MCKELL INSTITUTE VICTORIA

The Place to Make

THE FUTURE OF MANUFACTURING IN VICTORIA

OCTOBER 2017

About the McKell Institute

The McKell Institute is an independent, not-for-profit, public policy institute dedicated to developing practical policy ideas and contributing to public debate. The McKell Institute takes its name from New South Wales' wartime Premier and Governor-General of Australia, William McKell.

William McKell made a powerful contribution to both New South Wales and Australian society through significant social, economic and environmental reforms.

For more information phone (02) 9113 0944 or visit www.mckellinstitute.org.au

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FOREWORD

When the last automotive vehicle rolls off the Altona assembly line in late 2017 it will mark a pivotal moment in Victoria's history, as manufacturing has long been at the heart of the state's economic identity. It's a critical time to reflect on Victoria's economic future and that of the nation, since the state's manufacturing sector has been an integral part of Australia's modern success as an open and diversified economy.

It is in this context that we selected the future of manufacturing as our first area of research for the McKell Institute in Victoria. We wanted to explore the ongoing role of manufacturing in supporting prosperity and identify the policy levers governments can pull, not just to ensure that we keep making things locally but to maximise the benefits that domestic manufacturing can generate.

This report seeks to look beyond glib generalisations about the 'death' of manufacturing to describe a sector that remains a substantial source of employment and a fundamental ballast to a receding mining-led investment boom. In doing so, it identifies the McKell Institute's earlier calls to curb negative gearing and capital gains tax concessions as a vital opportunity to build a culture that places a higher value on genuine entrepreneurialism and innovation than it does on property speculation.

When it comes to viable industry policy options, the research finds considerable room between laissez-faire free markets on the one hand and the lazy protectionism on the other. Whether it be providing longer-term certainty and bipartisanship around the industry verticals government is aiming to foster or developing more creative ways to build scale within our small domestic market.

Because a strong manufacturing sector is not an end in itself, it would be a false strategy to seek support it through cutting wages or trashing our environment. Which is why the report directs our focus to strengthening the following five foundations: investing in the skills of all Australians; maintaining competitive energy while doing our part on climate change; creating a more commercial and collaborative culture; strengthening Australia's reputation for quality around the world; and improving our connections with global and domestic markets.

In an era where the beating drum of protectionism can be heard around the world, this report is a timely reminder that there is much we can do to stem the tide at home, and of the opportunities and prosperity that a globally competitive manufacturing sector can and must bring to Australia.

JAMES PAWLUK
EXECUTIVE DIRECTOR
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HON STEVE BRACKS AC
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EXECUTIVE SUMMARY

Manufacturing is the backbone of any strong economy, acting as the economic equivalent of the canary in the coalmine. Despite the shift over the last forty years of traditional manufacturers relocating productions to lower cost economies, Australia's prosperity and egalitarian framework hinges on the country's capacity to manufacture goods for global and domestic use.

The Australian experience is not unusual amongst advanced economies. We are, however, an extreme example of the hollowing out of the sector. With the closure of automotive production, Australia becomes the only G20 country, alongside oil-rich Saudi Arabia, not to host an automotive manufacturing industry. For Australia and Victoria, the question of 'where now for Australian manufacturing?' is not only relevant but urgent if we are to successfully recalibrate the ecosystems created by automotive manufacturing into the wealth and job creating systems of the future. However, opportunities will not happen automatically but must be actively seized by government and industry whilst we still possess capacity.

The narrative that Australia's macroeconomic condition and labour market precludes manufacturing production must be dispelled. Manufacturing is thriving and becoming more innovative across comparable developed economies, from long-term manufacturing leaders like Germany, to countries formerly in manufacturing decline, such as the USA and the UK, who are currently experiencing a renaissance. Asian manufacturing giants such as China and Japan can also reveal valuable lessons as to how governments can foster industry ecosystems and support the sector. Though the difference in part can be explained by the impact of the resources boom, this report shows that Australia's trend can also be explained by declining labour productivity and differences in industry policy and business culture that leave our manufacturers exposed and without consistent support.

Australia ranks low among comparable countries for industry subsidization and tariff protection, a policy deficit that has made it difficult to sustain and grow a vibrant manufacturing sector. Geographical and population constraints also significantly preclude the industry from scaling production effectively. Despite the argument that high wages were significantly responsible for the decision by automotive manufacturers to remove their production facilities, Victorian manufacturing cannot regain a competitive advantage over competing nations in Asia and elsewhere by slashing labour costs. Where our competitive areas in manufacturing will rely on highly skilled labour, our advantage should only be restored through productivity gains, innovation and increased investment. These broad strategies for the sector will build the advanced manufacturing capacity essential in areas like complex and bespoke mechanical parts and instruments, advanced materials, biotechnology and consumables that Australia is well placed to offer.

Part 1 of this report provides an overview of the recent history of manufacturing in Victoria and the current state of the sector. Victoria hosts 28 per cent of all manufacturing production in Australia but is undergoing major change as the automotive industry departs and tens of thousands of skilled, high-value jobs have disappeared. Our current advantage in the global market resides in advanced manufacturing, research and development intensive production that will overcome our high production costs. The manufacturing landscape that we will need to nurture has been described as 'Industry 4.0' and involves increased digital connectivity of products and processes, the use of data exchange and analytics, customisation and elements of pre and post production services. Rather than conceiving of manufacturing as only a vertical industry, built around the supply chain for certain key products such as cars, we should shift to a 'horizontal' conception of manufacturing that is part of many different supply chains and services.

Part 2 argues for the importance of a manufacturing sector for the diversity and resilience of the Australian economy in the face of global economic uncertainty. It points out the benefits of a sector like manufacturing as a long-term source of increasingly higher-skilled employment, and a backbone of the future working class and middle class, as well as a foundation for our national security and social mobility. On the whole, we argue that manufacturing should be a net-contributor, integrated into a broader economy without an ongoing reliance on government support that outweighs the spillover benefits and economic 'ecosystems' it nurtures. Further, the viability of the sector must not rely on compromising certain 'non-negotiables', namely environmental sustainability and good labour market conditions. Finally, this part makes the case for the first set of recommendations, reviewing how well Australia's macro-stabilisers support a diversified economy and the need to improve tax incentives to better favour entrepreneurialism, including in manufacturing, over property speculation.

Part 3 focuses on purpose built industry policy and 'top-down' measures designed to assist manufacturing businesses. State and Federal policies would benefit from greater consistency and tighter coordination across both levels of government. The aim of industry policy should be to foster the production of technologies in the new 'horizontal' manufacturing landscape that carry the potential for spillover and multiplier effects and the development of manufacturing ecosystems. For many years this position as the centre of a broader chain of supply and innovation was the advantage of the automotive manufacturing sector to the Victorian economy, and governments should be on the lookout for similar opportunities in the context of a horizontal sector of advanced and smart manufacturing. This part also discusses the longstanding challenges of geography and scale for Australian manufacturing, outlining strategies such as a 'global-first' approach from industry, coordination of demand by business and government, and government procurement policy. Finally, this section highlights the importance of Small and Medium-sized Enterprises to our future manufacturing sector, which global trends indicate is less likely to be centred around a few big producers, and the challenges SMEs face in accessing and benefitting from many of the current industry policies. Given the challenges in government dealing directly with SMEs, industry policy of broad application should be more tailored to the needs and challenges of SMEs particularly in terms of facilitating an export oriented attitude and R&D incentives.

Part 4, the longest part of our report, contains the bulk of our recommendations that aim to grow and strengthen the foundations of Victorian manufacturing, covering:

- **Investing in the skills of all Australians** – Addresses the reality of the current economy and dearth of STEM skills and educational opportunities for older Australians through a lifelong learning program, encouraging careers and education in manufacturing throughout a person's life.
- **Maintaining competitive energy while doing our part for climate change** – this highlights the need for energy and climate change policy to be a stable foundation for manufacturing that avoids adverse distortions. In moving to renewable energy, we should create a policy mix that ensures that our transition to a low carbon economy retains sustainable energy prices for manufacturers, retaining this important competitive advantage.
- **Creating a more commercial and collaborative culture** – Australia ranks poorly for collaboration between business and research institutions. Though organisations are making advances in this regard, there is room for significant improvement, and many of the challenges faced by SMEs in terms of capital investment in high technology could be overcome by embracing collaboration.
- **Strengthening Australia's reputation for quality around the world** – Australia needs to develop a universal 'Brand Australia' marketing and branding strategy. Australian producers' competitive advantage in quality could also be nurtured through the enhancement and enforcement of strong quality standards across industry in which manufacturing is a part, which supports and protects our industries' strengths from non-compliant overseas competitors, increasing total investment and sales. Though this report rejects the throwbacks of traditional protectionism, there exist ways that can provide an advantage to our industries without compromising our open economy and participation in the free trade world.
- **Improving our connections with global and domestic markets** – How government and industry can build expertise in engaging with global and domestic markets, considering the global first approach this report advocates. These include but are not limited to investment in domestic infrastructure and in technologies that could reduce the costs of distribution and logistics, particularly for SMEs that are not individually operating at a scale that encourages expansion and exporting at their own expense.

Though this report does consider the potential technologies and industries that the Victorian sector should embrace to stimulate ecosystems and make the most of its competitive advantages, identifying growth areas is not the primary consideration of this report. What we are concerned with is developing the suite of macroeconomic levers, industry policies, and foundational policy and culture across industry, government and the workforce to the point that Victoria is an environment well placed to develop a suite of new and existing technologies, and continue to adapt and innovate the sector to be a resilient pillar of a diverse and resilient economy in the medium to long term.

PRIORITY AREAS & RECOMMENDATIONS

PRIORITY AREA 1:
A MANUFACTURING SECTOR THAT SUPPORTS OUR ECONOMIC RESILIENCE & PROSPERITY

RECOMMENDATION 1
Review the adequacy of existing macroeconomic stabilisers for ensuring a robust, diversified economy.

RECOMMENDATION 2
End the favourable treatment in our tax system of speculation over entrepreneurialism as a means of building wealth.

PRIORITY AREA 2:
DYNAMIC AND RELIABLE INDUSTRY POLICY

RECOMMENDATION 3
Governments should provide maximum certainty in industry policies including R&D tax credits, or target growth sectors.

RECOMMENDATION 4
Within target sectors, governments should stimulate specific opportunities to develop new ecosystems with potential for spillover and multiplier effects.

RECOMMENDATION 5
Develop new pathways for Victorian businesses to achieve scale including adopting a 'Global First' attitude and exploring opportunities for demand-side incubation.

RECOMMENDATION 6
Ensure a level-playing field with strong anti-dumping protections & best-practice local procurement requirements.

RECOMMENDATION 7
Ensure Intellectual Property protections appropriately support higher value activities, such as design and research, in the production value chain.

PRIORITY AREA 3:
THE RIGHT SKILLS IN THE RIGHT PLACE

RECOMMENDATION 8
Governments need to promote manufacturing as a positive career choice through levels of education.

RECOMMENDATION 9
Ensure TAFE and University graduates emerge work ready.

RECOMMENDATION 10
Governments need to address the skills challenges and labour market changes that lie ahead by making 'lifelong learning' a reality for everyone.

RECOMMENDATION 11
Develop a workforce mobility strategy through COAG.

PRIORITY AREA 4:
MAINTAINING COMPETITIVE ENERGY WHILE DOING OUR PART FOR CLIMATE CHANGE

RECOMMENDATION 12
Ensure our energy and carbon abatement policies provide a path to a low carbon future whilst maintaining reliable and competitively-priced energy.

RECOMMENDATION 13
Responses to current energy challenges should prioritise market arrangements that support competitive investments in new technologies.

PRIORITY AREA 5:
CREATING A MORE COMMERCIAL & COLLABORATIVE CULTURE

RECOMMENDATION 14
Increase collaboration between employers, employees and their representatives.

RECOMMENDATION 15
Improving our commercial mindset across government and business and treat commercial innovation on par with other forms of innovation.

RECOMMENDATION 16
Government departments and agencies must be more aware and proactive around the commercial implications of procurement.

RECOMMENDATION 17
Capital barriers to SMEs should be overcome through co-investment and asset sharing between research institutes, government and businesses, and eventually amongst multiple different businesses.

PRIORITY AREA 6:
STRENGTHENING AUSTRALIA'S REPUTATION FOR QUALITY AROUND THE WORLD

RECOMMENDATION 18
Build equity in 'Brand Australia' to better market the quality of Australian-made goods.

RECOMMENDATION 19
Use evolving standards supported by strong compliance to strengthen Brand Australia and support domestic production base.

RECOMMENDATION 20
Cultivate provincial brands through support for marketing and production cooperatives.

