

A new deal plan for manufacturing.



@AuManufacturing
Powered by the Australian Manufacturing Forum

A new deal plan for manufacturing.

May, 2020.

Crowd sourced from members of the [Australian Manufacturing Forum](#) LinkedIn networking group, and readers of [@AuManufacturing](#) news.



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Introduction.

Over four weeks in April and May, 2020 the [Australian Manufacturing Forum](#) and [@AuManufacturing](#) news ran an ambitious campaign to crowd source *a new deal plan for manufacturing* from our manufacturing communities.

The Forum is the largest social media grouping of Australian manufacturers, while [@AuManufacturing](#) is the leading source of daily news from the sector. But we had no idea this grass roots campaign would catch the imagination of manufacturers and be so successful.

We received close to 50 substantial submissions from members and readers, numerous emails and phone calls, and hundreds of comments via our social media group that revealed a desire by our manufacturing communities for recognition as a national sovereign capability.

Submissions came from manufacturers big and small, consultants and suppliers, industry bodies, special interest groups, the many excellent groups out there working with the sector, academics, policy specialists and educators.

Many of the submissions were summarised in opinion articles published throughout the month in [@AuManufacturing](#) which were widely shared and commented on in our social media channels.

This wisdom of our Australian manufacturer crowd was distilled by a group of AMF volunteers led by [Jon Hayward-Wright](#) into *a new deal plan*.

Members of this grass roots group include [Patrizia Torelli](#), CEO of the Australasian Furnishing Association, [Ditta Zizi](#), a company director with deep experience in the public sector, and [Ingo Weidman](#), a senior manufacturing executive.

Here we present our *new deal plan for manufacturing* for consideration by policy makers as they respond to the challenges of the Covid-19 pandemic.

The summary and core recommendations are drawn directly from individual submissions and specifically target key areas identified during our campaign. The body of the plan is an attempt to bring together disparate, sometimes contradictory views, into a consensus document, and is necessarily more general.

We would like to thank all those who made submissions and commented during the campaign process, to our many supporters who got behind the campaign, and our volunteers who had the difficult task of creating our new deal plan for manufacturing.

Finally, we would like to thank [Bosch Australia Manufacturing Solutions](#) who generously supported our campaign, and designers and manufacturers [Corban & Blair](#) who assisted with printing this document.

We dedicate our new deal plan for manufacturing to Australia's 47,000-plus manufacturers – may they grow and prosper and take their place as the bedrock of Australia's economic security.

Peter Roberts and Brent Balinski,
Editors, [@AuManufacturing](#) news and media,
May, 2020.



Summary and core recommendations.

After close to three decades of economic growth Australia's luck has run out.

While today we are a wealthy nation - Australia enjoys one of the highest GDP's per capita of any nation – the economic model we have been following failed at the first serious challenge.

Much of our export income has held up during the Covid-19 pandemic, but our economy is revealed as fragile to external shock, narrowly based, and crucially, lacking in the deep manufacturing capabilities and capacity enjoyed by other advanced nations be they Germany, Israel, Singapore or Taiwan.

Australia's manufacturing capacity has been left to atrophy for too long, leaving Australia with the export profile of a third world nation, an industrial complexity similar to Senegal and Uganda, and a balance of trade deficit in elaborately transformed manufactures of \$188 billion. Our appetite for imported cars and iPhones has to be paid for somehow, putting intolerable strain on other sectors to perform.

At the same time, our economy is becoming less innovative, with the R&D intensity of the economy falling from above two per cent of GDP only eight years ago, to 1.79 per cent today. Most worryingly business expenditure on R&D (BERD) which creates future wealth is also falling, down a massive 10 per cent in the latest year alone from 1.0 per cent of GDP to 0.9 per cent.

The good news is we start our recovery from a good place. While Australia's manufacturing depth has been shown to be thin, where it exists it is excellent, dynamic and globally competitive.

Our largest manufacturer, CSL, is the world's number two biotechnology company, Austal is the world's number one in aluminium hulled ships, while our steelmaker BlueScope Steel is a global leader in steel coating and painting technology.

In the technology sector sleep apnea company ResMed and hearing implant maker Cochlear dominate their global niches, and tna Solutions is a global success story in food machinery manufacture. And our defence producers are beginning to emerge onto the world stage. All this is backed by a world-leading public research sector.

But to make more of the enormous potential of Australian manufacturing, our policy settings need a reset.

We need nothing less than *A New Deal Plan* for manufacturing, a plan crowd sourced from Australia's manufacturing community and laid out in detail in the body of this report. The core recommendations of our plan are:

Recommendation 1 – A national commitment to manufacturing. Manufacturing needs a rigorous, game changing reimagination campaign launched by the Prime Minister and State Premiers as a key part of crossing that bridge to a revitalised post-Covid economy.

Recommendation 2 – National Manufacturing Plan. Replacing the 'transitional' plans of the past, a new *National Manufacturing Plan* can reflect the successful planning guiding the development of the defence industry.

Recommendation 3 – Bi-partisan and national support. To achieve policy longevity, core manufacturing policies should be negotiated and implemented as a joint venture between state and federal governments.

Recommendation 4 – National manufacturing body. To overcome fragmentation of effort, a new National Industrial Strategy Commission should be established to develop national priorities and manage the implementation of industry-facing programmes.

Recommendation 5 – Sovereign manufacturing capabilities. Over and above Protective Equipment (PPE), further analysis is needed to protect our sovereign capability in our critical supply chains.

Recommendation 6 – Workforce development plan. A whole of industry workforce development plan that clarifies what work, what knowledge, what skills, to what extent, when and where they are needed, is key.

Recommendation 7 – Leadership. Industrial transformation rests on the skill of industry leaders, and policy must focus on building capability in strategic planning, innovation, commercialisation and technology.

Recommendation 8 – Government procurement. The emphasis of new transparent procurement policies should be placed on value for money for the economy as a whole over the life of the product, as opposed to initial upfront costs. Large private sector projects need local procurement plans in the conceptual and design phases, not those implemented after the event.

Recommendation 9 – Superannuation as investor in manufacturing. Superannuation funds should be required to invest a tiny amount of their funds in commercialising manufacturing research, and manufacturing business scale-up.

Recommendation 10 – Accelerated depreciation. Manufacturers need incentives such as accelerated depreciation to encourage them to invest in retooling plants with the most advanced technology.

Recommendation 11 – R&D intensity. The key to future manufacturing success is innovation. The government should declare a goal of boosting R&D intensity in the economy to three per cent of GDP, through increased R&D incentives.

Education and Skills

Overview

Education & Skills development – VET v Degree & RTO

As The Economist wrote in May of 2011: “If Australia is going to compete in anything other than iron ore, it will need a highly educated workforce.”

Nothing has changed since this statement!

