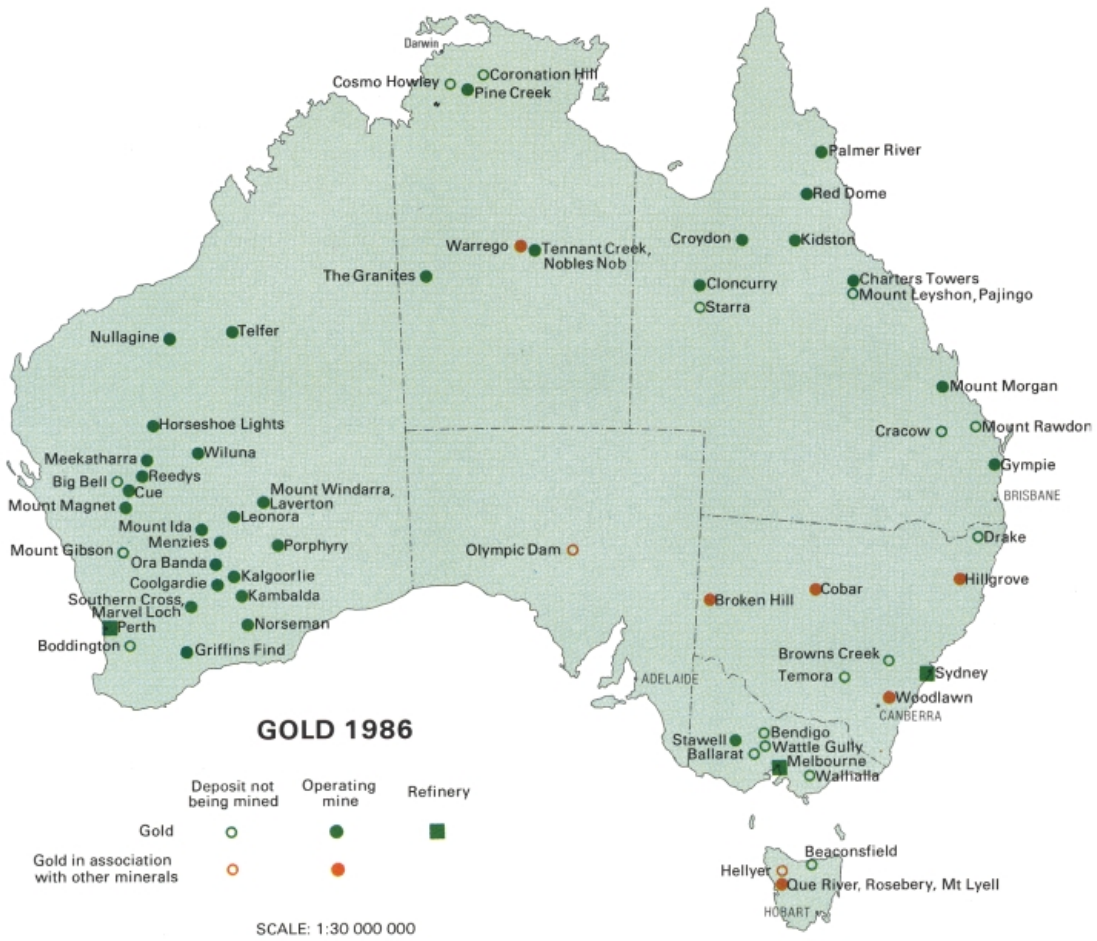
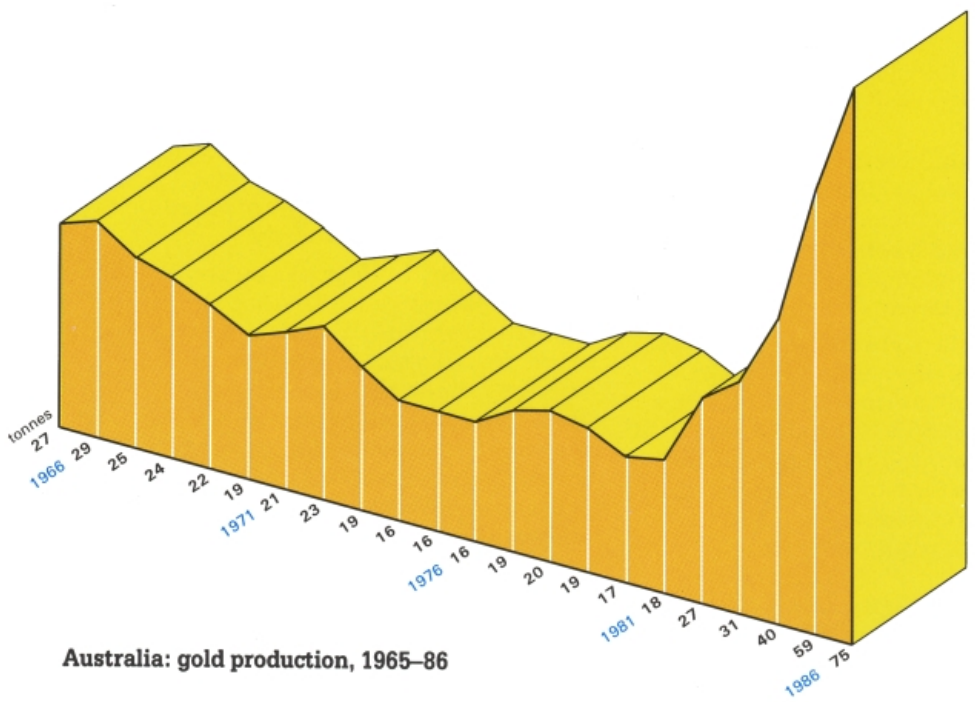
Gold





