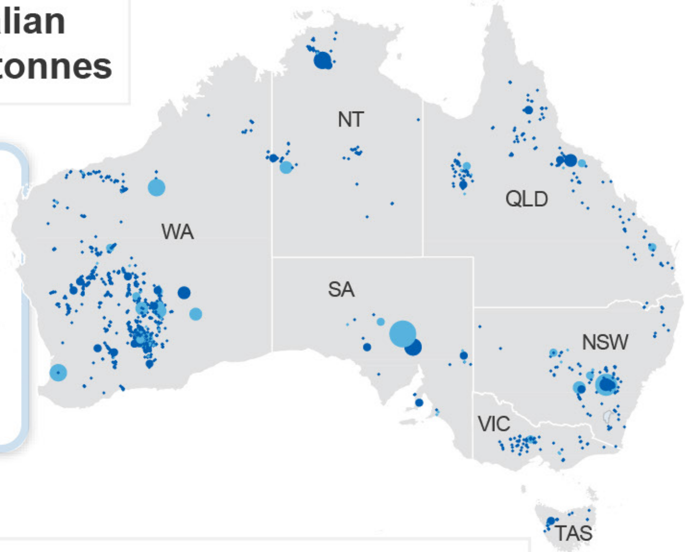
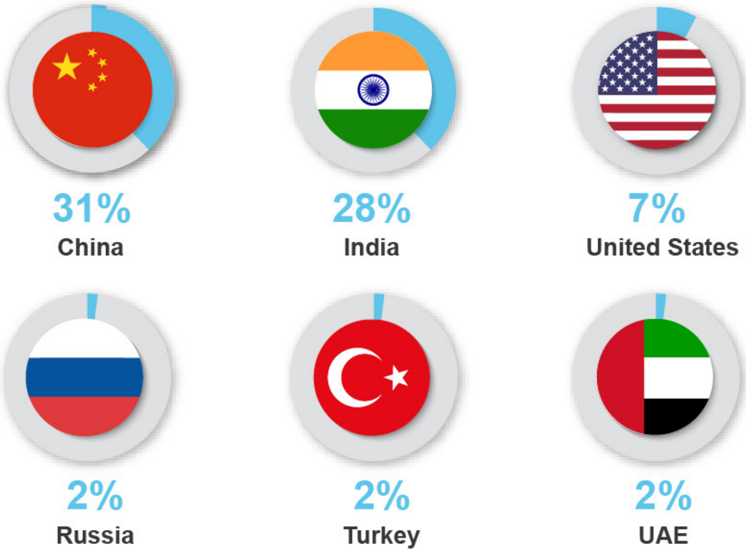
79 Au 196.967 Gold