In the post-virus global economy Australian education sectors will face their own set of challenges not least of which will be how best to adjust to the increasing demands of a growing basic and advanced manufacturing sector. Creating an economy that is technically savvy, agile, innovative and bold will need some significant changes in how the current generation of employees is educated and inducted into a continuously changing and learning culture.

The next generation of trainees will firstly need to be convinced that a STEM career is worth pursuing, a battle the education and manufacturing sector has been losing in recent times.

Continuing pressures from a range of factors including emerging industrial giants, the rebalancing of our currency; the reassessment of off-shoring and the need for sovereign security; the erosion of Australia’s traditional export markets are just a few challenges. But the one factor that will contribute more to the on-going success of an expanding advanced manufacturing sector will be a strong supply of technically skilled and experienced workers.

What more is needed?

What we do know is that the current issues and frustration between the various educational streams have not provided industry/manufacturing with a sufficient number of candidates or the skills and experience needed to support an accelerated expansion of the manufacturing sector.

The education sector remains fragmented and largely driven by commercial considerations, the volume of students, university economics or lower social assumptions about non-degree (VET-TAFE) qualifications.

Resolving these issues is fundamental to the success of manufacturing - we need to invest an equal focus on university and VET-TAFE education, both are major drivers of Australia’s future manufacturing economic performance Both are MUST haves!

Rising international competition and the pressures of an ageing demographic demand that we review the current relationship between the three main streams within the education sector. The objective of this review should be the introduction of an integrated STEM education process, one where the focus switches from basic understanding in primary schooling, selected streaming of students in secondary, to qualifications which incorporates both theory and practical experience of the application of STEM principles.

The German Experience – Apprentice training

The German technical education framework is built on co-operation and clear agreements between employers, government and union contributors. In general, the employers and government carry the cost of the education, setting the numbers required and agreeing the quality and content with the union movement. The union movement accepts responsibility for providing sufficient successful trainees, and delivering the agreed content and quality. It is a shared, constructive culture supporting national growth.

The UK – A degree is more than theory.

Driven by the frustration of industry and students the UK has re-focused on a degree structure that was popular in the 1970’s/80’s, the sandwich degree. Undergraduates are now being offered a four-year thick or thin sandwich of STEM courses as well as modular (undergraduate) degrees that can be studied remotely with time spent working in local or specified companies.

At the core of the UK’s successful STEM education framework is the acceptance that experience is as important as theoretical-knowledge. This is achieved by integrating theoretical education at university with periods spent in industry, normally of six months. Companies providing these facilities qualify for student-apprentice support from the government plus are free to offer permanent roles to undergraduates who perform well. Not only does the SME gain but the student has an opportunity to earn. This “try before you buy” is attractive to SME’s as they can gain a good understanding of what a graduate might offer their business.

Recommendations

Recommendation 12 – It is recommended that the findings from reviews of the German approaches to STEM training be re-assessed in light of the need to gain leadership in technical education, a requirement that will be core to the on-going success of Australian manufacturing. The joint responsibility between the three participants, employers, government and unions has other longer-term benefits.

Recommendation 13 - That an integrated STEM Education policy be developed. This should include the creation of a single Industrial Training Authority (ITA) to bring together University and VET-TAFE organisations. The ITA would review current educational outcomes and establish a focus on advanced manufacturing training and skills requirements. This will offer students clear national career paths that include both theoretical and practical knowledge and skills development. The opportunity for Sandwich course structures be explored and incentives for manufacturing SMEs to accept and support undergraduates for periods of six months be considered.

Leadership

Overview

Leadership - Changing the Paradigm's. Do we have what it takes?

Paradigms in Leadership, Politics and Business.

A *paradigm shift* occurs when there is a "crisis". The crisis is always related to the fact that the old paradigm or "normal" can no longer account for enough of the existing evidence to be believed or supported by a majority of people. This realisation can happen over a relatively long period with a growing acceptance of the "new normal", or arrive like a blinding flash depending on the speed the crisis develops.

For Australian manufacturing a virus has triggered a changed paradigm in less than six months. At first, such new paradigms are often rejected, but eventually they replace the old because they are a better approximation to reality, that fits better with the available evidence.

In almost all cases there has been one factor that has motivated individuals and teams - the style and strength of the early adopters, the leaders. They have come from various backgrounds; political leaders, scientists, humanitarians and business people.

Probably the most profound contribution made by these leaders has been their ability to ask the right questions, not give the answers! The most profound of the questions being: -

"What is impossible to do today in your business (economy, industry, science etc.), but if it could be done, would fundamentally change if for the better?"

This style of leadership creates a vision, it respects what has been but seeks what might be.

Leaders that set a direction, then establish the pace of change and have steadfast faith in the final outcome.

Businesses come in all shapes and sizes, but they all need good leadership to grow and succeed.

They have all at some stage had good ideas but have also had people shoot down good ideas because they assume that the future is merely an extension of the past.

a financial and emotional investment in the old paradigm.

Our new manufacturing leadership must not be afraid or constrained by what cannot be seen. This must not limit our aspirations. The duration and complexity of policies, actions and support needed to expand and re-establish manufacturing will be daunting at first, but the energies and skills of the Australian manufacturing sector will rise to this challenge as they have demonstrated in response to the Covid-19 coronavirus pandemic.

What more is needed?

Social Responsibility

As business leaders adopt a different mindset regarding human capital and the importance of a robust and well-cared-for labour market, they will need to look at these things from a more forward looking and long-term perspective. Leaders in the 21st century need to focus on the "triple bottom line": economic value to shareholders; value to the various stakeholders of the company, including employees, independent contractors, clients and vendors, and value to the community, its government and the environment.

Leaders who drive the successful companies of the future will radically reinvent the concept of value and the balance sheet, creating a second "balance sheet" that takes into consideration the "soft" contributors to business success, such as stakeholder goodwill, social capital, human capital, environmental impact, consumer buying behaviour, customer retention, technology and brand awareness.

Politics

Used in another context, the word paradigm can refer to a political theory that says that members of opposing major political parties share common interests and goals, as well as a covertly unified ruling authority over the political issues of the masses. The two major political entities act in concert but they also exploit divisiveness to control the political spectrum.

In Australia, this has not brought desirable outcomes. At changes of government entire policies are tossed out, reworked and rebranded. It may be they emerge in much the same form in the past, but there has in the meantime been years of policy disruption.

A new deal plan for manufacturing.

To guard against such change for change's sake, policy should be set and deployed jointly between state and federal governments so there is widespread buy in, and the creation of long-lasting policy. A consultative arrangement plus national interest mindset is a core requirement if a paradigm change is to occur in the interest of the Australian economy and hence the manufacturing sector. The four-year election cycle must not govern the stability and content of any industry policy.

Business

Never before have business leaders faced the challenges they face today.