Australia: gold production, 1965–86

Australia is currently the world's fifth largest gold producer, after the Republic of South Africa, U.S.S.R., U.S.A. and Canada, and exports around 80% of its annual output. The next few years are likely to see Australia move into fourth place, with recent projections indicating that the remarkable growth in Australian gold production which began in the early 1980s will continue in the foreseeable future.

Gold mining in Australia dates from the middle of last century. Indeed, the fledgling Australian mining industry was transformed with the discovery of gold near Bathurst in 1851 and subsequent major gold rushes elsewhere in New South Wales, and in Victoria, Queensland and Western Australia. These rushes drew thousands of immigrants and trebled the population to over 1 million within 10 years. Between 1855 and 1860 Australia displaced the U.S.A. as the world's leading gold producer and in the decade to 1860 produced 40% of the world's gold. Over this period gold accounted for 90% of the value of Australian mineral production. In 1903 annual output peaked at 119 t, an amount not since equalled though likely to be eclipsed before 1990.

The economic importance of gold to Australia declined from the early 1900s onwards, with the industry at its lowest ebb in the mid 1970s. However, greatly increased gold prices in 1980 following international unrest led to a resurgence in gold mining. This was reflected in the reopening of a number of old mines, including **Mount Magnet**, Lancefield (near **Laverton**) and some of the 'Golden Mile' mines at **Kalgoorlie**; in the development of new projects; and in heightened exploration activity.

For the new mines traditional selective mining techniques have generally given way to bulk handling and opencut mining methods, making large lower grade deposits increasingly viable. A further stimulus has been the introduction of modern ore-processing technology which has raised gold recovery levels. In many areas the retreatment of old tailings dumps has also been taking place.

Australian gold production more than doubled between 1980 and 1984 to 40 t before almost trebling over the next three years to around 110 t in 1987. This enormous increase has resulted mainly from the commissioning of new mines and expanded output from established mines in response to the continuing favourable world price for Australian gold.

Western Australia remains the largest gold producing state, accounting for just over 70% of the national total in 1986—see diagram to the left. Output is dominated by **Telfer** (Australia's second largest producer in 1986), **Norseman**, **Kambalda** and mines in the **Kalgoorlie** area.