Major Australian gold deposits, tonnes



World jewellery consumer markets



Gold

Gold is a critical component in **COVID-19 diagnostic tests**

The US holds the largest stockpile of gold reserves, at **8,133 tonnes**

In 2021 jewellery fabrication made up **55% of global gold use**

Gold only makes up **3 parts per billion** of the Earth's outer layer

Australia's gold

World's 2nd largest producer of gold in **2021**

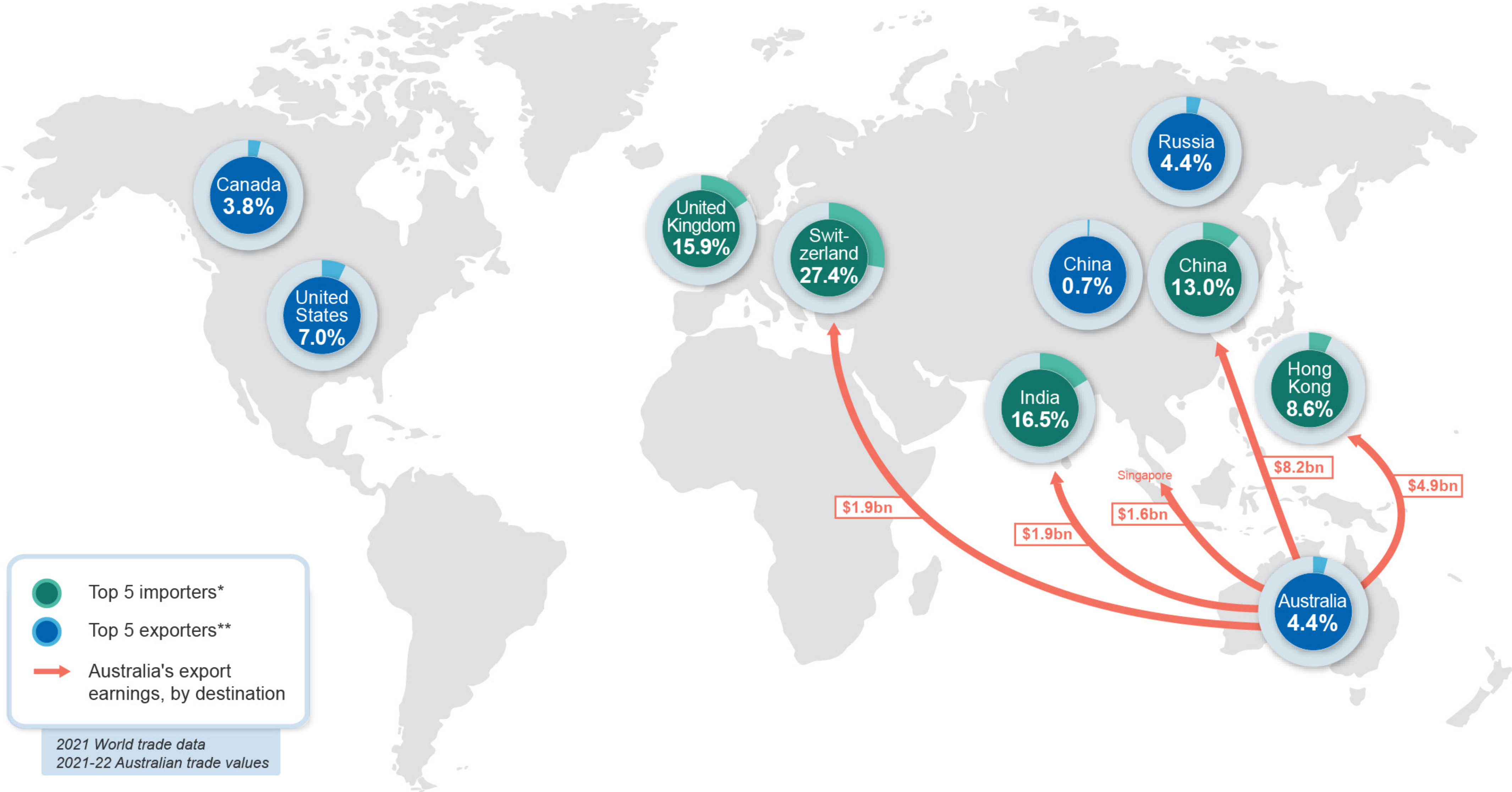
Largest known share of gold resources at **21%**

Largest gold coin ever created, cast by Perth mint

Gold

79 Au 196.967

Trade map | September 2022



* % of world imports (including ETFs and other investments)

** % of gold export from top 5 gold producing countries

10.1 Summary

- Gold prices averaged US$1,872 an ounce in the June quarter 2022, before falling to an average of about US$1,730 an ounce in the September quarter 2022. Prices came under pressure from the strong US dollar and rising bond yields, following aggressive US monetary tightening and heightnened uncertainty over global economic growth.
- Australian gold mine production in the June quarter 2022 was 0.9% higher year-on-year at 81 tonnes. Labour and skill shortages were still affecting mining operations, however production was 10% higher than the disrupted March quarter 2022 (see Australia section).
- Gold earnings are forecast to rise from $23 billion in 2021–22 to about $25 billion in 2023–24, as rising export volumes outweigh lower prices.

