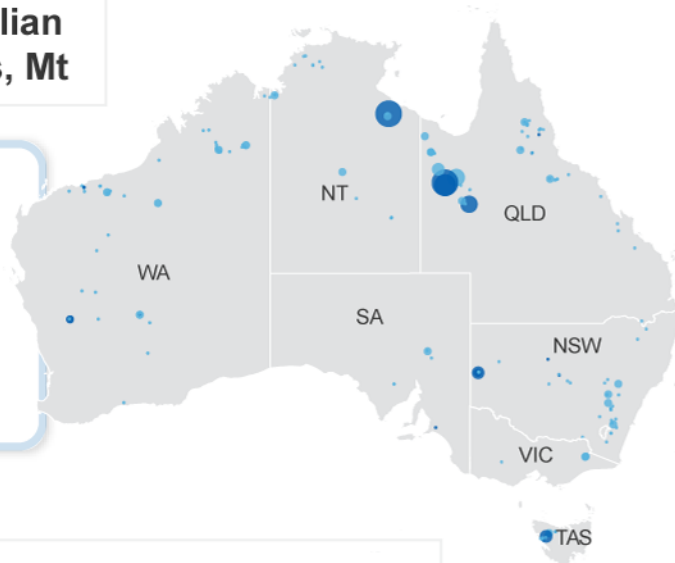
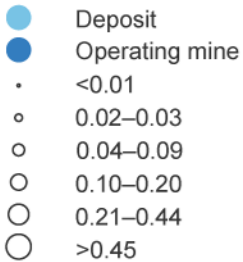
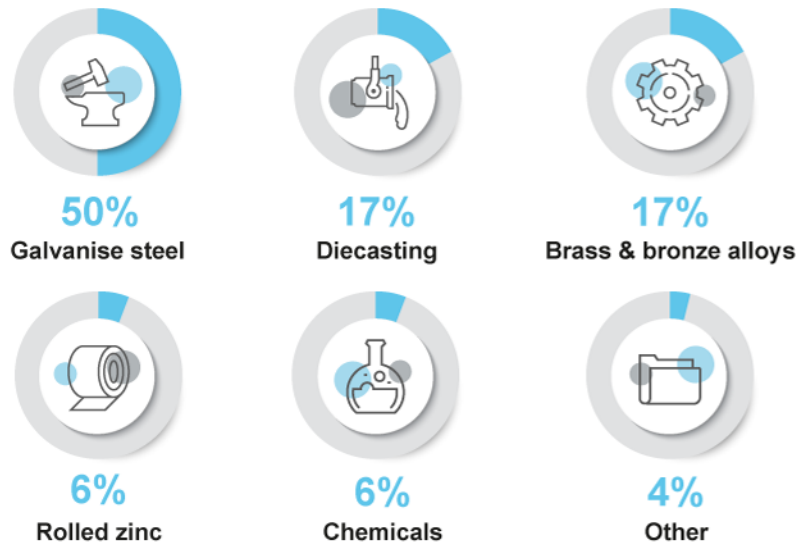


