

# Gold

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Canada's gold production decreased for the third consecutive year to 145.2 t in 1994 from 153.1 t in 1993 and a record 175.3 t in 1991. Canada is the world's fourth largest gold producer behind South Africa, the United States and Australia.

Over the next few years, Canadian gold production should gradually recover from its decline of the last three years. The start-up in 1995 of Homestake Mining Company's Eskay Creek mine and in 1996 of Metall Mining Corporation's Troilus mine, with a production capacity of 5 t/y each, as well as other projects in British Columbia, Manitoba, Saskatchewan, Yukon, Ontario and Quebec, which are all scheduled to start before the end of 1996, should boost production from its current level of 145 t in 1994 to a range of between 160 and 165 t by 1997, and maintain that level until the end of the decade.

The average price of gold in 1994 was US\$384/troy oz compared to \$360/oz in 1993 and \$344/oz in 1992. Based on London p.m. fix prices, gold traded in the range of US\$370.25-\$397.50/oz in 1994.

## **CANADIAN DEVELOPMENTS**

There were about 50 primary gold mines in Canada at the end of 1994 and these accounted for 91% of the gold produced, with the remainder coming from base-metal mines (6.5%) and placer operations (2.5%). Six mines closed while three opened during the year. Employment in primary gold mines in 1993 totalled 8500 compared to the 1992 level of 9400. Employment figures in the gold industry have been declining steadily from the 1989 peak of 12 600.

The \$2.4 billion acquisition of Lac Minerals Ltd. by Barrick Gold Corporation included the assets of five Canadian gold mines in Ontario and Quebec and one gold retreatment project in Ontario, as well as an exploration project in British Columbia. Following this acquisition in 1994, Barrick Gold Corporation

became the largest gold producer outside of South Africa and the world's third largest producer overall.

## **British Columbia**

British Columbia's gold production decreased to 12.3 t in 1994 from 13.9 t in 1993.

The Eskay Creek project of Prime Resources Group started producing gold and silver in January 1995. The ore will be shipped to smelters in Japan and Quebec. Annual gold production is expected to be around 5 t. Eskay Creek is one of the highest-grade precious metal deposits in the world with reserves of 1.1 Mt grading 66 g/t gold and 2930 g/t silver.

Homestake Mining Company, which maintains a 54% controlling interest in Prime Resources Group, will also be the mine operator at Eskay Creek.

Two projects started pre-production in 1994. Cusac Industries Ltd. announced the start-up of the 270-t/d mill at the Table Mountain Project near Cassiar. Cusac produced around 0.6 t in 1994. Fairfield Minerals Ltd. produced 0.8 t at the Elk/Siwash mine near Merritt in the southern part of the province.

Kinross Gold Corporation is expected to bring on stream the QR deposit in the spring of 1995. The mine is expected to produce 1.3 t/y for a period of six years.

The Red Mountain project of Barrick Gold Corporation, with reported gold reserves of 24 t, could sustain production of 2.4 t/y. A total of \$15 million had been spent on the project by the former owner, Lac Minerals Ltd.

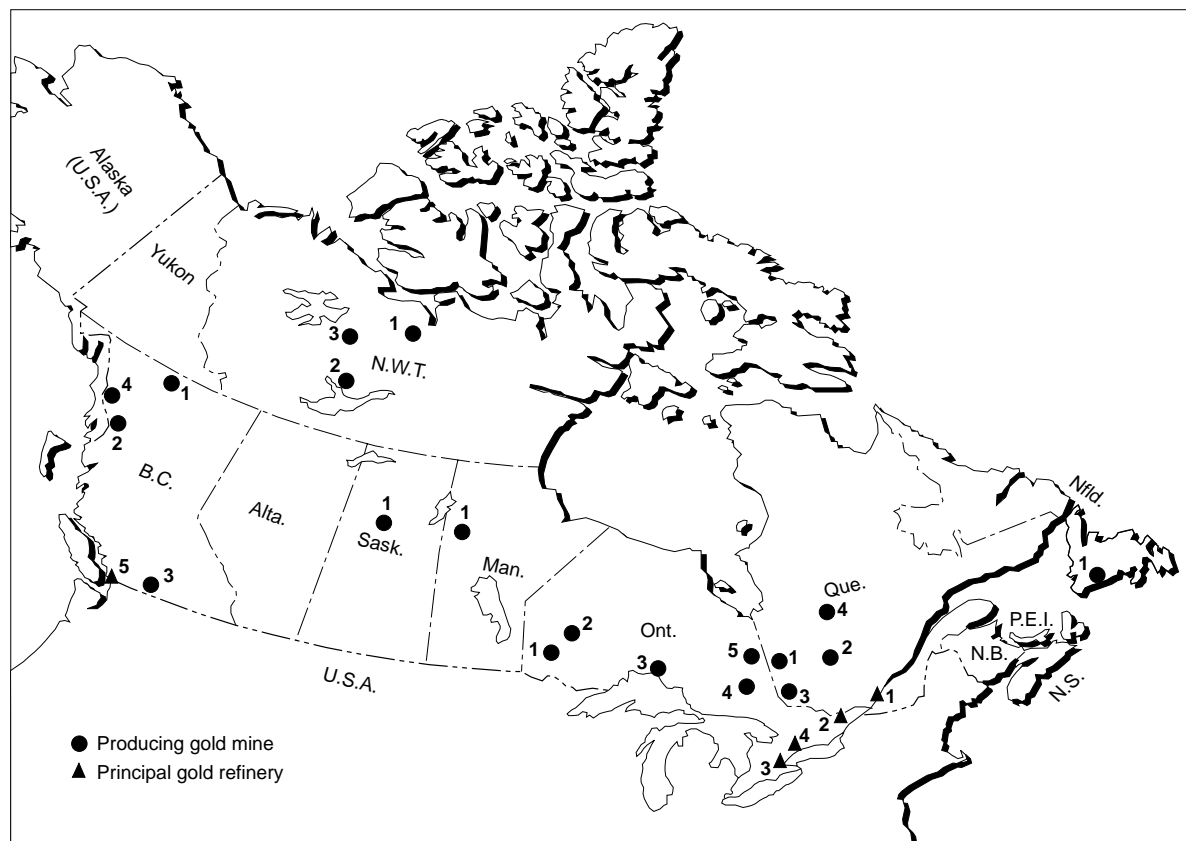
Wheaton River Minerals bought Homestake's 85% interest in North American Metals Corp.'s Golden Bear mine. In 1995, North American Metals, who remains the mine operator, expects to process material from the Kodiak pit, allowing time to develop the newly discovered Grizzly zone.

## **Northwest Territories and Yukon**

Gold production in the Yukon and Northwest Territories decreased slightly from 16.7 t in 1993 to 16.3 t in 1994.

Figure 1

## Primary Canadian Gold Mines and Principal Gold Refineries, 1994



## PRIMARY GOLD MINES

## Northwest Territories

1. Echo Bay Mines Ltd. – Lupin mine
2. Royal Oak Mines Inc. – Giant mine  
Miramar Mining Corporation – Con mine
3. Royal Oak Mines Inc. – Colomac mine

## British Columbia

1. North American Metals Corporation – Golden Bear mine
2. Westmin Resources Limited – Premier mine  
Westmin Resources Limited – SB project  
Homestake Mining Company – Eskay Creek mine
3. Homestake Mining Company – Nickel Plate mine
4. Cominco Limited – Snip mine

## Saskatchewan

1. La Ronge Area  
Claude Resources – Seabee mine

## Manitoba

1. Granduc Mining Corporation and Black Hawk Mining Inc. – BT mine

## Ontario

1. Red Lake Area  
Placer Dome Inc. – Campbell mine  
Goldcorp Inc. – Red Lake mine
2. Pickle Lake Area  
Barrick Gold Corp. – Golden Patricia mine
3. Hemlo Area  
Homestake Mining Company/Teck Corporation – Williams mine  
Hemlo Gold Mines Inc. – Golden Giant mine  
Homestake Mining Company/Teck Corporation – David Bell mine
4. Timmins – Kirkland Lake Area  
Placer Dome Inc. – Dome mine  
Royal Oak Mines Inc. – Pamour and Hoyle mines  
Kinross Gold Corporation – Hoyle Pond mine

## Ontario (cont'd)

4. Timmins – Kirkland Lake Area (cont'd)  
Barrick Gold Corp. – Macassa mine and Lake Shore tailings project  
Barrick Gold Corp. – Holt-McDermott mine  
A.J. Perron Gold Corp. – Kerr mine  
Northfield Minerals Inc. – Cheminis mine  
St. Andrew Goldfields Ltd. – Hislop East mine
5. Placer Dome Inc. – Detour Lake mine

## Quebec

1. Northwestern Area  
TVX Gold Inc. and Golden Knight Resources Inc. – Golden Pond Est and Quest mines
2. Desmaraisville – Chibougamau Area  
Campbell Resources Inc. – Joe Mann mine  
MSV Resources Inc. – Copper and Rand mines
3. Rouyn-Noranda – Val-D'Or Area  
Barrick Gold Corp. – Doyon and Bousquet 1 and 2 mines  
Agnico-Eagle Mines Limited – LaRonde mine  
Placer Dome Inc. – Sigma 1-2 and Kierna mines  
Cambior Inc. and Aurizon Mines Ltd. – Sleeping Giant mine  
Cambior Inc. – Chimo and Mouska mines  
Hemlo Gold Mines Inc. – Silidor mine  
Mine Richmond Inc. – Francœur mine  
Yorbeau Resources Inc. – Astoria mine  
Western Quebec Mines – Joubi mine  
KWG Resources Inc. and Exploration SEG Inc. – Granada mine
4. James Bay  
MSV Resources Inc. – Eastmain mine

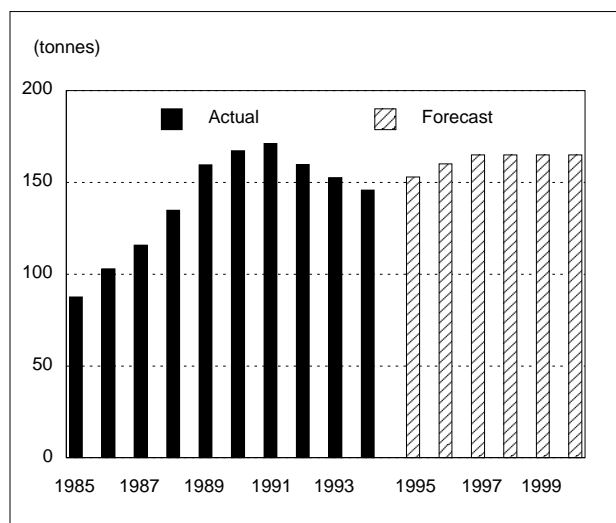
## Newfoundland

1. Royal Oak Mines Inc. – Hope Brook mine

## PRINCIPAL GOLD REFINERIES

1. Noranda Minerals Inc. Canadian Copper Refiners
2. Royal Canadian Mint
3. Johnson Matthey Limited
4. Imperial Smelting and Refining
5. Nesmont Precious Metals Corporation

**Figure 2**  
**Canadian Gold Production, 1985-2000**



Source: Natural Resources Canada.

