

**GAP / IIER-A / Gravity iLabs National Resilience Project**

# **Australia's Sovereign Industry Capability**

**Report of the Industry Workshop**

**May 2021**

**Global Access Partners  
Institute for Integrated Economic Research Australia  
Gravity iLabs  
DMTC**



This paper is a contribution to a program of work – involving similar discussions among a wide cross-section of participants from multiple industry sectors – on national resilience in light of COVID-19. It is one of the products of the National Resilience Project being co-led by Global Access Partners (GAP), the Institute for Integrated Economic Research Australia (IIER-A) and Gravity iLabs, and supported by DMTC.

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**DISCLAIMER:** This paper represents a broad consensus among participants reached over the course of several months of conversation both in person and electronically in late 2020 – early 2021. Conversations and email exchanges were held under the Chatham House rule of non-attribution to inspire a frank and constructive exchange of ideas. Accordingly, there was a diverse range of views expressed by the individuals involved and not every participant agrees with every statement in full. They are personal opinions that do not necessarily reflect those of the organisers and sponsors of the GAP/IIER-A/Gravity iLabs National Resilience Project.

# Table of Contents

- Executive Summary .....4**
- Recommendations.....5**
- Part 1 – Arguments for Change.....9**
  - Introduction.....9
  - Three Types of Risk.....12
  - Risks and Opportunities.....13
  - The Importance of Manufacturing.....14
  - Barriers to entry for SMEs .....15
  - Learning from Defence.....16
  - Learning from abroad.....18
    - New Zealand* .....18
    - Scotland*.....19
  - Rethinking supply chains .....20
- Part 2 – Proposals for change .....22**
  - Cross-sector cooperation.....22
  - Government.....23
    - A National Industry Policy* .....23
    - Combining a National Economic and Environmental Reconstruction Plan* .....24
      - #1: Early Childhood Education and Care Strategy.....24
      - #2: Training for Reconstruction.....25
      - #3: Rediscover Australia .....26
    - The National Reconstruction Investment Plan*.....27
    - Human Resources*.....29
    - Infrastructure and Procurement* .....29
    - Energy* .....30
  - Business.....31
    - Investment* .....31
    - Repurposing existing assets* .....31
    - Advanced Manufacturing* .....32
    - Cyber-resilience* .....33
    - Small and Medium Enterprises* .....33
    - Defence SMEs*.....35
    - Urban manufacturing* .....35
  - A National Resilience Platform .....36
- Conclusion.....39**
- Participant List.....42**

**Attachments**

1. IIER-A Industry Workshop Participant List
2. DMTC/Gravity iLabs Case Study: National Health Security Resilience Assessment 2020

## Executive Summary

This report reflects the discussions of the Institute for Integrated Economic Research – Australia (IIER-A) Working Group on Australia's Sovereign Industry Capability. The group included a broad range of experts and stakeholders with diverse interests and opinions, and so not every participant would endorse every idea outlined in this document.

The group argued that the COVID-19 pandemic has exposed long-term deficiencies in Australia's domestic productive capacity and that a reliance on overseas supply chains left the nation vulnerable to a range of future political, economic and environmental contingencies.

The report calls for a broad investigation of Australia's manufacturing base to highlight areas of sovereign importance which could be strengthened and expanded through a range of government measures. This approach, which has already been embraced to some degree in the 2020-21 Federal Budget, could also generate a range of employment and environmental benefits, as well as support resilience efforts in human resources, social cohesion, disaster planning and other key sectors.

While Australia will continue to rely on mining, agriculture and services for most of its economic activity, lessons can be learned from Australia's history, the domestic defence sector, and the approaches taken by international peers such as New Zealand and Scotland, to inform the creation of a coherent and effective industrial policy.

While the development of high-technology sectors, as outlined by the government in the 2020-21 Budget, is important, it must become part of a broader strategy to strengthen Australia's manufacturing base, develop low-tech manufacturing industries, support small and medium-sized enterprises (SMEs) and create or protect strategically important manufacturing capacities.

A series of related steps to improve the resilience of Australia's manufacturing sector, and therefore national resilience as a whole, should be undertaken as part of this broad approach, ranging from improved cyber-security and workforce training to city planning and the modernisation of energy supply.

The pursuit of an integrated resilience policy, in which economic policy plays a significant part, would help safeguard Australia from future threats. Viewing economic policy in isolation from international political issues, environmental threats and social consequences is no longer tenable, given a deteriorating international situation and the experience of COVID-19.

The creation of an independent National Resilience Institute would facilitate a thorough and ongoing examination of these issues, helping to inform the policy debate and ensure it remains on the political agenda beyond the current pandemic.

A revival of domestic manufacturing is a necessary, but not sufficient, part of improving national resilience, and so this report should be understood in concert with those produced by other IIER/GAP working parties.

