respective portions of the Los Azules porphyry copper-gold system in the high Cordillera of San Juan north of El Pachón. Xstrata has run proprietary geophysical surveys over both properties, and a total of three drill rigs were mobilised for both areas during the austral summer 2003-04. Rio Tinto has ended exploration at El Altar in the San Juan Cordillera between El Pachón and Los Azules. Some diamond drill intersections at El Altar were over 100 m in length averaging above 1.0% Cu. It is believed that this high-grade intersection at El Altar reflects an enriched portion of a well-developed porphyry copper system.

Intrepid Minerals Corp has defined additional resources as part of a prefeasibility study at the Casposo gold-silver deposit in the Precordillera. Mineralisation has been extended from the main Kamila zone to the northwest and southeast and encompasses a strike length of over 3 km. Intrepid reports high-grade intercepts of up to 70 g/t Au and 1,500 g/t Ag in this vein system. At an open-pit cut-off grade of 1.4 g/t Au equivalent, the combined Kamila and Mercado zones have an indicated resource of 775,000 t grading 5.6 g/t Au and 87 g/t Ag and an inferred resource of 1.97 Mt grading 3.5 g/t Au and 110 g/t Ag. Intrepid has optioned the adjacent Rosarita property from Exeter Resource Corp and is conducting further exploration.

Elsewhere in the Precordillera at the Gualcamayo project, Viceroy is returning to the initial skarn discovery area drilled and tunnelled in the late 1980s by Anglo American plc. The Amelia Inés, Magdalena and 3D targets are being drilled in this year's programme, to expand upon the 2.5 g/t Au mineralisation at the heart of this district. Previous work at Gualcamayo defined an indicated open-pit resource at the Quebrada del Diablo zone of 12.7 Mt averaging 1.2 g/t Au, and an additional 22.4 Mt at 1.0 g/t Au using an 0.6 g/t Au cut-off grade. IMA Resources holds a 1% NSR royalty on the Gualcamayo property.

La Mancha Resources Inc is undertaking geophysics and diamond drilling at the historic Hualilán property. This sediment-hosted vein and manto gold deposit also lies in San Juan's Precordillera, within the same limestone belt that hosts Gualcamayo to the north.

Mendoza Province: Lumina Resources has purchased the San Jorge porphyry copper deposit in Mendoza's Precordillera from Northern Orion with

an indicated and inferred resource of 57.3 Mt averaging 0.61% Cu at a 0.25% Cu cut-off grade based on projected open-pit mining and heap-leaching of mixed copper oxide and chalcocite for SX-EW recovery.

Exeter Resource Corp has completed a prefeasibility study at the low sulphidations La Cabeza gold property in southern Mendoza. Combined open pit and underground resources (all in the inferred category) at a 2 g/t Au cut-off are 3.4 Mt grading 4.3 g/t Au.

The rise in the spot price of uranium has prompted Argentina's atomic energy commission, CNEA, to begin administrative procedures that may enable the reopening of the San Rafael mine which operated from 1976 until 1997. Concurrently, Mendoza has received US\$10 million from a US\$30 million World Bank loan for clean-up of uranium mill tailings in the town of Malargüe.

Neuquén Province: Minera Andacollo Gold, a small company with Canadian and Chilean investors, is mining about 25,000 oz/y of gold from veins at the Erica and Sofía mines in the Andacollo district.

Patagonia

Río Negro Province: Barrick has taken an option on Iamgold's Los Menucos district properties where previous drilling encountered encouraging gold values at Cerro La Mina, Cerro Abanico and Dos Lagunas. Golden Peaks Resources Ltd continues to explore the Tanque Negro property and Patagonia Gold SA is exploring the Cuya and El Puesto prospects at Los Menucos. Elsewhere, Aquiline Resources Ltd has drilled 12,000 m on gold-silver veins at its Calcatreau prospect at the northern end of the emerging Gastre Fault play which extends south into Chubut Province. A gold-silver resource estimate will be completed by mid 2004.