PRIORITY AREA 7:
IMPROVING OUR CONNECTIONS WITH GLOBAL AND DOMESTIC MARKETS

RECOMMENDATION 21
Investing in world-class domestic infrastructure with efficient utilisation driven by competition and big data.

RECOMMENDATION 22
Develop competitive access to overseas markets via both air and sea as well as in-country services.

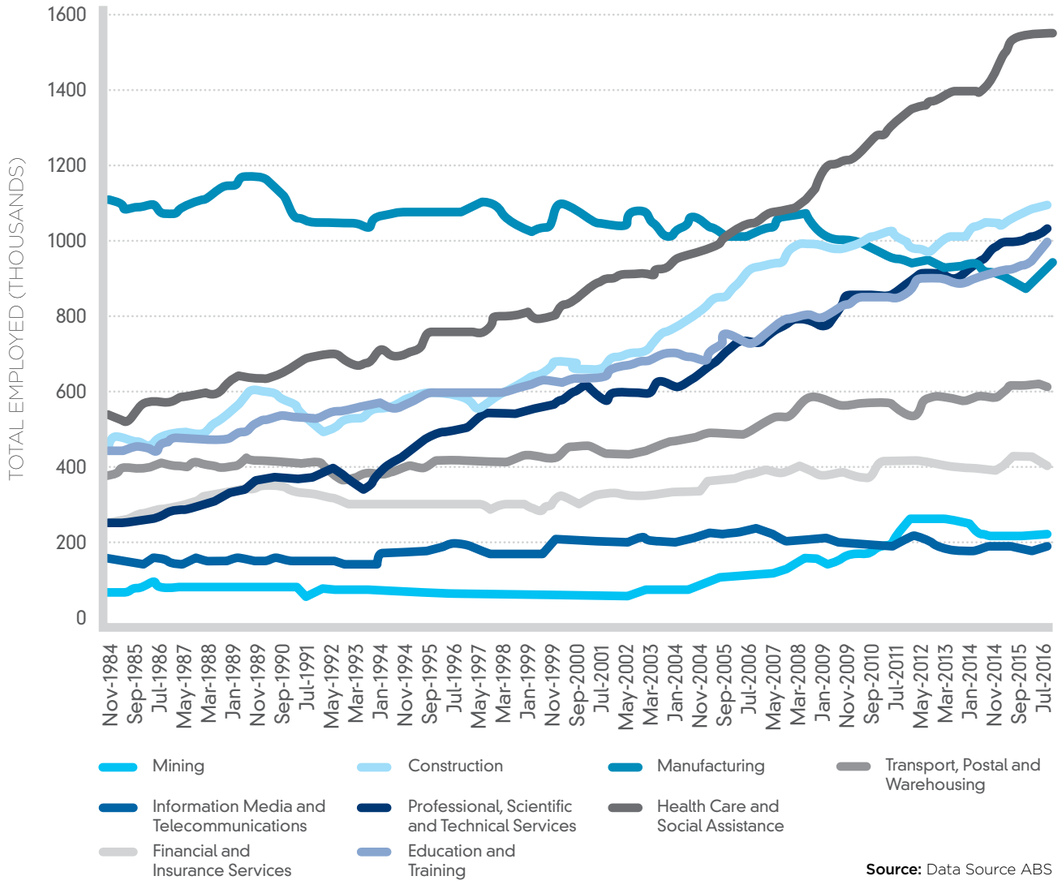
RECOMMENDATION 23
Reform cross border processes, including cost-recovery arrangements, to better reflect the modern complexity of global supply chains.

PART ONE:
THE CURRENT STATE OF VICTORIAN MANUFACTURING

Victorian manufacturing continues to remain strong despite challenges

Victoria's manufacturing history is one of strength and capability in the face of adversity. The global liberalisation of economies over the last 30 years has suggested to many that manufacturing in Western nations can only be achieved successfully through historically inefficient and wasteful protection, slashing labour costs, increased innovation and/or increased productivity and a complimentary floating exchange rate.[1,2] This report argues that these first two scenarios – protectionism, and lower labour costs - are not required for Australia to remain a successful manufacturing nation. Additionally, such false solutions attack the core of Australia's egalitarian foundation and design. The halcyon days of global openness and economic growth – from opening of the global economy late in the 1970s and 1980s until the global financial crisis in 2008 – seem an eternity from where we are now. Global growth has been anaemic and inequality has been expanding. This has helped to create a resurgence in protectionist movements across the Western world that have subsequently increased political instability and dented investor confidence.[3,4] With digitisation and automation changing the nature of production and capital, traditional manufacturing ecosystems built around centralisation are also becoming antiquated. It is in this context that Victoria has been challenged following the departure of the car industry from the state. But far from signalling the 'end' of manufacturing, the departure of the automotive industry represents the departure of just one pillar of high-value, high-employment and highly innovative manufacturing. The challenge for Victoria is to find what can fill this void going forward, not conduct a premature post-mortem on what went wrong with our manufacturing sector. As of 2015, Victoria still employed 247,415 people in manufacturing out of an Australia wide total of 913,300, demonstrating the reality that manufacturing remains a significant sector of Victoria and Australia's economy, and will remain a significant employer of Victorians in the future with appropriate policy settings in place.

FIGURE 1.1
Australian employment by industry 1984-2016



Source: Data Source ABS

Australian manufacturing has typically grown for 30 years, albeit slower than the wider economy

As politicians frequently state, Australia has historically prided itself on being a country that made things. Historically, tariff protections in the decades following federation aimed at nurturing Australian industry were as fundamental a pillar of our economy as were the decent working conditions secured by unionised manual labourers. At the time, this was the most reasonable strategy to protect and nurture the nascent industry of a young nation emerging onto a laissez-faire global economic stage. Much of the push for industry protection came from Victoria, which has long been the leading state in Australian manufacturing. In the early decades, as manufacturing grew, Australia was still 'riding on the sheep's back', with agricultural exports constituting the bulk of our overseas trade.[5] However, the period also saw the beginnings of Australia's future manufacturing strength. The 1920s saw the arrival of U.S car manufacturers General Motors and Ford in Australia, who set up subsidiaries in several states to assemble cars using imported components. The 1930s saw the establishment of the BHP steelworks at Port Kembla, New South Wales, the pioneering GMH plant at Fishermen's Bend in Melbourne, and the timber mills in Burnie, Tasmania.[6] Building from these foundations, during and after the Second World War, a mixture of necessity, relative freedom from the worst disruptions of war, prudent government intervention, and protection led to our manufacturing sector truly coming of age. Manufacturing centres such as Dandenong, Geelong and Shepparton boomed in the post-war decades and were home to a variety of different industries. At its zenith in the 1960s, manufacturing accounted for one in every four dollars of nominal gross domestic product.[7]

Between 1975 and 2006, overall manufacturing output in Australia increased by an average of 1.5 per cent per year.[8] However, growth in other sectors has risen at a much faster rate of 3.3 per cent per annum from 1974-2001 by comparison.[9] The strong performance of these other sectors mean that manufacturing has consistently accounted for a declining 'share' of GDP and employment over the last four decades, relative to other sectors. Though the sector itself still grew for many years, the glory days of manufacturing in Australia began to come to an end by the 1970s, as under the influence of government protection, productivity gains and technological improvements to our products languished compared to trading partners like Japan, just as our trade links with Britain weakened following their entry into the European Common Market.[11] Though the most significant mining boom took place around the turn of the millennium as the volume of Asian purchasing of resources grew, the effects of a turn towards an economy centred around mineral wealth were being felt from the 1970s, as the inflow of foreign capital led to an upward pressure on the exchange rate, leading to a reduction in the price competitiveness of our manufacturing sector, just as wages were rising in our most labour-intensive and trade-exposed industries.[12] From 1974-1976, real manufacturing output actually declined, as did total employment, with the sector only brought back to a growth after introducing higher technology and precision equipment.

The decline in manufacturing requires a policy response that works with other domestic industries

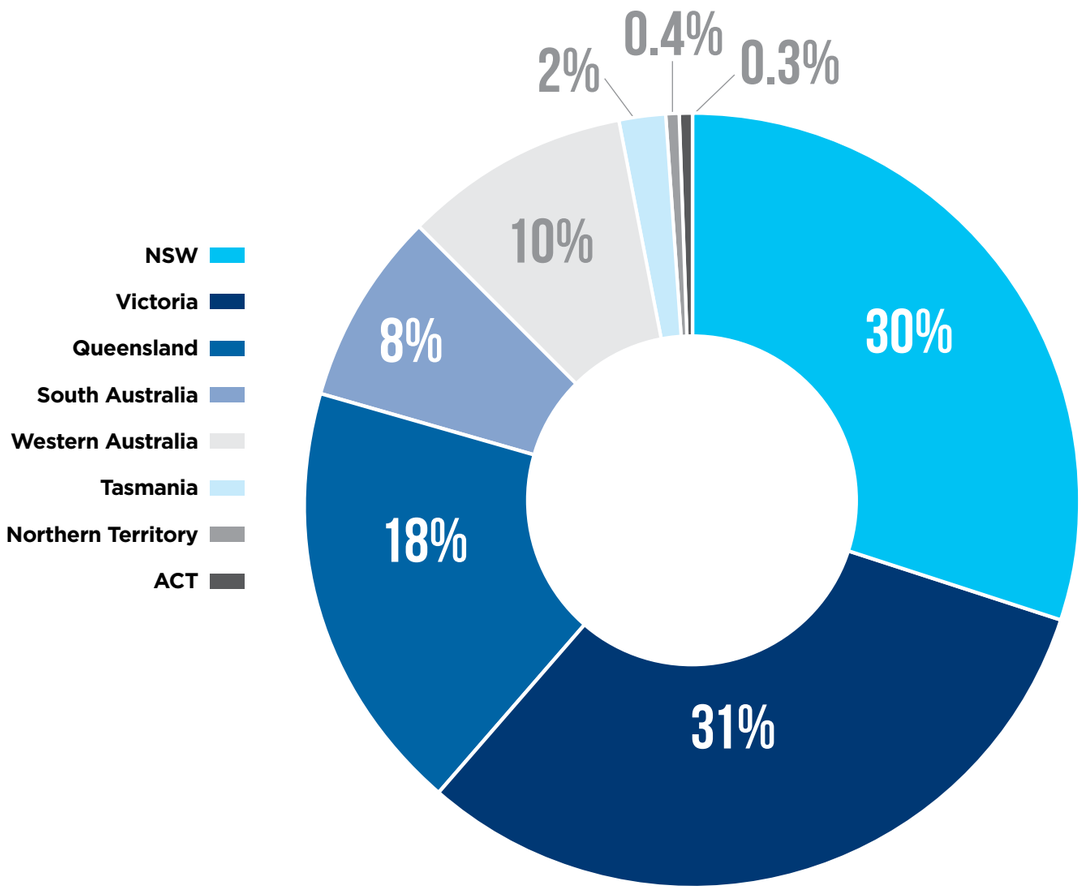
The opening of the Australian economy in the 1980s initially seemed to do good things for the manufacturing sector, which moved to a more export-oriented approach with a more competitive exchange rate after the floating of the dollar. However as the 1990s and 2000s wore on, the combination of the open economy and exposure to the rising manufacturing sectors of Asia, along with the resources boom and a prohibitively high Australian dollar led to a further decline in a sector that had failed to compete with low cost production markets or make sufficient gains in labour productivity.[13] The spectre of 'Dutch disease' loomed over Australian manufacturing in these years – manufacturing decline whilst the terms of trade were unfavourable could progress to such an extent that when the terms of trade rebounded the sector would no longer have the capacity to rebound along with it.