Royal Oak Mines resumed production at the Colomac mine, which was acquired from Neptune Resources Corp. in 1993 for \$10 million. Production start-up at the Colomac mine was delayed by a fire in the mill building as well as by mechanical problems in the mill. Full production was reached in January 1995 at an annual rate of 5 t of gold. Current reserves are sufficient for seven years of production. The Colomac mine was closed in 1991 due to high operating costs.

Miramar Mining Corporation operates the Con mine, which has been in operation for 55 years during which time it has produced 150 t of gold. The Con mine has proven and probable reserves of 4 Mt grading 10.6 g/t gold, representing approximately 10 years of production.

Production at Treminc Resources Ltd.'s Ptarmigan and Tom mines was shut down due to depleted reserves.

The Yukon's gold production of 3.2 t in 1994 was exclusively derived from placer deposits.

The Loki Gold Corporation Brewery Creek project is expected to come on stream in 1995 at a rate of 2.5 t/y. The heap leaching operation has reserves of 16 Mt grading 1.5 g/t gold.

## Saskatchewan

The Contact Lake mine of Cameco Corporation and Uranerz Exploration and Mining Limited will produce an expected 2 t/y of gold, starting in 1995. Contact Lake has geological reserves of 1.6 Mt grading 9.6 g/t gold. Contact Lake started production in January 1995 and is expected to continue for six years.

Claude Resources Inc.'s Seabee gold mine produced approximately 1.5 t in 1994. Seabee has proven and probable reserves of 450 000 t grading 10.5 g/t gold.

## Manitoba

In Manitoba, Granduc Mining Corporation and Black Hawk Mining Inc. produced around 1 t of gold at the BT mine in the Lynn Lake area. The BT open-pit mine has reserves of 1 Mt grading 2.8 g/t gold, enough for production for another three years. The ore from the BT mine is brought to the Lynn Lake mill.

Granduc Mining Corporation and Black Hawk Mining Inc. also acquired the Farley Lake property in the Lynn Lake area from Manitoba Mineral Resources Ltd., a provincial crown corporation. Probable reserves from the open-pit mine at Farley Lake are estimated at 1.6 Mt grading 3.6 g/t gold. The Farley Lake deposit is expected to be brought on stream once mining operations at the BT mine are closed.

Production at the New Britannia mine of TVX Gold Inc. and High River Gold Mines Ltd. is expected to begin in August 1995 with an estimated production of 3 t/y of gold.

## Ontario

Ontario's gold production in 1994 totalled 68.5 t, a decrease from the 1993 total of 72.4 t. This important decline was prompted by the temporary closure of the Macassa mine due to a rockburst, and by a general decline at several operations. Production at the three mines in the Hemlo area accounts for 49% of Ontario's total production.

Ross-Finlay Ltd. ceased production at the Dona Lake mine. Dona Lake was acquired in 1993 from Placer Dome Inc.

St. Andrew Goldfields suspended production at the Stock Township mine due to exhaustion of reserves. However, mining activity continued at the Hislop open-pit mine. In the fall of 1994, St. Andrew Goldfields filed an application under the *Companies Creditors Arrangement Act*.

In 1996, production is expected to start at the Holloway project of Hemlo Gold Mines Inc. and Teddy Bear Valley Mines Ltd. Total reserves at the Holloway project are 6 Mt grading 6.8 g/t gold.

Placer Dome Inc. is expected to start production at the Dome open-pit mine in April 1995. The company has outlined proven and probable reserves of 32.5 Mt grading 2.4 g/t gold. Mill throughput is expected to increase from 3800 t/d to 9100 t/d, while annual production is expected to increase from 6 t to 10 t. The Paymaster mine, which is adjacent to the Dome mine,

will resume production in 1995 and will be part of the Dome mine complex.

Placer Dome Inc. announced that the Musselwhite project in northwestern Ontario is estimated to hold reserves of 4.3 Mt grading 9.5 g/t gold, equivalent to 40 t of gold. Inferred reserves could boost the estimate to over 60 t. TVX Gold Inc. has a 32% ownership in the project.

In the Kirkland Lake area, exploration at Sudbury Contact Mines Ltd.'s Victoria Creek project has outlined a resource of 4.27 Mt grading 4.5 g/t gold.

## Quebec

Quebec's gold production decreased slightly from 41.8 t in 1993 to 40.9 t in 1994.

MSV Resources, who re-opened the Portage and Rand mines near Chibougamau in 1993 following their purchase from Westminer Canada Ltd., brought the Eastmain mine on stream. The ore will be trucked, beginning in January 1995, by winter roads to MSV's milling operation in Chibougamau. Reserves at the Eastmain mine total 900 000 t grading 10 g/t gold. Initial production for 1995 is expected to be 1 t of gold and the mine should reach production of 1.7 t/y in 1996.

Metall Mining announced that it will bring the Troilus project on stream in 1996. The Troilus project, which is located 150 km north of Chibougamau, hosts reserves of 49 Mt grading 1.34 g/t gold. Gold production is expected to reach 5 t/y. The capital cost of the project is estimated at \$150 million.

The Louvicourt base-metal mine of Aur Resources and the Mobrún base-metal mine of Cambior inc. are expected to increase Quebec gold production by 1 t/y and 0.7 t/y respectively.

Orco Resources Inc. started pre-production at the Donalda mine, while Louvem Mines and Aurizon Mines began pre-production at the Beaufort mine. Total gold production at Beaufort and Donalda was expected to reach approximately 1 t/y.

TVX Gold Inc. and Golden Knight Resources Ltd. plan to develop the Principale deposit at a cost of \$30 million. In 1994, TVX Gold Inc. started a deep development program to link the Principale zone to the existing Est and Ouest mines. Annual gold production at the Casa Berardi complex is expected to increase by 1996 to 4.5 t from the current level of 3 t/y.

The Ferderber and Dumont mines of Aur Resources Inc. closed in December 1994 due to ore depletion. An exploration program at both mine sites will take place in the first half of 1995 to find new reserves.

## Newfoundland

Production at the Hope Brook mine continued following its purchase by Royal Oak Mines Inc. from BP Resources Canada Inc. in 1992. Reserves at the Hope Brook mine are estimated at 8 Mt grading 3.5 g/t gold. The mine produces about 3 t/y of gold.

## WORLD DEVELOPMENTS

### South Africa

In April 1994, the African National Congress, a democratically elected government, took power in South Africa. The transition to a multi-party democracy will affect the South African and world gold industry. The elimination of various economic and political sanctions by South Africa's trading partners will provide South African gold producers with better access to gold exploration and development projects around the world.

The land tenure whereby the owner of the land also owns the mineral rights is currently being reviewed by government authorities. According to government sources, the transfer of mineral rights to the State could accelerate the development of gold projects by increasing competition and allowing small mining companies, as well as foreign companies, to invest in South Africa.

In addition, health and safety measures in South African gold mines are expected to improve with the election of the new government. In 1993, 573 miners died in South African mining operations, mainly due to rockbursts and groundfalls. Since mining activities are conducted at depths of up to 3500 m, the chance of rockbursts increases dramatically.

South Africa remained the world's largest gold producer with an estimated output of 585 t in 1994. Output declined significantly in the first half of 1994 due to labour unrest and mine fires. South Africa's share of world production was estimated at around 26% in 1994, compared to approximately 66% in 1970.

With a cumulative output of around 45 000 t from 1870 to 1994, South Africa has been the dominant gold supplier. About 98% of South Africa's gold comes from mines in the Witwatersrand Basin in the Johannesburg area.

South Africa has moved from being the lowest-cost gold producer in 1985 to being one of the highest-cost producers. Cash costs in South Africa in 1985 were approximately US\$147/oz, while costs at other major Western World producers averaged about \$200/oz. However, by 1994, South Africa was considered to be the highest-cost producer with a cash cost of \$277/oz compared to the average Western World cost of \$247/oz.

The elimination of sanctions also allowed the re-introduction of the Krugerrand gold coin. The Chamber of Mines launched an aggressive promotion campaign to recover its leadership position. During its 27-year life, the Krugerrand accounted for between 40 and 60% of the Western World's gold coin market. Sales promotion of the Krugerrand ceased when trade sanctions were imposed in 1985.

The South African Chamber of Mines reached an agreement with the National Union of Mineworkers (NUM) for coal and gold workers whereby workers received an average 10% wage increase from June 1994. The Mineworkers Union, as well as the NUM, is considering joint action to increase the number of public holidays from 4 to 12. According to mine operators, if such a measure is accepted, it could mean a reduction of 20 t in gold production. In South Africa, wages represent close to 50% of total production costs.

Gold production is vital to the South African economy. It is valued at around US\$6 billion per year and accounts for over 30% (half of that of the entire mining sector) of South Africa's export earnings. According to the Chamber of Mines, a total of about 360 000 workers are employed in the gold mining industry in South Africa.

Despite a large reserve base, South Africa's mine production faces major difficulties due to declining ore grades, deep gold reserves, intensifying competition from low-cost producing countries, and high domestic inflation.

The South African mines' ability to keep reducing costs is limited by their relatively low-grade reserves which have declined from 13 g/t in 1970 to 5 g/t in 1993. Cash production costs were reported to have increased by more than 6% in 1994.

Anglo American Corporation of South Africa Ltd. is the world's largest gold producer, with gold production of 283 t in 1993. Anglo American estimates that its gold reserves total 4700 t. The company announced that the Moab mine would be developed, with production start-up scheduled for 1997. The Moab mine is expected to produce 13 t/y of gold over a period of 28 years. Anglo American also produced 13 t at its gold retreatment facility operated by East Rand Gold and Uranium.

Gold Fields of South Africa Ltd. is the world's second largest gold producer with output of 122 t in 1993, while Gencor ranked third with production of 70 t. Gencor announced that it will downscale underground mining development at the Oryx project until the end of 1995 when more development information should be available. To date, more than US\$528 million has been spent on the mine. The development of Oryx is plagued by lower-than-expected grades, underground fissure water, and temperatures of 50°C at the 2000-m depth.

In the current context of deep ore reserves and declining grades, compounded by labour-intensive operations, South Africa's gold production may very well decrease by 100 t/y to around 500 t/y within the next decade.

## United States

Gold production increased from 44 t in 1981 to an estimated 330 t in 1994, thereby making the United States the second largest producer behind the Republic of South Africa. According to the U.S. Bureau of Mines, 25 mines yielded about 75% of the gold produced in the country. Nevada accounted for about two thirds of U.S. production with production of 210 t. The other major producing states are California, South Dakota and Montana. The growth in gold production in Nevada was made possible by the application of the heap leach process, which is designed to treat low-grade ores.

The U.S. Mining Law Reform Bill to amend the 1872 Mining Law was stopped in the House of Congress, despite near agreement on the establishment of a royalty scheme on public lands. The numerous additions governing the environment were blamed for the breakdown in negotiations. Other issues addressed in the Bill included the compensation for land claims, and patents of the mineral resources extracted from public lands. A new Mining Law Reform Bill is expected to be introduced to the Senate and the House of Representatives in early 1995.

Cumulative production from Newmont Gold Company's Carlin mine complex and Barrick Gold Corporation's Goldstrike mine was approximately 105 t in 1994. Barrick Gold Corporation announced production start-up at the Meikle deposit for the middle of 1996. The Meikle deposit is located 2 km north of the Goldstrike deposit. It contains 6.5 Mt of ore grading 21.6 g/t gold. The Meikle underground mine is expected to produce 11 t/y of gold for 11 years.