## Major Australian zinc deposits, Mt



## World consumption



## Zinc facts



Zinc ore was used in ancient Greece to produce brass



Zinc **fight**s infection in our bodies and is used in wound-care & sunscreen

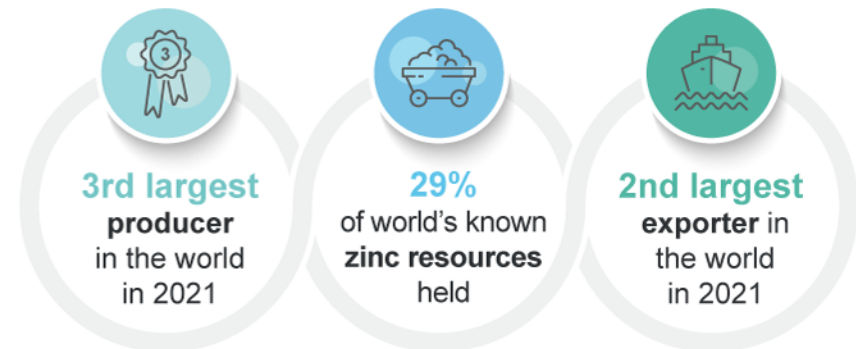


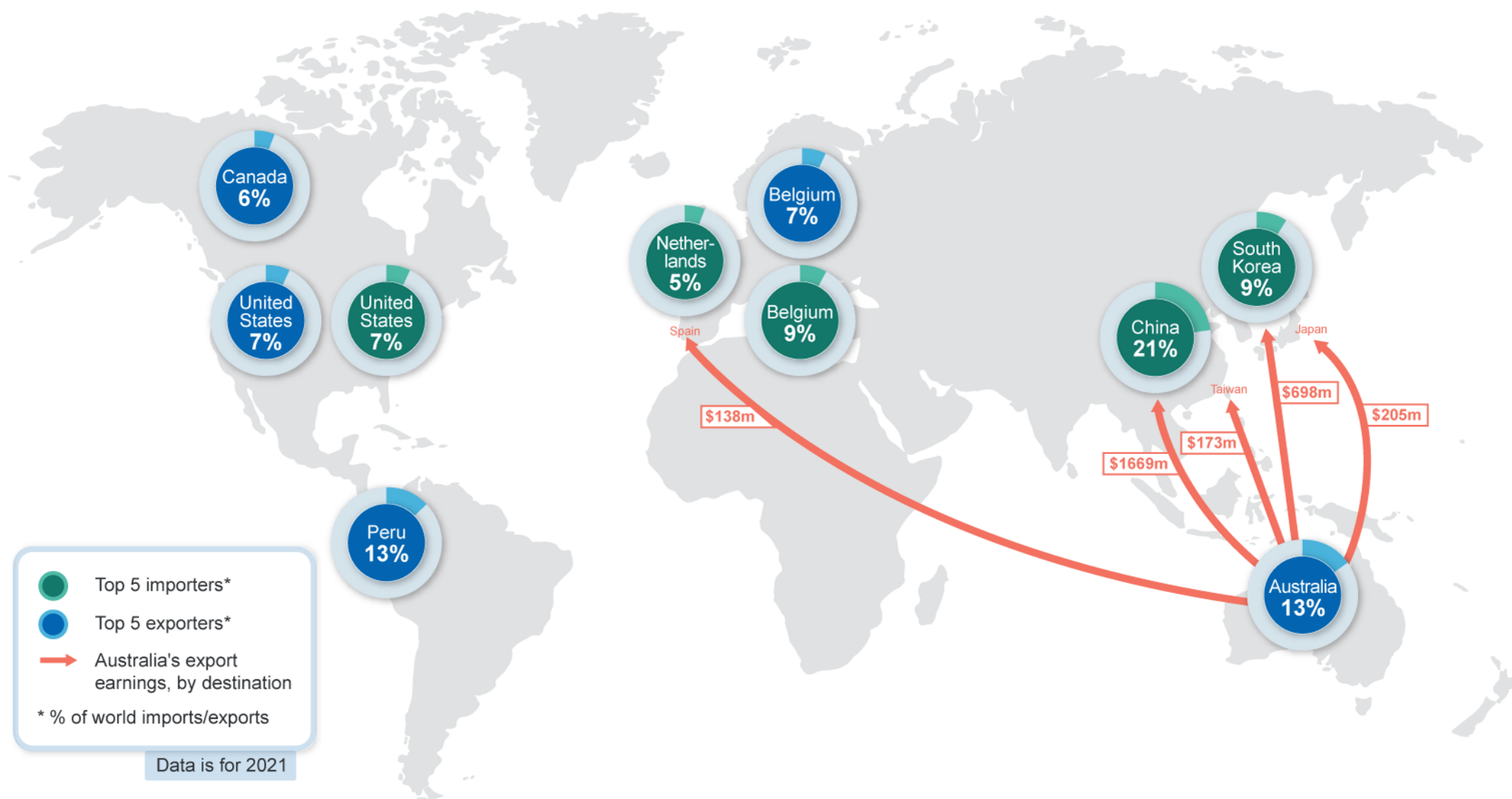
World consumption per capita is **2kg**



Zinc is an **emerging battery mineral**

## Australia's zinc





## 14.1 Summary

- The LME zinc spot price is forecast to average around US\$3,750 a tonne in 2022, driven by robust global construction activity and continued refined supply shortages in Europe. Prices are forecast to ease over the outlook to around US\$2,900 a tonne by 2024, as global supply rises and consumption growth normalises.
- Australia's zinc production is estimated to be around 1.3 million tonnes in 2021–22, and is forecast to rise by 4.9% per year to around 1.4 million tonnes by 2023–24 (see [Australia section](#)).