In 2008-09, the overall manufacturing output finally started to fall, a trend we can attribute primarily to the effects of the Global Financial Crisis. While the GFC left Australia relatively untouched overall, it had significant consequences for the manufacturing sector.[14] The current state of Australia's manufacturing sector represents the latest and most extreme iteration of a long decline. The contribution of the manufacturing industry to the overall size of the Australian economy has now been falling over many years, and by 2013-14 its share of gross domestic product (GDP) was 6.5 per cent, less than half what it was four decades earlier, as has its gross value added.[15] Operating profits have fallen steadily from 2009-2010, and private capital expenditure in manufacturing has been steadily decreasing to levels not seen for over two decades.[16] Unsurprisingly recent years have seen a steady decline in the number of persons employed by the sector and the hours worked – 878,100 persons were employed nation-wide in the sector in the February quarter of 2016, a decrease of 20,400 from a year before.[17]

Victoria leads manufacturing in Australia, making up 27 per cent of income from the sector

Victoria is well placed to transition and expand its manufacturing sector, and the size of its manufacturing workforce and the supply chains that have grown up around it means that there is an imperative to do so. Victoria has historically been a leader in manufacturing; it contains diverse manufacturing centres such as Dandenong, Geelong and Shepparton, and it has long been home to large scale employers such as Holden, Ford and Toyota, and Alcoa's Portland aluminium smelter. Manufacturing still looms significantly in Victoria today; the state makes up about 27 per cent of total Australian income from manufacturing as of 2015, and around 31 per cent of the total manufacturing workforce are employed in Victoria.[18]

FIGURE 1.2
Percentage of employees in manufacturing in each state 2014-2015



Source: Australian Bureau of Statistics http://www.abs.gov.au/ausstats/abs@.nsf/mf/6291.0.55.003

In terms of manufacturing employment, Victoria has seen an increase in employment of 9,400 people between 2013-2015, particularly in Shepparton and Melbourne's East.[19] Business Expenditure on Research and Development has also increased in most sub-sectors of manufacturing, indicating a willingness and recognition of the need to develop and transition the sector, and manufacturing has also seen an increase in exports, despite its declining place in the economy overall.[20] Most promisingly, the Australian Performance of Manufacturing Index has recorded an increase in manufacturing activity in 2015-16 for the first time since 2009-2010, and production has increased in this last year by over 6 percentage points.[21]

Manufacturing comprised 8.8 per cent of Victoria's economy, ahead of 7.5 per cent of Australia's economy overall, and 9.6 per cent of Victoria's workforce.[22] The sector is far more diverse, and far more varied in its overall fortunes, than some of the graver homilies over the end of automotive manufacturing may indicate. Advanced manufacturing contributed 3 per cent to GDP and 2 per cent of the workforce.[23] This latter form of capital intensive productivity is an area where Victoria possesses an existing competitive advantage to develop and transition those sub-sectors, especially automotive, that have seen decline.

Thus, while the overall picture of the sector is of declining employment, fresh investment and expenditure, and decreased significance to the economy overall – there are signs that manufacturing is coming out of the productivity slump it entered shortly after the Global Financial Crisis. These signs of steady recovery and stabilisation run contrary claims that the era of manufacturing as a major employer and a significant and expanding sector of the economy is at an end. However, a successful transition, particularly one to advanced and high technology manufacturing, will not happen spontaneously or through the efforts of business alone.

Currently, manufacturing is dominated in both employment and income measurements by food product manufacturing, which is typical of the sector across the board.[24] Amongst other factors in regards to labour productivity and intensity, this is in part due to the fact that this sub-sector is more resilient to trends in international trade, as it has a healthy and reliable domestic market.[25] Food production as a share of total sector employment is followed by transport equipment manufacturing, fabricated metal product manufacturing and machinery and equipment manufacturing.[26] As a share of the total sector therefore, advanced manufacturing around complex vehicles and parts remains reasonably robust albeit in decline. With the final departure of Toyota and Holden in 2017, following that of Ford in 2016, this will change and the flow on effects to the extensive supply chain of parts manufacturers and services that has grown up around the major suppliers since outsourcing in the 1980s will mean that this source of advanced manufacturing capability will either die, or need to urgently find alternative products and knowledge to transition towards.

The closing down of the automotive industry in Victoria will result in massive job losses

The departure of automotive manufacturing by late 2017 is expected to result in 5000 job losses in Victoria from the three major manufacturers, out of a total of 6000-7000 nationwide.[27] The indirect job losses in the automotive supply chain that has grown over the past several decades, principally the closure or downsizing of businesses that do not have a plan to transition after the departure of the major producers, are more difficult to measure, though they will substantially increase the magnitude of the loss felt by this departure. The automotive industry was more than the sum of its parts, and the most pessimistic measurements put total job losses for Victoria at 98,483 jobs, almost half of total losses nationwide.[28] More positive estimates still place total Victorian job losses at 25,000 by 2018, with a cumulative impact from the concentrated nature of the closures.[29]

Post-GFC, the Federal Labor Government's strategy, after the tenuous position of the major producers in Australia became evident, was to subsidise car and components manufacturers. This was done under the Automotive Transformation Scheme Act, under which $2.5 billion was budgeted until 2020 to be invested by the car manufacturers in plant equipment and R&D. This was aimed not only at supplementing employment costs, but stimulating spill over effects. After 2013, the federal strategy became focussed upon transition as money was cut from this subsidy scheme, principally the Commonwealth Growth Fund designed to assist worker transition, support diversification by supply chain manufacturers and stimulate innovation-based activities outside the auto industry. This included support for workers both through public 'JobActive' providers and the retraining schemes administered by Toyota and GMH, the Auto Diversification Program for components manufacturers, and subsidies to boost private sector investment in high-value manufacturing across the affected states of Victoria and South Australia more broadly.

Significant investments in automotive transition plans have been made

On a state government level, the Victorian government invested $46 million in its own Automotive Transition Plan with similar diversification subsidies under the Automotive Supply Chain Transition Program. This plan was in addition to already established policies, such as payroll tax concessions and wage subsidies for employers hiring retrenched automotive workers, and regional adjustment funds for Melbourne's southeast and western suburbs and Geelong, which included skills training and subsidies for businesses in affected areas to stimulate new jobs. While these initiatives have been welcomed, the suite of policies has been unable to ensure the retraining and maximum utilisation of the skills of all workers in supply chain businesses, many of which are too small for government to access.[30] Furthermore, the regional adjustment funds are not designed to find employment for workers in the automotive sector, merely to stimulate the regions affected by closures, and a large proportion of businesses accessing these funds were in the service sector. While stimulating sectors such as health services and aged care in Geelong is beneficial for the region's economy overall, the regional growth funds are not particularly tailored to retaining strategic jobs, skills and capabilities essential to a manufacturing sector.[31]

Finally, in terms of industry policy more broadly, beyond the scope of transitioning after the shock of automotive departure, recent years have indicated where state and federal governments see Australia's post-automotive sector transitioning towards. The Victorian Future Industries Fund identified transport, defence and construction technology as suited to future job creation. Additionally, the expansion of transport infrastructure – particularly in central and outer Melbourne – has been coupled with government investment in locally made trains and trams.[32] Support for the transport manufacturing sector is provided through programs such as the Next Generation Manufacturing Investment Programme and Victoria's 'Rolling Stock Strategy,' and Victoria will be home to a consortium manufacturing 65 new trains, each made with 60 per cent local content and creating 1,100 highly skilled local jobs.[33] Defence industry is another growth area marked out by the federal government, with the 2016 Defence White Paper outlining plans to build our aerospace and naval manufacturing capacity with a total of 195 billion spent on defence capability by 2020, most notably the construction of 12 submarines in Adelaide.[34] Though the invigoration of defence manufacturing is not of particular benefit to Victoria's sector, it does signal that Australian policymakers have not given up on manufacturing despite the clear challenges to the industry. The federal government is on the lookout for new sectors that could fulfil the foundational role played by the automotive industry, in which Australia possesses advantages, and that may not be exposed to the same forces that led to the departure of the big automotive producers. This ought to be done with an eye to the strategic value of the skills and capacities created and left by automobile production.

Australia's competitiveness is dependent on the capacity to scale effectively

Among G20 nations, only Australia and Saudi Arabia no longer maintain an automotive sector. In Australia, the automotive sector has been historically crucial in fertilizing an ecosystem that encourages research and development, investment, technological spill over and value adding along the entire manufacturing sector, a sector which is distinctly horizontal in nature encompassing inputs into many different areas of the economy. However, labour costs in Australia are high even amongst high quality manufacturing economies, with productivity gains over recent decades being comparatively low. Geographically, Australia faces a disadvantage in that it is a remote nation far from the two biggest world economies, the U.S and EU. Even domestically, Australia's vast expanses create a fractured and dispersed national market that places significant pressure on the capacity to scale effectively.

Manufacturing continues to flourish in comparable advanced economies

This recalibration of the global economy is causing a paradigm shift in the global manufacturing supply chain and a consolidation of manufacturing growth in developing countries as illustrated in the 2016 Deloitte Manufacturing Competitiveness Index listed below.

TABLE 1.1

2016 (CURRENT)			2020 (PROJECTED)		
RANK	**COUNTRY**	**INDEX SCORE (100 = HIGH) (10=LOW)**	**RANK**	**COUNTRY**	**INDEX SCORE (100 = HIGH) (10=LOW)**
1	China	**100**	**1**	United States	**100**
2	United States	**99.5**	**2**	China	**93.5**
3	Germany	**93.9**	**3**	Germany	**90.8**
4	Japan	**80.4**	**4**	Japan	**78**
5	South Korea	**76.7**	**5**	India	**77.5**
6	United Kingdom	**75.8**	**6**	South Korea	**77**
7	Taiwan	**72.9**	**7**	Mexico	**75.9**
8	Mexico	**69.5**	**8**	United Kingdom	**73.8**
9	Canada	**68.7**	**9**	Taiwan	**72.1**
10	Singapore	**68.4**	**10**	Canada	**68.1**
11	India	**67.2**	**11**	Singapore	**67.6**
12	Switzerland	**63.6**	**12**	Vietnam	**65.5**
13	Sweden	**62.1**	**13**	Malaysia	**62.1**
14	Thailand	**60.4**	**14**	Thailand	**62**
15	Poland	**59.1**	**15**	Indonesia	**61.9**
16	Turkey	**59**	**16**	Poland	**61.9**
17	Malaysia	**59**	**17**	Turkey	**60.8**
18	Vietnam	**56.5**	**18**	Sweden	**59.7**
19	Indonesia	**55.8**	**19**	Switzerland	**59.1**
20	Netherlands	**55.7**	**20**	Czech Republic	**57.4**
21	Australia	**55.5**	**21**	Netherlands	**56.5**
22	France	**55.5**	**22**	Australia	**53.4**
23	Czech Republic	**55.3**	**23**	Brazil	**52.9**
24	Finland	**52.5**	**24**	Finland	**49.7**
25	Spain	**50.6**	**25**	South Africa	**49.3**
26	Belgium	**48.3**	**26**	France	**49.1**
27	South Africa	**48.1**	**27**	Spain	**48.4**
28	Italy	**46.5**	**28**	Romania	**45.9**
29	Brazil	**46.2**	**29**	Belgium	**45.8**
30	United Arab Emirates	**45.4**	**30**	Italy	**45**
31	Ireland	**44.7**	**31**	Ireland	**43.7**
32	Russia	**43.9**	**32**	Russia	**43.6**
33	Romania	**42.8**	**33**	United Arab Emirates	**42.6**
34	Saudi Arabia	**39.2**	**34**	Colombia	**40.9**
35	Portugal	**37.9**	**35**	Portugal	**40.1**
36	Colomba	**35.7**	**36**	Saudi Arabia	**36.1**
37	Egypt	**29.2**	**37**	Egypt	**28.3**
38	Nigeria	**23.1**	**38**	Nigeria	**25.4**
39	Argentina	**22.9**	**39**	Argentina	**24.6**
40	Greece	**10**	**40**	Greece	**10**

Source: Deloitte Touche Tohmatsu Limited and US Council on Competitiveness, 2016 Global Manufacturing Competitiveness Index https://www2.deloitte.com/content/dam/Deloitte/us/Documents/manufacturing/us-gmci.pdf

As shown in Table 1.1, by 2020, the top 25 manufacturing nations are expected to include 10 developing countries, rather than the current eight. Existing developing countries in this index have also increased their competitiveness significantly, growing 27 points in aggregate, while developed nations are expected to lose 21 points in competitiveness over the same period, although 48 per cent of this is due to Sweden and Switzerland alone. This does show broadly that developed economies such as Australia are hitting a productivity ceiling in which gains in manufacturing are stagnating, and are thus being overtaken by developing nations with fewer wage and regulatory constraints. With high living standards and effective action on climate change central to Australia's future, it must learn from other developed nations if it is to strengthen its competitiveness. Australia's challenges will persist and we will have to repurpose the strategies of competitors into our geographical, economic and social context. In this era of global economic shifts, we should learn from the increased use by successful manufacturing economies of strategic investment policies within their manufacturing sectors.

Structural trends in manufacturing, the new frontier

Paradigm shifts affect all manner of global and domestic life, economic, environmental, technological or geopolitical. Australia's manufacturing industry is no different. This report identifies five key structural trends that will define the future of manufacturing in Australia:

1. MASS CUSTOMISATION

Advances in technology and greater consumer expectations are causing a shift from mass production of goods to bespoke solutions.