The U.S. Secretary of the Interior awarded titles to 2000 acres of federal land where Barrick Gold Corporation's Nevada operations are located. In 1993, Barrick decided to take court action against the Department of the Interior seeking timely action on its patent application. Under the 1872 Mining Law, federal land can be bought for between \$2.50 and \$5.00 per acre. However, the U.S. government's plan to revise its 1872 Mining Law has substantially delayed the patenting process on federal land.

REA Gold Corporation started production at the Mount Hamilton open-pit heap leaching mine in Nevada. The Mount Hamilton mine is expected to produce an average of 1.5 t/y of gold for a period of 7.5 years at a cash cost of US\$240/oz.

Battle Mountain Gold commissioned the Reona mine in Nevada. Reona is expected to produce 2.2 t/y of gold for a period of four years at a cash operating cost

of US\$212/oz. Battle Mountain Gold is also expected to start production at the Crown Jewel mine in Washington State once the permits are obtained at the end of 1995. The Crown Jewel mine is expected to produce about 5 t/y of gold.

Hecla Mining Company and Great Lakes Minerals Inc. began production in December 1994 at the Grouse Creek gold-silver mine in Idaho. The underground and open-pit mine is expected to produce 3.5 t/y of gold.

After a period of substantial growth, the outlook for increased gold production in the United States appears grim, with U.S. companies increasing their exploration expenditures in Latin America, Africa, and the Commonwealth of Independent States (C.I.S.).

Placer Dome Inc. (60%) and Kennecott (40%) will decide in 1995 whether to proceed with the South Pipeline project. Proven and probable geological reserves of 16 Mt grading 5.5 g/t gold, representing a total of 62 t of gold, are all amenable to open-pit mining.

Placer Dome Inc. and Kennecott also own the Pipeline project which hosts reserves of 32 Mt grading 4.5 g/t gold. Production was initially targeted for the end of 1995; however, a pending lawsuit regarding claim ownership has caused start-up delays.

Placer Dome Inc. and Kennecott also brought the Crescent pit, which is part of the Cortez mine, on stream in 1994. The ore of the Crescent pit was processed at the existing Cortez mill, located near the Pipeline mining complex, and accounted for 40% of the mill throughput of 2000 t/d. Production at the Cortez mine was approximately 2 t in 1994.

Several projects were also delayed due to the environmental approval process, such as the Juneau deposit of Echo Bay Mines Ltd. and the New World project of Hemlo Gold Mines Ltd. These projects host mineable gold reserves of 150 t and 50 t, respectively.

## Australia

Australian gold production has shown a spectacular increase over the past 10 years from 39 t in 1984 to an estimated 260 t in 1994. Gold production could reach 300 t by the turn of the century. As was the case for South Africa, Canada, and some other producers, currency devaluation vis-à-vis the U.S. dollar in the last few years, coupled with increasing gold prices and major gold discoveries, has helped the competitiveness of its gold industry. Australia's production is mainly derived from Western Australia (76%), Queensland (12.5%), the Northern Territory (6.7%), and New South Wales (2.7%).

According to the Australian Mining Industry Council, major threats facing Australia's gold mining industry

are the competition from emerging countries and the increase in the area of the country that is closed to mining (from 7% of Australia in 1988 to 29% in 1994). In fact, the 13 largest Australian mining companies are spending about 30% of their budgets overseas, citing the major impediments to mining domestically as being national parks or aboriginal reserves.

Following the acquisition of Aztec Mining Co. Ltd. and a 40% interest in the Boddington mine from Reynolds Metals, Posgold became Australia's largest gold producer. Other major Australian producers are Newcrest, Placer Pacific, and Western Mining Corporation.

Amongst Australia's most important mines in 1994 are the Super Pit of Kalgoorlie Consolidated Gold Mines (17 t), Newcrest Mining's Telfer mine (12 t), Posgold's Boddington mine (12 t), and Western Mining Corporation's St. Yves mine (10 t).

Zapopan announced that it is proceeding with the development of the Mount Todd gold mine in the Northern Territory. The A\$135 million project is expected to produce over 5 t/y of gold. Reserves are 42 Mt grading 1.5 g/t gold, representing approximately 60 t of gold.

Placer Pacific announced the commissioning in the second quarter of 1995 of the A\$155 million Osborne copper-gold deposit. Reserves at Osborne are 11.4 Mt grading 1.3 g/t gold. Annual production is expected to reach 1.2 t of gold.

Delta Gold NL and Placer Pacific Ltd. announced that they will develop two gold deposits near Placer Pacific's Granny Smith mine. The Keringal deposit has reserves of 5.5 Mt grading 2 g/t gold, while the Sunrise deposit has proven and probable reserves of 1.8 Mt grading 3.7 g/t gold. These deposits are expected to increase the Granny Smith mine's life by about two years, to 1999.

Great Central Mines NL commissioned the Bronzewing mine. Bronzewing hosts a resource of 20 Mt grading 4.4 g/t gold. Initial production is targeted at 5 t/y with an expected production increase to 8 t/y starting in 1996. Great Central Mines also plans to bring the Jundee mine on stream at the end of 1995. Jundee is expected to produce 6 t/y from reserves of 7.6 Mt grading 2.5 g/t gold.

Pancontinental Mining Ltd. plans to increase production at the Paddington mine from 3 t/y to 5 t/y. Reserves at Paddington are 42 Mt grading 1.3 g/t gold.

MIM Holdings Limited will double production from 1.5 t/y to 3 t/y at the Ravenswood gold operation by spending A\$47 million to develop the Nolan Lease. Reserves at the Nolan Lease are 12.5 Mt grading 1.75 g/t gold. The Ravenswood mine was supposed to shut down in 1995 due to reserves depletion. The expansion will extend the mine's life by six years.

MIM Holdings Limited announced an A\$200 million investment to bring on stream the Ernest Henry copper-gold deposit. Ernest Henry hosts reserves of 122 Mt grading 1.1% copper and 0.6 g/t gold. Production is expected to reach 3 t/y by 1996. Western Mining's affiliate company, Central Norseman Gold, is also expected to bring the 2-t/y Harlequin gold mine on stream in 1995.

Burdekin Resources announced the development of the McKinnon gold deposit. Production is expected to reach 4 t/y beginning in the second quarter of 1995.

Production at a rate of 2 t/y resumed at the Fortnum gold mine following its purchase from Homestake by Perilya. Reserves are estimated at 2 Mt grading 2.8 g/t gold. Fortnum was closed by Homestake in 1992 due to low grades and low gold prices.

In 1996, Renison Goldfields plans to commission the 3-t/y Henty mine.

Production of 2.4 t/y at Western Mining Corporation's Lancefield mine ceased in 1994.

GoldCorp was set up by the Western Australian government to produce the series of Australian Nugget bullion investor coins, which come in denominations of two ounces, ten ounces, and one kilogram. Since the inception of the coinage program in 1987, more than 90 t of gold has been used. The Australian Mint also has a series of platinum and silver coins. In 1994, GoldCorp launched the "Aussie," which contains two 1-kg silver coins, a 2-oz gold coin, and a 1-oz platinum coin. GoldCorp is also Australia's largest gold refiner with a capacity of 150 t/y.

## New Zealand

New Zealand's gold production increased to 13 t in 1994 from 7 t in 1991. The Macraes Gold Project open-pit mine and the Golden Cross underground and open-pit mine each produced around 3 t. Macraes also started production at the Globe-Progress mine, which is expected to be in full production of 3 t/y by 1996.

Production from alluvial mines was estimated at 2.5 t.

## Papua New Guinea

Papua New Guinea's (PNG) gold production in 1994 was expected to have declined to 55 t from 62 t in 1993 and its 1992 peak of 70 t. Despite the decrease in production over the last two years, PNG's gold production is expected to exceed 70 t by 1998 if the Lihir mine is brought on stream.

The Porgera gold mine decreased its production from 46 t in 1992 to 36 t in 1993 and to 31 t in 1994. The decrease is attributed to declining gold grades from

36 g/t to 13.4 g/t, and to an explosion at the storage area. However, the drastic grade decrease was partly compensated for by an increase in milling capacity to 8900 t/d. A further increase in milling capacity of 17 700 t/d at a cost of US\$55 million was announced. The expansion, scheduled for completion in the first quarter of 1996, will ensure that cash costs remain around US\$200/oz for the remainder of the mine's life. Cash operating costs at Porgera in 1994 were US\$162/oz, compared to \$100/oz in 1992. The operation has 99.2 Mt of mineable reserves grading 4.7 g/t gold. The mine, located in Enga Province, is owned equally by Placer Pacific Ltd. (the operator), Highlands Gold (a 65% subsidiary of Australia's MIM Holdings), Renison Goldfields Consolidated, and the Government of Papua New Guinea (which previously held a 10% stake). The new PNG government elected to sell its equity share in the country's resource projects, including those in the Porgera and OK Tedi mines, and the future Lihir gold project.

The OK Tedi mine is owned by Broken Hill Pty. Co. Ltd. (52%), Metall Mining Corp. (18%), and the PNG government (30%). The OK Tedi mine has a production capacity of 11 t/y of gold and 200 000 t/y of copper. Reserves are 500 Mt grading 0.75% copper and 0.73 g/t gold, with a mine life of 15 years. In early May, it was reported that a Melbourne, Australia-based law firm had initiated an A\$4 billion law suit on behalf of local villagers regarding the discharge of pollutants from the mine.

Other operating gold mines in Papua New Guinea are Placer Dome's 60%-owned Missima mine, with production of 10 t. Missima has ore reserves of 22 Mt grading 1.2 g/t gold.

A production decision on the Lihir gold project is expected in the first part of 1995, with possible initial production by the middle of 1997. Development costs at Lihir are expected to be US\$625 million. Lihir is owned by RTZ Corporation PLC (30%), Niugini Mining (30%), the PNG government (15%), land owners of Lihir Island (15%), and Venezuelan Goldfields Ltd. (10%). Lihir is considered to be one of the world's largest undeveloped deposits outside South Africa with mineable reserves of approximately 104 Mt grading an average of 3.25 g/t gold, representing over 650 t of gold. The deposit could produce 19 t/y of gold; the cash operating cost is projected to be around \$185/oz in the first five years of the project.

## Commonwealth of Independent States

Gold production in the Commonwealth of Independent States (C.I.S.) was estimated to be 250 t in 1994. The general decline in production from a peak of over 285 t in 1989 is largely attributed to the exhaustion of some placer deposits (particularly in Russia) and a shortage of hard currency to buy equipment and supplies. About 20% of the C.I.S.'s annual gold production is believed to originate as by-product from base-metal operations, with the copper industry

accounting for 15% of gold production and the lead and zinc industry accounting for about 5%.

After the break-up of the former Soviet Union, the various producing federations decided to establish their own state-owned gold mining enterprises. Rozzoloto, which falls under the authority of Roscomdragmet, controls state gold production for Russia, while Uzbekzoloto controls production in Uzbekistan, and Kazzoloto controls it in Kazakhstan. In addition, each gold-producing region in Russia has at least one state-owned gold mining company.