2020 will prove to be a major inflection point, a time when multiple paradigms shift creating a number of conflicts that business will need to manage. There is a shift in imperatives where business leaders need to understand the forces of change and learn to deal with them effectively.

This imperative will cut across all aspects of an organisation.

For example, a radically new way of assessing strategic alternatives from the standpoint of investment, risk and return is needed. Most companies' financial executives seem trapped in a paradigm that, with the exception of various passing trends such as activity based costing and economic value add, have remained largely unchanged for the past fifty years.

It is no longer adequate or acceptable for financial executives to view costs and financial return only in "hard" terms, such as operating costs, capital expenditures, cash flow, etc. Nor can it be adequate or acceptable for companies to view financial strategy from the perspective of a one-quarter or even a one-year horizon.

Today's companies must be more fluid, much more non-linear, and the value chain is more ill-defined and ephemeral.

Risk and Uncertainty / Foresight and Simulation

A radically new approach is needed to assess, measure and manage risk and uncertainty. Traditional approaches use risk profiles based on historical, empirical experience. These models no longer work. We must move away from regression tools, which optimise history, to simulation tools, which focus on foresight. We must use these tools, not so much to predict the future, but to understand the range of possible future events and how we can effectively deal with all of them.

Recommendations

Recommendation 14 – Companies seeking public funds, incentives or grants must nominate a leadership team to undertake a "leadership knowledge" course, with participants holding senior roles within the company receiving the public funding. The course to include a personality assessment tool and provide an understanding of change management techniques.

Recommendation 15 – To address the longer-term risks within the newly emerging "social economic structure", the government to review the company reporting requirements to legislate for provision of stakeholder goodwill, social capital, human capital, environmental impact, consumer buying behaviour, customer retention, technology and brand awareness sections in annual reports.

Recommendations 16 – To avoid the "four-year cycle" and the effect of the political paradigm; the structure of any review and any subsequent industry planning to be a bi-partisan proposal engaging major political parties, employers and union representation.

Collaboration

Overview

COVID-19 has caused chaos throughout the global economy. Many people are working from home for the first time and companies are trying to adjust their operations on the fly. However, we are in a place to positively respond to the challenges that COVID-19 has forced upon us. But it doesn't end with digital enabled remote work. It goes far beyond that.

A new look at how businesses collaborate B2B and with customers, suppliers, employees and government using both digital and non-digital workplace strategy needs to be in place to not only survive the pandemic but adjust to the "new normal" permanent changes it will bring.

A workplace platform, digital or otherwise, that can engage employees and help them collaborate better by allowing them to work closely with their team members, irrespective of their location, is a strong start. But beyond the tools, for teams need to develop a new set of skills around how to collaborate in an open and constructive way, one change needs to be how individuals give and accept constructive criticism.

B2B Collaboration

Healthcare, education, entertainment, spending habits, ... The Information Age has revolutionised all of them and Industry 4.0 will have a profoundly greater impact on a much wider range of sectors. In the way millennials will never experience a world without connectivity or mobile devices, companies will never return to a lesser state of "connectedness", hence those businesses who master the skills of B2B collaboration and connectedness to exploit the advances of Industry 4.0 will gain the upper hand.

Collaboration is not just for the big end of town It is going to be a vital part of the advanced and basic manufacturing SME post-virus landscape. It is a powerful tool for all small businesses, regardless of the industry they are in or the type of business they are. Enhancing the connections formed with other businesses, and the different ways collaboration is used will help the scale-up SME business grow to new levels.

Collaboration involves a commitment to sharing knowledge to foster and take benefit from the "open innovation" between two or more businesses or knowledge providers such as universities. This type of relationship needs to have a high level of trust between collaborators plus mutual confidence in what each will bring to the table.

From an outcome perspective the best collaboration brings together multiple businesses to create a "combined" product, which has a definable commercial potential for all collaborators. These relationships use a combination of new knowledge, technology and existing skills - the classical synergy of knowledge and effort. These efforts tend to work best in scale-up SME environments not in start-up, where the added maturity of scale-up entities provides a less risky environment.

One of the biggest benefits of collaboration is the opportunity for learning. In fact, every interaction with someone outside of your immediate circle can teach you something valuable. The good news is that small business collaboration doesn't necessarily require a significant time to develop or financial investment if you think creatively. However, it would be enhanced by a more structured and open support framework more focused at scale-up SME who would benefit from help to achieve relationships with collaborators.

What more is needed?

The COVID 19 pandemic has thrown into stark relief the risks associated with supply chains which extend beyond Australia's borders. Those risks have now been recognised and the need to on-shore manufacturing for safety-critical items, medical equipment and personal protective equipment to make Australia self-sufficient has been championed by politicians on both sides with the call for "national capability" being led by the Prime Minister, Scott Morrison.

In recent times, companies for a wide range of product groups have collaborated to design and manufacture critical equipment, showing that there is a pool of latent capabilities that could be leveraged to the national benefit with higher collaboration. To focus on just medical equipment and pharmaceuticals fails to recognise the importance of having broad-based, robust and resilient supply chains within Australia.

As business reaches out to potential collaborators part of the process should be a review of any make-or-buy decisions and the cost factors that are considered. Time, money, and talent all weigh in, getting the data to build a comprehensive "total cost of ownership" analysis. Decisions made

regarding purchasing of Australian made or imported goods needs to acknowledge not just price comparisons but the “total cost to the nation”.

The focus should be a fast response pro-active import replacement programme to generate new opportunities for Australian manufacturers. Re-defining R&D incentives, focused upon this import replacement taken through to commercialisation, will enable basic innovation to thrive. The wider benefits of the shorter more robust supply chains and the critical part played by SME manufacturers needs to be considered when developing a new manufacturing industry plan

When thinking through the frameworks and objectives of inter-collaboration there will be a number of issues to review, including the different frameworks that might be of use.

The most basic and longstanding type of collaboration is the strategic alliance. Typically, these have been seen as the realm of large corporations but they can also be framed to suit scale-up SME's.

These could cover basic functions such as joint procurement, common standardisation of non-critical components to help leverage combined buying power, supplier quality management or shared resources across functions such as marketing, accounting and HR etc. They tend to be considered on a project by project case.

Portfolio collaboration is the natural follow on for the single strategic alliance. Having experienced the benefits of creating alliances, firms looking for a way to secure longer term benefits look at the “portfolio”. These consist of multiple projects being managed centrally via a joint management team leveraging the benefits of multiple strategic alliances.

Expanding the use of portfolio management eventually leads to a wider framework built around networks of businesses who interact on a domestic and export level but also bridge the challenges of location, distance and time, between other networks, creating a multi-network platform used to share knowledge and ideas. These “super-networks” can include groups of firms that share R&D goals related to products, services, processes or business models.