With global population predicted to increase to over 9 billion by 2050 accompanied by a vastly expanded middle class in BRICS economies, consumers are increasingly able to tailor their goods to their own circumstances on a macro and micro scale.[35] Coupled with the huge strides in technology that allow manufacturing to be done to order, rather than to stock, these patterns are eroding the efficacy of the traditional centralised assembly line model of production. Further advances in communicative tools and online payment methods are also transforming previously stubborn cycle-times and costs, increasing efficiency and efficacy. Third parties will also be less relevant as these tools improve, further lowering costs and production times.[36]

2. SUPPLY CHAIN EVOLUTION

Collaboration is increasing as a result of growing consumer need for specialised products. Paradoxically, technological advancement is also seeing increased vertical integration capability for large scaled enterprise.

Linked to mass customisation, the rise in tailored products is increasing the challenge for manufacturers in meeting all the needs of their consumers. This is causing manufacturers to move into a more specialist direction and away from a generalist approach such as tailoring and customisation expands. This evolving environment is predisposed to developed economies with a high level of digitisation, where there is a market for niche products that are typically small and easily transportable, affecting the supply chain and reducing transport costs. This new environment favours collaboration as an essential component of competitiveness and success. The specialisation that it demands from individual manufacturers dictates that these same manufacturers cannot fully satiate consumer needs.[37] Advances in communication are also making it easier to connect and organise resources together across different areas of the supply chain in a domestic and global context. However, tools like 3D printing may encourage the reverse pattern of production when consumer demand requires a more highly complicated product. This phenomenon will create scenarios where large manufacturers increase market share through vertical integration of increasingly complex stages of design, prototyping and manufacturing. Both patterns are resulting in generalist middle ground manufacturers with traditional assembly line supply chain models losing ground, with this traditional mode of production becoming obsolete.[38]

3. SUSTAINABLE OPERATIONS

The forces of climate change, increased consumer demand for ethical business practices and finite resources, more sustainable and efficient practices are demanded by consumers, governments and the environment.

Adding to these significant challenges is exponential global population growth since the 1950's, predicted to comfortably surpass 9 billion by 2050.[39] These four factors will all be managed effectively in part by the manufacturing sector, a sector that requires significant amounts of finite resources such as minerals, water and energy. Water demand alone is set to increase 400 per cent between 2000 and 2050. Manufacturing industries also use around 30 per cent of global energy with demand expected to grow by 40 per cent to 83 per cent through to 2050.[40, 41] The more dangerous and unpredictable climate change becomes, the harder it will be to effectively forecast and in turn effectively manage a sector vital for global, Australian and Victorian prosperity and security. Paired with growing consumer sentiments reflecting this reality and manufacturers will need to transition to life cycle costs management to improve the value chain and cater for consumer demands heavy on sustainability.

4. SERVICE EXPANSION

Manufacturers are expanding their role in the value chain from making 'widgets' to developing tightly integrated service-product bundles.

Customer demands are shifting away from products and towards services and experiences. At the same time, global connectedness continues to grow rapidly. This is allowing people, businesses and governments to obtain information, perform transactions and interact with each other, and machines, through virtual platforms.[42] These drivers are causing manufacturers to shift from a product-focused business model to a client-centric model. To better understand and meet the needs of their customers, manufacturing companies are taking greater control of operations further down the supply chain (closer to the customer). The Service Expansion megatrend is shifting the activities and profit base of manufacturers towards the provision of ongoing services for the products that the company supplies.

Another factor driving this megatrend is an increasing proportion of customers who do not want the financial and environmental burden of product ownership. Companies like Uber and Airbnb have transformed physical products into services through collaborative consumption, shifting the economics of usage from product to service, and changing to platform based business models. Now sectors are beginning to see established corporate businesses adjust to the shift. For example, large automakers are launching their own car sharing platforms such as Ford2Go, DriveNow (BMW) and Park24 (Toyota). Business models based around this shared use of assets incentivises manufacturers to provide more robust products – aligning the incentives of producers and users – and allows the creation of new service based revenue streams.[43]

5. SMART AND CONNECTED

Advances in data capture and analytics are optimising operations across the manufacturing value chain and the factory floor.

The significant increase in connectivity is only predicted to grow. This phenomenon dubbed 'the internet of things' allows for further integration and harmonisation of vast reams of data currently confined to more limited use. On a micro scale, manufacturers in their workshops are increasingly possessing technology that is learning and recalibrating their outputs to synthesise with one another more efficiently. This connectivity is expected to become more embedded and advanced as years go by, increasing competitiveness in the process.[44] On a macro scale, manufacturers can now use the emergence of the internet of things across the product cycle, upgrading software, diagnosing faults and attaining efficiency dividends that resultantly overlap with our Service Expansion section.

PART TWO: THE IMPORTANCE OF MANUFACTURING

PRIORITY AREA 1:
A MANUFACTURING SECTOR THAT SUPPORTS OUR ECONOMIC RESILIENCE & PROSPERITY

RECOMMENDATION 1

Review the adequacy of existing macroeconomic stabilisers for ensuring a robust, diversified economy.

RECOMMENDATION 2

End the favourable treatment in our tax system of speculation over entrepreneurialism as a means of building wealth.

Political and economic uncertainty has proliferated around the globe in recent years. In these times, it is essential that Australia secures its future prosperity and security through developing a diversified economy, including vital industries supporting national security and strategic interests such as steel and shipbuilding capabilities, all of which result in constructive spill over effects that encourage technological advancement throughout Australia's economy.[45]

From a Victorian perspective, the catastrophic energy failure at the Portland Alcoa plant in late 2016 came at a precarious time, with margins thinning and energy prices predicted to go up by 4-8 per cent with the imminent closure of the brown coal Hazelwood plant in the La Trobe Valley. Furthermore, the nature of a smelting plant dictates that if there is a significant power outage for a prolonged period then naturally all the molten material will melt in the pots and throughout the infrastructure of the entire plant, which was sadly the case for more than half of the entire facility. This will likely render the plant unviable unless there is significant assistance through all levels of government, industry and unions, which is possible. With the Arrium plant in Whyalla under administration, China dumping steel into our domestic market and compliance measures often proving inadequate to enforce our domestic standards, the fate of Australia's steel industry is incredibly precarious.[46]

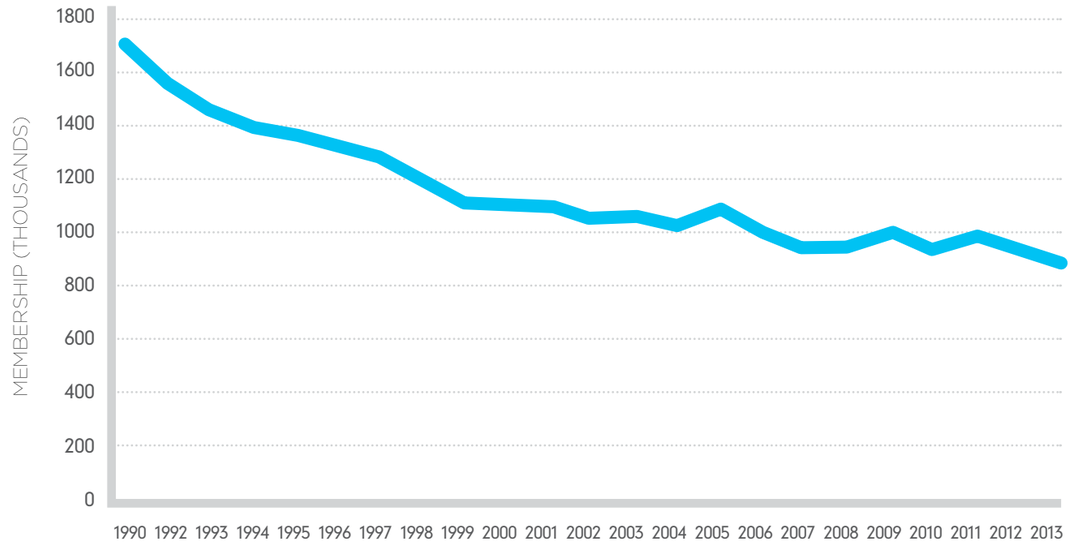
At its pinnacle manufacturing accounted for 29 per cent of Australian employment

While still a major component of Australia's economy manufacturing used to constitute a far more significant section of the Australian workforce than it does today. At its highpoint in 1950-51, during the post-war boom, manufacturing accounted for 29 per cent of total employment.[47] Today, manufacturing accounts for around 7 per cent of the total workforce, and has declined concurrent with the expansion of the service sector.[48] Whilst traditionally seen as a low-skilled but stable form of employment, manufacturing is transitioning towards requiring a high skilled workforce with competency not only in complex machinery, but increasingly also science, technology, engineering and mathematics (STEM) skills. For less-skilled workers, manufacturing has always provided an opportunity to develop technical competencies within the workplace and provide a decent standard of living for themselves and their families. Developing a large, highly skilled and highly productive manufacturing workforce is of immense value if Australia is to develop a 21st century workforce and not have too much of our population engaged in low-skilled, low-paid occupations.

Employment in the manufacturing workforce is necessarily a value-adding activity, and entails capital inputs that spill over to develop and benefit many sectors of the economy due to the horizontal nature of manufacturing. Thus, manufacturing can provide labour-intensive, highly productive, and increasingly highly skilled jobs that generates further employment in the many sectors of the economy that manufacturing feeds. The impact of the loss of the automotive sector in Victoria is an indication of the extent to which key manufacturing sub-sectors can provide an important source of productivity and employment to the broader economy.[49] Few other sectors possess manufacturing's link to the development of new technologies and other innovations.

FIGURE 2.1

Trade union memberships in main job 1990-2013 (thousands)



Source: http://www.abs.gov.au/AUSSTATS/abs@.nsf/mf/6310.0

Workplaces such as the traditional manufacturing factory are a better environment for labour to organise in historically strong trade unions to achieve better pay and workplace conditions for all workers in an era of increasing casualisation and employment instability. The manufacturing workforce has long been at the forefront in advances in worker's entitlements over our history from the Harvester judgment of 1907 to the Accords of the 1980s, and will continue to do so if it is deservedly nourished with investment. Over 80 per cent of jobs in manufacturing are full-time, and the vast majority of these come with the full suite of employee benefits including paid leave - manufacturing has shown a low propensity to casualise its workforce or use contractors in comparison with workers in low-skilled service sector occupations.[50] Thus not only is manufacturing a source of good jobs, but also a leading sector for industrial reform, with aspirational spillover effects in terms of workers' rights across other industries in an era where we are negotiating a very different future of work.

Given many of the strengths and advantages of a manufacturing sector lie in the historical quality and benefits of employment, there is nothing to be gained from boosting manufacturing by driving pay and conditions down. The choice between working conditions and the strength of the sector is a false one. If anything, the increasingly higher skills requirement of manufacturing means that the sector must retain and improve pay and conditions, to encourage young people to undertake the training and study required to enter manufacturing jobs and to stem any potential brain drain of competent workers to overseas competitors. It is logical that to be an attractive sector, manufacturing must have strong enticements.

Likewise, a future strategy for the revitalisation of manufacturing cannot come at the expense of the environment. The challenge of energy policy will be looked at in more detail in Part 4, however with the imperative to make a transition to clean energy and sustainable practices the future of the sector does not lie in large scale use of fossil fuel energy such as coal. Consumer demand for sustainable production and goods is on the rise, and high-technology renewable energy presents opportunities in and of itself for Australia to become a world leader, and to develop a clean energy manufacturing ecosystem.

Manufacturing is critical to a diversified economy that can withstand external shocks

One of the most commonly offered explanations for the recent decline in our manufacturing sector is that the mining boom ushered in foreign capital which altered our terms of trade to become disadvantageous to our manufacturing sector, discouraging foreign companies from basing their lower-skilled production in Australia.[51] Many economic commentators have argued that Australia is suffering from Dutch Disease – the primacy of mining investment hampered the attractiveness of manufacturing in Australia such that alongside slow productivity gains, the sector languished and hollowed out to the extent that it could not recover when conditions became more favourable, capacity growing too diminished.[52] Diagnoses of 'Dutch disease' are exaggerated – though our manufacturing sector became less competitive over the past 10 to 15 years, it is not so withered that it cannot bounce back to strength and the value of our manufacturing output is still one and a half times higher than it was in 1979.[53] The mining boom teaches there is a need to ensure that any future resources booms do not overheat the economy, which to the extent that it damages the viability of other sectors. Additionally, it is essential that Australia's relatively small economy remains sufficiently diverse, and adaptable to a world in constant economic and political flux. A diverse economy, involving a strong manufacturing sector, can itself function as a macroeconomic stabiliser in future booms. Given boom and bust cycles will be an ever-present feature of any economy, it is vital that we have in place mechanisms that lessen their detrimental impacts and make the most of their benefits in terms of the inflow of capital, collecting revenue that can be used to reinvigorate hollowed industries or invest in the general foundations of economic growth and diversification.