- Australia's zinc export earnings are estimated to increase to \$4.2 billion in 2021–22. Earnings are forecast to peak at \$4.6 billion in 2022–23 before easing in 2023–24 to \$3.8 billion.

## 14.2 World consumption

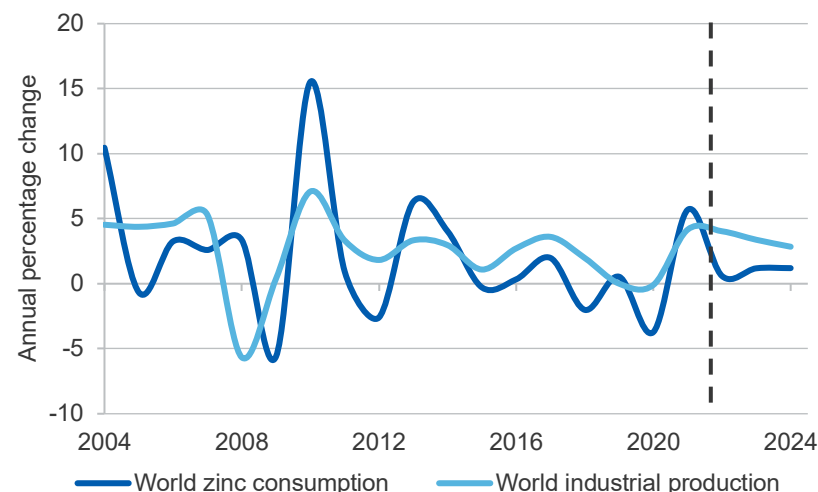
### Infrastructure spending supports world zinc demand

World refined zinc consumption increased by 1.4% year-on-year in the March quarter 2022, helped by strong industrial activity. Year-on-year consumption rose in ex-China Asia (up 8.5%), the EU (1.2%) and China (0.1%), but fell by 2.1% in the United States. Zinc consumption tends to follow the world industrial production cycle, given its primary role in galvanising steel (Figures 14.1 and 14.2).

However, the outlook for industrial growth has weakened since the March 2022 REQ (see *Macroeconomic Outlook* chapter), and this will weigh on zinc demand. Lockdowns in China have suppressed demand and disrupted supply chains, while the fallout from the Ukraine-Russia conflict has also pushed up the cost of refining zinc — due to higher global energy prices.