Dense network structures are natural progressions of alliances and portfolios. As collaboration tools and practices spread from advanced high-tech to medium and low-tech sectors, new ways of structuring the growth activities, including innovation, emerge. Some of these networks can develop further, into an ecosystem structure.

Ecosystems enable organisations to respond and exist in an increasingly uncertain world using a collaborative structure.

The business ecosystem is the network of organizations including suppliers, distributors, customers, competitors, government agencies, and so on, involved in the delivery of a specific product or service through both competition and cooperation. Business ecosystems have clear advantages of speed, market responsiveness, and show resilience in turbulent times.

Recommendations

Recommendation 17 – That the federal government review and report the number, sector and funding of “start-up” and “scale-up” businesses receiving federal or state funding to establish their potential ROI and timeline to achieve a commercial product produced in Australia. That any business receiving federal funding be required to provide a “return-on-investment” assessment which should include detailed estimates of the number of job's the funding is supporting or will support when the product is commercialised in Australia. That business is required to fulfil these employment targets or re-pay the funding, plus interest.

Recommendation 18 – That the federal government move away from pure grant funding which assists only a small number of companies to programme funding delivered through mechanisms like the Clean Energy Finance Corporation. In these models, assistance is co-investment, with payback achieved on success.

Recommendation 19 – The Australian government(s) initiate the creation of a government-business ecosystem portal across selected sectors. Establish a comparative report that can be made available to all industry sectors, leading to common best practice. The portal to support the establishment of “open innovation” forums/portals to promote collaboration.

Recommendation 20 – The Australian federal government to promote and provide related incentives to business to increase the proportion of Australian sourced components or finished goods by using a comparative “total cost of ownership” analysis. This analysis to include details of potential Australian job gains/losses.

Energy

Overview

Clean Energy: What is it?

Renewable energy investment has increased significantly in Australia over recent years, contributing to a continuing shift in the energy generation mix away from traditional fossil fuel sources. Investment in renewable energy has moderated from its recent peak but the transition to renewable energy is expected to continue in the longer term. Significant coal-fired generation capacity will be retired over coming decades and is likely to be replaced mainly by distributed energy resources and large-scale renewable energy generators, supported by energy storage.

The Problem with Coal, Gas, and Oil

Coal, gas, and oil are our biggest sources of energy to date; these carbon-based fuels produce carbon dioxide which has been known to cause acid rain, sulphur oxide emissions, hazardous wastes and is often linked to ozone depletion and global warming.

Across the globe, governments and manufacturers are increasingly developing new ways of using renewable energy to strengthen clean energy competitiveness in various industries. Not only are these developments addressing the future shortage of some carbon-based fuels but also the growing understanding of environmental damage being done. They are increasingly delivering a significant financial benefit to manufacturing, helping to lift the global competitiveness of their manufacturing sectors.

The hidden benefits of a renewable clean energy investment should be the move towards a “cheap-clean energy” (CCE) strategy for the rest of the Australian Industry sector.

Other nations have identified renewable cheap-clean energy as a future strategic advantage, offering benefits across their industry sectors and a significant input cost reduction opportunity. Renewable energies offer the most effective method for reducing energy consumption and manufacturers around the world are exploring the same unique ways of using renewable energy with this goal in mind.

Localised renewable cheap-clean energy sources include solar power, wind power, solar thermal systems and biomass.

Major infrastructure driven cheap-clean energy sources include hydropower, ocean energy and geothermal power.

At the very least, the benefits of a diverse energy portfolio speak for themselves. Manufacturers can, and should, hedge their bets against rising fossil fuel prices. Solar, wind and hydroelectricity are the heirs apparent to coal, oil and natural gas.

Diversifying Manufacturing Power Sources

Manufacturing factories around the world are implementing alternative methods of power generation from renewable energy sources in order to increase production and reduce their energy usage. In Australia leaders include Liberty Primary Steel which is investing \$1 billion in solar PV together with pumped hydro storage to power its Whyalla steel works. Nearby Sundrop Farms utilises concentrated solar power to desalinate water and heat greenhouses to grow tomatoes all year round.

These alternative power sources in renewable energy are contributing to slowing the impacts of climate change in manufacturing.

What more is needed?

External Pricing Impact – Asian market

China’s push to clean up its air quality and respond to international pressure for better environmental standard coupled with the growing impact of the Australian domestic renewable energy sector has a hidden impact on Australian industry global competitiveness. The impact of China purchasing of black rock NSW coal as part of their drive to raise air quality has resulted in a knock-on to the price for coal paid by generators in New South Wales, hence artificially high domestic energy costs.

NSW coal-fired generators have become an important price setter in the National Electricity Market, having a knock-on impact on the price fixed for the rest of the east coast.

Over the same time period, renewables growth is pushing gas generation out of contention, leaving NSW as the most expensive producer. While the NSW fuel price has not followed the export price up directly in lock step, it has nonetheless been heavily influenced by the vigorous competition from offshore buyers.

Commercial Benefit of Clean Energy

According to recent surveys, Australia's manufacturing industry could slash its annual energy bill by 23 per cent if it switches to renewable energy, saving \$1.6 billion a year through moving to 100 per cent renewables. This cost saving could subsequently help the industry transition from resource extraction to value-added production, which requires more skills and pays higher wages.

By 2050, manufacturers could cut their energy bills by a third, or \$2.2 billion a year, if they all make the switch to 100 per cent renewables. This future benefit is based on government changing its view on "picking winners" and supporting the on-going development of a distributed energy generation footprint.

Although many manufacturers are already taking advantage of the opportunities offered by renewables, the government should speed up the process by developing more consistent and supportive policy incentives. Otherwise, other nations will continue to outpace Australia on both reducing emissions and government support for domestic manufacturing.

Long-Term Energy Security

Another benefits of moving manufacturing and other industries to renewables is that they provide stability and security over the long term. Even if we see oil prices fall instead of rise in 2020, this is a temporary fix on top of a permanent problem: oil is a finite and environmentally destructive natural resource.

What this means is that it's likely "pennies wise" and "pounds foolish" for industries like manufacturing to invest in fossil fuel-powered equipment and infrastructure today. A solar panel installed today atop an assembly plant or distribution centre will likely still be producing electricity 30 years from now. Fossil fuels are, in comparison, increasingly difficult to justify from an investment perspective. And no matter the short-term price paroxysms we might observe in the coming months and years, the long view says we'll see dwindling returns if we cling to fossil fuels.

In short, there's every reason for corporate decision-makers as well as consumers to get excited about this potential "windfall" of cheaper, less harmful energy sources in the manufacturing sector.

Recommendations

Recommendation 21 – It is vital that any clean energy policy and Industry/manufacturing strategy be integrated, as manufacturing expansion will be dependent on a stable and secure energy supply over the long term. Australia should maintain a distributed energy technology strategy to avoid a single technology domination. The government will further review small footprint technologies with the potential of providing localised generation.