### **Russia**

Russian gold production in 1994 was reported to have fallen to 140 t from 150 t in 1993. The largest areas of gold production in 1994 were in Magadan and Yakutia with 30 t each. Decreased Russian production can be attributed to declining reserves at several alluvial operations and taxes of between 70 and 75% on the gold produced, in addition to mandatory payments to governments. Other problems include high import taxes for machinery and a shortage of funds for geological surveys. About 70% of Russia's gold production comes from placer deposits, but these deposits account for only 30% of the total proven reserve base. As gold reserves are generally concentrated in large low-grade deposits, Russian gold production will likely continue to decline in the medium term.

The government is seeking to revitalize the lagging gold industry through the creation of a gold market, and plans to set up a Gold Club to facilitate that process. The Russian Gold Club would make accessible a variety of trading instruments, such as warrants, that are expected to provide funds to develop the gold industry. The Gold Club would control the circulation and price of gold while the government would retain its monopoly on gold refining and foreign trading. In addition to the creation of a Gold Club, the Russian government has also allowed 25 banks to handle gold operations.

International gold-trading rights are held by Vneshtorgbank. In addition, Roscomdragmet exercises state regulations over the extraction and production of precious metals and stones. Roscomdragmet is also responsible for ensuring the proper exploration of mineral resources, and the processing and distribution of precious metals and stones.

Russia's gold production is equally divided between state-owned enterprises and cooperatives known as Artels. There are about 350 producers with various forms of ownership, including 200 Artels which generally operate small placer deposits. Artels account for approximately 60% of total gold production. Gold from individual prospectors has increased rapidly over the past few years, but the future of the Artels is threatened by competition from the large state mining companies. Gold production from Artels mostly

originates from Magadan (20 t), Yakutia (16 t), and Chita (7.5 t).

The gold industry is of great importance to the Russian Federation. To address the problem of declining production, Russia has decided to open gold exploration to tenders in several regions. Until new mines enter into production, output is expected to continue to decline.

Cyprus Amax announced in late 1993 that an agreement was reached with the Government of Russia for the development of the Kubaka and Evenskoe gold projects in the Magadan region. Cyprus Amax, which owns 45% of the Omodon Mining Company, plans to start production in 1997 at a rate of 11 t/y.

ASARCO Incorporated and Grynberg Resources obtained a 50% ownership in the Kamgold joint venture to develop the Aginskoe deposit located in the Kamchatka region. Development of Aginskoe could start by the middle of 1995 upon receipt of a licence from the Russian government. Production could start in 1997 at a rate of 5 t/y.

RTZ Corporation PLC formed a joint venture with the Chelyabinsk regional administration and the local mining company Yuzhuralzoloto to develop the Svetlinskoe mine in the southern Urals. Svetlinskoe is expected to contain 70 t of gold and could increase output from its current level of 0.6 t/y to 5 t/y.

After a two-year delay, Star Technology Systems of Australia obtained a licence from the Russian government to develop the Sukhoi Log project in eastern Siberia. Sukhoi Log, in which Star Technology has a 35% interest, is reported to be one of the largest undeveloped gold deposits in the world.

Armada Gold of Canada acquired a 49% interest in the Baltails Joint Stock Co., which has rights to operate the Baley gold tailings project in the Chita region. According to pre-feasibility estimates, the tailings contain 42 Mt grading 1 g/t gold. A feasibility study is expected in 1995. Production at Baley could total 4 t/y.

The threat of major gold exports from Russia upsetting normal markets has diminished considerably in the past few years following the announcement that estimated bank reserves stood at 300 t.

In the future, declining reserves, increased domestic consumption, and increasing pressure from the republics to receive a greater return from their gold sales will reduce Russia's ability to sell gold to Western countries.

Uncertainty about Russia's legal framework and the jurisdictional conflicts between local and central authorities, as well as the State monopoly on gold extraction and marketing, make the current investment climate unattractive. It is reported that



Russia's gold mining industry would require investments of more than US\$10 billion in exploration, development and equipment replacement to modernize the gold industry.

### **Uzbekistan**

Uzbekistan's gold production in 1994 was estimated at 70 t and is expected to approach 100 t by 1996 once additional development projects are brought on stream.

The Muruntau low-grade open-pit mine was commissioned in 1969 and is reported to have an annual production of 55 t. The mine treats about 20 Mt/y of ore grading 3 g/t gold. The remainder of Uzbekistan's gold production is from the Almalik nonferrous complex.

Start-up at the Zarafshan tailings retreatment joint venture will start in 1995 at an annual rate of 15 t. The Government of Uzbekistan signed an agreement in early 1992 with Newmont Mining Corp. to create the 50-50 Zarafshan joint venture to process gold tailings from the Muruntau mine. Newmont expects that leaching of the stockpile will yield 150 t of gold over the life of the project. The capital cost has been estimated at US\$150 million with a duration of 16 years. The European Bank for Reconstruction and Development (EBRD) and a private bank consortium led by Barclays de Zoete Wedd are each lending \$52.5 million for the project.

Representatives of Lonrho Plc, the Uzbekistan government and the International Finance Corporation (IFC) agreed to develop the Amantaytua and Daughystau deposits south of the Zarafshan gold fields. Production is expected in 1996 at an initial rate of 10 t/y, rising to 16 t/y after four years. Reserves are expected to last at least 27 years. Capital costs are expected to total US\$250 million. Lonrho, who will be the operator with a 33% ownership, will contribute processing know-how such as the biological leaching process developed at the Ashanti mine in Ghana.

### **Kazakhstan**

Kazakhstan's 15-t/y gold production is derived mostly from the Ust-Kamenogorsk base-metal operation and the Tselinny mining and chemical plant slag heaps. To attract foreign investors, various measures were implemented, including a new law to regulate the extraction, processing, storage, and export and import of precious metals and stones.

Bakyrchik Gold PLC (BK Gold) and the Kazakhstan government started production at the Bakyrchik mine. BK Gold retained a 40% ownership in the mine and will be the mine operator, while the state mining company Altynalmas owns 60% of the joint venture. Initial production at Bakyrchik is expected to be 1.5 t/y of gold. The Bakyrchik mine contains

proven and estimated reserves of 31 Mt grading 9.11 g/t gold, equivalent to about 250 t of gold. The mine has been operating since 1965 with an estimated output of 0.5 t/y of gold. A further expansion at a capital cost of US\$100 million could increase output to 8 t/y by 1995. The cash production cost is expected to be US\$120/oz.

Goldbelt Resources of Vancouver received an operating licence from the Kazakhstan Ministry of Industry concerning the Leninogorsk gold and silver tailings project. Goldbelt, which is 61% owned by Pegasus Gold Inc., has a 50% interest in the project. The gold tailings contain 150 Mt of material grading 0.6 g/t gold and 4.8 g/t silver. The capital cost of this project is estimated to be US\$75 million. The project is expected to start in 1996 and gold production will total 5 t/y. Total gold production over the 15-year life of the project is expected to be 50 t at a cash operating cost of US\$135/oz. The U.S. Overseas Private Investment Corp. (OPIC) could provide up to US\$35 million in financing for the project.

### **Kyrgyzstan**

Kyrgyzstan gold production is almost exclusively produced at the Machmal mine at a rate of 3 t/y. However, by the year 2000, production could easily reach 20 t/y.

The Republic of Kyrgyzstan issued a concession to Cameco Corporation to proceed with the development of the Kumtor deposit. The Kumtor Operating Company will be 33% owned by Cameco, while the Kyrgyzstan government will own 67%. Production at the US\$325 million gold open-pit project is expected to start by 1997 at a rate of 15.6 t/y for a period of 11 years. Kumtor has total estimated reserves of 517 t of gold, of which 211 t are amenable to open-pit mining. Grades at Kumtor are 3.9 g/t gold. Cash operating costs at the Kumtor open-pit mine are expected to be US\$160/oz.

In late 1994, Cameco announced that financing of the Kumtor project was in place. A syndicate of Western banks will lend US\$120 million, while the European Bank for Reconstruction and Development and the Canadian Export Development Corporation could provide up to US\$130 million. Cameco will invest a further US\$45 million in equity in the project.

Brush Creek Mining and Development Co. Inc. and the Kyrgyzstan government signed an agreement to set up a joint venture to develop the Dzherul gold deposit. The capital cost of the project is expected to reach US\$200 million, with Brush Creek retaining a 30% interest. The deposit, which hosts reserves of 47 t, should allow an annual production of 5 t. The U.S. OPIC announced its intention to provide part of the financing of the development costs of the Dzherul project. Once the financing is completed, the mine is expected to take two years to be brought on stream.

## Asia and the Pacific

In addition to being a prolific region for gold production, Asian countries are the world's fastest growing gold markets.

### China

China's gold production was estimated at 135 t in 1994, a 6% increase over the 1993 estimate. It is reported that the majority of China's 460 mines produce less than 0.3 t/y of gold, while 40 operations produce more than 0.3 t/y. The majority of China's reserves are in the form of lode deposits (52%); the balance of the reserves is 17% in placers, and 31% are by-products of base-metal deposits (primarily copper). According to the China National Gold Corporation (CNGC), employment in China's gold production sector stands at around 150 000 employees. Currently, small- and medium-sized gold mines account for 80% of the country's gold production, but China plans to invest in large-scale operations over the next few years. Proven and probable reserves have grown 10 times larger between 1975 and 1992. Also, since gold mining in China is concentrated in shallow areas, efforts will be made to encourage deep mining. Gold production has grown rapidly in the past few years due to a number of government actions, including the introduction of the State Gold Administration in late 1988 and increased funding for mining and prospecting. The main organization dealing with gold production is the CNGC, which reports to the Ministry of Metallurgical Industry (MMI). The MMI's National Gold Administration Bureau, however, has responsibility for overall policy formulation.

Several factors prevent China from increasing its gold production faster. By law, gold producers have to sell their entire production to the People's Bank of China (PBOC). In addition to fixing the gold price, the PBOC has the power to limit production to authorized enterprises and has the monopoly over sales. It was estimated by Chinese authorities that, in 1993, the amount of gold purchased by the PBOC decreased by 32%, while gold production increased by 7%. In September 1993, the Chinese government changed its policy to try to attract gold producers by offering their purchased gold price at 10% below the world market price, which represents a significant increase over previous prices. In 1994, the China State Council issued a decree which reiterated that only the state has the right to deal in gold and ordered the closure of all private gold markets. In addition, the decree stated that "without the approval of the PBOC, any region, organization or individual should not produce, process, or purchase gold, or conduct wholesale and retail businesses of gold."

Gold smuggling occurs mostly between gold producers and converters (predominantly jewellery manufacturers). In addition, gold and gold jewellery imports are subject to duties and local taxes of 127%.

Also, the price that the PBOC charges gold converters is higher than the international price, thereby creating an incentive for illegal sales. There is significant gold smuggling to Hong Kong for finished gold products being exported illegally back to China. It was reported that in 1993 up to 20 t of gold were smuggled into China from Russia.

The Chinese government announced in early 1994 that it will levy a 1.2% value-added tax on all mining operations. The revenues from the tax, which became effective April 1, will be used to invest in geological prospecting. The tax rate is expected to increase to around 5% between 1996 and 2000. However, in view of decreasing gold sales to the PBOC, the government has given gold miners a two-year exemption from the new value-added tax.

Another factor that impacts on China's production growth is the 10% inflation rate for fuel, electricity, and construction materials. It is reported that certain high-cost mines employ up to 3000 employees while they produce only 1 t/y.