10.2 World consumption

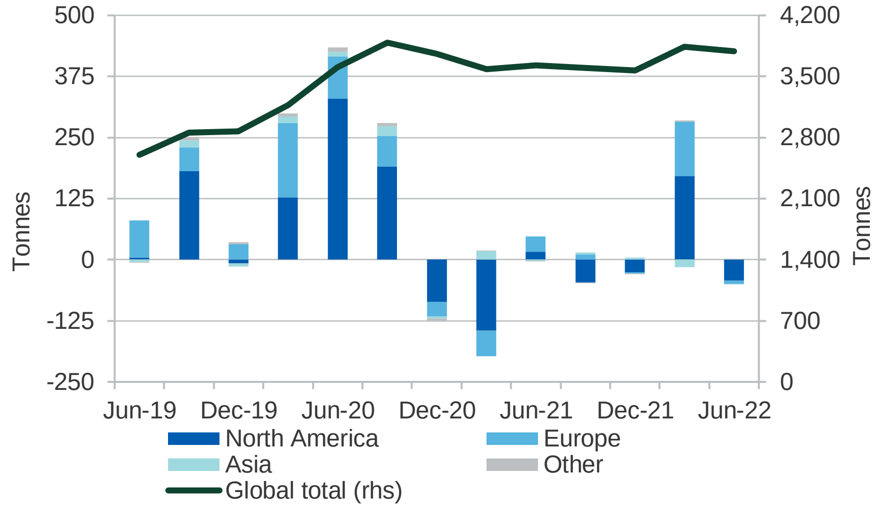
World gold consumption increased in the first half of 2022

World gold demand increased by 12% year-on-year to 2,189 tonnes in the first half of 2022. This increase was driven by strong flows into US and European gold-backed exchange-traded funds (ETFs), which gained 234 tonnes, compared to an outflow of 127 tonnes in 2021 (Figure 10.1).

Heightened geopolitical risk following Russia's invasion of Ukraine, weaker equity markets and mounting inflation concerns, drove significant investment flows into safe-haven assets (such as gold ETFs) from January-April 2022. From May 2022, rising real bond yields and a strong US dollar eroded gold's appeal to investors, leading to ETF outflows and lower gold prices over the remainder of the June quarter 2022.

Official sector buying (central banks and other government financial institutions) fell by 17% year-on-year to 270 tonnes in the first half of 2022. According to the World Gold Council, Turkey and Egypt were the largest purchasers, collectively buying 107 tonnes of gold during the quarter. Kazakhstan was the largest seller, with net sales of 18 tonnes of gold from their reserves in the first half of the year, followed by the Philippines with 6 tonnes and Germany with 4 tonnes.

Figure 10.1: Changes to gold held in global ETFs



Source: World Gold Council (2022)

Consumer demand for gold (jewellery, gold coins and bars) was weaker during the first half of 2022, partially offsetting the strong ETF inflows. As a result, gold jewellery consumption declined by 2.2% year-on-year to 928 tonnes in the first half of 2022, driven by weaker demand from China.

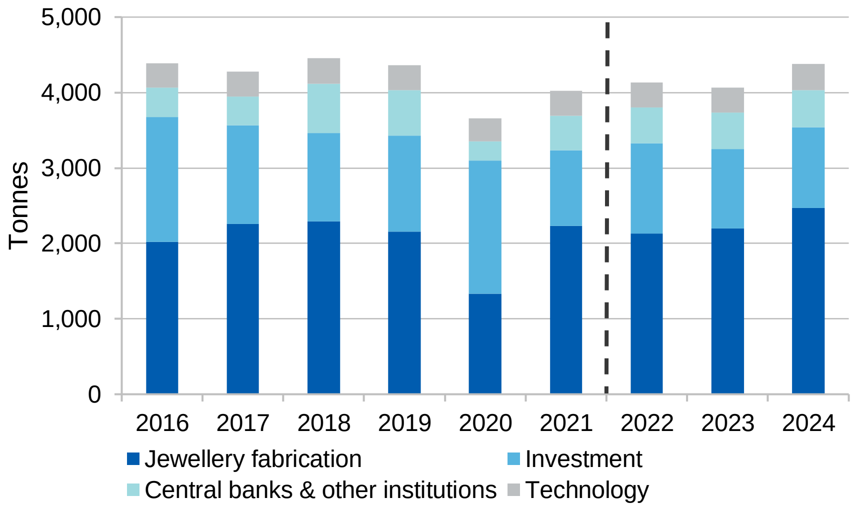
Jewellery consumption in China fell by 23% year-on-year to 384 tonnes. Demand was weakened by lockdowns in major cities throughout April and May, while COVID-related mobility restrictions across the country affected millions of consumers. Local currency depreciation and increased precautionary saving by Chinese households also contributed to weak jewellery demand amidst the ongoing economic uncertainty.