Chubut Province: IMA Exploration Inc has announced that Snowden Mining Industry Consultants Inc has completed a resource estimated at Galena Hill, the first systematically drilled target on the 100% owned Navidad silver-lead discovery in the central part of the province. This is a major new silver deposit and a type of mineralisation previously unknown in the region. Recent drilling has linked the mineralisation at Navidad Hill with similar mineralisation at the Galena Hills zone some 1,200 m away. Silver and lead, with very minor copper, is associated with calcite and barite and is both structurally and stratigraphically controlled in Mesozoic volcanic and sedimentary host rocks that are believed to be contemporaneous with mineralisation. The Snowden report states a resource at a 50 g/t Ag-equivalent cutoff grade of 63.6 Mt at 101 g/t Au and 1.76% Pb in the indicated category and 16.9 Mt at 66.5 g/t Ag and 0.3% lead in the inferred category.

The discovery at Navidad has sparked considerable prospecting activity in this extra-Andean structural zone trending in-between the Somuncurá Massif to the north and the Deseado Massif to the south known as the Gastre Fault system. Golden Peaks has entered into an option agreement to acquire the Fortuna property, with its gold-bearing quartz veins in this trend, drilled by

Minera Mincorp in the early 1990s. Further to the east near the Atlantic coast, Portal Resources is exploring the Arroyo Verde gold property.

Meridian Gold Inc's Esquel project is on hold indefinitely, its fast-track development having fallen victim to a non-binding citizens' referendum on March 23, 2003 in which 81% voted against the project. Subsequently, Chubut passed legislation banning open-pit mining and the use of cyanide in the province. Meridian tried to continue fieldwork on the project but was enjoined by a judicial order from a local court, which specifically stopped all exploration in the Cordón de Esquel. When Brancote Holdings (later acquired by Meridian) optioned the property in 1999, through its 60%-owned Minera El Desquite, voices began to be raised in the local press concerning aboriginal rights and water rights on the mining concessions. Minera El Desquite conducted an aggressive exploration campaign that resulted in open-pit measured and indicated reserves converted into mineable reserves (at a 1 g/t Au cut-off grade) of 10.4 Mt averaging 8.5 g/t Au and 15 g/t Ag.

At least four companies examined the property in 2001, and there was a flurry of drilling activity to confirm reserves. All the while, the local populace of the picturesque tourist town of Esquel with its nearby lakes and ski area became increasingly concerned about the project, which is only 6 km from the outskirts of town. The locals also complained about the large percentage of foreign workers on the project at the height of the drilling activity. The provincial Mining Directorate continued promoting the project to the increasingly hostile public who, by 2002, had attracted the attention of Greenpeace and the coalition behind Montana's anti-cyanide initiative. Local opposition crystallised after Meridian's US\$229 million offer for the project in 2002, and a study commissioned by Meridian, carried out by the non-profit association Business for Social Responsibility following the negative vote, criticised Meridian's lack of transparency and inadequate handling of locals' concerns about the use of cyanide and potential water pollution. The report said that the lack of information from Meridian meant most people were informed about the project from the local advocacy group, other outside activist groups and the Internet.

The outcome of this confrontation cannot be predicted at this time, as the local advocacy group insists that "no means no". In the early 1990s, the strong central government headed off numerous provincial moves to impose extra taxes and regulations on mining projects, encouraging the type of investment that led to the discovery of the Esquel deposit. Now, however, the government's attention is focused on more pressing social and economic concerns at the national level, and perceived environmental issues have provided the anti-mining forces with a potent argument that will take tremendous effort to counter.

The laws passed by Chubut Province are in conflict with the national mining laws and will probably be struck off eventually. The lack of understanding about the respective rights of the surface owners and the owners of the underlying mineral rights has contributed to this atmosphere of confrontation, despite sustained efforts by the national mining authorities over the years.

The national political authorities are beginning to speak out in favour of mining development, and the anti-mining advocacy movement has not been extended to the rest of the country.