To pursue growth in gold production, the country announced that foreign companies will be allowed to engage in gold mining in China. China has made available to foreign companies 10 low-grade deposits with refractory ore grading less than 3.5 g/t gold.

In November 1994, Barrick Power Gold Corp. (a joint venture between Barrick Gold Corporation and Power Corporation of Canada) signed two letters of intent with the CNGC covering the development of the Paishanlou deposit in the Liaoning province and the Changkeng deposit in the Guangdong province. Barrick Power will acquire a 75% interest in the joint venture by providing management, technology and financing for the project's development. Barrick Power has been working on a pre-feasibility study of the Paishanlou project since early 1994. A joint-venture agreement with the CNGC must be signed before detailed work can begin. In 1995, Barrick Power plans a 50-hole drilling program to check the already-identified reserves of 30 t. A decision on whether to proceed will be taken by the end of 1995.

The Changkeng deposit is not as far advanced as the Paishanlou deposit, and further drilling will be conducted in 1995 to better delineate the reserves.

Vancouver-based Asia Minerals signed a joint-venture contract with Zhaoyuan City Gold Corp. to acquire a 50% interest in the Yingezhuang gold mine located in the Shandong province. Asia Minerals can earn a 50% interest in the joint venture by funding a US\$3.5 million feasibility study followed by a further US\$26.5 million in financing. The project will consist of expanding the mine throughput from 400 t/d to 2000 t/d. Reserves at the Yingezhuang mine are 19.4 Mt grading 2.4 g/t gold. The mine has been in production since 1992; its gold output was 0.3 t in 1993.

The Shandong province is reported to be the largest producer with about 25% (33 t) of China's gold production, followed by Henan and Hellongjiang with 10% each.

The CNGC also announced its intention to seek foreign assistance to build a gold refinery in the Hunan province.

Despite the austerity measures designed to reduce inflation after two years of 13% growth, economic activity was expected to have grown by 10% in 1994. According to estimates, China's gold demand in 1994 was expected to have grown slightly to approximately 400 t. Jewellery alone accounts for two thirds of the country's fabrication demand. China has over 400 gold jewellery manufacturers, compared to about 65 only 10 years ago. It is expected that Chinese consumers will continue to use gold as a hedge against inflation and currency devaluation. China's prospects for strong economic growth (around 10% in 1995) and high inflation should encourage further consumption of gold, particularly in jewellery. Also, it is expected that as the disposable income of the Chinese people increases, an important portion of their savings will be held in the form of gold.

China mints gold and silver 99.9%-pure Panda coins. The gold coins are available in five sizes ranging from one ounce to one twentieth of an ounce.

### **Japan**

The Hishikari gold-silver mine of Sumitomo Metal Mining Co., Ltd., located on Kyushu Island, is Japan's only gold mine with production estimated at 8.4 t in 1994. With the Eskay Creek mine in British Columbia, Hishikari is reported to be the richest gold mine in the world with average grades of 80 g/t gold and 35 g/t silver.

Japanese gold consumption was expected to have risen to 300 t in 1994, with 115 t resulting from jewellery consumption. Gold demand in 1993 and 1992 stood at around 290 t. Gold consumption is expected to grow because of the recovery in the Japanese economy, the strength of the yen, income tax cuts, and an increase in consumer Gold Accumulation Plans.

According to the World Gold Council (WGC), more than 130 000 Japanese people opened Gold Accumulation Accounts in 1994, raising the number to 530 000 accounts. Under the plan, investors deposit a minimum of 3000 yen each month. According to the WGC, gold demand created by these accounts was expected to total 30 t in 1994 compared to 33 t in 1993.

In 1993, Japan was also the world's most important fabricator of gold in the electronic (67 t) and dental (16.5 t) industries, accounting for 36.5% and 26% of the world market respectively.

After completing the sale of 220 t of commemorative coins of former Emperor Hirohito in 1990 and 60 t of coins of the new Emperor Hakehito in 1991, the Japanese Mint produced a new 18-gram coin in 1993 for the wedding of Crown Prince Naruhito. The new gold coin issue, which totalled 36 t, was made using existing stocks. Japan's Ministry of Finance has still not made a decision on the disposal of 90 t of gold coins that have been bought back from their owners since 1990.

### **Indonesia**

Indonesia's gold output almost quintupled in the last five years to reach 50 t in 1994. Indonesian production is expected to increase further in 1995 to 70 t.

The bulk of Indonesia's production is from Freeport McMoRan Copper and Gold Inc.'s Ertsberg/Grasberg copper-gold mine. The company will expand its operating capacity by the end of 1995 to produce around 47 t of gold following an increase in the daily milling capacity from 71 000 t to 115 000 t. Gold production by Freeport McMoRan was around 25 t in 1994, and it is expected to exceed 60 t by the year 2000. Proven and probable reserves stand at 1.13 billion t grading 1.42 g/t gold and 1.3% copper. These reserves represent over 1200 t of gold.

Indonesian gold production also increased due to the recent start-up of CRA's Kelian mine. Output at the Kelian mine in 1994 was 13 t. Companies associated with Kalimantan Gold are suing CRA for damages in the hostile takeover of Kalimantan in 1990. Since its opening in 1992, output at the Kelian mine has exceeded expectations.

The Mount Munro mine of Ashton Mining came on stream in 1993 at a production rate of 2.5 t/y of gold.

Another gold mine will come on stream in 1996 following Newmont Gold Corporation's announcement that it will commission the Minahasa mine in early 1996. The US\$130 million mine will produce 4.4 t/y of gold for a period of 13 years.

In addition, Newmont has announced that its Batu Hiau project is the single largest gold occurrence ever discovered by the company. Batu Hiau is reported to contain 400 t of gold.

### **Africa**

Following important investments by international development agencies and local governments on geoscience activities, as well as the revision of mining codes and investment laws, increased attention is being devoted to gold exploration in African countries.

## Ghana

Ghana's gold production has more than tripled in the past five years from 15 t in 1989 to 48 t in 1994. According to national authorities, production could reach 75 t by the end of the century due to good mineral potential and a liberalization of the country's mining laws.

Gold production at the Ashanti mine in 1994 was expected to total 25 t/y. This should increase to 30 t/y by 1995 following the start-up of the 220 000-t/m bioleaching plant. Production at the Ashanti gold mine is derived from underground, open-pit and tailings retreatment operations. Total reserves at the Ashanti mine are 74 Mt grading 7.6 g/t gold, which is equivalent to 560 t of gold. The mine, with 10 000 employees, has a cash operating cost of US\$175/oz.

Following a share issue, the Ashanti gold mine is owned by Lonrho plc (41.3%) and the Ghana government (31.3%), with institutional and private investors owning the remainder.

Cluff Resources Plc announced production start-up at the Ayanfuri gold mine. The open-pit heap leaching mine is expected to produce 1 t/y for the next 10 years.

Pioneer Group Inc.'s Terebie Goldfields mine plans to increase production from 5.5 t to 7.8 t, beginning at the end of 1995.

Ghana's other major gold producers are the Gencor Group's Bogosu mine (3 t), Golden Shamrock Mines' Iduapriem mine (5 t), and Gold Fields of South Africa's Tarkwa mine (1.4 t).

## Zimbabwe

Zimbabwe is Africa's third largest gold producer with production of around 20 t. In 1994, Kinross Gold Corporation increased gold production at the Blanket and Golden Kopje mines by over 30% to 1.2 t. In addition, the announcement of a gold tailings retreatment project at the Blanket mine should increase production by 0.5 t starting in 1995. Also, following the commissioning of Zimbabwe Ltd.'s Bundara mine at the end of 1994, output could increase by another 2 t in 1995.

Improvements to Zimbabwe's investment climate favour increased gold production in the future.

## Mali

Production at the Syama gold mine in Mali increased to 6 t/y in 1994. The mine is owned by BHP Minerals (65%), the Government of Mali (20%), and the International Finance Corporation (IFC) (15%). Reserves of oxidized material at the Syama mine are 2 Mt grading 3.7 g/t gold, and 4.5 Mt of sulphide ore grading 7.2 g/t gold.

Anglo American Corp. of South Africa Ltd. announced that production at the Sadiola mine will start in late 1996 at a rate of 11 t/y. Sadiola hosts reserves estimated at 50 Mt grading 2 g/t gold. Anglo American Corporation and International African Mining Gold Corp. (IamGold) each own 38% of the project, while the Government of Mali and the IFC own 18% and 6% respectively.

## Ivory Coast

Société des Mines d'Aféma (SOMIAF), a joint venture between Eden Roc Minerals Corp. and Société pour le Développement Minier de la Côte d'Ivoire (SODEMI), operate the Aniuri mine. Production reached 1 t/y in 1994 at a cost of US\$150/oz. Reserves are estimated at 1.4 Mt grading 4 g/t gold. At the Ity mine, which is 60% owned by the state mining agency SODEMI and 40% owned by Mines Or SA, gold production was 1.3 t in 1994.

## Latin America and Mexico

Major changes in investment and mining laws and relatively unexplored land have made Latin America a very active area for gold mining exploration and development. Currently, there are several foreign companies pursuing gold mining projects in Latin America, particularly in Chile, Peru, Mexico and Venezuela.

## Brazil

Brazil's gold production was expected to remain stable at around 75 t in 1994. Mining companies accounted for approximately 60% (45 t) of production in 1994, while the Garimpeiros' share of output continued to decline to 40% (30 t).

The decline in the Garimpeiros' production in the last few years was mainly due to the depletion of easily accessible alluvial gold deposits, more stringent environmental regulations, and land access to certain regions, particularly in the Amazon. Some states have prohibited gold prospecting by Garimpeiros due to pollution problems and because their presence usually discourages conventional mining companies from investing in the area. At the request of Indian bands, Brazilian government authorities attempted to evict the Garimpeiros from certain areas. Part of the concern results from the relatively uncontrolled mercury discharges from the Garimpeiros' operations. (Several organizations are pressuring Brazilian authorities to ensure that each miner uses a retort for greater recovery of mercury.) The number of Garimpeiros has substantially declined in the past five years from an estimated one million in 1989, the year when Brazilian gold production peaked at 101 t, to around 400 000 garimpeiros in 1994.

Mining investments in formal mining operations have consistently decreased since the signing of the 1988 Constitution limiting foreign direct investment

in new mining projects to 49%. Despite this, government authorities have continued attempts to promote investments by foreign gold producers through the sale of mining rights.

Production by the state-owned Companhia Vale Rio Doce (CVRD) was expected to reach 12.6 t in 1994 and about 18 t in 1995, making it Brazil's single largest gold producer. Currently, the company operates five gold mines; however, in the next few years CVRD plans to bring on stream the Almas and Caete projects with respective production levels of 5 t/y and 3.5 t/y. In addition, CVRD signed a joint-venture contract, involving Anglo American Corporation and the Mineracao Morro Velho, to conduct a \$20 million feasibility study on the Salobo copper-gold deposit. The capital cost of the project is US\$765 million and production is expected to start in 1998 at a rate of 8 t/y of gold and 150 000 t/y of refined copper. The company also plans to double production to 10 t/y from 1995 at the Igarape mine by spending US\$20 million. If all these projects come on stream, production at the state-owned CVRD could total 30 t/y by the year 2000. CVRD also announced that it had resumed exploration work at the Serra Pelada project. Although CVRD had the exploration rights at Serra Pelada, the company was unable to develop the project due to the presence of 10 000 Garimpeiros. The recent flooding of the site forced the Garimpeiros out of Serra Pelada. A major unknown that could significantly affect CVRD's expansion projects is the privatization plans by the Government of Brazil.

