



CONRYTECH

AUSTRALIA'S DIG & SHIP OBSESSION

A Conry Tech report on
Australia's manufacturing
decline and mining growth

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INTRODUCTION

“Australia’s obsession to dig and ship is short changing the country and slowly burying manufacturing...”

Sam Ringwaldt,
Conry Tech CEO and co-founder



“Australia has an enviable abundance of natural resources and a booming mining sector that is a major contributor to GDP growth. However, there is a major disconnect between the resources and talent available in Australia, and what we are doing with it. Once Australian raw materials are out of the ground, we export them to China, Japan, South Korea, and the US and rely on them to make all the high value consumer products we import and purchase.

“The country and successive governments have been stuck in this “dig and ship” mentality for years, the shortcomings of which were laid bare during the pandemic. Being so reliant on foreign-built goods is disruptive and costly during times of geo-political and supply chain uncertainty and is also incredibly short-sighted at a national economic level. Whilst we prosper shipping critical resources such as lithium to South Korea and other maker nations, we then allow these other nations to disproportionately benefit through the transformation of our raw materials into finished products. We sell our rocks only to purchase their products later at an inflated rate – including EV batteries, smartphones, and TVs.

“We must accept that the Australian manufacturing sector has been in a state of decline for a long time. Many domestic and foreign manufacturers have exited the country or closed their doors. However, the market and consumer demand has changed dramatically in the last ten years alone, and labour costs are no longer such a critical national differentiator in modern manufacturing. It should encourage us to think bigger than raw exports. As the world pivots to renewable energy, EVs, and the electrification of everything, Australia has a once in a generation opportunity to lead the rest of the world rather than follow.

“In 2021, The IMF identified Australia as one of only four nations with the critical mineral exports needed to significantly grow its GDP in a 2050 net zero economy. It’s also a country that acutely experiences the terrible impact of climate change and extreme weather events. It is well-within Australia’s reach, and its best interests, to be a leader in climate tech innovation. It could simultaneously be one of the world’s top producers of ethical lithium, one of the biggest manufacturers of electric vehicle batteries, and one of the most efficient generators of renewable energy.

“This recognised potential is why the Australian government recently announced the creation of a National Reconstruction Fund to support manufacturing businesses and start-ups in Australia. However, apart from this, manufacturing was not mentioned in the latest federal budget and the labour Government’s stated aim to make Australia a manufacturing nation feels no closer to reality than it was a year ago. The data confirms the alarming scale of the problem. The Australian government has a huge uphill challenge to turn this situation around, but it needs to act fast to put manufacturing on the same trajectory as mining.”

METHODOLOGY

To create this report, Conry Tech analysed Occupation (OCCP) and Industry (INDP) data from every Australian census since 2006. We tracked the number of Australians entering and leaving 220 industries such as INDP 1314 gold ore mining, as well as 36 occupations such as OCCP 3232 metal fitter/ machinist.

As the Australian population has grown, so too has the number of people in full-time employment. The 2006 Australian Census categorised the occupation and industry of 8,800,000 people, a figure which rose by 30% in 2021 (to 11,500,000 people). The data reveals that some sectors have grown disproportionately during this period while other critical sectors have plateaued or even declined.

As well as high-level national data, we have compared the figures by state/territory. This gives us a detailed macro and micro understanding on the state of mining and manufacturing jobs in the country. It helps us understand how these industries have evolved over the last 15 years and the challenges facing Australia as it looks to bolster its manufacturing sector once more.

KEY FINDINGS

The number of mining industry jobs has doubled since 2006 (101% increase), while one in four manufacturing jobs has disappeared (25% decrease).

For every new mining job created in Australia, we are losing 2.5 manufacturing (approx. +100,000 mining jobs and -250,000 manufacturing jobs).

Manufacturing has declined more than any other Australian industry in the last 15yrs. Of the 8.8m individuals whose occupation/industry could be confirmed in the 2006 census, 10.7% were employed in the manufacturing industry. In the 2021 census, this number fell to just 6.2%.

Western Australia increased its number of mining industry jobs by 40,000 between 2006-2021, more than any other state, a +153% increase.

New South Wales (-67,000) and Victoria (-65,000) have lost the most manufacturing jobs.