Recommendation 22 – Australia should consider regional energy pricing to attract industries to specific locations, include preferential energy pricing in the incentives offered to overseas companies who set-up or retain manufacturing facilities in Australia, and offer reduced energy costs for those companies who make substantial reductions in the amount of energy used in production.

Recommendation 23 – As a near-term measure, the government to review the impact of export sales of high-grade coal on the roll-on into cost/price setting mechanism for electricity across the eastern states.

Environmental - Australia's B.H.A.G commitment to the environment.

Overview

Domestic waste recycling

The world is experiencing a climate crisis made up of many factors, but one that every Australian contributes to is domestic waste. This waste stream can be directly attributed to the way in which we procure, manage and dispose of our waste.

Extracting and processing resources for energy make up the majority of greenhouse gases, however the lack of coordination and compliance to existing regulation of the 'domestic and industrial waste management streams' contributes significant effects.

Australia has a National Waste Policy.

Compared with other developed economies Australia generates more waste than average and recycles less.

About 40 per cent of what is called "core waste" is recycled, but 21.7m tonnes still end up in landfill. Nationally the recycling rate is approx. 55 per cent, but the results vary dramatically across the states. The 2018 National Waste Policy provides a framework for collective action by businesses, governments, communities and individuals until 2030, when specific targets are to be met. The policy identifies five overarching principles underpinning waste management in a circular economy. These are:

- **Avoid waste;** design out the waste by using advance production and management practices.
- **Improve resource recovery;** raise the use of efficient resource conversion technology.
- **Increase use of recycled material;** build demand and markets for recycled products; view recycled materials as a component of existing and new products.
- **Better manage material flows** to benefit human health, the environment and the economy, remove the risks to people, places and profits.
- **Improve information to support innovation,** guide investment and enable informed consumer decisions. Identify untapped opportunities for the recycling of waste materials.

The Policy is underpinned by the National Action Plan, and 2018 National Waste Policy guidelines which include:

1. Banning the export of waste plastic, paper, glass and tyres, commencing in the second half of 2020.
Update - Action on this point was forced on Australia by China's refusal to take any more deliveries of "unclean recycling" from Australia, forcing more recyclable waste into our landfill or to other nations, such as India. We may reach the desired target but it is unlikely that the domestic recycling sector will have the capacity to process the additional export volumes.
2. Reducing total waste generated in Australia by 10 per cent per person by 2030
Update - Currently approximately 21.7 million tonnes of waste go to landfill each year, of which 3.5 million tonnes are plastic. If we were on target we would reduce the landfill by over 650,000 tonnes in 12 years! Of the 3.5 million tonnes of plastic less than 30 per cent is recycled.
3. Achieving an 80 per cent average recovery rate from all waste streams by 2030,
Update - current rates of recovery are between 30-35 per cent, hence requiring a 100-150 per cent increase in the recycling sectors capability and capacity. Currently the recycling industry is only viable if there is sufficient demand for the recycled materials. By establishing targets for the inclusion of recycled materials (plastic) into designated products, it would help address the glut of plastics and other recyclables in Australia
4. Significantly increase the use of recycled content by governments and industry.
Update - Taking plastics as an example, we recycle no more than 12-14 per cent of the 3.5 million tonnes sent to landfill.
5. Phase out problematic and unnecessary plastics by 2025
Update - Very little progress
6. Halve the amount of organic waste sent to landfill by 2030
Update - The organic waste category presents one of the greatest opportunities for further action.

B.H.A.G. challenge

If the aluminium can is the world's most perfect recyclable container, plastic is the opposite. Aluminium can be recycled innumerable times but each variety of plastic requires a different recycling process.

The B.H.A.G; there exists an opportunity for advanced manufacturing to create a robotic and AI-driven total recycling process capable of handling the complete domestic waste stream. This technical development could address Australian domestic waste and potentially be exportable technology to other countries. With an integrated solution it is conceivable to re-cycle already buried waste, converting landfill sites from "waste dumps" to "gold" mines of future recycled materials. The marketing of Australia as green and clean environmental champions is at odds with the lack of compliance to existing environmental plans and the absence of substantial progress towards existing and future goals.

Supply Chain Challenges

Let's use the furniture industry as one example of just one supply chain that does not comply with existing domestic and international law.

By law, no product containing regulated timber can enter Australia without prior due diligence to ensure that it meets Australia's strict illegal logging regulation before being imported. Penalties include up to \$150,000 in fines and even jail time.

In 2017, during a soft-launch period of the Regulation, 76 per cent of furnishing importers audited by the Department of Agriculture, Water and Environment failed the audit. With an estimated annual sector turnover of \$32 billion and approximately 250,000 people directly employed along the industry supply chain, and 200,000 jobs supported through flow-on economic activity, it is important to protect the economic value of the industry.

Each year industry uses around 4.8 million m³ of sawn timber and 1.5 million m³ of wood-based panels. However, the supply chain of regulated timber products within the furniture industry is very complex, much more so than the paper and timber industries.

Along with the barriers of language and communication difficulties with overseas suppliers, the lack of targeted information to suppliers and importers in the furniture industry has resulted in limited knowledge of the regulation requirements by importers and their suppliers. This results in illegal products entering Australia.

The increased supply of illegally harvested products to Australia identifies the need for a tailored Due Diligence Toolkit to halt the illegal activity. Co-investment between Government and the peak industry association was used to develop the toolkit with critical tools to understand and comply with the regulations. The toolkit was launched. And there it stopped.

The various departments responsible for compliance to this law include Department of Agriculture, Water and Environment, Department of Finance and Department of Home Affairs.

The Australian Border Force is under-resourced to monitor and control breaches of this law and the Department of Agriculture, Water and Environment simply perform the role of reporting to government now that the law has been passed.

Australia's delay in establishing a Taskforce to deal with PFAS.

Another example of ineffective barriers to avoid waste can be found in Australia's delay in establishing a taskforce to deal with PFAS. PFAS are per- and polyfluoroalkyl substances, a group of over 4000 chemicals. Some PFAS are very effective at resisting heat, stains, grease and water, making them useful chemicals for a range of applications including:

- Stain and water protection for carpets, fabric, furniture and apparel
- Paper coating (including for some food packaging)
- Metal plating
- Photographic materials
- Aviation hydraulic fluid
- Cosmetics and sunscreen
- Medical devices.

Because they are heat resistant and film-forming in water, some PFAS have also been used as very effective ingredients in fire-fighting foams.

In Australia, the historical use of PFAS in fire-fighting foams has resulted in increased levels detected at sites like airports, defence bases, and other sites where fire-fighting training has been conducted, or where fire suppression systems are installed for extinguishing liquid-fuel fires. Increased environmental levels of PFAS have also been found near some industrial areas, effluent outfalls and landfill sites. Outside of these areas, it is unlikely that increased levels of PFAS would be present in the local environment.