Queensland has recently overtaken the Northern Territory as the second largest gold producing state. The **Kidston** mine—in 1986 Australia's largest producer of gold, with a yield of nearly 7.5 t—is primarily responsible for Queensland's position. Treatment of tailings at **Mount Morgan** has produced about 1.5 t of gold annually in recent years. The **Mount Leyshon** and **Red Dome** mines were commissioned during 1986 and gold is also extracted from numerous smaller mines.

Northern Territory gold comes from mines in the **Tennant Creek** area, from **Pine Creek** and **The Granites** mine (which opened in 1986). In New South Wales gold is mainly a by-product of base metal mining at **Broken Hill** and **Woodlawn** and of antimony mining at **Hillgrove.**

The Defiance and Orchin gold mines near Kambalda (W.A.)
Recent expansion and redesign of these opencut mines (right) has allowed deeper mining. Together with other gold operations in the area, they produced nearly 4 t of gold in 1986–87.

Prospecting for gold near Seymour (Vic.)
The high price of gold in recent years and the ready availability of electronic metal detectors has brought about a marked resurgence in gold prospecting.

Victorian gold production revived in the 1980s with the reopening of the **Wattle Gully** mine (since closed again). **Stawell** is currently Victoria's dominant gold mine and in 1986 produced nearly 85% of the state total of just over 1 t. Gold from Tasmania is a by-product of copper mining at **Mount Lyell** and of lead–zinc–silver mining at **Rosebery** and **Que River.**

In most states a significant number of gold deposits are being evaluated and developed. For example, in Queensland there are the **Pajingo**, Starra (south-east of Mount Isa) and **Cracow** deposits and in New South Wales the Browns Creek (just south-west of Orange) and **Temora** deposits. In Victoria a number of small mines are being reopened including Gaffneys Creek (east of Healesville) and at Harrietville (south-east of Beechworth). There is also considerable exploration activity focused on the former gold mining centres of Ballarat, Bendigo and **Walhalla**. In Tasmania the old **Beaconsfield** mine is being rehabilitated. Although almost no gold is produced in South Australia the **Olympic Dam** copper–uranium–silver–gold deposit, currently under development, is an important potential source.

Exploration in Western Australia has continued at a high level resulting in the discovery of numerous economic deposits, the more notable being **Boddington**, **Big Bell** and **Mount Gibson**. The mine being developed at Boddington, where production commenced in 1987, is destined to rapidly become one of Australia's largest gold producers, with production estimated at about 9 t a year when fully operational. In the Northern Territory the Cosmo Howley (south-east of Darwin) and **Coronation Hill** deposits are both being developed.