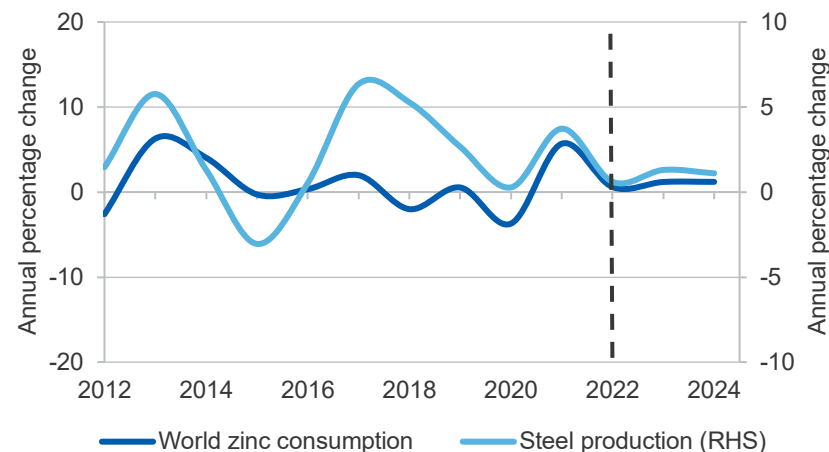
Global vehicle sales fell 24% year-on-year in the March quarter 2022, as the industry continues to be impacted by the ongoing shortage of semiconductor chips; additional semiconductor production capacity is only expected to become available by the end of 2022.

**Figure 14.1: World zinc consumption vs industrial production**



Source: International Lead Zinc Study Group (2022); CPB Netherlands Bureau for Economic Policy Analysis (2022); Department of Industry, Science and Resources (2022).

**Figure 14.2: Steel production vs world zinc consumption**



Source: International Lead Zinc Study Group (2022); World Steel Association (2022); Department of Industry, Science and Resources (2022).

The Russian-Ukraine conflict could slow chip production further as 2022 progresses: it has disrupted the world supply of neon gas — a key component of semi-conductor manufacturing. Disruptions to other parts of the supply chain — due to the China lockdowns and the Russian-Ukraine conflict — will also constrain automotive production over the rest of 2022.

However, demand for zinc from infrastructure spending is expected to offset falls in consumer demand. China has announced plans to boost infrastructure spending, in response to the economic impacts of the recent lockdowns. The US Bipartisan Infrastructure Law and the EU Next Generation package is also expected to provide additional funding for infrastructure. The US spending is spread out over many different types of projects, while the EU package is targeted towards digital and green investments.

Over the outlook period, world zinc usage is forecast to grow an average of 1.2% per year, from 14.0 million tonnes in 2021 to 14.5 million tonnes in 2024 (Table 14.1). Demand growth will be driven by higher infrastructure spending and by the global transition to low emissions technology.

### 14.3 World production

#### Global mine production faces short term disruptions

World mine zinc production fell 0.4% year-on-year in the March quarter 2022, driven by disruptions to production in Peru and Australia. Peru's mined production fell by 12% year-on-year in the March quarter 2022. Road blockades by protestors have disrupted operations at a number of mines this quarter, including at the Cerro Lindo and Cuajone mines. Australia's mined zinc production fell by 8.9% year-on-year in the March quarter 2022. Increased COVID-19 cases from the Omicron variant and COVID-19 suppression measures created labour shortages, impacting on production this quarter.

China's mined zinc production rose 5.9% in the March quarter 2022. Production is still recovering from the downturn triggered by the COVID-19 pandemic in 2020, and remains 5.3% below March quarter 2019 levels.

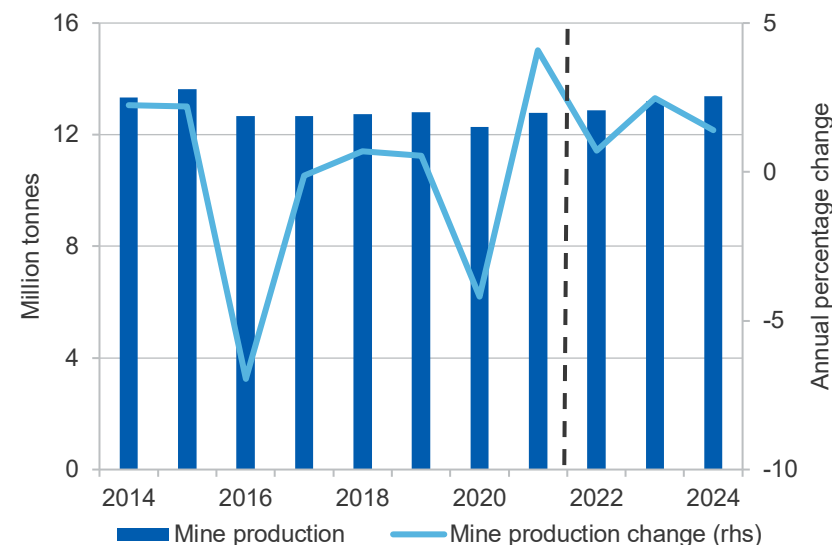
#### Mine production is expected to rise over the outlook period