Consumables vs product manufacturing. Whilst manufacturing jobs in food, beverage and clothing industries have increased slightly in this period, jobs in industrial manufacturing have been declining rapidly

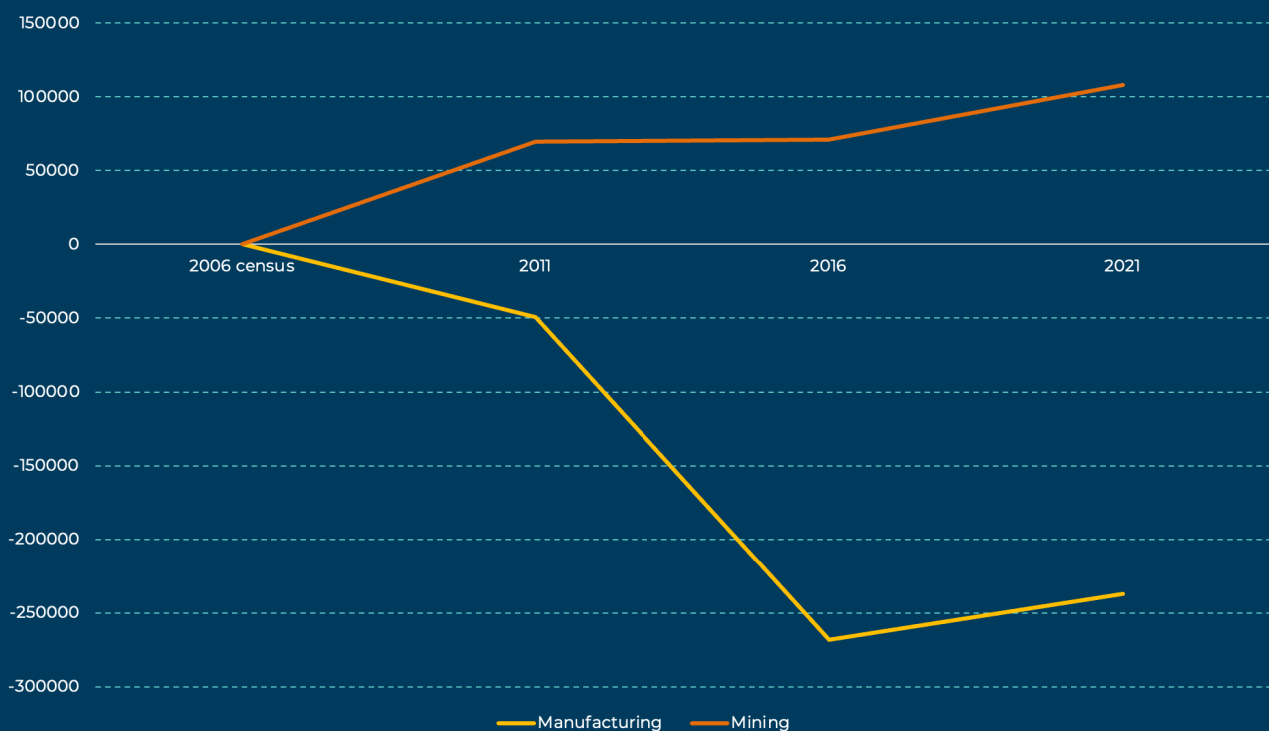
Some of the most desperately needed manufacturing jobs in Australia have virtually disappeared. These jobs are essential for developing new products, including the climate tech hardware needed to transform the energy grid. For instance, toolmakers and engineering pattern makers have decreased by 70%. There are only 2220 left in Australia, making them an endangered species in Australia.

The economies and manufacturing sectors of Australia's largest trading partners, such as South Korea, have boomed. Australia is rapidly depleting its natural resources, while not reaping the full benefits. A focus on manufacturing would create jobs, boost the economy, and allow Australia to take the lead on emerging sectors such as EV battery creation, and climate tech - which are vital for Australia's net zero objectives.

MEASURING MANUFACTURING DECLINE

The number of mining jobs has doubled (101% increase) since 2006, while one in four manufacturing jobs has disappeared (25% decrease). Australia has 100,000 more mining jobs, while losing ~250,000 manufacturing jobs. If these trends continue, for every mining job gained, Australia is losing 2.5 manufacturing jobs.