The PFAS of greatest concern are highly mobile in water, which means they travel long distances from their source-point; they do not fully break down naturally in the environment; and they are toxic to a range of animals.

While understanding about the human health effects of long-term PFAS exposure is still developing, there is global concern about the persistence and mobility of these chemicals in the environment.

Many countries have discontinued, or are progressively phasing out, their use. The Australian government has worked since 2002 to reduce the use of certain PFAS. Why is it taking so long to address this critical issue?

These are just two examples of how policies fall through the cracks when it comes to implementation due to lack of communication between authorities and regulators or lack of urgency to act. There are many others that are well documented.

Recommendations

Recommendation 24 - B.H.A.G - Reset the nation's 'climate and environmental' benchmarks to lead the world. Bring together sector leaders to enforce, implement and fast-track a National Action Plan.

Recommendation 25 – Propose a nationwide “open” incentive (prize) for the creation of a total recycling process capable of automatically handling domestic waste and achieving 95+ per cent waste stream separation, to be manufactured in Australia.

Recommendation 26 – That the waste management policies, recycling industry structure and technologies of leading recycling nations, for example Sweden, be investigated and reviewed to assist in determining an Australian best practice solution. Less than 1 percent of household waste in this Scandinavian country finds its way to landfill.

Recommendation 27 - Reform state regulatory frameworks to provide long-term certainty for investment in the waste management sector. Foster a common approach to land fill levies between states, including the reinvestment of at least 50 per cent of funds raised from levies in the sector.

Innovation

Overview

Bridging the gaps

The OECD has identified that effective policy to drive greater innovation is required in a wide range of fields, including advanced manufacturing, digital infrastructure, skills and intellectual property rights. Typically, these diverse policy fields are not well aligned in government, nor is there an appetite for agendas with long timeframes regardless of the potential benefit.

A missing incentive to Australian industry has been government reluctance to “pick a winner” Before COVID-19 this may have been the correct approach, however in a post-COVID-19 world, and with the economic drive to “on-shore” lost manufacturing demand and jobs, they may need to do this. The resistance appears to be driven by a belief that the government departments do not have the experience to provide clear and unbiased assessments.

For policy makers to successfully implement Industry 4.0 plus develop the bridges needed to carry existing manufacturing forward will require considerable support SME's. There needs to be a clear and robust process to assess the opportunities so that Government can plan strategically across multiple areas to strengthen SME's, promoting greater collaboration that fosters technology uptake or flexible integration.

Government support is essential to promote this research, and to create an integrated Research, Development and Innovation (RDI) support framework, providing incentives that foster productive research-industry relationships.

Finance for “scale-up” businesses is an ongoing problem, exacerbated by the fact that many venture-capital firms prefer to invest in start-up companies more focused on software, biotech and media rather than in advanced manufacturing SMEs, which often work with costlier and riskier technologies. It has been identified that the VC market in Australia is manufacturing adverse due in part to the absence of a government industry policy.

Learning from others

Germany's Fraunhofer Institute Network is a collaboration between industry and government and provide research solutions for companies that would otherwise find it cost-prohibitive. This helps small- and medium-sized businesses to continually upgrade their processes and products to keep ahead of the competition. Each of the Fraunhofer institutes is associated with a university and selects its own research field and projects, and decides how to handle results. Contract research generates more than 85 per cent of its revenue. Most institutes operate pilot manufacturing plants and demonstration facilities. To support this, German machine tool and equipment suppliers regularly provide equipment for testing and training.

Clusters accelerate innovation.

They act like a magnet pulling like-minded individuals and compatible technologies together, binding them to a shared sense of purpose. The attractive force holds companies together in highly collaborative networks operating in high trust environments that speed up the transfer and diffusion of technology. It is this synchronicity that drives productivity and long-term prosperity. Australia has had some success in this area, particularly when industry and research are co-located with research infrastructure, such as the highly successful Melbourne Biomedical Precinct.

In the future a wider network, not limited by physical distance will be needed. However, a prevailing view is it's not possible to do it in Australia because the universities and companies that would form a cluster are scattered across the country. After the COVID-19 experience of homeworking etc., this objection needs to be questioned - the success of clusters is built on the sharing of knowledge not a meeting room. Another factor is the lack of inter-government cooperation, federal on state and state on state and the desire to have “all” of a specific cluster contributor in one-state.

Industrial sponsors

In the U.K., the supportive business networks bridging the gaps between university-driven research and industry sponsored development is the CATAPULT / MTC.

The UK Manufacturing Technology Centre (MTC)/CATAPULT network was established in 2010 as an independent Research & Technology Organisation (RTO) with the objective of bridging the gap between academia and industry often referred to as ‘the valley of death’. They work through seven world class centres of industrial innovation, focused on high value manufacturing.

A new deal plan for manufacturing.

Catapult accelerates new concepts to commercial reality. The CATAPULT organisation creates a one-stop-shop for over 75 per cent of manufacturing support incentives provided by the government. It has taken on the management, assessment and co-ordination of significant government incentives and grants with a clear brief to ensure that those selected to receive funding represent the best British prospect for a successful commercial outcome.

To do this they provide access to the specialist equipment and expertise needed by member companies to complete the definition and manufacturing of a commercial product. They also help companies to improve existing processes via a team of process development experts. Their approach is to strip away the risks of innovation and make investment decisions when there is confidence that an idea can be scaled up to deliver on a commercial scale. Once a specific opportunity has been selected, they provide resources and facilities to reach first production volumes.

In comparison, in Australia there is a significant number of bodies and bureaucratic processes associated with accessing assistance from both federal and state governments. The apparent lack of integration across the multiple agencies wastes funds on non-value adding activities within a business and adds to the potential risks. At times the current structure creates confusion and unnecessary conflict between agencies.

For example, support for advanced manufacturing is spread across numerous programmes, including an Advanced Manufacturing Fund, Growth Fund, Automotive Innovation Labs, Automotive Engineering Graduate Program, Manufacturing Early Stage Research Fund, Advanced Manufacturing Growth Centre, Innovative Manufacturing Cooperative Research Centre and an Adopting Industry 4.0 Test-labs Programme.

To these we must add a number of state-based initiatives such as Made in Queensland, NSW Invest and Victoria's Advanced Manufacturing Advisory Council.

Regulations and Standards

A progressive commercialisation of the Australian regulatory agencies has created an environment that is stifling innovation. The regulatory sector is now more focused on ensuring that they are commercially viable (even NFP) hence there is little or no drive to simplify or update existing regulations or harmonise these standards with other nations to provide easy export compliance. There is a reluctance to accept other nations approvals even when the approving nation as comparable or higher safety standards. This requires Australian companies to complete product or component/materials registrations processes, sometimes including testing, which add significant cost to the product development and introduces delays in new products entering the marketplace. These restrictive practices can deprive Australian businesses of both domestic and export markets. Australia has strong product standards, requiring both domestic and imported products to meet high safety, technical and ethical standards.