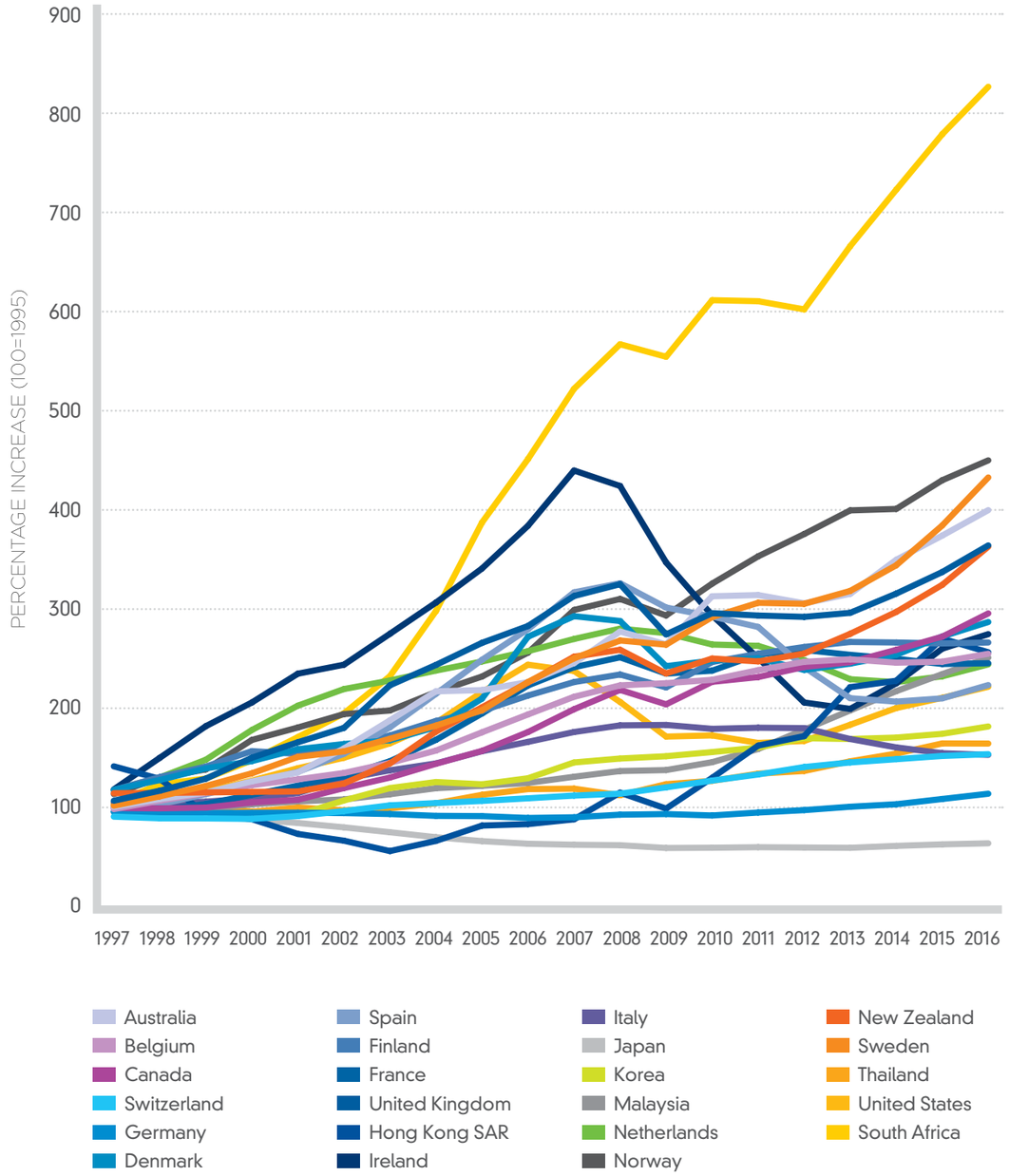
Sovereign wealth funds can act as an economic stabiliser

Mechanisms such as sovereign wealth funds and stabilisation funds can ensure that our economy does not overheat and make Australia's economy vulnerably to international economic headwinds.[54] Sovereign wealth funds can serve this role as well as creating capital for investment in downtime and reinvigorate sectors that are trade exposed. Though Australia's 'Future Fund' performs well, countries such as Norway with its Government Pension Fund, Alaska's oil based Sovereign Wealth Fund, the Stabilisation Fund of the Russian Federation, and the Copper Stabilisation Fund of Chile have all proven to be valuable sources of revenue, as well as insulators from the volatility of resource exportation.[55] With prudent stabilisation and investment by government from such funds in building manufacturing capacity, this sector eventually becomes in and of itself a form of economic stabilisation, preventing over-reliance upon short-term mineral boom and bust cycles. In this way Victoria, and Australia more broadly, can avoid the consequences currently being faced by Western Australia from over reliance and investment in one industry.[56]

Manufacturing is real entrepreneurship and genuine wealth creation

Financially-savvy Australians looking to invest savings from their early career have for years looked to the property market more than any other industry to invest by an order of magnitude. Our mix of tax incentives sends clear signals to invest capital in property rather than in entrepreneurial activities such as starting or expanding a business that delivers net benefits to the economy in terms of jobs and spillover effects and significant return on investment.[57] The much talked about housing crisis is well documented, such as in The McKell Institute's 2012 *Homes for All*, report and subsequent recommendations should still be adopted to reduce housing speculation, such as negative gearing and capital gains tax reform.[58] But in the context of the future of manufacturing, these reforms are as much about creating a fairer housing market for all Australians as about channelling more capital into productive areas of the economy and signalling to the next generation of wealth-builders that we want them make their mark as business entrepreneurs in areas such a manufacturing rather than speculating on land.

FIGURE 2.2
Property price percentage changes 1997-2016



Source: Bank for International Settlements (2016). Property prices. Long series. [online] Basel, Switzerland: Bank for International Settlements. Available at: http://www.bis.org/statistics/full_data_sets.htm.

PART THREE:
INDUSTRY POLICY TO SUIT THE VICTORIAN CONTEXT

PRIORITY AREA 2:
DYNAMIC AND RELIABLE INDUSTRY POLICY

RECOMMENDATION 3
Governments should provide maximum certainty in industry policies including R&D tax credits, or target growth sectors.

RECOMMENDATION 4
Within target sectors, governments should stimulate specific opportunities to develop new ecosystems with potential for spillover and multiplier effects.

RECOMMENDATION 5
Develop new pathways for Victorian businesses to achieve scale including adopting a 'Global First' attitude and exploring opportunities for demand-side incubation.

RECOMMENDATION 6
Ensure a level-playing field with strong anti-dumping protections & best-practice local procurement requirements.

RECOMMENDATION 7
Ensure Intellectual Property protections appropriately support higher value activities, such as design and research, in the production value chain.

There is a need for consistency and stability in industry policy

Due to Australia's constitutional make up and federalist system, and short election cycles, the constant problem of misalignment and failure of coordination can pollinate the public policy space. This has implications for the manufacturing sector. While the nature of Australian policy formulation can't be changed overnight, there is still much that can be done to promote intergovernmental cooperation and coordination using successful examples from abroad and depoliticising the manufacturing sector and reimagining it as a sector that fundamentally underpins Australia's innovative capacity and economy. Thankfully, both the federal and state governments have similarly identified the areas where manufacturing needs to improve. This growing consensus has the potential to generate into meaningful and tangible cooperation and outcomes so that industry can invest in confidence.

Technologies that stimulate ecosystems and create spillovers are essential

CASE STUDY

Intellectual Ventures Laboratory

Even with the advent of the internet creating massive gains in connectivity and information sharing, traditional institutions of information such as universities and much of the Australian private sector largely work in balkanised and closed learning environments can be counterintuitive to more production and innovation. Enter Intellectual Ventures Laboratory in California USA.

It works on the simple premise of hiring a single scientist from every field of science along with one piece of machinery symbiotic with that field of work and they collectively attempt to solve Earth's most challenging and pressing problems, with great cross pollination results due to their one roof structure and culture of revolutionary ideas.[59, 60]

It is also a model that could fundamentally change the way innovation is looked at, turning the nature of innovation from something achieved through closed and specialised research to something that actually is done through more collective means. It is this complete reversing of the current invention and innovative model that is so exciting and is so far producing impressive results for the manufacturing sector listed below:

MULTI AXIS MILLING	ELECTRIC DISCHARGE MACHINING
Sheet Metal Fabrication	CNC Lathes
Water and Laser Cutting	Welding

There are two other important aspects to IVL, their patent scheme and invention submission scheme. With a few clicks of a mouse from anywhere in the world anybody can submit their patent for purchase or their invention idea/schematics for the IVL team to purchase. This important feature can allow for growth in SME's or young individuals who may not have the money, time or business wherewithal to develop their idea further, allowing them grow in partnership with a world class organisation and grow from there. While most IVL's work is dedicated to areas outside of manufacturing, this model of invention and innovation could be adapted to Victoria's need, though protections to mitigate patent trolling should also be examined.

New pathways to scale are needed to overcome the tyranny of distance

The tyranny of distance and the challenges of scale are two economic dilemmas Australia has always faced. While advances in telecommunications and aviation transport have helped diminish the former, the size of Australia's population necessarily means we cannot rely on the same pathways to achieve scale as larger economies such the United States or Europe. More specifically, the option of first achieving scale within the domestic market and then turning an eye to export opportunities once cost-leadership has been established will never work as effectively for an Australian firm as it would for a US-based firm.

This doesn't mean Australia should disregard the importance of scale. While craftsmanship and designer-making have seen a resurgence in recent decades, operating at scale is where the major opportunities for increasing productivity and generating income via exports. Instead, Australia should be seeking out alternative pathways to scale, ones that larger economies might overlook and that we can possibly turn into new sources of competitive advantage.

Manufacturers should prioritise global markets

The first place to start is by flipping the old model of growing your export after you've established yourself domestically on its head. Being 'Global First' means not just being on the lookout for opportunities to enter overseas markets, but actively making that the priority. For instance, niches that seem too small to service in an individual country might become sizeable once accumulated across multiple markets. What can be overlooked by a manufacturer with a 'Domestic First' strategy, creates an opportunity for firms and countries with a 'Global First' mindset.

Putting this into practice requires being at the frontier of new platforms and technologies in e-commerce and Industry 4.0 as well as ensuring we are well connected to the rest of the world (see Priority Area 6). Australia Post's partnership with Ali Baba to help Australian businesses sell to Asian consumers via its online marketplaces is a good example of what we need to do more of. The decision to replicate this arrangement into Malaysia, Singapore and Indonesia demonstrates how technology can be used to scale this approach across multiple markets.[60]

Encouraging 'demand-side incubation' can stimulate supply

The concept of incubation is typically associated with organisations or networks that help nurture start-ups at their initial stages of developments. Providing support in areas such as business strategy, marketing, human resources so that fledgling businesses can avoid the common pitfalls that occur when trying to start and grow a business. Incubators, like accelerators, will usually work with multiple start-ups and often specialise in specific areas, which provides incubators themselves with greater scale and therefore increased effectiveness and impact. We describe these activities 'supply-side incubation' since it involves working with the 'suppliers' that are attempting to bring new services or innovations to market.

'Demand-side incubation' involves working with potential customers that have a potential need for a new service or innovation and working with them to stimulate supply. It strives to overcome the customer acquisition challenges faced by start-ups by signalling to the market the level of qualified demand for a new service or product across multiple potential customers. For innovations aimed at business customers, this would mean that instead of start-ups having to infer a level of demand and then attempt to sell to individual businesses one-by-one where they encounter varying purchasing processes and timeframes or demand that is locked away in long-term contracts, the incubator would collate that information from its participants and to the extent possible develop common requirements and a common approach to market.

The benefit of coordinating demand in this way for a country like Australia is that it can emulate

the scale of a larger economy by ensuring more demand is on the market at a given point in time than would ordinarily be the case. While this won't be suitable in all circumstances, demand-side incubation is well suited to applications that deal with generic problems or inefficiencies in areas such as improving energy efficiency or workplace operations.

Supporting Australian manufacturing through procurement and strategic investment

The world is becoming more competitive as it becomes more globalised and markets more enmeshed. As such, Australian governments should embrace procurement and strategic investment as part of a framework to nurture local manufacturing that is emerging and already exists. This is particularly important during times of cyclical stress, as seen with a persistent high Australian dollar, or through circumstantial stress as seen with the abrupt closure of the Hazelwood plant and the Alcoa energy failure in Portland in Western Victoria.