Job losses / creation since 2006



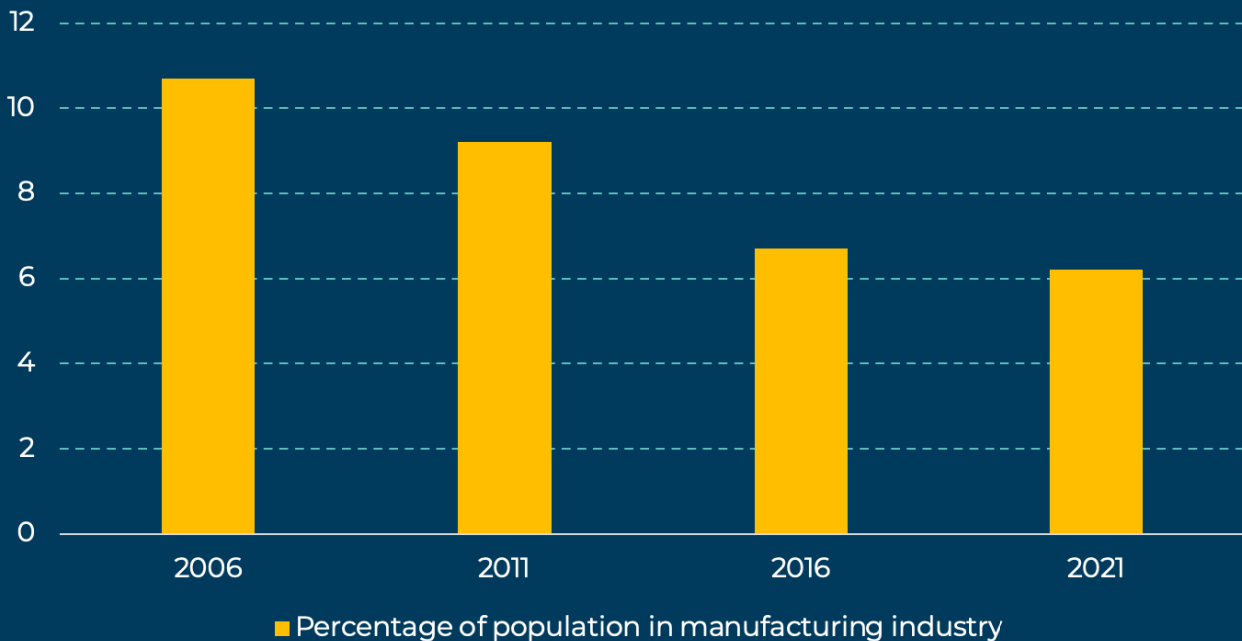
It may be seen as a positive that manufacturing had a small uptick between 2016-2021. However, several industries within food, drink, clothing, and pharmaceutical all grew in this period while most industrial manufacturing industries continued to decline. If we remove these figures and focus on the creation of physical products only, manufacturing jobs rose by a negligible 9,000 between 2016-2021 after plummeting by 242,000 between 2011-2016. It is not a sizable enough increase to suggest that the manufacturing sector is back on its feet, and may be explained by population growth alone between the two census dates. For context, ship and boat building and repair jobs alone grew by nearly 6,000 between 2016-2021.

Indeed, when looking at manufacturing jobs as a percentage of Australian workers, it's clear that the 2016-2021 uptick still falls short on following the broader population and total employment growth trends in Australia, and therefore doesn't reflect manufacturing growth but rather a slightly slowed decline.

The ABS estimates that a quarter of the population was employed in the manufacturing sector in the 1970s but had declined to 18% by 1985, so its regression is not a new phenomenon. However, the accelerated decline over the last 15yrs is alarming, and we are about to reach critical levels from which recovery may soon become impossible.

In 2006, one in ten (10.7%) Australians were employed in the manufacturing industry. This fell to 6.2% in 2021, which was a bigger decrease than any other industry.

Percentage of population in manufacturing industry



Manufacturing has historically been a strong industry in Australia, and its decline should be a cause for concern. Manufacturing should grow in tandem with mining, especially since Australia has the world's largest supply of materials like lithium, which is in high demand for electronic products. Due to labour costs, Australia may not be able to compete with nations like China on manufacturing low-cost commodity items. However, it should be transforming its raw materials into high value products, which could then be exported for a greater net-benefit than the raw materials alone.

Since 2006, one in four manufacturing jobs has disappeared from Australia.