However, the enforcement of these standards is not equally applied. Domestic businesses must provide auditable data/reports to federal and state agencies, which are scrutinised, sometimes including physical inspections by certified approval bodies.

This ridged and thorough application of safety, technical and ethical standards is not rigorously applied across imported goods, many being authorised for use on the basis of "self-certification" by the importing business. In some cases, sub-standard imports are supported by false documentation supplied by the exporter or agent. Very few manufacturing site inspections are undertaken, and no in-depth reviews of product quality or defect history are conducted. This policing of the standards is left to the importing company who rely on the submitted documents from the overseas manufacturer.

What more is needed?

A more efficient method of providing access to funding for manufacturers keen to adopt new technologies or looking for novel solutions or seeking new products to take to market.

Countries successfully transitioning to Industry 4.0 are being helped by government initiatives that offer funding, collaboration opportunities and other financial and commercial incentives. In many countries, these programs involve larger companies assisting smaller companies enter the market, appreciating these collaborative efforts will enhance the bottom line of all. This is supported by a research system that rewards strong collaboration and interaction with industry and business.

There is a precedent for this in Australia. The government's initiative to break down the silos between medical research and front-line health professionals via its globally respected and well-funded

Medical Research Future Fund has not only exceeded expectations but provides a blueprint for a similar strategic approach to Industry 4.0.

It is vital that the retention of Australian developed intellectual property and the corresponding manufacturing capability remains in the country - they are national assets and have a national value. To protect these assets, we need a strong and focused Foreign Investment Review panel, which needs to enforce criteria that stops these assets being exported, and focussed more on encouraging overseas buyers to make legally binding commitments to retain manufacturing in Australia once the IP is ready for commercialisation.

History has shown us the pattern, time and time again, that supported Australian innovators can create new products, commercialise them and break into global markets. However, at this point many global corporations have noticed the Australian company, buy it out, close the Australian facility and integrates both the production and the Australian know-how into their overseas operation. This does not have to happen. When Ford sold Volvo cars to Chinese manufacturer, Geely, the Swedish Government insisted that the company's head office, research and development and a significant part of production remain in Sweden.

Australia needs a tax or incentive-based system that encourages investment in R&D&I and improves the attractiveness of investing in product development in Australia. The recommendations of the review of the R&D Tax Incentive should be revisited and substantially implemented.

Tax concessions provided to Early Stage Venture Capital Limited Partnerships (ESVCLPs) and Venture Capital Limited Partnerships (VCLPs), designed to fund start-ups, are excellent but not well known and are under-utilised by investors.

A similar fund environment is needed for "scale-up" sized businesses, who need finance to make their step in to the world class manufacturing arena. The same is true of Australian Fund of Funds (AFOFs) that are able to invest into a selection of ESVCLPs and VCLPs. It should also require our superannuation funds, a strategic asset in themselves, to invest a legislated amount of their funds in commercialising manufacturing research.

More industry technical advisory services are required. These services, often supported by government funding, focus on addressing barriers to product and process improvements for manufacturing SMEs. The programs provide free or subsidised management and engineering expertise such as diagnostics, mentoring, training for improvements to activities such as LEAN transition, equipment investment, plant layouts, employee training, process and quality improvements, cost reductions, and new products and marketing strategies.

Federal and State Procurement Policy

Governments, both federal and state must make greater use of public procurement as a facet of industry development. Government expenditures of relevance to advanced local manufacturers and services include health, defence, infrastructure and services previously delivered by government. The Victorian government decision to purchase locally-made trams and trains with a policy for minimum of 50 per cent local content is creating thousands of skilled jobs. By contrast New South Wales' purchases of rolling stock from overseas has limited industry opportunities.

Government needs to "develop winners" through smart procurement, because only then will they truly incentivise investment in new technology and growth. Manufacturers need incentives, to cover on-going employee development, plus items like accelerated depreciation to encourage them to invest in retooling plants with the most advanced technology. Companies need to be aware that such incentives will be scrutinised to ensure the public funds go to the creation of productive assets, not items like company vehicles and office fit outs. Likewise access to competitively priced finance for such investments needs to be provided to enable businesses to fund investment in technology and growth.

Recommendations

Recommendation 28 - The federal and state governments should consider the creation of a "one-stop-shop" organisation for the technical and commercial assessment of potentially public funded advanced manufacturing development ventures. The new organisation would jointly supervise all existing programmes and be directly responsible for the creation and management of all new incentives. The savings from joint administration should be used to reach out to industry, business, manufacturing ventures and adopters of new manufacturing technologies to commence the change agenda and fund industry advisory and technology diffusion services.

Recommendation 29 - Learn from international experience. Invest in creating national policy that fosters successful models based on building collaboration across industry and research using proven clustering models such as the UK Catapult Centres or Germany's Fraunhofer Institute Network.

Recommendation 30 – Follow on funding should be confirmed for the continuation of the successful AMGC and IMCRC models.

Recommendation 31 - Funding for research should be prioritised for universities and research institutions that demonstrate collaboration and interaction with industry and business, in addition to scientific excellence.

Recommendation 32 - The government should cornerstone an Australian Fund of Funds (AFOFs) dedicated to investing in Early Stage Venture Capital Limited Partnerships (ESVCLPs) and Venture Capital Limited Partnerships (VCLPs) that seek to invest in the commercialisation of research that has applications in strategic industries.

Recommendation 33 - Our AU\$2.7 trillion superannuation industry should be mandated to invest in a diversified portfolio of Australian manufacturing businesses.

Trade – Incentives, Tax and Dumping

Overview

THE GLOBAL INCENTIVE DISPARITY – OTHER COUNTRIES DO IT BETTER

Due to COVID-19 there has been much debate about reshoring manufacturing and our unhealthy dependence on outsourced supply chains, specifically in Asia.

The simple reason companies are sourcing from Asia or moving their manufacturing overseas is it that it gives the cheapest unit cost. Historically, on average the landed cost is 20 per cent lower than the local equivalent. Hence it is hard to argue with but it comes with a long list of cons which we have been happy to accept or have simply ignored until now.

A manufacturing revival can be 'kick started' by ensuring that all current and future government purchasing contracts require a significant percentage of local content, not just major construction projects. Defence has implemented a suite of policies for higher Australian participation and capability which could serve as a model.

The procurement process initially assessed the move off-shore, considering the price of the product being sourced and supply chain freight and duties.

Recent supply chain failures have shone a light on how volatile these added costs can be. Leaving aside the current off-shored product price and focusing on the wider risks and benefits the pros and cons includes:

Risks.