CASE STUDY

65 New Trains and 1,100 Jobs for Victoria

Through an open tender process with the nation's toughest local procurement regime in place, Victoria could secure 65 trains with a local content minimum of 60 per cent, 10 per cent more than the Victorian minimum standard of 50 per cent. Further, 15 per cent of all employees must be apprentices, cadets, trainees or workers from disadvantaged backgrounds.

In addition, training will be given to workers currently transitioning out of the automotive sector and new national headquarters and maintenance facilities will be established and upgraded across the state. A total of 1,100 jobs are estimated to be created thanks to this project.[61]

CASE STUDY

Bus Rapid Transit TransMilenio

'TransMilenio' in many ways is the pinnacle of Bus Rapid Transit (BRT). Effectively an above ground train network utilising existing and new road infrastructure, surface stations and off-board fare payment that enable mass boarding, TransMilenio transports 2.4 million Colombians throughout a network spanning 112 kilometres in a city of 8 million.

In 2006 research by the American Federal Transit Administration found that Bogota's city-wide BRT system was between one tenth and one seventh the cost of only one 18 mile rail corridor and highly adaptable to developed cities in the U.S.[62] Not only could Victoria receive significant economic benefit from such a scheme here, the local manufacturing industry and workers would be given strategic and common sense support similar to the recent train order if the government's current procurement and local build policies remain.[63]

Equally important to Victoria's manufacturing future is the capability to formulate a compliance regime that levels the playing field and avoids market distortions in the form of dumping or the use of products that fail to comply with tender requirements, legislation or regulation jeopardising local jobs and safety in the process.

CASE STUDY

Chinese Steel Dumping

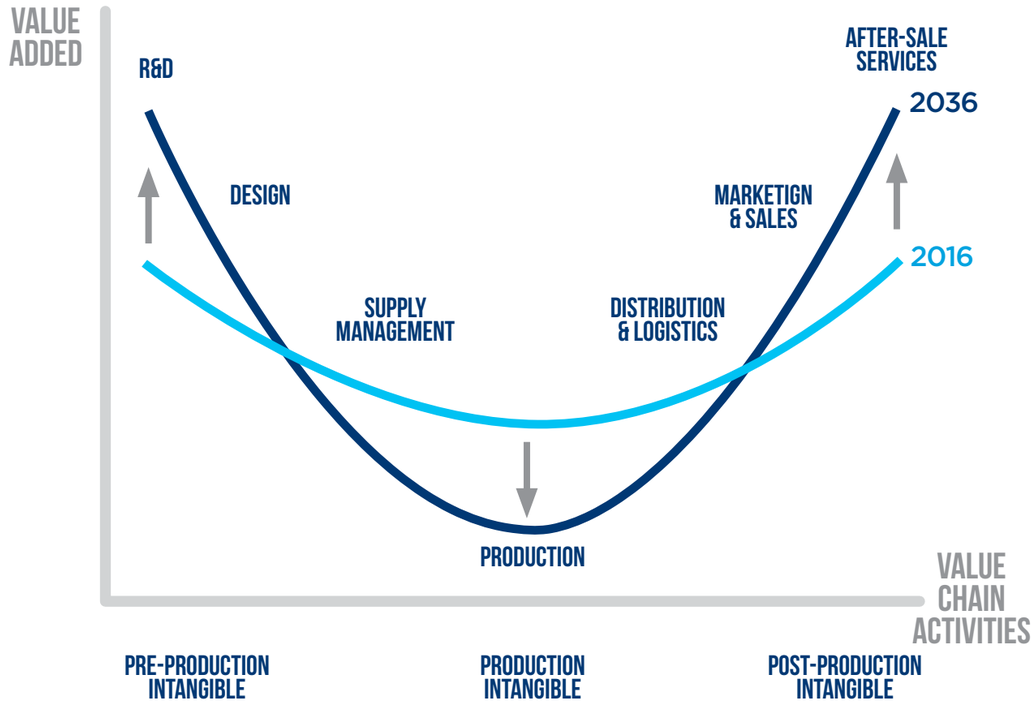
Steel dumping is an area ripe for discussion with regards to strategic investment.

Much publicised is the case of China flooding the local market with steel, a phenomenon compounded by the fact of other nations such as the U.S have been successfully repelling these measures through regulation and strategic procurement policies which has consequentially encouraged the flow of Chinese steel to countries with less safeguards and protections against this practice, such as Australia. Thankfully, there is a roadmap to avoid further dumping and exploitation of the Australian steel industry and lessons to be learnt for compliance generally through the 'Buy America Act', Pennsylvania Steel Act and the Victorian procurement rules.[64]

The importance of design in the manufacturing process

There are growing conversations around the significant importance of design within the manufacturing process, with recent research by the CSIRO supporting this.[65]

FIGURE 3.1
Pre- and post-production value adding



Source: CSIRO http://www.csiro.au/en/Do-business/Futures/Reports/Advanced-manufacturing-roadmap

At the same time, Australia's intellectual property (IP) regime often affords local designs weaker protection than comparable nations and can have more cumbersome processes for applying for IP protections. In the context of manufacturing, this can have the effect of encouraging Australian designers to prioritise high-end markets over mass consumer markets with lower production volumes that mean reduced opportunity for downstream employment in production and distribution. While the Australian Government has committed to investigating the implications of joining The Hague Agreement, which would bring local design rights into line with overseas jurisdictions, the timetable for this process is unclear. There would be clear benefits in the government committing to firm timetable for this investigation and any response, allowing industry to streamline its input into the consultation process.

PART FOUR:
FOUNDATIONS FOR A VIBRANT MANUFACTURING SECTOR

PRIORITY AREA 3:
THE RIGHT SKILLS IN THE RIGHT PLACE

RECOMMENDATION 8
Governments need to promote manufacturing as a positive career choice through levels of education.

RECOMMENDATION 9
Ensure TAFE and University graduates emerge work ready.

RECOMMENDATION 10
Governments need to address the skills challenges and labour market changes that lie ahead by making 'lifelong learning' a reality for everyone.

RECOMMENDATION 11
Develop a workforce mobility strategy through COAG.

Attitudes to manufacturing careers need to improve

There is perpetual conversation of skills, re-skilling and the need for future Australians to have the necessary skills for the future job market, including jobs that do not yet exist. Unfortunately, this rhetoric that traditional sectors such as manufacturing are dead, ignores the almost one million current workers employed in the manufacturing sector, many of whom have been involved for decades. This does not warrant the talk of imminent demise and instead points to the inherent resilience of the manufacturing industry, though this resilience should not be taken for granted. For the sector to grow strongly once more, young Australians at school, choosing which subjects to take and potential career paths to follow, should not be hearing that the sector is in decline or is old-fashioned, but rather the more nuanced truth that the majority of manufacturing jobs remain well-paying jobs enticing to current students and the future workforce that unfortunately under this climate are led to believe that a future in manufacturing is not a future at all.

This is a notion that must be dispelled if we are to increase the level of STEM education often raised as an imperative by all sides of politics and vital to a future manufacturing workforce. Despite the increased presence of technology, high school graduates are less prepared to enter STEM courses at university and 50 per cent of them finish high school with no science or technology study at all.[66] In a worrying pattern, the increased recognition of the need for STEM skills, which are estimated to be required for 75 per cent of fast-growing occupations, is occurring alongside a reduction in the rate of students taking those subjects at high school and university, with STEM tertiary graduates greatly outnumbered by those from business and humanities and social science courses.[67] Whilst this is of course a problem of teaching and resourcing of these subject areas, it is also one of attitudes: whilst there is much talk of the need for STEM skills in the future, this is not done alongside a promotion of visible occupations where STEM is required, including a positive view of manufacturing's future that encourages a receptive attitude in young people towards this area.

Graduates must be work-ready

Students are increasingly told by employers and being sent signals by the labour market that they will need post-graduate qualifications to be able to get a professional job in a field of their choice. When they graduate with a Master's Degree in their mid-20s, they rightly expect to be employed on a higher wage and utilising all the knowledge they've acquired. Employers on the other hand still want graduates to do the jobs that those starting out in an industry have always done, and complain that many graduates aren't necessarily ready or equipped for the workplace and often unwilling to take on 'mundane' tasks. A time-consuming front-loading of tertiary education could be creating an inevitable clash in expectations that benefits neither, and makes students unable to adapt to a full-time workplace. Employers complain of a lack of workplace experience or skills from graduates, however there is a dissonance between the proportion of employers in STEM areas who say that such experience is necessary, and the proportion who offer structured work placements to students or who collaborate with tertiary education institutions to provide this experience.[68]

It Is important to expose students to workplaces sooner, before they've made too great an investment in their skills and acquired significant debt. Postgraduate study will still be important but students can calibrate it based on their experience in the workforce without compromising the validity and independence of their degree. This is particularly necessary for the future high-skilled manufacturing sector, where postgraduate study for technically specialist roles will be, and already is, increasingly necessary compared to the equivalent occupations in other

sectors.[69] In integrating the lengthy periods of study for high-skilled manufacturing workers with workplace experience, Australia could learn from the German apprenticeship model, which is centrally coordinated between employers and institutions and involves students much time on the job as in education.[70]

Further, during times of great retrenchment and labour readjustment as seen with the leaving of the automotive industry, it could have been far more advantageous had these workers already been undergoing some form of extracurricular education either as a mentor to apprentices or learning new skills themselves, creating more flexibility in the economy and greater job security for workers.

Lifelong learning is central to the future of manufacturing

The automotive sector is not the first sector to face upheaval and with digital disruption and automation it certainly won't be the last. In a 2015 study released by CEDA it was found that around 40 per cent of Australia's workforce were at a high probability of being replaced by computers in the next 10 to 15 years.[71] Even at half that rate, the implied task for Australia in terms of the need to constantly reskill or upskill our workforce means we should significantly rethink our approach. We must move away from reactive responses for individual industries or firms under imminent threat and get on the front foot with proactive policies to ensure everyone in our workforce has the skills they will need throughout the 21st century. In short, it is time to get serious about lifelong learning.

Lifelong learning has been around as both a policy concept and a goal for over two decades, and while some individuals might practice it as part of managing their careers, from an institutional perspective it is still more of an aspiration than a reality. Part of the explanation for this can be the lack of time available for people to take on additional training or study unless its integrated with work, particularly when they're mid-career and juggling family with work. Employees can't afford to give up the extra pay and their employers might understandably be reluctant to invest in skills that are intended to ensure their staff are employable in other sectors.

This classic positive externality is ripe for government intervention and with almost every job at risk, it can allow the simplicity of a universal response – such as a Universal Learning Allowance designed to ensure every Australian can afford to engage in ongoing learning or training. A critical difference with a Universal Basic Income (UBI) or Guaranteed Minimum Income (GMI), also proposed in response to digitalisation or automation, is an activity requirement to be engaged in formal learning, training or perhaps teaching. This would maintain the successful targeted approach that underpins Australia's social security system, while achieving many of the objectives of a UBI at a much lower cost. For instance, a ULA would also help top-up the income of the underemployed and improve their earning potential via the ongoing training, while those working full-time on high incomes would face a much greater trade-off when deciding whether to cut back their hours in order to be able to meet the activity requirements.

Workers must be able to access areas rich in employment

If Australia does evolve its labour force into a more educated, innovative and productive cohort, what cannot be ignored is labour mobility. Manufacturing workers are the least likely to move location to attain work. This may be due to lack of connectivity, integration and geographical locations of manufacturing jobs in an age where centralised factory floors with accommodating transport infrastructure are evaporating.[72] Whilst some of these factors, such as family and social connections, lie beyond the reach of policy, on a structural level, affordable housing, quality infrastructure, good schools and broader employment opportunities and conditions play the greatest role.[73] That is why it is crucial to remove these geographical barriers through infrastructure and service improvements that can be found through increased investment in connecting regions with metropolitan areas and increasing school funding in accordance with the Gonski reforms. Infrastructure upgrades along these connecting routes could also have a regional jobs requirement, addressing the pressing unemployment rates in regional Victoria that is as high as 8.1 per cent.[74] If executed correctly, could not only delivery local jobs during the build stage but expand the employment market regional Australians have access to without having to move their families. Because the number of policies that impact labour mobility is so vast and span across multiple levels of government, this is an area that should be well suited to being address through COAG.