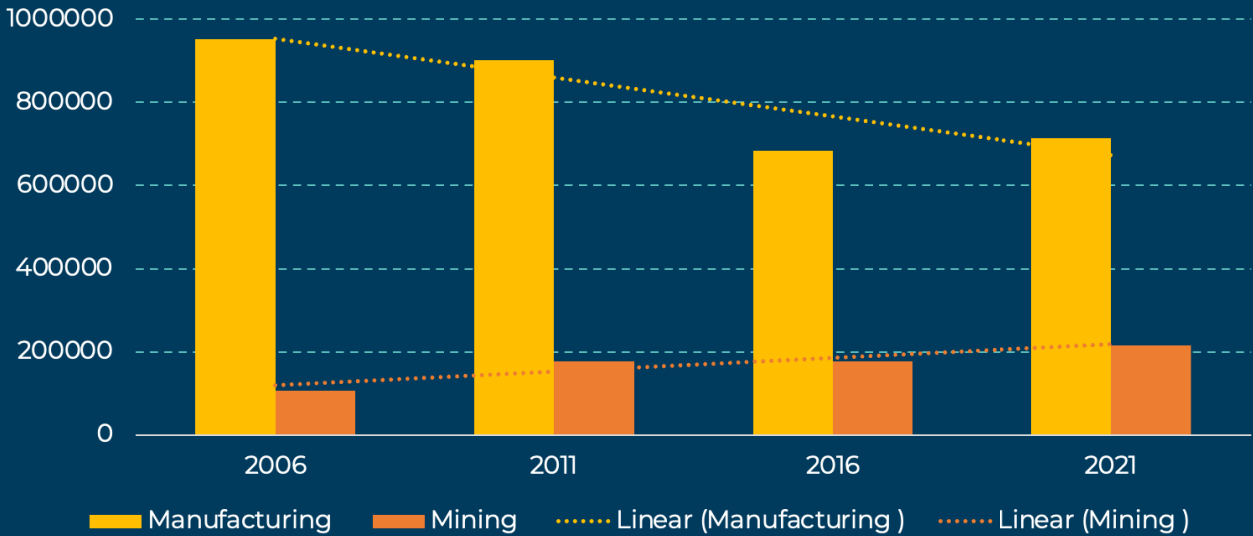


Meanwhile, the number of mining jobs has doubled .



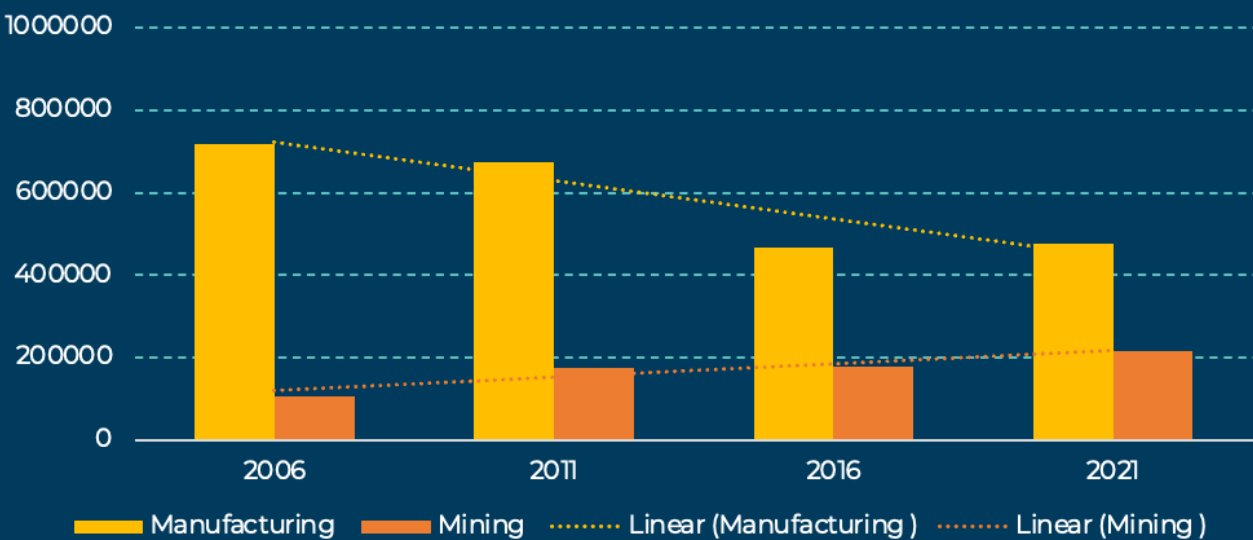
There are still more manufacturing jobs than mining jobs in Australia.

Number of mining and manufacturing jobs



However, it is important to note that manufacturing jobs in certain industries such as food, beverage and clothing industries are not in decline, and some of these jobs have increased since 2006. It is primarily product manufacturing jobs that have been lost. If we remove clothing, food, and beverage industries, it is even more noticeable how rapidly manufacturing is declining. Both sectors should be growing together, as more materials are mined from Australia, more products should be being made with those materials.

Number of mining and product manufacturing jobs



REGIONAL TRENDS

Western Australia increased its number of mining industry jobs by 40,000 between 2006-2021, more than any other state and a +153% increase. The Northern Territory also saw a +100% increase, but this only equates to +1,700 new mining jobs.