Retail investment in gold bars and coins was 12% weaker year-on-year during the first half of 2022, with investors purchasing 526 tonnes of gold. Lockdowns in major Chinese cities resulted in bar and coin investment falling by 40% year-on-year to 87 tonnes. Festival-related purchases in India lifted bar and coin investment 11% higher to 72 tonnes in the first half of 2022, partially offsetting weaker demand in China.

Investment demand to push gold consumption higher in 2022

World gold consumption is forecast to increase by 2.7% to 4,129 tonnes in 2022, driven largely by stronger investment demand — rising by 18% year-on-year (Figure 10.2). Investment demand (gold-backed ETFs or bar and coin holdings) has been revised down to 1,193 tonnes in 2022; this is 7.1% lower than forecast in the June 2022 *Resources and Energy Quarterly*. While investment in gold-backed ETFs was strong in the first half of 2022, ongoing strength in the US dollar and the potential for inflation to be lessened (mainly by tighter monetary policy in the US), have created headwinds for investment. This change in investor sentiment emerged in July 2022, with 81 tonnes of outflows from global gold ETFs, according to the World Gold Council. Investment demand is expected to remain supported by ongoing geopolitical and economic uncertainty through to the end of the year.

Figure 10.2: World gold demand by sector



Notes: **f** Forecast. Jewellery fabrication includes jewellery consumption and the change in jewellery inventory. Investment includes ETFs, bars and coins. Technology includes gold used in the electronic, dentistry and other industrial sectors.

Source: World Gold Council (2022); Metals Focus (2022); Department of Industry, Science and Resources (2022)

Jewellery consumption is now expected to decrease by 3.9% year-on-year in 2022, due to weaker than expected demand in China and India during the first half of the year. Chinese consumption is expected to be lower than in 2021, mostly due to the weak first half of the year. The potential for Chinese consumer sentiment to be further hindered by the country's 'zero COVID' policy measures poses a downside risk to this forecast.

Gold consumption is expected to fall in 2023 but recover in 2024

World gold consumption is forecast to decrease by 1.6% to 4,065 tonnes in 2023, as investment demand eases from relatively strong levels in 2022. While safe-haven demand will tend to support gold investment — so long as geopolitical and economic uncertainty persists — real bond yields are unlikely to decline to the negative levels seen throughout 2021 and 2022. This will make investors more likely to seek alternative safe-haven assets, such as interest-bearing bonds.

World gold consumption is forecast to increase by 7.7% in 2024 to 4,376 tonnes, driven largely by continued growth in global jewellery consumption. Jewellery consumption is expected to grow by 12% year-on-year in 2024, as economic recovery and a forecast decline in gold prices support purchases in key consuming countries such as China and India.

10.3 World production

World supply increased in the first half of 2022

World gold supply increased by 4.9% year-on-year to 2,357 tonnes in the first half of 2022. The increased supply was driven by a 3.1% rise in global mine production and an 8.0% increase in gold recycling. Stronger gold recycling activity in the quarter largely reflected the impact of higher US dollar gold prices, with increases achieved despite disruptions in China related to the country's zero COVID policy.

Global mine production rose to a record high 1,764 tonnes during the first half of 2022, driven largely by increased production in China and Australia.

Production in China — the world's largest gold producing nation — rose by 14% year-on-year to around 175 tonnes in the first half of 2022, as most mines in Shandong province resumed production. Shandong's provincial government halted operations in 2021 for safety inspections to take place.