World mine output is forecast to reach 12.9 million tonnes in 2022. Beyond 2022, mine output is forecast to rise by an average of 1.9% per year to 13.4 million tonnes by 2024, as miners respond to elevated zinc prices and face fewer operational disruptions from COVID-19 suppression measures (Figure 14.3). Global mine production capacity is expected to increase over the outlook period, as new mines and mine expansions come online.

The largest new projects expected to add to mining production capacity over the outlook period are located in Kazakhstan, Portugal, Mexico, South Africa, and Australia. China, the world's largest producer of zinc ore, is also expected to expand production across smaller mines.

Glencore's Zhairem in Kazakhstan began operating in 2021, and produced 27,000 tonnes of zinc over the year. The mine is expected to ramp up to its nameplate capacity of 160,000 tonnes of zinc per year by 2023.

**Figure 14.3: World zinc mine production, metallic content**



Source: International Lead Zinc Study Group (2022); Wood Mackenzie (2022); Department of Industry, Science and Resources (2022).

Lundin Mining's Neves Corvo mine in Portugal began an expansion project in 2017 to increase mine capacity from 70,000 tonnes to 150,000 tonnes of zinc per year, with production expected to ramp up towards full capacity over 2022 and 2023.

Grupo Mexico's Buenavista mine in Mexico is expected to begin operating in 2023, ramping up to its maximum capacity of 120,000 tonnes of zinc per year by 2025.

Vedanta Zinc's Gamsberg mine in South Africa began operating in 2019, and produced 170,000 tonnes of zinc in 2021. Production is expected to ramp up, with a Stage 1 capacity of 250,000 tonnes per year by 2023.

New Century Resources' Century mine in Australia restarted in 2018, and has since produced 120,000 tonnes of zinc per year. An expansion project is underway to raise output over 2022 and 2023. The proposed expansion will boost production to 230,000 tonnes of zinc per year.

#### World refinery production falls as energy price rises

World zinc refined production fell by 1.5% year-on-year and 1.7% quarter-on-quarter in the March quarter 2022. China, the largest zinc refiner, recorded a 0.7% year-on-year increase in production. However, year-on-year production fell for European producers, as high energy prices increased costs for smelters. The Auby smelter in France closed in January 2022 before resuming at reduced capacity on March 2022. The Portovesme smelter in Italy temporarily closed in November 2021, and Glencore stated that operations will resume when there is "a meaningful change in power market prices".

In 2022, refined output is forecast to grow by 1.2% to reach 14.0 million tonnes. While energy prices are likely to remain high, due to the fallout from the Russian-Ukraine conflict, zinc demand is expected to remain strong, and disruptions to mine production is expected to be resolved.

Refined production from primary and secondary sources is expected to increase by 1.9% a year over the outlook period, reaching 14.6 million tonnes in 2024.