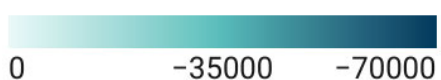
Mining jobs created



Meanwhile New South Wales (-67,000) and Victoria (-65,000) have lost the most manufacturing jobs.

However, it should be noted that South Australia and The Northern Territory have lost nearly half of their manufacturing jobs, -46% and -44% respectively.

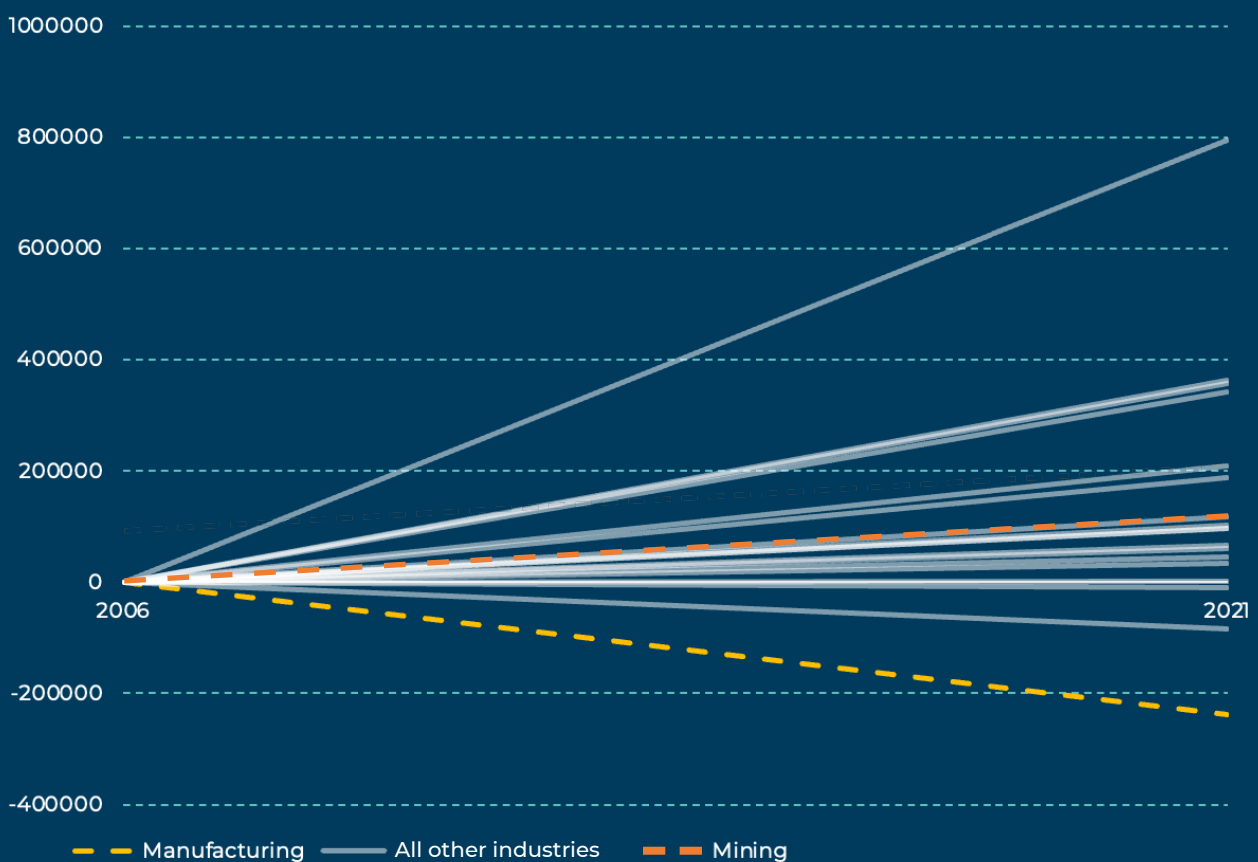
Manufacturing industry jobs lost



GROWTH OF OTHER INDUSTRIES

Whilst the mining industry continues to experience rapid growth, they are by no means alone with most Australian industries also growing as the total job market has grown. This makes the decline of the manufacturing industry all the more stark as it is an outlier. No industry in Australia has regressed to the same extent as manufacturing in the last 15 years. Indeed, it is virtually the only industry in Australia that has suffered a significant net reduction in numbers. Wholesale trade is also down 84,000 jobs, but there is an obvious link between the two industries. As we manufacture less in Australia, there is less demand for Australian wholesale traders. Australian businesses are instead purchasing more of their goods from foreign wholesale traders.