Mineracao Morro Velho S.A., a joint venture between Bozzano Simonson (51%) and Anglo American Corporation (49%), produced approximately 14 t of gold from its Raposos, Jacobina, Crixas, and Cuiaba mines in 1994. Combined gold reserves at these four mines are reported to be 150 t. Rio Paracatu Mineracao S.A., an association involving a Brazilian investor and RTZ Corporation PLC, produced around 5 t.

TVX Gold Inc. owns portions of three Brazilian operations. It has a 50% share in the Crixas Goias mine, a 23% share in the Brasilia mine, and a 50% share in the Novo Astro mine. The latter mine is expected to close in 1994 due to exhaustion of reserves. Together these three mines produced 11 t of gold in 1994. TVX's share of the production was 4.3 t.

### Chile

Chile's 1994 gold production was expected to grow by 10% to around 43 t. In 1994, approximately 6 t of gold, or 15% of Chile's production, was as a by-product of copper mining, with 60% coming from the two largest copper mines: Chuquicamata and La Escondida.

Following the acquisition of Lac Minerals Ltd., Barrick Gold Corporation became the operator of the

El Indio and Tambo mines, which together produced 6 t of gold in 1994. With the expansion of underground mining at the El Indio and Viento gold-copper mines, as well as a new 6000-t/d milling operation to treat ore from the Tambo mine, production is expected to reach 11 t in 1997.

Barrick Gold could also bring the Nevada exploration project, located 30 km north of the El Indio complex, on stream by 1997. The cost of developing this project, with reserves of 29 Mt grading 1.5 g/t gold, representing 73 t of contained gold, would be US\$200 million.

In 1995 alone, Barrick Gold Corporation plans to spend US\$145 million on the El Indio complex. A total of \$30 million will be spent on 120 000 m of diamond drilling. Barrick Gold Corporation plans to double gold reserves at the El Indio complex from the current level of 171 t within a two-year period.

In its second full year of production, the La Coipa mine of Placer Dome Inc. and TVX Gold Inc. produced around 3.5 t of gold and 200 t of silver. The capacity of the processing plant at the La Coipa mine increased from 15 400 t/d to 18 000 t/d. Reserves at the La Coipa mine are 60 Mt grading 1.3 g/t gold and 75 g/t silver. The mine, located at an altitude of 4000 m, should have a life of 12 years.

Cia Minera Can Can indicated that the Can Can mine, which came on stream in 1993, increased gold production to 2.2 t in 1994 from 1.3 t in 1993. The Can Can mine hosts reserves of 1 Mt grading 8 g/t gold and 60 g/t silver.

Codelco, with private joint-venture partners, decided to proceed with the exploitation of the Pajonales Occidental and Silica Roja deposits in the Copiaco region. These deposits, with reserves of 2 Mt grading 1.4 g/t gold, are adjacent to the El Hueso deposits of Homestake Mining.

Cyprus Amax and Bema Gold Corporation announced a production decision on the Refugio property. The US\$130 million heap leach mine is expected to produce 7 t/y of gold by 1996 for a period of 9.4 years. Total reserves are estimated at 70 t of gold. Reserves at the Refugio mine are 101 Mt grading 1 g/t gold.

Compania Minera Dayton de Chile Ltda plans to commission the 4-t/y Andacollo gold mine in 1995. The mine has reserves of 32 Mt grading 1.2 g/t gold. The development cost of the Andacollo project is expected to be US\$90 million and the mine should be in operation for a period of eight years.

Production is expected to start in 1995 at the La Candelaria copper-gold mine owned by Phelps Dodge Corp. and Sumitomo Metal Mining Company Ltd. The US\$1.5 billion project has reserves for 30 years containing 90 t of gold. Output is expected to be 2.5 t/y of gold and 100 000 t/y of copper.

Coeur d'Alene Mines Corp. plans to bring the Fachimal open-pit and underground mine in Southern Chile on stream in 1995. The mine is expected to cost US\$42 million and to produce 1.3 t/y.

If no additional reserves are found, the El Hueso mine of Homestake Mining Corporation will close in 1995. El Hueso had a production capacity of 2.2 t/y in 1994.

### **Peru**

In 1994, Peru became South America's third largest producer by increasing gold production from 30 t to 37 t. According to officials of the Energy and Mines Ministry of Peru, production could rise to 57 t by 1997, mainly due to the privatization of gold concessions and the liberalization of the gold market. About 35% of Peru's gold production is derived from placer operations.

The Yanacocha open-pit heap leaching mine of Newmont Mining (38%), Compania Minera Condessa (32.3%), Mines Or SA (24.7%), and the IFC (5%) is expected to become South America's largest gold mine in 1995 following a production increase from 7.8 t to 12.5 t. The production increase at Yanacocha was made possible following the start-up of the Maqui Maqui mine at a cost of US\$40 million.

Barrick Gold Corporation announced that gold reserves at the Cerro Corona project are 91 Mt grading 1.1 g/t gold and 0.5% copper, representing 90 t of gold. A production decision at Cerro Corona is expected once feasibility results are available in 1995.

### **Bolivia**

As with Peru, Bolivia's gold production is expected to rise rapidly from its 1994 level of 15 t following the privatization of assets and the opening of the gold market.

Battle Mountain Gold Co. (88%) and Zeland Mines SA (12%) are expected to produce 11 t in 1995 following a US\$150 million expansion program at the Korri Kollo mine. Current gold recoveries at the 19 000-t/d mine are 70%. The mine started production in 1993 at an initial rate of 7.6 t/y. Reserves at Korri Kollo are 45 Mt grading 2.3 g/t gold and 14.5 g/t silver.

### **Venezuela**

Venezuela's gold production, estimated at 11 t in 1994, was mostly attributed to placer mining by several small private miners.

Following the discovery of the Las Cristinas gold deposit in 1992, owned 70% by Placer Dome Inc. and 30% by Corporacion Venezolana de Guayana, several companies have focused on exploring in Venezuela.

According to Placer Dome's pre-feasibility estimates, the Las Cristinas mine has a resource estimate of 214 Mt grading 1.25 g/t gold. Gold production at Las Cristinas could be 12 t/y for a period of 13 years. Results of the Las Cristinas feasibility study are expected in 1995.

In the middle of 1994 Monarch Resources Ltd. commissioned the La Camorra gold mine in the southern Bolivar state. The La Camorra mine is expected to produce 2.5 t of gold in 1995. Monarch has been producing an average of 0.6 t/y of gold in Venezuela since 1989 at the Revemin processing plant (also in the Bolivar state).

In 1994, state-owned Minerven, a subsidiary of CVG, was Venezuela's single largest gold producer with an output of 2.8 t. The bulk of Minerven's production is from the Columbia mine near El Callao.

In order for Venezuela to become a major player in gold, several changes will have to take place with respect to mineral rights tenure, the obligation to sell gold to the central bank, currency controls, and investment laws. Local authorities expect that Venezuela's gold production could reach 50 t by the year 2000, compared to an estimated 15 t in 1994.

### **Argentina**

Argentina's gold production should grow from its current level of 1 t as several major mining companies were expected to spend around US\$40 million on exploration in 1994.

The most promising project is the Bajo de Alumbraera copper-gold project of International Musto Exploration and MIM Holdings Ltd. According to pre-feasibility estimates, this mine could produce between 15 and 20 t/y of gold over a period of 20 years.

In addition to production by small local private miners, the Angela underground mine operation owned by Cerro Castillo SA produced 0.5 t of gold in 1994.

In 1994, production started at the Cerro Mayal gold placer operation of Comal SA, Sikaman Gold Resources and Monk Gold. Production was expected to approach 0.8 t.

A US\$5 million gold refinery is expected to start production in the first part of 1995 in La Rioja province. It will have a capacity to process 50 t/y of gold and 220 t/y of silver. Almost all doré is expected to come from Chile.

### **Mexico**

Gold production in Mexico is also expected to grow from its current level of around 12 t, following an increase in foreign investment.

Currently, Industrias Penoles is Mexico's largest gold producer with an output of 7 t. In 1994, Penoles commissioned the La Cienega mine, which is expected to become Mexico's largest gold mine with an estimated output of 3.1 t.

Hecla Mining Company commissioned the La Choya heap leaching mine located in the state of Sonora at the end of 1993. Gold output at La Choya is expected to total 2 t in 1994 for a mine life of 2.5 years.

Eldorado Corp. commissioned the La Colorada mine, also located in Sonora State. The heap leaching operation has a production capacity of 0.7 t/y. However, annual gold output at la Colorada is expected to quadruple by 1996.

Amongst Mexico's most promising gold projects are Placer Dome Inc.'s 70%-owned Mulatos property in Sonora State with an identified geological resource of 30 t of gold; Cambior's and Corporación San Luis Metates' project in Durango State shows a preliminary inventory of 200 Mt grading 1.2 g/t gold.

### **Guyana**

Production at Omai Gold Mines Limited's Omai mine stood at around 8 t in 1994. An expansion of the 12 000-t/d mill to 18 000 t/d at a cost of US\$58 million should allow gold output to increase to 9.4 t in 1996. In 1994, total reserves at Omai increased by over 20% to 56 Mt grading 1.4 g/t gold. Omai Gold Mines Limited is owned by Cambior (65%), Golden Star Resources Ltd. (30%) and the Guyana government (5%).

### **Europe**

With privatization efforts and the greater accessibility of land, some mining companies regard Europe as a good place to invest. Currently, promising exploration projects are being explored, mainly in Hungary, the Czech Republic and Greece.

### **Bulgaria**

The Chelopec copper-gold mine, a joint venture between Navan Resources Plc (68%) and Chelopec ODD (32%), a Bulgarian state company, resumed production in 1994. Gold production is expected to peak in 1996 at a rate of 4 t. Reserves at Chelopec are estimated at 32.5 Mt grading 5 g/t gold and 1.4% copper.

### **Spain**

Caledonia Mining Corporation expects to triple its production to 2 t by 1996 at the Filon Sur gold mine in Spain.

## **Middle East**

### **Saudi Arabia**

Saudi Company for Precious Metals (SCPM), a joint venture between Trelleborg AB of Sweden and the Government of Saudi Arabia, produced around 3 t of gold at the Sukhaybarat mine. SCPM also announced that another deposit the size of Sukhaybarat is expected to come on stream in 1996.

A US\$6 million gold refinery with a treatment capacity of 100 t/y of gold will be built in Saudi Arabia. The new refinery is expected to start to process metal in November 1995, mostly from the Middle East and Africa.

### **Turkey**

Eurogold, a Turkish joint venture between Mines Or SA and Metall Mining, is spending US\$40 million to develop the Ovacik mine. Ovacik has reserves of 1.3 Mt grading 11.7 g/t gold, which should sustain a production level of 3.1 t/y for a period of eight years. The Ovacik project has been delayed for a few years because of the environmental approval process.

Turkey was the world's sixth largest gold product fabricator with 137 t in 1993. To promote its gold industry, Turkey recently launched a gold exchange.

### **Pakistan**

Saindak Metal plans to commission the Saindak gold-copper mine in February 1995. The Saindak mine, which was built by the China Metallurgical Construction Corp., is expected to produce 1.5 t/y.