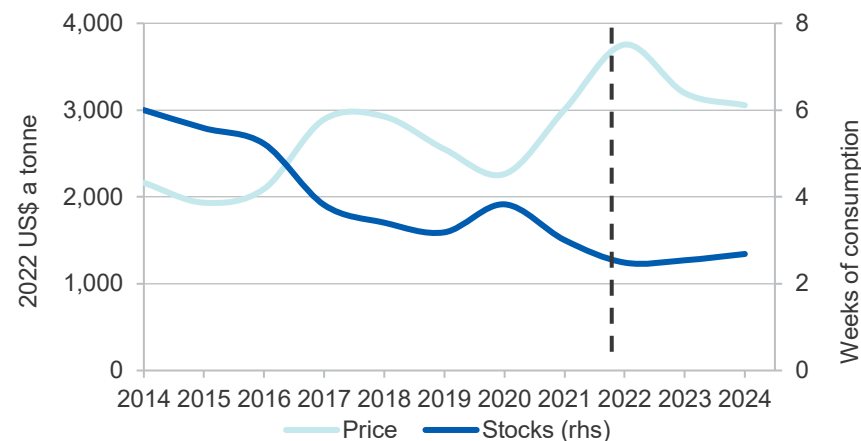
## 14.4 Prices

### Improved supply to drive price moderation

The London Metal Exchange (LME) spot zinc price rose to US\$3,950 a tonne in early June, after averaging US\$3,754 a tonne during the March quarter 2022. Rising prices were driven primarily by supply constraints, as high energy prices raised the cost of refining, and as the COVID-19 pandemic disrupted supply at several major zinc mines (Figure 14.4).

Benchmark treatment costs of zinc concentrates rose to \$230 a tonne in the March quarter 2022 from \$159 a tonne in 2021. While demand remains strong, treatment costs may rise further as energy costs lift.

**Figure 14.4: Zinc prices and stocks**



Source: LME (2022); Department of Industry, Science and Resources (2022).

LME stocks fell below 90,000 tonnes in early June, from 142,000 tonnes at the end of the March quarter 2022. Strong demand and disruptions to production contributed to the reduction in stocks.

The LME zinc spot price is forecast to average US\$3,750 a tonne in 2022. The price is forecast to fall to \$2,900 a tonne by 2024. Prices are expected to decline from the current high levels, as short-run disruptions to mining production are resolved, and more production capacity comes online.

## 14.5 Australia's exports and production

### High prices to drive export earnings until 2023–24

Australia's zinc export earnings for both concentrates and refined metal are estimated to have reached \$4.2 billion in 2021–22. Higher zinc prices in the March quarter 2022 have boosted export earnings.

Over the outlook period, Australia's export earnings are forecast to increase to around \$4.6 billion in 2022–23 due to high prices and increased production, before falling to around \$3.8 billion in 2023–24, as improving zinc supply on the global market pushes down prices.

### Australia's mine production falls due to COVID workforce disruptions

COVID cases resulted in workforce disruptions in several of mines over the March quarter 2022. As a result, Australia's mined zinc output fell by 8.9% year-on-year in the March quarter 2022.

Production at Glencore's Australian operations, including Mt Isa in Queensland and McArthur River in the Northern Territory, fell 9.0% year-on-year to 135,000 tonnes in the March quarter 2022. The fall was mainly due to Mt Isa reporting a drop in production due to COVID-related workforce disruptions. McArthur River reported a small year-on-year output gain.

Production for MMG's Australian operations, including Dugald River in Queensland and Rosebery in Tasmania, fell 27% year-on-year to 350,000 tonnes over the March quarter 2022. The declines were attributed to COVID-related workforce disruptions and lower ore grades.