For comparison, the number of manufacturing jobs fell by 237,000 while construction jobs grew by 357,000. Healthcare (+795,000) and education (+363,000) jobs also grew significantly over this period. These numbers do not include individuals out of work, retired, or who did not define their industry/occupation in the census.



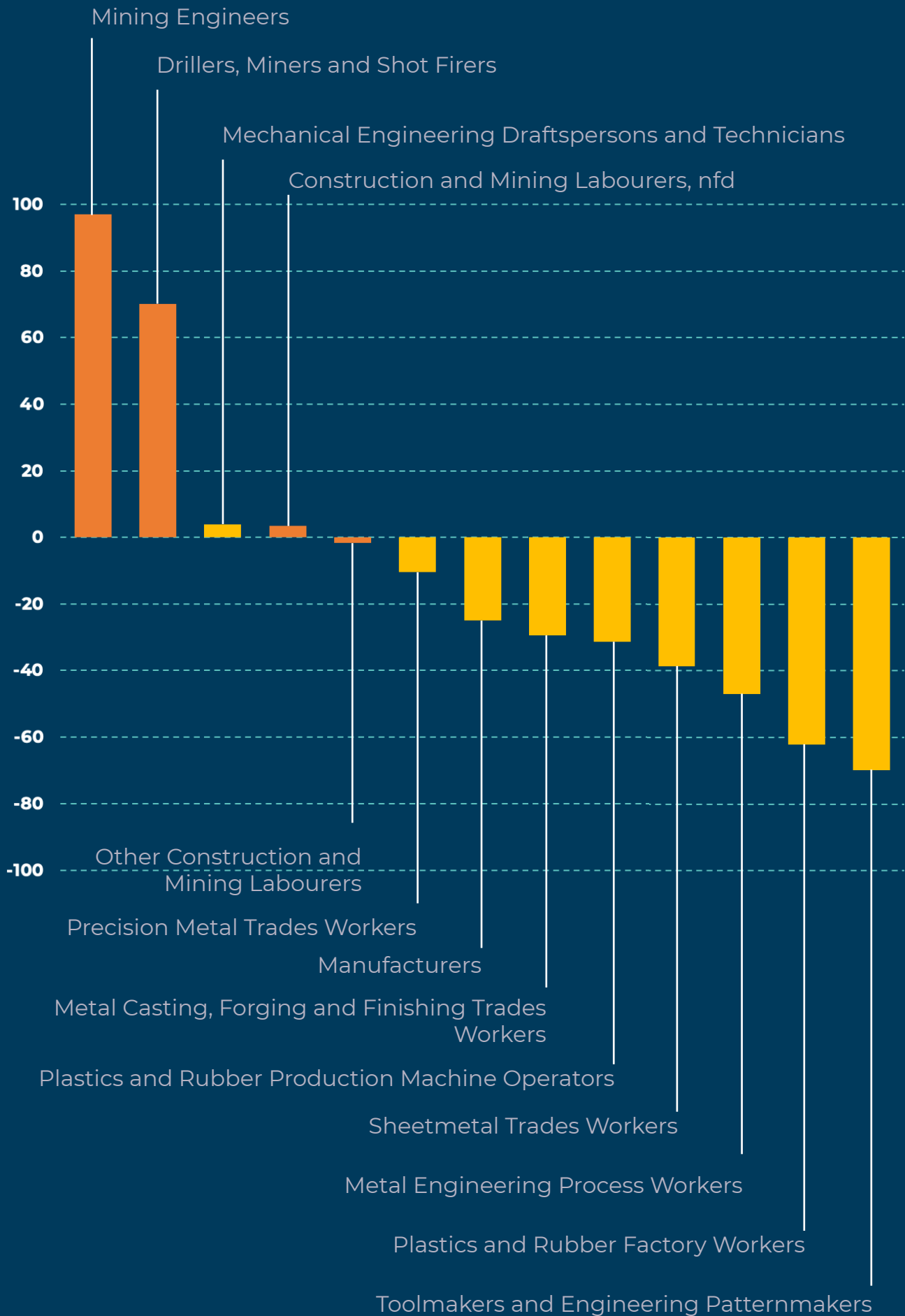
| INDUSTRY | 2006 CENSUS | % | 2021 CENSUS | % | JOBS LOST/ GAINED | % CHANGE |
|---|----------------|-------|-----------------|-------|-------------------|----------|
| Agriculture, forestry and fishing | 280923 | 3.17 | 282227 | 2.45 | 1304 | -0.72 |
| Mining | 106898 | 1.21 | 214759 | 1.86 | 107861 | 0.66 |
| Manufacturing | 952016 | 10.74 | 714759 | 6.20 | -237257 | -4.53 |
| Electricity, gas, water and waste services | 89451 | 1.01 | 134368 | 1.17 | 44917 | 0.16 |
| Construction | 709844 | 8.00 | 1067645 | 9.27 | 357801 | 1.26 |
| Wholesale trade | 396361 | 4.47 | 311863 | 2.71 | -84498 | -1.76 |
| Retail trade | 1033193 | 11.65 | 1099617 | 9.54 | 66424 | -2.11 |
| Accommodation and food services | 575113 | 6.49 | 783737 | 6.80 | 208624 | 0.32 |
| Transport, postal and warehousing | 427793 | 4.82 | 546364 | 4.74 | 118571 | -0.08 |
| Information media and telecommunications | 176820 | 1.99 | 166872 | 1.45 | -9948 | -0.55 |
| Financial and insurance services | 348586 | 3.93 | 445121 | 3.86 | 96535 | -0.07 |
| Rental, hiring and real estate services | 153908 | 1.74 | 187621 | 1.63 | 33713 | -0.11 |
| Professional, scientific and technical services | 602018 | 6.79 | 945094 | 8.20 | 343076 | 1.41 |
| Administrative and support services | 286621 | 3.23 | 388432 | 3.37 | 101811 | 0.14 |
| Public administration and safety | 608598 | 6.86 | 797031 | 6.92 | 188433 | 0.05 |
| Education and training | 697805 | 7.87 | 1061320 | 9.21 | 363515 | 1.34 |
| Health care and social assistance | 956149 | 10.78 | 1751717 | 15.20 | 795568 | 4.42 |
| Arts and recreation services | 127393 | 1.44 | 188479 | 1.64 | 61086 | 0.20 |
| Other services | 338213 | 3.81 | 435459 | 3.78 | 97246 | -0.03 |
| Average | | | | | 139725 | 0.26 |
| TOTAL | 8867703 | | 11522485 | | 2654782 | |