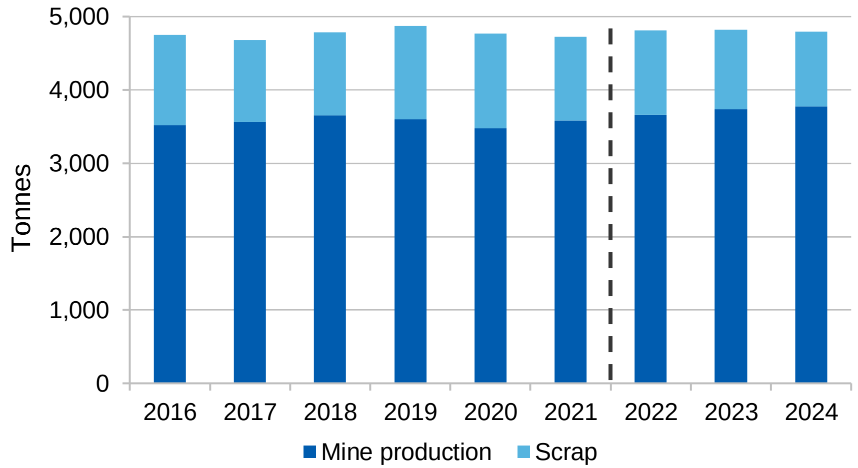
Production in Australia — the world's second-largest gold producing country — increased by 0.8% year-on-year in the first half of 2022, to 155 tonnes (see Australia section).

Production in the United States was 10% lower year-on-year in the first half of 2022, primarily due to lower ore grades and reduced output from the Carlin mines of Nevada.

World supply expected to fall after 2022 as recycling activity eases

In 2022, global gold supply is forecast to rise by 2.2% to 4,807 tonnes, driven mainly by higher gold mine production. World gold mine production is forecast to rise by 2.3% in 2022 to 3,663 tonnes, led by increases in China, Australia, North America and West Africa.

Figure 10.3: World gold supply



Note: Net producer hedging is not included.

Source: Department of Industry, Science and Resources (2022); Metals Focus (2022); World Gold Council (2022).

High gold prices are also expected to support greater recycling activity, with recycling volumes forecast to rise by 0.6% to 1,196 tonnes in 2022.

World gold supply is forecast to be relatively steady in 2023 and 2024, as lower recycling activity offsets increases in mine production (Figure 10.3).

Gold mine production is expected to increase as new projects come online in Canada, Chile, Brazil and Argentina. Production in Australia is forecast to rise during 2023 and 2024, driven by new projects and expansions of existing projects. Continued environmental regulations and industry consolidation in China will see production fall over the medium-term.

10.4 Prices

Gold prices under pressure from rising bond yields

The London Bullion Market Association (LBMA) gold price retreated below US$1,700 an ounce in mid-September, driven by sharp increases in real bond yields and a strengthening US dollar (Figure 10.4).

Figure 10.4: Gold price and real US 10-Year Treasury yield

Source: Bloomberg (2022)

The price fall came after gold prices averaged US$1,875 an ounce over the first half of 2022, with prices supported earlier in the year by safe-haven demand — amid the Russian invasion of Ukraine and increasing inflation in advanced economies.

Higher than expected inflation in advanced economies resulted in most central banks ceasing bond-buying programs and lifting interest rates, with further hikes expected over the remainder of the year. Aggressive tightening of US monetary policy compared to other advanced nations also resulted in strong demand for the US dollar, pressuring USD gold prices.

As a result of the central bank action, real bond yields lifted sharply in the June quarter 2022, and have remained above zero for the first time since the beginning of the pandemic in 2020. Rising bond yields tend to undermine gold's appeal to institutional and retail investors, as a secure asset to hedge against inflation or other risks. This is because increases in the yield of a US (or other credible government) Treasury bond raises the so-called market "risk-free rate", and increases the opportunity cost of holding gold. The relationship between gold prices and real bond yields has weakened significantly since the beginning of the Russian invasion of Ukraine, due to heightened safe-haven demand for gold.

Market expectations for US interest rates increased after hawkish messaging from Federal Reserve Chair Jerome Powell at the Jackson Hole Economic Symposium in late August. These "higher for longer" expectations were reinforced by higher than expected US inflation in August – particularly for the core inflation measure. This change in expectations was reflected in real bond yields rising from about 0.1% at the beginning of August to a recent peak of 0.98% in mid-September.

On 21 September 2022, the US Federal Reserve lifted the target for the Fed funds rate by 75 basis points to 3.00%-3.25%. Markets are pricing in a Fed Funds rate of about 4.2% by the end of the year — 100 basis points higher than expected at the time of the release of the June 2022 *Resources and Energy Quarterly*.