- Supply chain risks, civil unrest, changes in political relationships; pandemics supply chain shutdown.
- Poor quality, especially in safety critical products. Poor quality in terms of failure to meet specifications and standards, poor reliability and issues around durability, especially within harsh Australian environments.
- Tales are legion around forged or falsified quality and test certificates on imported goods. Flammable building cladding is a high-profile example of failure to meet standards with potentially catastrophic consequences.
- Inability to get legal redress through foreign legal processes can leave buyers with major costs and defective products.
- Reputational risk in those cases where the item is being badged by the Australian company as their own brand.
- Speed to market/transport time – creates a need to hold larger buffer stock/inventories.

Benefits

By contrast, on-shoring provides benefits to our economy: -

- Local, accessible and shorter supply chains, offering the benefits of lower shipping costs, inventory levels and less storage space.
- Healthy, profitable, resilient manufacturing companies capable of providing on-going support and collaboration in building local networks etc.
- Australians employed in skilled manufacturing jobs, paying income tax
- Higher employment levels, reducing demand on Centrelink payments
- Environmental benefits, such as reduced transport miles and a lower contribution to global warming.
- Skills, knowledge and capability retained in Australia.
- The employment "multiplier effect" for manufacturing has been shown to be greater than any other sector.

The result is that you get what you pay for which is often perpetual low quality. Experience manufacturers have struggled obtaining the quality and compliance first requested. Many of the Asian industry sectors are actively pursuing better standards while modernising but are patchy, with ideology from the 1980's compared to the western drive towards Lean Six-Sigma and the pursuit of "perfection". Hence if the items being produced must meet international standards the will most likely require oversight by highly trained individuals. Items requiring stricter controls require non-Chinese involvement in the process (for example electronics and medical). This

acceptance of low quality is contrary to TQM and other continuous improvement practices that are now the expected norm in the west.

The “total cost” of import and local production should take all aspects into account.

One of the biggest costs in manufacturing is of course labour and this has been the main advantage of the Asian countries. Although many have industrial labour laws in place these have until recently not been enforced allowing labour to not only be cheap but also incredibly variable. OHS standards are often not policed. Although new plants are increasingly coming into line with western standards the large majority of manufacturing plants enforce standards of the 1960's with regards to safety guarding and risk control standards.

Usually the corporate tax rate is 5-10 per cent lower in Asia than western manufacturing nations. In addition there are extensive government incentives to increase capacity, modernise facilities and increase exports. Additional incentives include real estate concessions, tax relief or loans for factory construction and related assistance to ensure the ongoing growth of manufacturing capability and capacity.

Infrastructure such as roads and ports are strategically provided to increase national manufacturing strength, in contrast to Australia where these are an additional cost and often inhibit efficient logistics.

The growth mentality is something that stands out as a significant difference. Every business plan for significant growth was encouraged to do so via tax breaks and government incentives but mostly culture

And don't underestimate the “Made in China 2025” strategic plan of the People's Republic of China issued by Premier Li Keqiang and his cabinet in May 2015. The programme aims to use government subsidies, mobilise state-owned enterprises, and pursue intellectual property acquisition to catch up with and then surpass western technological prowess in advanced industries. Other countries such as Germany and Japan have similar coordinated strategies led by government something that is lacking in Australia.

If things are designed right we can manufacture them in Australia more cost effectively than offshore suppliers and add more value to raw materials prior to exporting.

Let's take our 'tech know how' and apply it to manufacturing. Life cycles are now smaller, customisation is expected by the end consumer and reliability of supply is appreciated.

Finally industry 4.0 developments have combined to erode the benefits of low cost countries. These encourage on-shoring of manufacturing from mass manufacture facilities overseas to smaller, more flexible factories close to the customer in developed nations.

Recommendations

Recommendation 34 - A more aggressive investigation of potential dumping of any product into the Australian market.

Recommendation 35 - Immediately step up the 'Australian Made' campaign, providing incentives to companies to register via a one-off free registration period. Extend the country of origin declaration to inform people of the level of Australian content in manufactures.

Recommendation 36 - Proactively identify and encourage export of manufactured goods. Incentivise the processing and export through value-adding of skill and technology-intensive products based on our comparative advantages in food and minerals.

Appendix 1 – List of submissions.

Peter Roberts – [launch of campaign to crowd source a new deal plan for manufacturing.](#)
Roy Green – [five building blocks for a new deal plan.](#)
Grant Anderson – [a rallying cry to get involved.](#)
Serena Ross – [SME experience and Australian Made.](#)
Shay Chalmers – [a strategy to support a new era in manufacturing.](#)
Jeff Lang – [building blocks for a promising future.](#)
Danny Samson – [eight keys to the future.](#)
Tom Kenyon – [innovation and bi-partisanship.](#)
Phil Toner – [seven areas of policy that actually work.](#)
Alex Kingsbury – [supporting a transforming and vital industry.](#)
Aleksandar Subic – [six steps to lead the world.](#)
Anna Minns – [now is the time for a circular economy in manufacturing.](#)
Tim McLean – [where we went wrong and the things that work.](#)
Kerrie Clarke – [skills and how Australia can get them.](#)
Sarah Pearson – [urgency, collaboration and diversity.](#)
Gary Workman – [action to train a skilled Australian workforce.](#)
Rodin Genoff – [how clusters will accelerate innovation.](#)
Narelle Kennedy – [creating opportunity and capability.](#)
John Blakemore – [clever ideas to rebirth the sector.](#)
Phil Hodgson – [support for innovation is crucial.](#)
Iain Wicking – [technology planning for competitiveness.](#)
Patrizia Torelli – [let's get government procurement right.](#)
Mark Vassella – [the view from the CEO seat.](#)
Andrew Stevens – [a post COVID-19 reset.](#)
Scott Blakemore – [SME leaders need to reskill too.](#)
Brandon Gien – [a design-led future for the industry.](#)
Lyn George – [how Geelong can show the way.](#)
Lance Worrall – [we learned we don't have an industry policy.](#)
Jon Hayward-Wright – [what we have learned from readers.](#)
Barry Alchin – regulatory impediments to manufacturing.
BlockTexx Pty Ltd – opportunities in waste materials.
Ian Brammer – opportunities to re-grow the sector.
Elliot Duff – retaining Australian IP
Karl de Koning – lessons to shape the future.
Bruck Textiles – changes in defence procurement.
John H. Howard - manufacturing for a post-COVID world.
Allen Roberts – the challenge of older workers.
Phillip Haley – cross sector knowledge and skills transfer.
SEEMA – South East Melbourne Manufacturers Association.
Ben Kehoe – innovation in Australia.
Colin Thomas – machine learning the essential capability.
Mary Jardine Clarke – a business development strategy.
Eurotech Australia – accelerate tax write-offs.
Philip Ewen – the elephant in the room is skill.
V.J. Fenwick – price and total cost.
Peter Roberts – [summary of submissions received.](#)