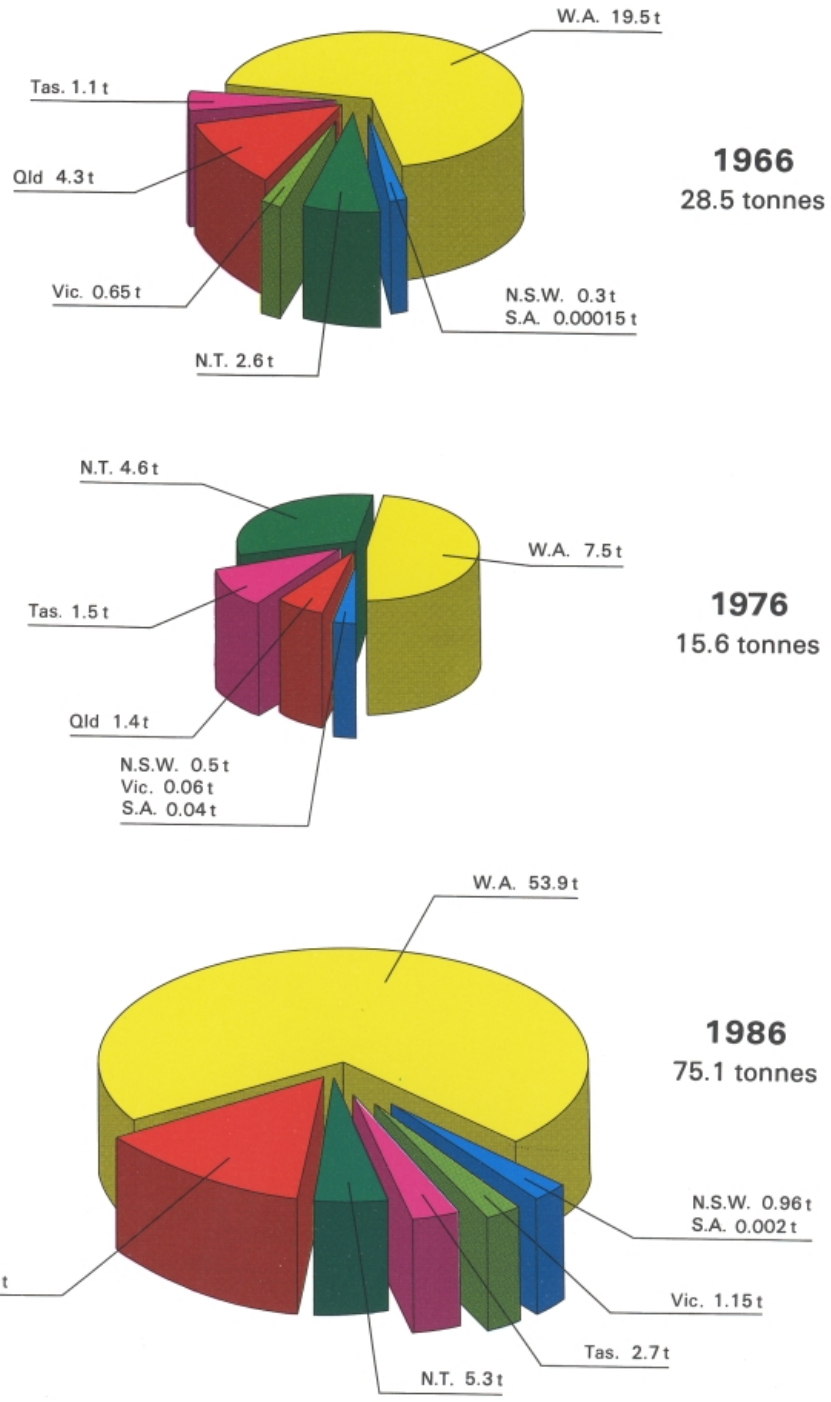
Since the Second World War there have been, surprisingly perhaps, only five completely new gold finds in areas where gold was never previously thought to occur. These are **Telfer** and **Boddington** in Western Australia, **Olympic Dam** in South Australia, and Starra (south of Cloncurry) and **Pajingo** in Queensland. All other currently known deposits or mines are in, or are extensions of, gold-bearing zones first discovered and mined last century or early this century.

The **Perth** Mint produces the bulk of Australia's refined gold. It is one of only three refineries in Australia which presently meet the metal specifications of the London Gold Market. Plans are underway to raise the refining capacity of the Perth Mint, with the construction of new facilities in Perth and a smaller refinery in Kalgoorlie.

Australia is only a small consumer of gold and in 1986 exported nearly 59 t of gold, about 40 t going to Japan. Other important destinations were Hong Kong, U.K., Singapore and West Germany.

The properties that have given gold its special value throughout history are its rarity, high density, colour, lustre and chemical inertness. These qualities have favoured gold as a medium of exchange and investment, as a standard for monetary systems and for jewellery. Since the advent of the electronic age gold has also emerged as an essential industrial mineral while continuing to retain its traditional status.

The strong international market for gold partly reflects the move by many countries, particularly Japan, to produce official and commemorative gold coins. Also contributing to demand is the fact that many countries now permit individuals to hold gold in the form of bullion.



Gold production by state

The legendary 'Golden Mile' at Kalgoorlie (W.A.)
The 'Golden Mile' identifies the famed string of gold lodes—first exploited in 1893—stretching between Kalgoorlie and Boulder. Measuring some 4 km by 1.2 km and extending at least 1.5 km in depth, this gold orebody is one of the world's richest. Over the next few years the landscape is likely to change dramatically with vast opencut mines replacing underground mines.