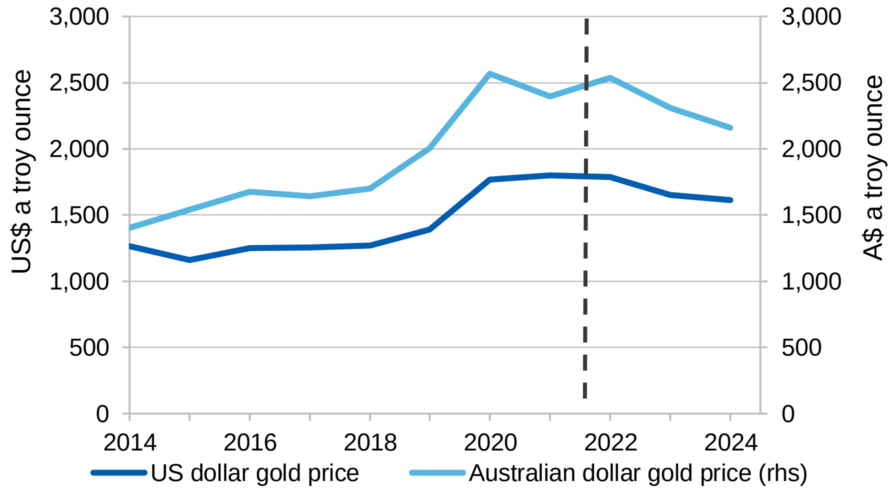
Gold prices to fall over the short and medium term

Gold prices are projected to fall at an average annual rate of 4.9% over the outlook period, from about US$1,788 an ounce in 2022 to US$1,614 an ounce in 2024 (Figure 10.5). Gold prices have mostly resisted sharp increases in real bond yields so far this year, however this resistance is expected to unwind over time, as interest rates continue to rise and as global economic uncertainty continues to support the US dollar. Lower safe haven demand will do less to ameliorate the impact of higher interest rates on gold demand.

In combination with forecast appreciation in the Australian dollar, the lower US dollar gold price is expected to lower the Australian dollar gold price from around A$2,540 an ounce in 2022 to A$2,160 an ounce in 2024.

There are several risks to the gold price assessment in the remainder of of 2022. These include the arrival of any new COVID-19 variants and the extent to which COVID-19 lockdowns and control measures persist in China. Persistent outbreaks could dampen future gold demand from one of the world's largest importers and consumers of gold.

Figure 10.5: US and Australian dollar gold prices



Source: Department of Industry, Science and Resources (2022); LBMA (2022) Gold price PM

A further risk to the price assessment is the continued fallout from Russia's invasion of Ukraine. An escalation or de-escalation in the conflict is likely to have a pronounced impact on the safe-haven demand for gold.

Finally, the path of official interest rates — and partly by extension, real bond yields — over the forecast period, is highly uncertain. A faster than expected rise in official interest rates could lift or maintain high real bond yields, leading to a steeper than forecast fall in gold prices — as the opportunity cost of holding gold increases. On the other hand, a slower tightening of monetary policy would likely result in a slower than forecast decline in gold prices, as real bond yields return below current levels.

10.5 Australia's trade, production and exploration

Australian gold exports declined in 2021–22

Australia's gold exports fell by 11% to $23 billion in 2021–22. The fall was driven by lower export volumes, the impact of which was only partially offset by higher Australian dollar gold prices.

Australia exported $8.2 billion in gold to China (excluding Hong Kong) in 2021–22. This was sharply higher (303%) than the $2.0 billion in gold exports during 2020–21 — which was impacted by bans imposed by Beijing when COVID-19 hit. Gold exports to India were worth $1.9 billion in 2021–22, 31% higher than in 2020–21.

Australian exports to the financial hubs (United States, United Kingdom, Switzerland, Hong Kong and Singapore) were collectively worth $10 billion in 2021–22, 48% lower year-on-year, due to base effects after strong inflows into global gold-backed ETFs during 2020–21.

Australian gold exports to increase with higher production

Australian gold export earnings are forecast to rise by 10% to almost $26 billion in 2022–23, before falling back to $25 billion in 2023–24 (Figure 10.6). Increased gold production is expected over the next two years, however, the forecast fall in export values in 2023–24 is expected to be driven by lower US and Australian dollar gold prices (see Prices section).