## **CONSUMPTION AND USES**

Total world fabrication demand for gold in 1994 decreased by about 2% to reach 2900 t. Jewellery demand doubled in the past 10 years and exceeded total world production of gold by 165 t in 1994. Jewellery manufacturing decreased by about 1% to 2450 t in 1994. The main factor that contributed to reduced fabrication demand since the second quarter of 1993 was the increase in the price of gold. Gold consumption is particularly price-sensitive in Asia.

The outlook for an increase in jewellery demand is very favourable for the next few years, particularly in China, India, Japan, Singapore, Indonesia and Thailand as those markets adjust to higher gold prices.

Other important sectors where gold is in demand include electronics, dentistry and coinage. World

demand from the electronics sector in 1994 experienced an increase of around 4%, with Japan accounting for nearly 40% of fabrication in this sector. Demand for coinage declined by 40% from 119 t in 1993 to around 72 t in 1994. The decline was mostly due to the peak demand in 1993 resulting from the special 36-t coin issue in Japan. The coinage market is highly vulnerable to gold speculation trends and to commemorative coin issues. Dentistry fabrication was stable at around 60 t, with Japan accounting for 28% of that market.

Canada's gold fabrication demand in 1994 declined by 14.6% to around 20.5 t from an estimated 24 t in 1993. The decline is attributable to a decrease in sales of gold Maple Leaf coins from 13.6 t in 1993 to 9.5 t in 1994. Gold fabrication in Canada in 1994 included jewellery (10 t), electronics (0.5 t), and dentistry and other industrial uses (0.5 t).

The Royal Canadian Mint produces two official coins that contain gold: a numismatic gold coin containing one quarter of an ounce of gold, and the gold Maple Leaf coin. Since its introduction in 1979, the Maple Leaf coin program has consumed some 493 t of gold, or 27.8% of total Canadian production during that period. With the reintroduction of the Kruggerand bullion coin in 1994, the Royal Canadian Mint will face increased competition in this unstable market.

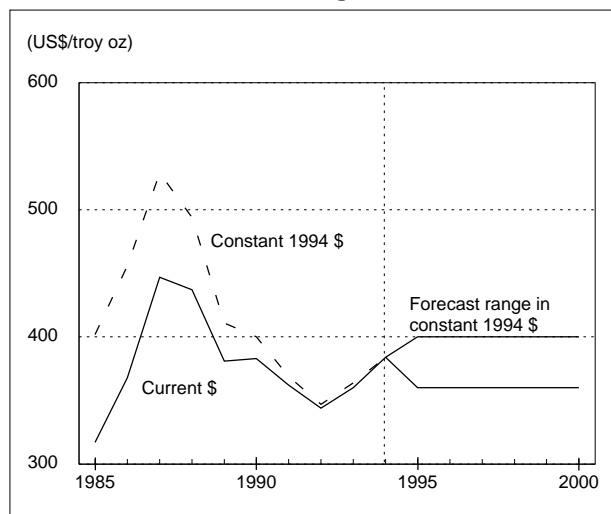
Since 1992 Canada has lost its leadership of the world gold coin production market. In 1994, the gold Maple Leaf coin ranked fourth after Austria's Philharmonic coin, the Australian Nugget and the American Eagle.

## OUTLOOK

The current economic recovery (mainly in the United States and Japan), increased interest rates that dampen inflation threats, and the relative stability of the world political climate should keep gold prices relatively stable in the short term. In 1995, an average gold price of US\$380/troy oz is forecast compared to \$384/oz in 1994. In the medium term, the combined effect of increased demand for gold products, particularly in the jewellery sector, along with a moderate increase in world gold production, should result in some strengthening in the price of gold. In 1995, a 3% recovery in total gold fabrication demand is anticipated, with the jewellery sector being responsible for most of that growth. However, total projected fabrication demand growth could be hindered by plans from the Japanese Ministry of Finance to sell 90 t of gold from previous coin issues. In addition to the current pressure on higher interest rates, mostly from the United States, we could see a decline in net investments as real interest rates show increases. For the rest of the decade, an average annual gold price of between US\$360 and \$400/oz, in constant 1994 dollars, is forecast.

*Notes: (1) For definitions and valuation of mineral production, shipments and trade, please refer to Chapter 60. (2) Information in this review was current as of February 15, 1995.*

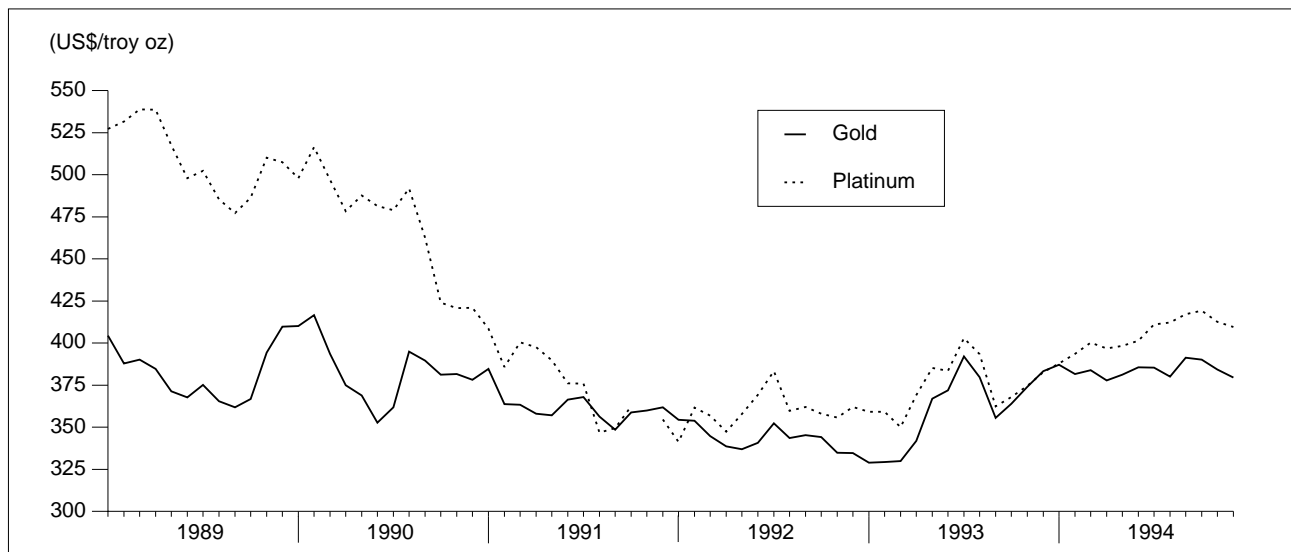
**Figure 3**  
Gold Prices, Annual Average, 1985-2000



Sources: London Bullion Market Association; Natural Resources Canada.



**Figure 4**  
**Precious Metal Prices, Monthly Averages, 1989-94**



Sources: London Bullion Market Association; Johnson Matthey Public Limited Company.

## TARIFFS

Item No.	Description	Canada			United States	E.U.	Japan <sup>1</sup>
		MFN	GPT	USA	Canada	MFN	GATT
71.08	Gold (including gold plated with platinum) unwrought or in semi-manufactured forms, or in powder form						
	Non-monetary						
7108.11.00	Powder	10.2%	7%	Free	Free	4.1%	Free
7108.12.00	Other unwrought forms	Free	Free	Free	Free	Free	Free
7108.13	Other semi-manufactured forms						
7108.13.10	Of a purity of 10 carats or more	Free	Free	Free	Free	0.5-1.8%	Free
7108.13.20	Of a purity of less than 10 carats	9.6%	6.5%	Free	Free	0.5-1.8%	Free

Sources: Customs Tariff, effective January 1995, Revenue Canada; Harmonized Tariff Schedule of the United States, 1995; The "Bulletin International Des Douanes," Journal Number 14 (16th Edition), European Economic Community, 1992-1993, "Conventional" column; 1st Supplement to Journal No. 14 (16th Edition), European Economic Community, 1993-1994, "Conventional" column; Custom Tariff Schedules of Japan, 1994.

<sup>1</sup> GATT rate is shown; lower tariff rates may apply circumstantially.

**TABLE 1. CANADA, GOLD PRODUCTION AND TRADE, 1993 AND 1994**

Item No.	1993		1994p		
	(kilograms)	(\$000)	(kilograms)	(\$000)	
<b>PRODUCTION</b>					
Newfoundland	x	x	x	x	
Prince Edward Island	—	—	—	—	
Nova Scotia	—	—	—	—	
New Brunswick	361	5 383	372	6 273	
Quebec	41 843	624 378	40 936	690 304	
Ontario	72 441	1 080 971	68 476	1 154 706	
Manitoba	3 001	44 776	2 456	41 415	
Saskatchewan	x	x	x	x	
Alberta	65	964	12	200	
British Columbia	13 865	206 898	12 266	206 834	
Yukon	3 538	52 795	3 218	54 269	
Northwest Territories	13 205	197 043	13 079	220 552	
Total	153 129	2 284 991	145 156	2 447 773	
Mine output	153 299	..	145 719	..	
<b>EXPORTS</b>					
2600.001	Gold in ores and concentrates	3 870	39 482	3 510	46 466
7108.11	Gold powder				
	Japan	—	—	167	3 275
	United Kingdom	—	—	115	2 174
	Belgium	—	—	260	383
	United States	873	11 767	18	311
	Total	873	11 767	560	6 145
7108.12	Other unwrought forms				
	United States	116 467	1 724 456	116 293	1 945 121
	Switzerland	43 403	640 856	38 180	639 651
	United Kingdom	11 562	178 810	21 275	357 210
	Hong Kong	4 154	55 111	11 637	194 032
	Taiwan	1 480	20 136	8 281	134 536
	Germany	2 680	39 505	3 947	68 036
	Argentina	527	8 087	1 893	31 355
	Japan	—	—	1 361	22 390
	Mexico	—	—	1 339	21 294
	Other countries	1 095	15 776	245	2 263
	Total	181 368	2 682 745	204 451	3 415 897
7108.13	Other semi-manufactured forms				
	United States	21 728	303 222	5 443	82 898
	Portugal	236	3 050	4	60
	Trinidad-Tobago	—	—	5	40
	United Kingdom	—	—	..	5
	Other countries	2	51	—	—
	Total	21 966	306 326	5 452	83 004
	Total refined gold exports	204 207	3 000 838	210 463	3 505 046
<b>IMPORTS<sup>2</sup></b>					
2600.003	Gold in ores and concentrates	3 234	35 199	1 898	24 434
7108.11	Gold powder				
	Ghana	—	—	40	239
	United States	12	116	11	127
	United Kingdom	..	5	3	23
	Germany	—	—	..	5
	Hong Kong	—	—	..	1
	Total	12	122	54	397
7108.12	Other unwrought forms				
	United States	38 460	492 157	22 152	232 055
	Guyana	9 421	131 062	11 543	175 302
	Nicaragua	3 718	14 838	1 355	7 571
	Switzerland	34	491	28	396
	Germany	13	150	25	297
	Other countries	2 074	29 782	50	960
	Total	53 720	668 488	35 153	416 587

TABLE 1 (cont'd)

Item No.	1993		1994 <sup>p</sup>		
	(kilograms)	(\$000)	(kilograms)	(\$000)	
<b>IMPORTS (cont'd)</b>					
7108.13	Other semi-manufactured forms				
	United States	644	6 428	1 154	11 105
	Switzerland	97	1 213	98	1 362
	Germany	16	226	20	271
	Italy	4	57	3	49
	United Kingdom	...	2	2	26
	France	...	...	1	23
	Austria	-	-	2	13
	Other countries	9	173	...	...
	Total	770	8 114	1 280	12 854
	Total refined gold imports	54 502	676 724	36 486	429 838

Sources: Natural Resources Canada; Statistics Canada.