Targeted infrastructure investment is key to maximising economic potential

Australia is playing the price for its anaemic and low infrastructure investment over the past few decades. Now with a booming population and the Federal Government failing to take advantage of interest rates at generational lows, Victoria's economy is being hamstrung. The Victorian Government has so far laid out an ambitious infrastructure plan which dictates that current infrastructure be upgraded to meet its potential. Again, this calls for more collaboration between existing manufacturers and government to implement cluster economies. The recent purchasing of 48 per cent of the former Holden manufacturing site in Port Melbourne by the Government to harbour early advanced manufacturing businesses is a great case in point.[75] Current industrial areas that are being slowly residentially zoned should have their preservation considered at least in part for the expansion of existing industries or to act as a spawning pool for new ones connected to existing freight and port infrastructure.

Managerial performance needs to improve

Australia's managerial class lags behind the rest of the developed world in terms of competence, risk-taking and innovation.[76] This is particularly true in SME's, whose structural nature dictates that these businesses lack either the capability, will or both to invest into their managerial staff at risk of losing them to other firms or simply being unable to afford such professional development.[77] Larger corporations in turn suffer from a short-term outlook in their leadership, in part stemming from short periods at the helm of a corporation, which coupled with a risk aversion in the short term for the sake of their management record, can lead to a stagnation in industry leadership.[78] A sector that will need to be engaged in constant innovation requires management that is willing to embrace 'fast-failure' and stick by long-term strategic shifts to new models.[79] As it stands, Australia has a lower share of high performing managers despite more researchers and technicians per million than manufacturing powerhouses USA, Germany and China, and this may account for part of our productivity lags.[80] While understandable and legitimate, these issues need to be resolved as a matter of urgency to the betterment of management and SME's. Using the incubator model as an example, a system whereby skills incubation for the managerial class for existing SME's occurs rather than incubation focussed on business start-ups should be explored thoroughly.

PRIORITY AREA 4:
MAINTAINING COMPETITIVE ENERGY WHILE DOING OUR PART FOR CLIMATE CHANGE

RECOMMENDATION 12
Ensure our energy and carbon abatement policies provide a path to a low carbon future whilst maintaining reliable and competitively-priced energy.

RECOMMENDATION 13
Responses to current energy challenges should prioritise market arrangements that support competitive investments in new technologies.

Australia's historical advantage has been its access to cheap energy

A historical advantage for Australian industry has been its access to cheap energy. With the much-publicised gold plating of the national energy grid coupled with the planned closure of the brown coal plant in Hazelwood, Victorian residential power costs are set to increase by an estimated $99 according to state government estimates.[81] This confluence of events only further highlights the need for SME's and indeed larger manufacturing businesses to collaborate and use one another to scale demand wherever necessary to lower their costs of production. With the state government now also providing certainty over CSG and the VRET, the government should also look at ways in which energy intensive manufacturing can be protected through the wider energy system if their overall energy efficiency is already on par with global standards or progressing significantly, such as the Portland Smelter that contributes 800m annually to GDP and 3,600 jobs.[82]

Continued energy diversification is inevitable and the community must become aware that this may mean fluctuations in the National Energy Market. While renewable energy was not the source of the problems now facing Alcoa Portland, responding to this crisis through cooperative development between state and federal governments along with bodies such as the Clean Energy Finance Corporation is a move in the right direction that warrants further examination. The transition to renewable energy must not involve instability in supply for energy-intensive manufacturers already struggling to acquire reliable and cost-effective energy.

The current energy crisis is impacting manufacturers

Australia's advantage in cheap power is no more with prices having doubled in the last few years.[83] Brownouts and blackouts have affected the community, government, manufacturers and created the perverse situation where LNG companies are actively assessing whether to buy Australian-mined LNG from Japan rather than domestically due to cheaper prices.[84] These huge challenges should be met not from primarily through Twitter but rather through sound evidence-based proposals that allows for local procurement. As welcome as Elon Musk's involvement is in this space, local producers of battery technology have been advocating for similar reforms for some time and are arguing that they can match or beat his proposal.[85] AEMO has shown that it is urgently in need of reform with its antiquated bidding system rightly criticised as being too lethargic and protecting established fossil-fuel energy providers. Electricity is currently supplied in 5-minute blocks, but the price to do so is currently averaged out over a period of 30-minutes. Reforming this system into 5-minute blocks universally is a prudent regulatory measure of no cost to the budget and should be examined thoroughly as it will encourage more renewable technology into the market and subsequently make it more competitive.[86]

Policy inertia has encouraged the states to become far more active with regards to policy in an attempt to give investors certainty and confidence to invest in renewable technologies, namely solar, wind and now battery technology. According to the International Monetary Fund, Australia was predicted to subsidise fossil fuel consumption by *$41 billion* dollars a year, including $25 billion on social costs.[87] By contrast, Australia could have 100 per cent renewable energy with existing technology in the medium to long term as old fossil fuel generators close over the next 15 years as they reach the end of their lifespan. Renewable power is predicted to be AU$75/MWH while coal more expensive at AU$80/MWH.[88]

Climate change must be addressed

Climate change is also a significant contributor to power insecurity and stability, with its extremes projected to worsen as years go by.[89] It is incumbent on policymakers to realise this and manage the inevitable transition that needs to take place to combat climate change effectively while helping the environment, economy and local manufacturing industry. Market-based mechanisms to help this transition have been shown throughout the world to be one of the most effective and efficient way to address these pressing concerns and should be adopted in Australia.[90] Environmental and economic experts along with representatives from business and community groups have all submitted in favour of moving in this direction, through methods such as an Emissions Intensity Scheme in the Commonwealths Chief Scientists review into the National Electricity Market.[91]

While manufacturing does require significant energy consumption it must be recognised that many Victorian manufacturers are amongst the most energy efficient in the world whilst providing a high number of quality jobs and economic activity for the state. Climate change policy should reflect the need to balance these concerns as we move towards a more sustainable growth model.

New energy innovations can help maintain Australia's energy advantage

While the magnitude of this problem cannot be understated there are many ways in which this issue can morph into a positive one for Victoria's manufacturing sector.

New innovations need to be welcomed such as the world firsts Decentralised Energy Exchange and Wattswatcher technology, marketplaces designed to empower the consumer with real time data on their energy consumption. Renewable technology is growing rapidly and with it jobs for manufacturers and associated jobs such as technicians. These new industries could transition into previously established manufacturing areas that are in decline due to the changing economy.

Battery storage is also another important and rapidly expanding area for manufacturers if the suitable policy levers for its growth are put in place. The design, manufacture, and maintenance of these new technologies can all be part of a new manufacturing ecosystem, having the potential to significantly help to stem the current decline of manufacturing jobs.

PRIORITY AREA 5:
CREATING A MORE COMMERCIAL & COLLABORATIVE CULTURE

RECOMMENDATION 14
Increase collaboration between employers, employees and their representatives.

RECOMMENDATION 15
Improving our commercial mindset across government and business and treat commercial innovation on par with other forms of innovation.

RECOMMENDATION 16
Government departments and agencies must be more aware and proactive around the commercial implications of procurement.

RECOMMENDATION 17
Capital barriers to SMEs should be overcome through co-investment and asset sharing between research institutes, government and businesses, and eventually amongst multiple different businesses.

Further collaboration between business, unions and employees should be fostered

Broad changes in terms of casualisation, automation and business seeking reductions in the duration and hours of employment arrangements in many sectors will change the nature of the workplace. If the relationship between employers and employees and their representatives is weakened, these trends will result in unprecedented friction that will either drive down working conditions to the detriment of workers, or force manufacturers to move offshore if employers are too intransigent. In a sector increasingly powered by innovation, there is much to be gained from new and more formal models of institutional collaboration, bringing employee knowledge to the table of business strategy. Business and employee representatives can then work together in an ongoing manner, not merely when there is a dispute, and tailor the future of the company's activities towards a balance between employee and employer priorities, contribute to innovation strategy, develop contingency plans for economic downturns or business departure, and possibly pioneer arrangements such as employee share schemes.[92]

Germany provides a shining example in collaborative industry approaches

The shining example of this collaborative approach delivering outcomes for both workers and business lies in the German Works Council system, known as *Mitbestimmung*. A method used to democratise the economy, this system is made up of workers, trade union representatives, business representatives and neutral members. In total, Works Council's represent 43 per cent of all employees in the west of the country and 35 per cent in the east.[93] They ensure employee input in all key decisions, bring a consultation requirement and can make their own proposals as well as possessing a veto power over certain management proposals.[94] This obviates a build-up of tension to the point of major industrial antagonism by requiring regular reports to the

Works Council on the financial situation of the company, a vetting of all new technologies or procedures in the workplace, and effectively a chance for employees representatives to prepare for the possibility of restructure before management have started to make plans. There should still be a place for traditional union activity and industrial action, however this model could be adapted to current trends in a casual, decentralized and fragmenting workforce, ensuring that there is an ongoing collaborative relationship.

In a sector where employees will increasingly be highly skilled, a collaborative relationship will allow the technical and institutional knowledge of employees to be more effectively utilised in planning and development. Lastly, workers are formally educated into the benefits of labour organisation, potentially acting as a conduit for more organisation and productivity across the wider economy as production structures continue to evolve.[95]

A commercial mindset must be developed across government and business

In the complex services government has a responsibility for, solving broad-ranging problems and delivering reliable services to large populations, government projects will often be at the forefront of innovative solutions to 21st century challenges.

In establishing Public Private Partnerships and attracting consortiums for public works, government should look beyond the life of the project itself, to the commercial potentialities of the project or service and the bodies and partnerships established to complete it.

A good example of this awareness of the commercial potential is in Transurban. Originally a consortium formed for the purpose of running the CityLink electronic toll road in the 1990s, Transurban has since become a global toll road operator, with assets throughout Australia as well as the United States.[96] In contracts involving manufacturing, government should be mindful of how the technologies and capabilities developed and invested in for the life cycle of a particular project could generate spillover effects, with partnerships and consortiums being able to continue on and export their activities to other markets.

Government procurement must benefit local manufacturers

Similarly, government procurement with an eye to interests and incentives for business is an important way to stimulate and nurture local industry. When procuring, government should be mindful of the broader benefits that a more 'business-friendly' arrangement may have in developing new technologies marketable for a variety of contexts. Allowing manufacturers rather than government to retain the intellectual property associated with a project provides an added incentive to seek out procurement contracts and to develop a quality and versatile product. It also allows the result to be adapted and marketed for a variety of purposes.

A procurement project such as driverless government cars, or big data analytics for traffic and transportation is an example of a development that could be versatile and adaptable beyond the initial government demand, and go on to form the basis of a new manufacturing 'ecosystem' as discussed in part 3. Procurement also constitutes a path to scale for manufacturers – government contracts generally offer a larger and more stable form of demand of the sort that many smaller enterprises need to establish themselves.

Victoria is leading the way in terms of procurement policy, with the Victorian Industry Participation Policy tailored to the needs of SMEs. In 2016 the Victorian government introduced a formal 10 per cent local content weighting as part of project tender evaluation, and in the recent contract for 65 new trains being built in Victoria, the vehicles are to be made up of 60 per cent local content.[97]

Improvements to procurement processes would allow businesses to launch themselves and scale into global value chains, and develop their capacities to fill high value market niches. Procurement policy can provide incentives to be innovative and to collaborate with research institutions. Industry policy around creating ecosystems with global value potential could be tied in with government procurement programs, with procurement tied to creating networks of production and capacity above and beyond that required by the project in question, so that they may nurture capacity for broader engagement with international markets.[98]

Commercial savvy that looks to the impacts of procurement beyond the life cycle of a particular project is crucial in ensuring the capacity of government to elevate scale and capabilities is realised beyond direct subsidies.

Co-investment and asset sharing is a solution to capital barriers

As manufacturing grows more advanced and technology-intensive, the equipment and infrastructure required can present a higher barrier for SMEs. In addition, the need to constantly innovate, research and develop products will present another significant running costs for smaller producers. In many cases, R&D facilities that will allow SMEs to be competitive and which will foster new technologies, such as the Australian Synchrotron and the CSIRO carbon fibre mill, require large institutional capital well beyond the capacity of a smaller business.

The CSIRO, in partnership with universities such as Deakin and Monash, as well as businesses is leading the way in a collaborative pooling of funds to share research infrastructure and other assets.

Government bodies such as the CSIRO can pool funds with businesses and universities to develop and then use high technology facilities for both research and production purposes. The model of regional adjustment funds, tailored as it is to capital investment by companies rather than direct wage subsidies, could in part be used to supplement investment in high technology equipment that is to be jointly used by research institutes and multiple businesses.

In this way, these funds could be more tailored to reinvigorating manufacturing, in response to criticisms that they are insufficiently focussed on the sector.[99] In financing jointly used equipment such as 3D printers, the regional funds could contribute more to community assets and long-term resilience rather than the fortunes of individual companies.