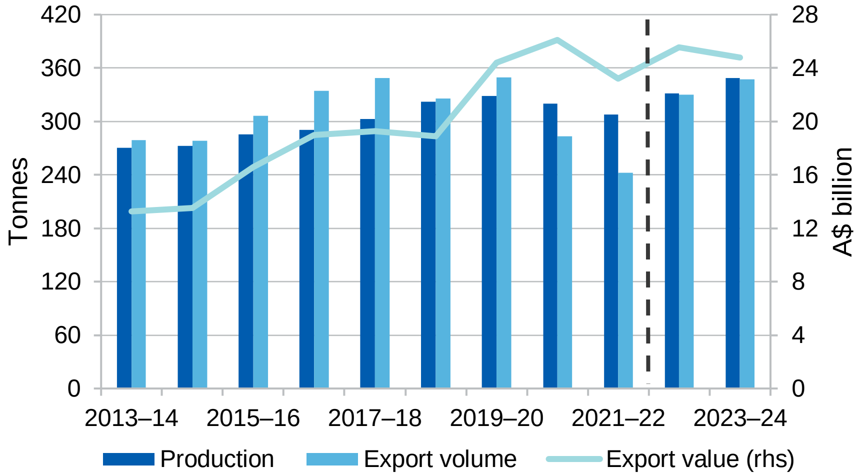
Australian gold mine production declined in 2021–22

Australia's gold production declined by 3.0% year-on-year in 2021–22 to 308 tonnes. Lower ore grades affected several of the larger operations early in the financial year, while wet weather in Western Australia (WA) and New South Wales (NSW) affected production over the second half of the year.

Many gold miners reported production impacts from labour shortages and logistical issues (such as delays to road haulage) related to COVID-19 outbreaks and border closures through much of 2021–22.

Production at Newcrest's Cadia mine in NSW decreased by 27% year-on-year to about 14 tonnes in 2021–22. This decline was largely a result of planned maintenance to replace the plant's SAG mill motor from July-November 2021. A scheduled underground shutdown in the March quarter also temporarily reduced mining rates.

Figure 10.6: Australian gold exports



Notes: Export volume contains ash, waste and scrap gold, with gold content unknown.
Sources: ABS (2022); Department of Industry, Science and Resources (2022).

Production at Agnico Eagle's Fosterville gold operation in Victoria was 23% lower in 2021–22, with output additionally impacted by lower workforce availability and primary ventilation operation restrictions in the June quarter 2022.

AngloGold Ashanti produced 7.6 tonnes of gold in 2021–22 from their Sunrise Dam operation in WA, equal to production in 2020–21. The company attributed a production loss of 0.3 tonnes in the first half of 2022 to COVID-related absenteeism of critical underground operators.

Production at Northern Star's Super Pit gold operation in WA in 2021–22 was 1.6% higher year-on-year at 15 tonnes, while Newmont's Boddington mine finished the financial year up 14% at 25 tonnes.

Australian gold mine production to increase in 2022–23 and 2023–24

Australian gold production is forecast to rise at an average annual rate of 6.5% during 2022–23 and 2023–24. Production is forecast to reach 331 tonnes in 2022–23, propelled by production from new mines and existing mine expansions. Red 5's 6.2 tonnes per year King of the Hills gold project in WA achieved first gold in June 2022, with production expected to ramp up through 2022–23. First gold was poured from Calidus Resources' 4.3 tonnes per year Warrawoona gold project in WA in May 2022, with production expected to ramp up through 2022–23.