The movement has become very aggressive however, especially in Patagonia, and although many communities have rejected outright the movement and its anti-mining agenda, some small towns near current exploration plays have been receptive to the message. There are community concerns about the Pirquitas project in Jujuy and the new all-weather access road to the Veladero project in San Juan. Despite efforts to organise dissident communities near Bajo de la Alumbrera mine and the future Agua Rica project, residents there are strongly in favour of the mining activity and only want more fiscal benefits. Thus it is important to see the Esquel conflict as a local issue concerning perceived harm to specific local interests. There is the likelihood that no mining will ever take place in this picturesque region of Chubut Province within 50 km of the Chilean border, as has been proposed. At the same time, the provincial government has given clear signals that the rest of the important mining projects under way in less picturesque terrains in Chubut can gain exemptions from the new laws. Meanwhile, Meridian Gold will continue to fight for its right to mine the Esquel deposit.

Santa Cruz Province: AngloGold Ashanti's 92.5%-owned Cerro Vanguardia mine produces in excess of 230,000 oz/y of gold and 2.0 Moz/y of silver from approximately 0.9 Mt/y of ore and has proven and probable open-pit reserves to support operations until 2012. Reserves at Cerro Vanguardia are 7.8 Mt grading 7.56 g/t Au and a little over 100 g/t Ag at a cut-off grade of 3 g/t Au-equivalent. Epithermal quartz veins averaging 3.5 m thick and ranging up to 10 m in thickness carry the precious metals values, and the mine exploits 25 of these veins via steep-sided, open-pit 'slot cuts.' The main producing pits are now approximately 90 m deep and the stripping ratio is about 15:1. Exploration drilling has continued every year the mine has been in production, and Cerro Vanguardia has, so far, been able to replace and slightly expand its reserve base. Future mining, when open-pit reserves are exhausted, will depend on underground mining, and the high gold and silver grades appear to continue at depth.

The high silver content of the ore at Cerro Vanguardia leads to high cyanide consumption, and AngloGold Ashanti has built a cyanide recovery circuit that recovers and reuses 1,200 t/y of sodium cyanide, or over two-thirds of the total used. Fomento Minero de Santa Cruz Sociedad del Estado (Fomicruz) is the province's state mining company, and has a 7.5% free carried interest in the mine. Cerro Vanguardia SA has the right to exploit the gold-silver veins for a period of 40 years from the signing date of the exploitation agreement in 1996. The US\$270 million project produced its first doré at the end of 1998. The mine pays a mine-mouth (after-cost) royalty to Santa Cruz Province of 1% of the value of mine production.

The Manantial Espejo project encompasses the second-largest epithermal, low-sulphidation vein district in Santa Cruz. The 257 km² district, located about 100 km west and south of Cerro Vanguardia, has approximately 70% of

its silver and gold resources concentrated in the María Vein, one of the largest and most continuously mineralised quartz vein structures in the Deseado Massif. Pan American Silver Corp operates the project in a 50:50 joint venture with Silver Standard Resources. Measured and indicated resources at the start of 2003 were 4.39 Mt at 264 g/t Ag and 4.5 g/t Au, plus 1.59 Mt at 258 g/t Ag and 3.6 g/t Au in the inferred category, mostly in the main Maria Vein and the increasingly important Karina/Union vein system. This year's activity includes an expanded programme of infill and exploration drilling, plus environmental, geotechnical, and metallurgical studies to complete a feasibility study by early 2005. This will probably envisage a combined open-pit and underground mining operation on distinct veins. The joint venture has tenure over the entire district, and since the original discovery was staked on open ground, there is no override on the project by the provincial mining corporation. Manantial Espejo will pay a mine-mouth (after-cost) royalty to Santa Cruz Province of 1% of the value of mine production.