## Recommendations

### National Resilience Framework

The IIER-A Working Group on Australia's Sovereign Industry Capability calls for the Australian Government to assess national vulnerabilities in the light of COVID-19 and improve national resilience to meet a range of current and future threats. Federal and state governments should cooperate on a comprehensive, evidence-based national resilience framework to assess current capabilities and future threats and set national, state and local objectives covering industry policy as part of an overall resilience strategy.

This resilience strategy should assess economic policy in terms of holistic risks, notably the vulnerability of international supply chains to shocks and disruption and the growing threat of climate change. It should support domestic manufacturing supply chains in a range of strategic sectors to ensure Australia's political and economic independence as well as social and environmental resilience.

A range of specific measures to encourage industrial regeneration are outlined in the report which might supplement the Australian Government's recently announced support for manufacturing in certain key sectors.<sup>1</sup> These additional schemes could include support for regional and urban businesses; better research and commercialisation; tax incentives for investment in manufacturing; workforce skills development; preference for Australian firms in government procurement; domestic capacity in fuel refining, medical equipment and shipping; and improved cyber-security.

### National Resilience Platform

To ensure independent analysis and cross-party and ongoing support, the Government should support the creation of a **National Resilience Institute** to undertake the analysis required to plan and deliver improved resilience across a range of sectors, including manufacturing capability.

The National Resilience Institute would build on the National Resilience Framework established to manage natural disasters to encompass a broader remit of economic, environmental and political challenges over the medium and long term. It would create a **'stocktake platform'** to highlight gaps and manage data on critical infrastructure, domestic production, supply chain integrity and other issues.<sup>2</sup> The Institute would conduct regular critical infrastructure and supply chain stocktakes and develop targeted program interventions.

<sup>1</sup> Commonwealth (020, Budget 2020-21, Economic Recovery Plan for Australia; <https://budget.gov.au/index.htm>)

<sup>2</sup> An example of this approach, examining National Health Security undertaken for the Defence Materials Technology Centre (DMTC) by Gravity iLabs, is attached.

## Measurement of Sovereign Capability

The measurement of sovereign capability would be an obvious initial priority for the National Resilience Institute, to explore areas where further investment is required. The development of a robust sovereign capability measurement framework would be an asset to government planning and offer an agreed set of figures to inform the wider political debate. There are successful models in niche sectors such as health<sup>3</sup> which could offer a template for this approach.

## A National Economic Reconstruction Plan<sup>4</sup>

In current circumstances, it would be simple common sense to make Australia more self-reliant and resilient to global economic and political shocks. This will require bold new initiatives to build domestic demand, support Australian business, ensure that our workers have the incomes to buy more of the products and services produced within Australia, and continue to expand our population.

Recovering from this social and economic catastrophe and reshaping our economy for a more resilient future will require enormous investments by government: in health care, in income supports, in infrastructure, in broader public service delivery, in developing new high value industries, and in direct public sector hiring. Private spending is crippled by shocked confidence, lost incomes, and deep uncertainty about what lies ahead. The private sector has neither the resources nor the capacity to act cohesively that are required to start and lead the long process of reconstruction. Only government possesses the economic and financial resources, the staying power, and the capacity and authority to plan at a national level, to get the macroeconomic ball rolling again. Without government leadership, and massive and sustained injections of resources and spending power, the economy will inevitably slip into prolonged stagnation – or worse.

To improve Australia's economic resilience, it is imperative we do not slip further into economic decline and we have board-based economic growth going forward. Even the biggest plan must start with some initial steps. To that end, we propose the following specific job-creation initiatives that are consistent with the broader vision of national reconstruction and economic resilience:

### **1. Early Childhood Education and Care Strategy**

The provision of appropriately funded, free childcare would boost the disposable income of households with young children and provide an effective form of stimulus to consumer spending and, in turn, overall demand in the economy. Constructing a quality, accessible, publicly funded, not-for-profit early childhood education and care system holds outstanding potential to contribute to Australia's post-COVID reconstruction.

<sup>3</sup> See the DMTC/Gravity iLab case study in attachment

<sup>4</sup> Australian Unions (2020), Australia's Economic Reconstruction after COVID-19: A National Jobs Plan, And Five Ways to Get Started; <https://www.actu.org.au/media/1449194/national-economic-reconstruction-plan.pdf>

## **2. Training for Reconstruction**

The importance of training has been accentuated by the COVID-19 pandemic. Many industries and occupations have been deeply affected by the crisis, and high-quality education and training can play a vital role in helping workers adjust to the coming changes in employment patterns. Investing in good quality education and training creates jobs directly within the education and training system, building and operating institutions, and education and training students.

Useful first steps have already been taken, and additional measures should build on this foundation. In July 2020, the Australian Government pledged \$2 billion to fund an additional 340,700 training places to help school leavers and job seekers improve their skills, for example. The initiative covers 50 per cent of the wages paid to apprentices as well as funding free or low-fee training courses as part of a \$1 billion *JobTrainer Fund*.