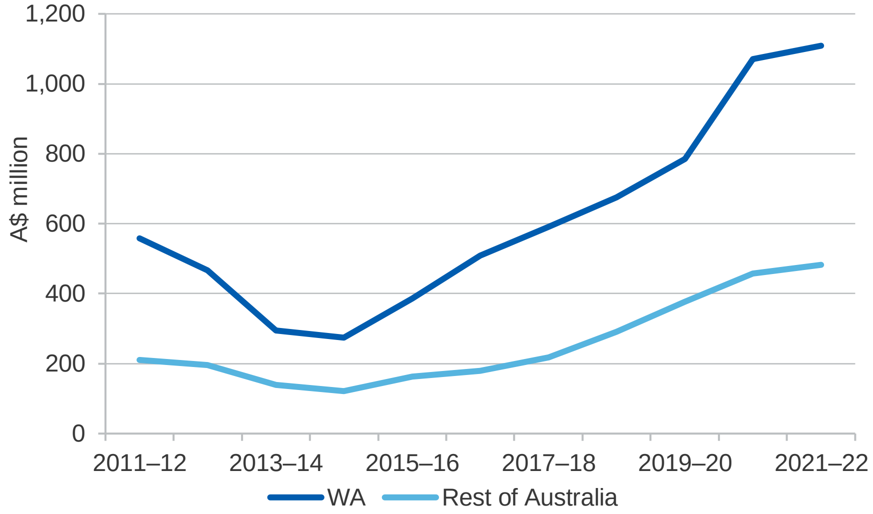
Australian output is forecast to reach 349 tonnes in 2023–24: Bellevue Gold's 5.7 tonnes per year Bellevue gold mine in WA is expected to come online in the second half of 2023, while Northern Star Resources' Super Pit gold operation will begin long-term expansion from 2024.

The primary risk to the Australian gold production forecast is the extent to which supply chain issues and labour or skill shortages continue in the short term. A further downside risk to the forecasts of Australian gold production is weaker than expected gold prices (see Prices section). In this scenario, high-cost Australian producers would be expected to cease or cut back their operations.

Record Australian gold exploration expenditure in 2021–22

Australia's gold exploration expenditure reached a record high of $1.6 billion in 2021–22, up 4.0% from the previous record in 2020–21. Gold accounted for 41% of Australia's total mineral exploration expenditure (at $3.9 billion) in 2021–22. Western Australia remained the centre of gold exploration activity in Australia in 2021–22, accounting for 71% (or $1.1 billion) of total gold exploration expenditure, followed by Victoria (10% or $166 million) and NSW (7.2% or $114 million).

Figure 10.7: Australian gold exploration expenditure



Source: ABS (2022)

Revisions to the outlook

Australia's forecast gold export earnings have been revised down for 2022–23 and 2023–24 compared with the June 2022 *Resources and Energy Quarterly*. This most reflects a downgrade to forecast export volumes, coinciding with a downgrade to forecast Australian gold production. Lower forecast US dollar gold prices also contributed to the downgrade, however the lower exchange rate assumption over 2022–23 has partially offset the fall in Australian dollar gold prices.

Table 10.1: Gold outlook

						Annual percentage change		
World	**Unit**	**2021**	**2022[f]**	**2023[f]**	**2024[f]**	**2022[f]**	**2023[f]**	**2024[f]**
Total demand	tonnes	4,021	4,129	4,065	4,376	2.7	-1.6	7.7
Fabrication consumption [b]	tonnes	2,560	2,462	2,534	2,812	-3.8	3.0	10.9
Mine production	tonnes	3,581	3,663	3,737	3,774	2.3	2.0	1.0
Price [c]								
– nominal	US$/oz	1,800	1,788	1,652	1,614	-0.6	-7.6	-2.3
– real [d]	US$/oz	1,938	1,788	1,603	1,532	-7.8	-10.4	-4.4
Australia	**Unit**	**2020–21**	**2021–22**	**2022–23[f]**	**2023–24[f]**	**2021–22**	**2022–23[f]**	**2023–24[f]**
Mine production	tonnes	320	308	331	349	-3.7	7.6	5.3
Exports								
– volume	tonnes	283	242	330	347	-14.5	36.3	5.3
– nominal value	A$m	26,105	23,205	25,567	24,798	-11.1	10.2	-3.0
– real value [e]	A$m	29,172	24,828	25,567	23,794	-14.9	3.0	-6.9
Price								
– nominal	A$/oz	2,481	2,529	2,412	2,222	1.9	-4.6	-7.9
– real[e]	A$/oz	2,589	2,706	2,412	2,132	4.5	-10.9	-11.6

Notes: **b** includes jewellery consumption and industrial applications; **c** London Bullion Market Association PM price; **d** In 2022 US dollars; **e** In 2022–23 Australian dollars; **s** Estimate; **f** Forecast. Gold export volume contains ash, waste and scrap gold, of which the metal content is unknown.

Source: ABS (2022) International Trade, 5464.0; London Bullion Market Association (2022) gold price PM; World Gold Council (2022); S&P Market Intelligence (2022); Department of Industry, Science and Resources (2022).