CRITICAL OCCUPATIONS

Some of the most desperately needed manufacturing jobs in Australia, essential for product development and transformation of national infrastructure, have virtually disappeared. We tracked the specific OCCP codes for a variety of occupations to understand which manufacturing jobs are growing, and which are in desperately short-supply. We believe that many of these jobs have decreased primarily due to lack of demand as manufacturing jobs have gone overseas, rather than changes in technology, digitisation or advances in manufacturing methods. Specifically, occupations such as toolmakers and engineering pattern makers, which are critical to product manufacturing, have decreased by 70%, making the ones that remain highly sought-after individuals. There are simply not enough remaining to meet the residual manufacturing needs and they therefore also lack the capacity to enable a quick regrowth in manufacturing. There are only 2220 left in Australia and this is cause for concern. We must continue to train these skills and encourage more people to enter the field. We need more people in these occupations if the Australian manufacturing sector is to prosper.

This chart demonstrates the percentage of these jobs which have disappeared between 2006 and 2021. N.B It is important to note that occupation data differs from industry data. The number of individuals employed in the mining industry has grown by more than 100%, but not all mining occupations have grown by this much. Mining companies are also likely hiring more non-mining roles as they have grown – including occupations in IT, transport, HR, professional services etc.

Percentage of **mining** and **manufacturing** jobs lost or added 2006-2021



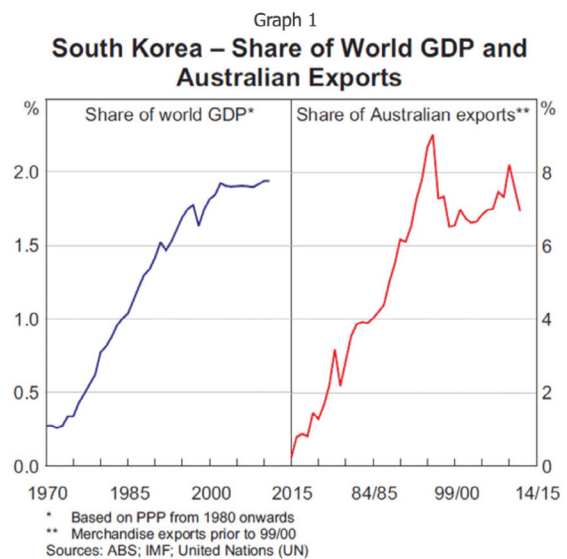
LESSONS FROM OVERSEAS

Australia's top export partners, in order, are China, Japan, South Korea and the US. These same countries are also among our top import partners (along with Europe, Thailand, Singapore, and New Zealand).