Creating a shared space for production and innovation can create spill over benefits in addition to the reduced costs of facilities for businesses. A space where multiple researchers and manufacturers share resources can stimulate sharing of knowledge and techniques, with the investment becoming more than the sum of its parts.

Australia is amongst the lowest ranked countries in the OECD for industry and research institute engagement, and in-house R&D carried out by corporations is comparatively limited.[100] One area in which the cost of capital can be separated from the activities of the corporation is in real estate and actual manufacturing sites. The recent purchase by the Victorian Government of the real estate of the Holden factory in Port Melbourne to be developed as an aerospace, defence, marine and automotive design precinct is one such example of government contributing to the shared capital assets to stimulate manufacturing ecosystems.[101]

PRIORITY AREA 6:
STRENGTHENING AUSTRALIA'S REPUTATION FOR QUALITY AROUND THE WORLD

RECOMMENDATION 18
Build equity in 'Brand Australia' to better market the quality of Australian-made goods.

RECOMMENDATION 19
Use evolving standards supported by strong compliance to strengthen Brand Australia and support domestic production base.

RECOMMENDATION 20
Cultivate provincial brands through support for marketing and production cooperatives.

Building 'Brand Australia' will boost manufacturing

Australia has historically relied on Foreign Direct Investment (FDI) and exports for its prosperity. However, if Australia is to remain prosperous, it must seek to better utilise its capacity to collect FDI and to export its goods, which requires national reform in the branding space to the great benefit of Victoria and the nation. This reform would do away with fragmented and conflicting state and territory marketing campaigns that can discourage potential investors and export markets, while simultaneously diluting Australia's reputational advantage in quality of service and goods. '100% Pure New Zealand' is the gold standard for such a nation-wide branding scheme. This campaign removes intellectual and cultural obstacles for investors and exporters with an easily digestible and marketable message, reinforcing existing perceptions regarding the quality of New Zealand goods. While similar campaigns have been flagged previously in Australia, to date, no economy-wide campaign has gained traction in Australia.[102]

Demand in China and the wider Asian region for food is expected to double by 2050 and the total value of world food consumption is predicted to be 75 per cent higher over the same time period.[103] In 2015-16, Victoria accounted for 26 per cent of Australia's food and fibre exports, and when it comes to value-added or processed goods Victoria accounted 39 per cent of Australia's prepared food exports 81 per cent of dairy exports.[104]

Enforce compliance with industry standards

While branding is essential to the successful growth and future of manufacturing so too is compliance on two important fronts. One, forgery and fraudulent replication of manufacturing goods offshore must be eradicated at any and every opportunity. An easy area of agreement between the varying interests within the manufacturing industry, this could potentially be achieved through a partnership with the Reserve Bank of Australia and its partners in polymer note technology such as Note Printing Australia and the CSIRO. If such anti-counterfeiting technology cross pollinated with labelling technology under a universal banner such as 'Brand Australia', the capacity to fraudulently underwrite local manufacturers and their respective workforces could be drastically reduced while also buttressing and strengthening Australia's high-quality reputation, though more research and development in this space is needed.

Secondly, it is critical that we properly grasp the symbiotic nature of having high reputational global standards for Australian goods and tough compliance measures domestically and abroad that reinforces that reputation, allowing our national brand to grow and flourish into the future. The environment and health policy areas are great cases in point. Strict policy guidelines and enforcement mechanisms prevent potentially deadly pollutants from entering our domestic and exportable food and goods supply chains, adding overall value and creating jobs throughout the state. In addition to this, imported goods must meet local requirement standards for the domestic market to function efficiently and productively. Regulators should be properly funded and staffed at the Port of Melbourne specifically while from a private sector perspective, firms should feel empowered and incentivised to take ownership of their supply chains, which could potentially take place in the form of a licensing authority.

Such an authority could grade firms, more favourable ratings earning more favourable tax incentives while less favourable compliance ratings incentivising against continued deficient performance, accountability and transparency. If strict quality control is linked to the strength of the Australian brand, then it should act as a self-perpetuating incentive, with Australian manufacturers best placed to meet our own quality standards.

New technologies can provide great advantages for local manufacturers over developing economies

Blockchain is also a rapidly evolving area affecting many facets of global commerce but in relation to compliance and quality control many varied organisations such as Wal-Mart, NASDAQ, the ASX and BHP are all using blockchain in some form to achieve significant gains in compliance with massive costs savings. Using Wal-Mart as an example, each packaged food item they are trialling can be individually tracked from production to the consumer, lessening the risk of disease outbreak and associated health and economic consequences involved. This system provides reams of detailed data compared to traditional methodology between Wal-Mart and their supplier, fertilising the ground for further logistical analysis upon which to find additional improvements in service delivery.[105]

Further steps to ensure that the concept of goods compliance is sacrosanct could include increased promotion of the awareness of existing regulatory bodies in which to report malfeasance and a sweeping review of building certification arrangements.[106]

Provincial brands will help unlock higher value opportunities

If a strong Brand Australia, that emphasis the quality and safety of Australian food and manufacturing, is a platform for all Australian businesses to export to Asia's growing middle class, for certain categories it is provincial brands that can lay a significant role for increasing the value-added component. This will be particularly important for regional communities where food processing and food tourism can create much needed employment opportunities.

One systematic way for policy to help drive the creation of provincial brands is through support for 'local' marketing and/or production cooperatives. This might take the form of direct support such as the State Government's Food Sector Planning and Growth Grants that are intended to encourage alliances that will drive export growth. It could also be achieved via support for accelerators or incubators, similar to the LaunchVIC initiative, that focus on fostering cooperatives around the state. One of the major challenges for cooperatives, particularly those involved in production, is access to capital. There could be opportunities to address this through direct loan programs such as the Federal Government's Regional Investment Corporation, established in the 2017-2018 budget.[107] Or through partial guarantees like the U.S. Government's loan programs for small businesses which encourage banks to provide finance into under-served sectors or segments of the economy.[108]

PRIORITY AREA 7:
IMPROVING OUR CONNECTIONS WITH GLOBAL AND DOMESTIC MARKETS

RECOMMENDATION 21
Investing in world-class domestic infrastructure with efficient utilisation driven by competition and big data.

RECOMMENDATION 22
Develop competitive access to overseas markets via both air and sea as well as in-country services.

RECOMMENDATION 23
Reform cross border processes, including cost-recovery arrangements, to better reflect the modern complexity of global supply chains.

As supply chains become ever more complex, spanning multiple time-zones and countries, Australia's competitiveness will be increasingly impacted by how seamlessly and affordably we can move inputs, materials and finished products around the country and across the globe. By minimising the time lost in transit or delays at the border, Australian businesses can increase their role in lean supply chains the benefits of which can often outstrip higher labour costs of producing in Australia.

World-class domestic infrastructure is essential for improving supply chains

The first area policy can have an impact is in ensuring the right domestic infrastructure is in place and that it is well managed and used. The more quickly, reliably and cheaply components and materials can be moved between and within our cities and regions, the more readily new manufacturing eco-systems can flourish.

The lead-times and cost involved in major infrastructure projects highlights the importance of having independent assessments by Infrastructure Australia and Infrastructure Victoria to make sure the right projects are being pursued at the right time. It's also important that the logistical requirements of the manufacturing sector, which differs greatly from the resources and agriculture sector particularly when it comes to advanced manufacturing, are adequately factored into our planning. For instance, the Federal Government's 2013 study into High Speed Rail sensibly excluded heavy and bulk haulage of freight from the business case but it also omitted high-value parcel-type freight despite acknowledging its potential and the international experience that this has worked.[109]

Increasingly, how well we utilise existing infrastructure will become more critical, and even more cost-effective, for tackling rising congestion and ensuring reliable and competitive service. New technologies, data analytics and commercial models will play a role in improving traffic flows, supporting multi-modal services and helping prioritise highest value uses of city infrastructure in particular. This is true not only for actual roads and rail, but even for parking where the inefficient allocation of parking and loading zones delays freight services and increases their cost as well as exacerbates congestion as freight vehicles circulate CBDs like Melbourne's looking for a park.[110]

Overseas market access needs to be improved

Strong connectivity with the rest of the world via air and sea freight is fundamental for any trading nation. For Australia, which has long grappled with the challenges of a small domestic market, being an island nation and far away from the world's major economic centres, connectivity matters even more.

While sea freight has long been the mainstay for shipping finished goods to export markets in significant quantities, air freight is playing an ever-increasing role in the movement of higher-value goods, in supporting complex global supply chains or for direct-to-consumer shipments in the era of online commerce. Although air cargo only covered approximately 1 per cent of global trade by volume in 2015, it is estimated to carry 35 per cent of global trade by value. Further, a 1 per cent increase in air connectivity (based on the number of scheduled services between a country and the rest of the world) was associated with a 6.3 per cent increase in a country's total trade.[111]

Not only is there clear benefit for manufacturers in Australia continually working to improve our air connections in number, but the quality of the connections can matter as well. For instance, a few hours difference in flight arrival time can be the difference between making it into a delivery network a full day later. For Australia's economic benefit, international commercial and freight airlines should be encouraged to adopt routes that are optimised for Australia as much as possible.

What happens to products when they are on the ground in an overseas market can be as important as the connections to get them there. To avoid being at a competitive disadvantage, Australian businesses must be able to match the services characteristics that customers in their target markets are accustomed to. For example, a manufacturer selling direct to consumers in North American or European markets must contend with higher expectations for flexible or even free returns than when compared to the demands of Australian consumers.[112] If Australian businesses have difficulty securing necessary reverse logistics services to meet these expectations, then there may be role for government in coordinating an approach to service providers to help ensure they can compete.

An issue that Australian manufacturing has experienced is consequences from other countries dominance in certain industries. For example, China has dumped substantial amounts of steel and aluminium in the country which has adversely impacted Australian manufacturers.[113] This predatory dumping has been difficult for regulators to prevent.

The Regional Comprehensive Economic Partnership (RCEP), a proposed trade agreement launched by leaders from ASEAN and ASEAN's free trade agreement (FTA) partners including Australia, China, India, Japan, the Republic of Korea and New Zealand.[114] Trade is an important part of Australia's future, however it is important that industries like manufacturing are still sustained.[115] Strengthening the framework around Anti-Dumping regulations will ensure that trade deals sustain the best outcomes.[116]

Cross-border processes must reflect the modern era

Many practices in Australia's cross-border processes have their origin in an era where most imports were of bulk goods or materials intended for consumption. As supply chains have become more complex and global, imported materials and partly-finished goods are increasingly likely to be re-exported after the local value-add has occurred and they are ready for the next stage in the production process. Any unnecessary delays or costs at the border risks making Australian manufacturers less competitive or reliable. While some businesses may have the resources to ensure they recover any duties and GST at the point of export, Import Processing Charges may be more problematic imposing up to 5 per cent in additional costs or forcing businesses to import their inputs in larger batches.

CONCLUSION

It is abundantly clear that local manufacturing in Australia is undergoing a deep-rooted transition, a transition unseen in the vast majority of the western world in some respects, while following global trends in others. Australia's manufacturing industry is currently at a fork in the road. The choices are stark, not only for the many economic imperatives recommended throughout this report, but also from a socio-political perspective at a time of great social, economic and political disruption.

The easy option is for politicians, policy makers and stakeholders to prematurely resign themselves to the false fait accompli of the manufacturing sector in some quarters. Some will falsely argue that the industry's decline as inevitable, arguing that investment continues to atrophy and workers lose hope and agency, culminating in an economy dominated by the services sector and increasingly vulnerable to boom and bust cycles of the resources sector.

But a more pragmatic option seeks the answers to tomorrows problems today, adapting manufacturing capacity that will ensure the prosperity and security Australia needs in the 21st century. This approach will encourage job creation, educational attainment, investment and economic dynamism that mutually reinforces Australia's economic and social underpinnings of egalitarianism and equality. The choice could not be clearer, current Australian manufacturing policy-making architecture is in dire need of reform as the social contract continues to fray in the face of huge paradigm shifts caused by globalisation and automation which render the economic policy orthodoxies of the past several decades untenable.

While all these problems may seem new, not all of them are. Australia has faced similar economic and social forces at play throughout its history when technology evolves at great pace. On each occasion, it has risen to the challenge through a combination of bold thinking and strategic policy reform. The future of the manufacturing sector in Victoria and Australia is bright so long as there is an honest appraisal of the challenges it faces, and a detailed, ambitious policy-making process is embarked to overcome these challenges. The 23 recommendations tabled in this report aims to provide a pathway forward, to a more prosperous, high-tech and internationally competitive Australian manufacturing industry.

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