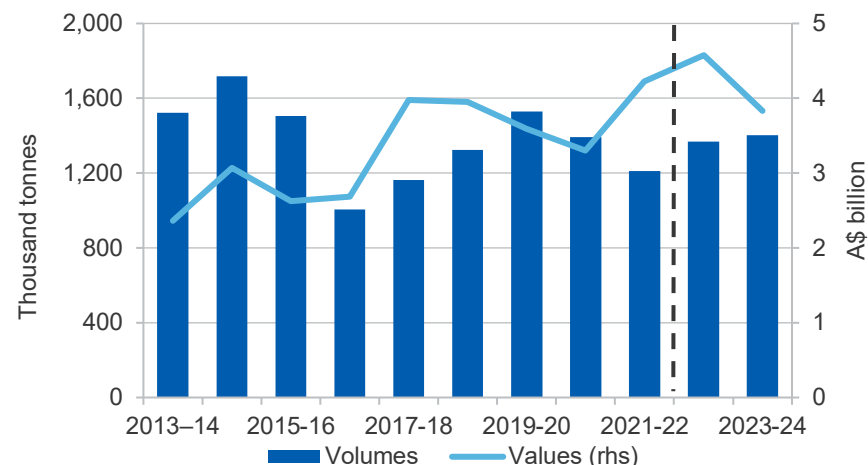
Production at New Century's Century Tailings Reprocessing fell 10% year-on-year to 27,000 tonnes in the March quarter 2022. Production in the March quarter continued to be impacted by the ball mill bypass with New Century repairing the ball mill motor in late February.

COVID-related workforce disruptions also impacted production at Cannington. As a result, South32's Cannington operation in Queensland fell 7.7% year-on-year to 16,000 tonnes in the March quarter 2022.

### Concentrate exports rose while refined exports declined

In the March quarter 2022, Australia's zinc concentrate export volume rose 8.4% year-on-year to 258,000 tonnes, and refined zinc export volumes decreased by 38% year-on-year to 45,000 tonnes (Figure 14.5). Zinc concentrate export earnings rose 64% year on year to \$861 million, and zinc refined export value fell 17% year-on-year to \$218 million.

**Figure 14.5: Australia's zinc exports, metallic content**



Source: ABS (2022) *International Trade in Goods and Services*, 5368.0; Wood Mackenzie (2022); Department of Industry, Science and Resources (2022).

China is the largest market for Australian zinc concentrate and refined zinc exports. The value of Australia's concentrate exports to China rose by 79% year-on-year in the March quarter 2022 to reach \$413 million, as a result of high zinc prices. However, a reduction in Chinese imports of refined zinc led to a 79% fall year-on-year in export value to \$21 million.

### Australia's mine production is expected to increase over the outlook period

Australia's output is expected to grow over the outlook period, with mine output forecast to lift from 1.3 million tonnes in 2021–22 to 1.4 million tonnes in 2023–24. The gains will be driven by higher production from the McArthur River operation, Golden Grove operation, and the Century mine.



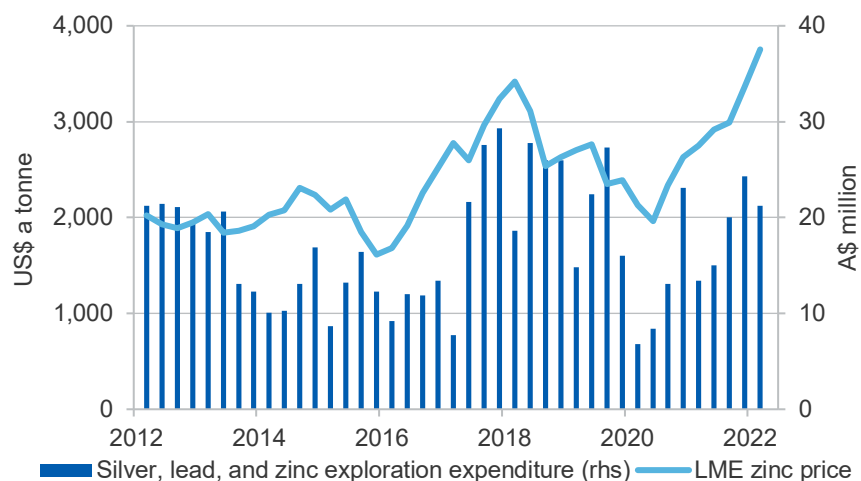
## Project development

New Century is examining several hard rock resources beyond the current tailings retreatment operation, which is due to end in 2027. New Century believes hard rock resources have the potential to increase mine life to 2030, and are mostly contained on the existing mining lease. Century Zinc earlier reported positive results from their feasibility study of potential operations at Silver King and East Fault Block. The company is targeting a financial investment decision (FID) in the second half of 2022, and possible first production in the second half of 2023. They estimate additional zinc production of 22,000 tonnes a year.