The San José project in the northwest of the province is under construction, with underground exploration and development currently being completed to define a mineable gold-silver reserve in the Huevos Verdes vein. Two 45° decline shafts are being advanced, and horizontal workings will be excavated on four levels for underground sampling to upgrade the resource into a mineable reserve, upon which a production decision will be made by mid 2004. Minera Andes discovered the property, originally known as El Pluma-Cerro Saavedra during grass-roots exploration. JV partner Mauricio Hochschild Compañía SAC (51%) operates the project. For the Huevos Verdes and the Saavedra West areas, the combined total indicated resource was estimated to be 1.85 Mt at 214 g/t Ag and 2.1 g/t Au based on a 50 g/t Ag cut-off grade. The JV controls 500 km², and since the project was staked on open ground, there will only be a mine-mouth (after-cost) royalty of 1% of the value of mine production. Numerous other potential targets exist within the claim block, and the Huevos Verde East zone, a parallel structure about 2 km to the northeast, returned a drill intercept of over 50 g/t Au and 1,500 g/t Ag during last year's exploration campaign.

Coeur d'Alene Mines Corp continues to mine high grade (over 1,000 g/t) silver ore from the Martha Vein and the R-4 zone at its Martha mine. The direct-shipment ore is bagged and transported by truck over 450 km to Coeur's Cerro Bayo mine and processing plant in neighbouring Chile's IX Region. Coeur is also exploring its approximately 1,200 km² land package in the western portion of the Deseado Massif of Santa Cruz Province acquired from Yamana Gold Inc. The latter continues to explore its approximately 1,000 km² land package in the eastern and central portion of Santa Cruz in a three-way partnership with Cia de Minas Buenaventura SAA and Mauricio Hochschild Compañía SAC. Buenaventura is the operator, and exploration is focused on the Paloma property and on the highly prospective Coyote, Cerro Oro and Armadillo (formerly T-1) sectors at Martinetas, considered to have potential for high-grade gold bonanza ore shoots.

Immediately south of the San José project, the Australian companies Oroplata Ltd and Kanowna Ventures have acquired Cerro Negro project from Xstrata. Encouraging gold-copper results have been obtained on this epithermal low-sulphidation vein system, which is believed to host an inferred resource of 6 Mt averaging 3.2 g/t Au in the Eureka vein system.

An 11-hole diamond drilling programme by Rio Tinto at lamgold's La Esperanza project in central Santa Cruz proved up the presence of a diatreme breccia with low anomalous gold values, but Rio Tinto has relinquished its option on the property. Elsewhere, Exeter Resource Corp acquired an option from Cerro Vanguardia SA and AngloGold Ashanti to explore some 39 properties totalling 1,047 km² throughout Patagonia outside the Cerro Vanguardia Mine area. The most advanced project is the Cerro Moro gold prospect in the eastern portion of the Deseado Massif where Exeter is currently drilling. Intrepid Minerals Corp continues with an agreement with Xstrata for the non-exclusive right for five years to use Xstrata's Patagonia database to explore for gold, silver, lead and zinc in the provinces of Río Negro, Chubut and Santa Cruz.

Non-metallic and construction minerals

Rio Tinto, through its subsidiary Borax SA, spent US\$3 million for borate plant improvements last year to process ore from its Tincalayu mine in northwest Argentina. A number of small borate mineral and boric acid producers also continue working in the region. FMC Lithium has resumed production of lithium carbonate in addition to lithium chloride from its US\$137 million Fénix project located at the Salar del Hombre Muerto in Catamarca Province. Full-scale lithium carbonate production had been suspended since 2000 owing to price pressures from Chilean producers. The high-tech brine plant uses a selective purification process that extracts lithium chloride from the salar brine in a nearly pure form with minimal processing. The Salar del Hombre Muerto is a unique deposit that contains lithium brines at depths much greater than its neighbours, with grades of 600-650 ppm Li and very low potassium values. It is a project designed for the long haul, with a projected mine life of 75 years, and its start-up delays and competitive challenges are behind it now. Financing is being sought for a government-approved extension of a new gas pipeline to the Fénix project. The pipeline is already delivering natural gas to nearby Pocitos in Salta Province. Lime production from the central Andean region of Argentina marketed into metropolitan Santiago in Chile, is imperilled by the rising cost of electricity and the shortage of natural gas.