There is a clear trend of Australia exporting its raw materials to countries that transform them into something else, which we then import later. Because of labour cost disparities, there has always been a historically strong economic basis for this mutually beneficial relationship. However, Covid and subsequent supply chain disruption has left Australia more isolated since 2020. Businesses and households have been unable to purchase products as easily, or forced to pay a premium to do so. There is now a growing demand to make Australia more self-sufficient, and advances in manufacturing such as automation and robotics mean that more highly skilled jobs can be created in manufacturing, and labour is a less critical overhead in product manufacturing

The jobs, skills and products created by the manufacturing sector could be a boon to Australia's GDP. It could also supercharge Australia's efforts to transition away from fossil fuels, build its renewables infrastructure and grow its EV ecosystem – which lags behind every other developed nation.

The Reserve Bank of Australia published research in the 2015s demonstrating how South Korea had grown its economy in parallel with, and boosted by, importing more raw materials from Australia. The two countries do not lend themselves to a like-for-like comparison, but it underscores the value of our exports and what can be done with them.



S.I.P.S

A CALL TO ACTION

“To revive the Australian manufacturing sector, we need the government to move away from the prevailing dig and ship mentality, to a more beneficial dig, make then ship construct. It needs to act with **speed**, prioritise **innovation**, encourage more **people** to join the industry, and provide **funding at scale**.”

SPEED

“If the sense of urgency wasn’t obvious before 2020, it is now. Australia’s manufacturing sector is flat-lining, and we can’t allow it to stay on life support. We need Government intervention and funding urgently. The new National Reconstruction Fund is hoped to be a shot of adrenaline, but we’re yet to see a penny spent and the latest federal budget made no mention of manufacturing whatsoever. It’s more than a little concerning and we need action ASAP. The sector is still in a state where it can be revived, but that won’t be the case for long as key manufacturing roles move from being critically endangered to simply extinct.

INNOVATION

“Manufacturing investment needs to go to genuinely innovative companies with new ideas. In the past, government grants have been swallowed up by big enterprise companies, or their associated startup brands. Big manufacturing businesses move too slowly and typically take 5-10 years to bring a new idea to reality. They are naturally slow moving, and there is often a conflict of interest with their existing product lines preventing them from disrupting the market.

“Perhaps there should be less of a focus on big enterprise businesses as they can largely fund their own manufacturing programmes. Instead, help startups and small businesses build factories and hire workers in Australia so they don’t look for money overseas and achieve success there. We want to grow and retain manufacturing skills in this country. A bigger ROI can also be achieved by a startup innovating faster with less, than gearing up a large slow moving company that inherently will want to spend more.

PEOPLE

“We need to move away from the idea that university is the preferred destination for all young people currently in compulsory education. It’s not right for everyone, and we need to educate young people on potential careers outside of well-known careers such as construction. Manufacturing needs some good PR so parents don’t think of it as a poorer career choice for their children, but rather as an attractive industry that is driving change. The mining sector has done this incredibly well, making ‘fly in, fly out’ jobs a lucrative and appealing prospect.

“Manufacturing needs to compete with these careers and encourage practical people to undertake apprenticeships and pursue careers in specialist trades. There is a looming trade skills shortage that can’t be sustainably fixed with immigration alone.

SCALE

“Australia needs to learn the lessons of the last 15 years and the consequences of investing in some industries and not others, because not all sectors are equal. It’s natural to give government money to software start-ups in the middle of a tech boom. However, funds should be given based on impact, not just based on what is trendy, or what is perceived to give a short term ROI or the prospect of building another Australian unicorn.

“Manufacturing and national infrastructure startups have much higher overheads and upfront costs. They require outsized investment, but ultimately are positioned to deliver far greater, and longer lasting impact. We cannot solve the big infrastructure and climate issues facing the world without big financial investments in the physical world.



CONRY TECH

Conry Tech's mission is to disrupt the heating, ventilation, and air conditioning (HVAC) industry, improving comfort and making it sustainable by delivering on the following objectives.

01.

Reduce a building's total energy usage by >40% whilst improving comfort. Providing demand side flexibility, enabling true net zero buildings.

02.

Air conditioning designed from the outset to harness clean energy, provide grid demand response capabilities, eliminate fossil fuels, and slash carbon emissions.

03.

Air conditioning that can provide an unprecedented level of flexibility and control for both tenants and building owners, that reduces CAPEX, OPEX, and wasted energy.

04.

A system that improves indoor air quality throughout the building and prevents the spread of airborne contagions such as COVID-19, actively eliminating viruses locally.

"Investing in more efficient air conditioners could cut future energy demand in half."

International Energy Authority.

Invest in us

Join our team