## Exploration expenditure increased significantly in 2021

Exploration expenditure for silver, lead and zinc rose 58% year-on-year in the March quarter 2022 (Figure 14.6). Exploration expenditure slumped in 2020 — due to the COVID pandemic — but recovered as zinc prices rose over 2021 and 2022. Exploration expenditure is expected to see continued strength with zinc prices expected to remain high over 2022 and 2023.

**Figure 14.6: Quarterly exploration expenditure and zinc price**



Source: ABS (2022) Mineral and Petroleum Exploration, Australia, 8412.0; Company reports; Department of Industry, Science and Resources (2022).

## Revisions to the outlook

Compared with the March 2022 *Resources and Energy Quarterly*, forecasts for export revenue are down 1.2% to \$4.2 billion in 2021–22, and up 14.9% to \$4.6 billion in 2022–23. Export earnings in 2023–24 are expected to be \$3.8 billion, up \$0.6 billion from forecasts in the March 2022 *Resources and Energy Quarterly*. The increases in the forecast for 2022–23 is due to prices being higher than previously expected.

**Table 14.1: Zinc outlook**

						Annual percentage change			
World	Unit	2021	2022 <sup>f</sup>	2023 <sup>f</sup>	2024 <sup>f</sup>	2022 <sup>f</sup>	2023 <sup>f</sup>	2024 <sup>f</sup>	
Production									
– mine	kt	12,778	12,868	13,188	13,373		0.7	2.5	1.4
– refined <sup>a</sup>	kt	13,841	13,980	14,306	14,502		1.0	2.3	1.4
Consumption	kt	14,033	14,116	14,283	14,454		0.6	1.2	1.2
Closing stocks	kt	809	673	696	744		-16.8	3.4	7.0
– weeks of consumption		3.0	2.5	2.5	2.7		-17.3	2.2	5.7
Price									
– nominal	US\$/t	3,005	3,755	3,196	2,854		24.9	-14.9	-10.7
	USc/lb	136	170	145	129		24.9	-14.9	-10.7
– real <sup>b</sup>	US\$/t	3,239	3,755	3,107	2,713		15.9	-17.2	-12.7
	USc/lb	147	170	141	123	15.9	-17.2	-12.7	
Australia	Unit	2020–21	2021–22 <sup>s</sup>	2022–23 <sup>f</sup>	2023–24 <sup>f</sup>	2021–22 <sup>s</sup>	2022–23 <sup>f</sup>	2023–24 <sup>f</sup>	
Mine output	kt	1,330	1,278	1,370	1,405	-3.9	7.2	2.6	
Refined output	kt	458	490	501	501	7.0	2.3	0.0	
Export volume									
– ore and concentrate <sup>c</sup>	kt	2,118	2,094	2,163	2,242		-1.1	3.3	3.7
– refined	kt	408	248	372	371		-39.3	50.0	0.0
– total metallic content	kt	1,392	1,211	1,367	1,403		-13.0	12.9	2.6
Export value									
– nominal	A\$m	3,301	4,229	4,576	3,833		28.1	8.2	-16.24
– real <sup>d</sup>	A\$m	3,444	4,229	4,371	3,545		22.8	3.4	-18.9

Notes: **a** Includes secondary refined zinc; **b** In 2022 US dollars; **c** Quantities refer to the gross weight of all ores and concentrates; **d** In 2021–22 Australian dollars; **f** Forecast; **s** Estimate.

Source: ABS (2021) International Trade in Goods and Services, Australia, Cat. No. 5368.0; Company reports; Department of Industry, Science and Resources (2021); International Lead Zinc Study Group (2021); Wood Mackenzie (2021); LME (2021).