Rio Tinto has been laying the groundwork with the provinces of Mendoza and Neuquén to begin the exploitation of a major potash (KCl) deposit in the Neuquén Basin. A feasibility study was carried out in the mid 1990 on the Mendoza portion of the deposit, and Rio Tinto signed an agreement last year to acquire 100% of Potasio Río Colorado SA, which owns the mineral rights.

Australia-based Admiralty Resources (formerly Equity 1 Resources NL) and Argentina Diamonds completed a favourable pre-feasibility study last year for the Salar Rincón lithium-potassium-magnesium brine project in Salta Province near the Chilean border and within the zone covered by the Chile-

Argentina cross border mining treaty. Over US\$1 million was spent on exploration and drilling in the early 1990s by the United Nations Economic Development Agency in combination with the provincial government and the University of Salta. In addition to the major constituents, lithium, potassium and magnesium, Salar Rincón contains potentially recoverable borate and caesium-rubidium.

Infrastructure

The reluctance of foreigners to risk new investment in Argentina, and the imbalance in supply and demand caused by price controls on natural gas and electricity, will continue to affect the country's infrastructure projects, which have been paralysed since the economic crisis in 2000. Indeed, even if natural gas and hydroelectric power supplies were to increase, there is a bottleneck caused by lack of pipelines and transmission lines restricting the flow of energy from Patagonia and Neuquén province to the Buenos Aires market.

The Potrerillos dam in Mendoza Province is one of the few new infrastructure projects to come on stream in recent years and this will favour construction of a long talked about 500 kV transmission line up to Veladero and Pascua Lama passing by the San Jorge copper deposit. Neuquén Province has awarded a 25-year construction and operating contract for the US\$711 million Chihuido II water supply and hydroelectric project, but construction has not begun. Infrastructure work in the provinces of the Northwest Argentina block (Salta, Jujuy, Tucumán and Catamarca) is currently stalled. Blueprints exist for significant improvements in the rail, road, pipeline and electrical transmission infrastructure along this bi-oceanic corridor linking Chile's Pacific ports with Brazil.

Growth in Argentina's mining sector is inevitable. Just how much growth will occur is dependent upon the general investment climate and mining specific policies by the federal government and the provinces. In one year we have seen Chubut province go from being Argentina's best destination for exploration dollars to one of the most risky as a US\$100 million investment was rejected by the local populace for environmental and social reasons. As Peru and Chile contemplate royalties on mineral production, Argentina has a golden opportunity to stand firm in the face of pressure to increase taxes on mining. As David Lowell (credited with helping find both the Escondida copper mine in Chile and the Pierina gold mine in Peru) said in a March 2004 interview with Reuters, new royalties being contemplated in both Chile and Peru would have delayed investment or sent prospectors elsewhere, and these discoveries might not have been made. If Argentina can put its overall economic house in order, and defend its existing mining policies without raising its already high taxes on mining, it may find itself in a more competitive position in the mining world.

Tables next page.

Exploration Expenditures and Drilling

Year	Expenditures (US\$ million)	Metres
2000	140	230,000
2001	50	165,000
2002	60	135,000
2003(p)	80	160,000
2004 (e)	80	150,000

Source: Argentina Mining Sub-Secretariat. (p) provisional. (e) estimated.

Mineral Exports (US\$ million)

2000	2001	2002	2003(p)	2004(e)
711	786	851	922	968

Source: Argentina Mining Sub-Secretariat. (p) provisional. (e) estimated.

Mineral Production

Commodity	Units	2001	2002	2003(p)	2004(e)
Gold	kg	30,630	32,530	38,355	34,916
Copper	t	191,667	204,027	199,020	176,500
Silver	kg	152,802	125,878	136,220	150,200
Zinc	t	39,703	37,325	29,839	34,740
Lead	t	12,334	12,011	12,079	11,120
Borate	t	512,624	509,630	545,304	567,000
Bentonite	t	123,404	120,006	128,406	133,540
Gypsum	t	582,377	362,556	387,936	403,450
Lithium carbonate	t	0	906	2,850	3,000
Lithium chloride	t	4,512	4,729	4,700	4,800

Source: Argentina Mining Sub-Secretariat. (p) provisional. (e) estimated.