- Nil; . . . Amount too small to be expressed; <sup>p</sup> Preliminary; <sup>x</sup> Confidential.

<sup>1</sup> Includes HS classes 2603.00.82, 2607.00.82, 2608.00.82, 2616.10.82 and 2616.90.82. <sup>2</sup> Imports from "Other countries" may include re-imports from Canada. <sup>3</sup> Includes HS classes 2603.00.00.82, 2604.00.00.82, 2607.00.00.82, 2608.00.00.82, 2616.10.00.82 and 2616.90.00.20.

Note: Numbers may not add to totals due to rounding.

TABLE 2. CANADA, GOLD PRODUCTION BY SOURCE, 1975, 1980, AND 1985-94

	Auriferous Quartz Mines		Placer Operations		Base-Metal Ores		Total	
	(kg)	(%)	(kg)	(%)	(kg)	(%)	(kg)	(%)
1975	37 530	73.0	335	0.6	13 569	26.4	51 433	100.0
1980	31 929	63.1	2 060	4.0	16 632	32.9	50 620	100.0
1985	67 241	76.8	3 464	4.0	16 857	19.2	87 562	100.0
1986	83 197	80.9	2 802	2.7	16 900	16.4	102 899	100.0
1987	94 723	81.8	4 009	3.5	17 086	14.8	115 818	100.0
1988	112 404	83.4	4 879	3.6	17 530	13.0	134 813	100.0
1989	138 211	86.6	5 354	3.4	15 930	10.0	159 494	100.0
1990	147 355	88.0	3 993	2.4	16 025	9.6	167 373	100.0
1991	153 859	87.8	3 834	2.2	17 589	10.0	175 282	100.0
1992	141 965 <sup>r</sup>	88.5	3 469	2.2	14 917	9.3	160 351 <sup>r</sup>	100.0
1993	137 346	89.7	3 787	2.5	11 997	7.8	153 129	100.0
1994 <sup>p</sup>	132 014	90.9	3 650	2.5	9 493	6.5	145 156	100.0

Sources: Natural Resources Canada; Statistics Canada.

<sup>p</sup> Preliminary; <sup>r</sup> Revised.

Note: Numbers may not add to totals due to rounding.

**TABLE 3. WORLD MINE PRODUCTION OF GOLD, 1980 AND 1988-93**

	1980	1988	1989	1990	1991	1992	1993
	(tonnes)						
South Africa	675.1	621.0	607.5	605.1	601.1	614.1	619.5
Canada <sup>1</sup>	50.6	134.8	159.5	167.4	175.3	160.4	153.1
United States	30.5	201.0	265.7	294.2	296.0	329.1	336.0
Other Africa							
Ghana	10.8	12.1	15.3	17.3	27.3	33.0	41.4
Zimbabwe	11.4	15.5	16.6	17.9	19.3	20.3	21.4
Other	11.0	40.0	35.8	34.3	41.9	44.3	45.9
Total, other Africa	33.2	67.6	67.7	69.5	88.5	97.9	108.7
Latin America							
Brazil	35.0	102.2	101.2	84.1	78.6	76.5	75.7
Chile	9.3	26.7	29.0	33.3	33.0	39.3	39.5
Colombia	17.0	33.4	31.7	32.5	30.7	29.9	26.4
Peru	5.0	10.0	12.6	14.6	15.1	18.0	23.5
Venezuela	1.0	20.0	17.1	14.2	13.2	11.7	11.2
Bolivia	2.0	9.0	11.5	10.4	10.0	7.9	12.1
Guyana	—	—	2.0	2.5	2.8	3.4	10.2
Mexico	5.9	10.4	10.8	9.6	8.5	10.4	10.9
Ecuador	0.7	9.0	11.3	9.3	7.5	6.8	6.6
Other	15.6	14.0	9.8	9.1	9.0	9.2	8.5
Total, Latin America	91.5	234.7	237.0	219.6	208.4	213.1	224.6
Asia							
Indonesia	2.1	12.3	10.8	13.3	18.4	40.4	46.3
Philippines	22.0	39.2	38.0	37.2	30.5	27.2	28.0
Japan	6.7	7.3	6.1	7.3	8.3	8.9	9.4
Other	5.0	11.1	13.5	13	14.3	15.9	18.1
Total, Asia	35.8	69.9	68.4	70.8	71.5	92.4	101.8
Europe	11.8	21.7	29.5	35.6	32.3	25.3	25.6
Oceania							
Australia	17.0	157.0	203.6	244.2	236.2	243.5	247.2
Papua New Guinea	14.3	36.6	33.8	33.6	60.8	71.2	61.8
Other	1.0	6.6	9.4	10.1	10.3	14.3	15.0
Total, Oceania	32.3	200.2	246.8	287.9	307.3	329.0	324.0
Total, Western World	960.8	1 550.9	1 682.1	1 750.1	1 780.4	1 861.3	1 893.0
Other countries							
C.I.S.	..	280.0	285.0	270.0	252.0	237.0	244.0
China	..	78.0	86.0	95.0	110.0	118.0	127.0
North Korea	..	..	9.5	13.0	13.0	17.0	15.0
Mongolia	..	..	5.0	5.0	4.0	4.0	4.0
Total, other countries	..	358.0	385.5	383.0	379.0	376.0	390.0
Total, world production	..	1 908.9	2 067.6	2 133.0	2 159.4	2 237.3	2 283.0

Source: Consolidated Gold Fields PLC, "Gold 1994."

.. Not available.

<sup>1</sup> Production figures for Canada were obtained from Natural Resources Canada.

**TABLE 4. CANADA, GOLD PRODUCTION, AVERAGE VALUE AND PERCENT OF TOTAL MINERAL PRODUCTION, 1975, 1980, AND 1985-94**

	Total Production	Total Value	Average Value <sup>1</sup>	Gold as a Percent of Total Mineral Production
	(kg)	(\$000)	(\$/g)	(%)
1975	51 433	270 830	5.27	2.0
1980	50 620	1 165 416	23.02	3.7
1985	87 562	1 219 653	13.93	2.7
1986	102 899	1 689 292	16.42	5.2
1987	115 818	2 204 472	19.03	6.1
1988	134 813	2 331 989	17.30	6.3
1989	159 494	2 315 860	14.52	5.9
1990	167 373	2 407 654	14.38	5.9
1991	175 282	2 338 614	13.34	6.7
1992	160 351 <sup>r</sup>	2 141 161 <sup>r</sup>	13.35	6.0
1993	153 129	2 284 991	14.92	6.2
1994 <sup>P</sup>	145 156	2 447 773	16.86	6.1

Sources: Natural Resources Canada; Statistics Canada.

<sup>P</sup> Preliminary; <sup>r</sup> Revised.

<sup>1</sup> Value is based on average gold London p.m. fix price.

**TABLE 5. GOLD FABRICATION IN DEVELOPED AND DEVELOPING COUNTRIES, 1980 AND 1987-93**

Fabricated Gold	1980	1987	1988	1989	1990	1991	1992	1993
	(tonnes)							
<b>DEVELOPED COUNTRIES</b>								
Carat jewellery	318	577	662	802	854	866	907	865
Electronics	93	117	125	129	137	141	130	141
Dentistry	63	45	47	47	48	51	55	54
Other uses	58	52	54	57	57	57	60	59
Medals and fake coins	18	6	7	8	8	9	6	5
Official coins	170	166	88	88	89	121	77	99
Subtotal	719	963	983	1 131	1 193	1 245	1 235	1 223
<b>DEVELOPING COUNTRIES</b>								
Carat jewellery	196	661	895	1 121	1 209	1 276	1 567	1 437
Electronics	2	9	10	10	12	12	13	15
Dentistry	2	4	4	5	5	5	6	6
Other uses	4	6	7	8	10	10	22	33
Medals and fake coins	3	10	12	13	13	18	23	19
Official coins	21	36	42	47	29	18	13	16
Subtotal	228	726	970	1 204	1 278	1 339	1 644	1 526
<b>TOTAL</b>								
Carat jewellery	514	1 238	1 557	1 923	2 063	2 142	2 474	2 302
Electronics	95	126	135	139	149	153	143	156
Dentistry	65	49	49	52	53	56	61	60
Other uses	62	58	61	65	67	67	82	92
Medals and fake coins	21	16	19	21	21	27	26	24
Official coins	191	202	130	135	118	139	90	115
Total	946	1 689	1 951	2 335	2 471	2 584	2 876	2 749

Source: Consolidated Gold Fields PLC, "Gold 1994."

Note: Numbers may not add to totals due to rounding.

**TABLE 6. AVERAGE ANNUAL GOLD PRICES, 1934-94, AND MONTHLY, 1991-94**

Year	US\$/oz	C\$/oz	Year	US\$/oz	C\$/oz
1934-67	35	. .	1981	459.22	550.57
1968	38.82	41.82	1982	375.52	463.51
1969	41.13	44.29	1983	423.52	521.82
1970	35.97	37.54	1984	360.63	466.99
1971	40.87	41.27	1985	317.35	433.21
1972	58.22	57.66	1986	367.58	510.73
1973	97.22	97.24	1987	446.66	592.18
1974	158.80	155.36	1988	436.45	554.76
1975	160.96	163.76	1989	381.27	451.33
1976	124.78	123.01	1990	383.72	447.79
1977	147.80	157.10	1991	362.34	415.09
1978	193.51	220.74	1992	343.86	415.23
1979	305.69	358.12	1993	360.06	464.35
1980	614.38	719.08	1994	384.15	524.60

Month	1991		1992		1993		1994	
	(US\$/oz)	(C\$/oz)	(US\$/oz)	(C\$/oz)	(US\$/oz)	(C\$/oz)	(US\$/oz)	(C\$/oz)
January	384.59	444.35	354.44	409.66	328.99	420.28	387.14	509.53
February	363.75	420.08	353.85	418.14	329.31	415.13	381.66	518.66
March	363.39	420.37	344.70	410.88	329.89	411.34	384.00	523.87
April	358.05	412.85	338.63	402.36	341.95	431.37	377.91	522.70
May	357.12	410.54	336.95	404.10	367.04	465.96	381.18	526.06
June	366.45	419.08	340.78	407.68	371.98	475.61	385.71	533.63
July	367.98	422.65	352.45	420.05	392.03	502.66	385.45	532.98
August	356.31	408.00	343.60	408.99	379.80	496.28	380.21	524.14
September	348.50	396.19	345.30	421.51	355.56	469.45	391.37	529.95
October	358.82	404.88	344.28	428.73	363.99	482.54	390.16	526.82
November	359.96	406.78	334.92	424.48	373.94	492.37	384.38	524.32
December	361.88	414.40	334.66	425.96	383.40	510.57	379.48	526.91

Source: London Bullion Market Association, a.m. fix, compiled by Natural Resources Canada.

. . Not available.