The Australian Government should now go further to sponsor a new nation-wide free TAFE program, similar to initiatives already in place in Victoria and Queensland, to provide free TAFE courses in priority areas for any students who wish to take them. We also recommend the Australian and state governments would commit that a minimum of 70% of all government vocational education funding is directed to TAFE, as the core anchor of vocational training in Australia. We also recommend a \$3 billion fund, to be allocated over three years, to support capital improvements in the TAFE system, including updating and modernising existing facilities, and expanding TAFE facilities (with a particular focus in regional areas).

## **3. Rediscover Australia**

Consumer-facing hospitality, retail, tourism and arts industries were the first and hardest-hit by the health-required shutdowns in the economy. Workers in those sectors have been devastated by job loss, reduced hours, and pay cuts – on top of the elevated risks of COVID-19 infection they already faced by virtue of the public-oriented nature of their work. We recommend \$500 million over 12 months in Commonwealth sponsorship of artistic, community, agricultural, and entertainment events, productions, and exhibitions in all states. The Australian Government will undertake to pay all regular state payroll taxes (up to 5% of qualifying incomes) for paid employees in two industries critical to the recovery of domestic travel and tourism.

## The National Reconstruction Investment Plan<sup>5</sup>

The National Reconstruction Investment Plan would boost public capital spending back to 6.5% of GDP, and maintain it there for the rest of the decade. This implies an additional \$30 billion of new capital spending per year on the full range of qualifying public capital projects. Those would include transportation, community and public housing, other urban infrastructure, cultural and public service facilities, forest and fire management investments to better prepare for future fire seasons, and renewable energy assets and efficiency upgrades.

Infrastructure Australia will receive a broader mandate to identify, negotiate and manage qualifying projects including specific effort on reducing the costs and fees of transactions and prioritising a role of Australian superannuation funds as principal investors.

Strong benchmarks for minimum Australian-made content in all funded projects will be mandated, including:

- 75% Australian content in structural primary metals
- 75% Australian content in other manufactured inputs
- 90% Australian content in engineering and design services

The National Reconstruction Investment Plan would support the creation of 75,000 direct jobs in construction, and over 100,000 additional indirect jobs in supply and consumer industries.

<sup>5</sup> Australian Unions (2020), Australia's Economic Reconstruction after COVID-19: A National Jobs Plan, And Five Ways to Get Started

## Part 1 – Arguments for Change

### Introduction

The work of the GAP Taskforce on National Resilience and a range of topic workshops organised by IIER-A has coalesced around a number of common themes, one of which is the need for additional domestic manufacturing capability in the wake of COVID-19 to increase national resilience in the face of future threats.

It is widely accepted that COVID-19 exposed a more general lack of economic resilience and political preparedness, and while Australia has coped with the pandemic relatively well over the last six months, it remains inadequately prepared for a range of potential challenges.

The Australian Government acknowledges the importance of reviving Australian manufacturing to boost jobs and output, improve economic diversity and support national sovereignty, with a range of measures announced in the 2020-21 and 2021-22 Budgets.

The Commonwealth's new \$1.3 billion Modern Manufacturing Initiative fund<sup>6</sup> is now open for six priority sectors: resources technology and critical minerals processing, food and beverage, medical products, recycling and clean energy, defence and space. The fund is designed to help domestic manufacturers achieve the economies of scale required to compete with larger overseas concerns by covering up to a third of the cost of new plants and factories. It will also subsidise up to 50% of the cost of projects to commercialise research and produce goods for sale or integrate Australian products into global supply chains.

In a break from previous government subsidies for domestic manufacturers, this investment fund is clearly modelled on the Clean Energy Finance Corporation which has successfully supported the expansion of renewable energy such as solar and wind in Australia.

The Federal Government is also funding the \$107.2 million Supply Chain Resilience Initiative,<sup>7</sup> which will look to provide information on supply chains, identify gaps and take action to address them through grants funding.

The state governments are also investing in manufacturing and supply chain resilience, with Victoria recently announcing its own \$60 million manufacturing and industry development fund to boost the state's sovereign capability.<sup>8</sup>

Welcome as this funding may be, this paper calls for a more comprehensive assessment of economic sovereignty and the role greater domestic manufacturing capacity could play in safeguarding Australia from a range of known and unknown political, economic and

<sup>6</sup> *Modern Manufacturing Initiative and National Manufacturing Priorities announced*, Department of Industry, Science, Energy and Resources, 1 Oct 2020; <https://www.industry.gov.au/news-media/modern-manufacturing-initiative-and-national-manufacturing-priorities-announced>

<sup>7</sup> <https://www.industry.gov.au/news/meeting-our-needs-in-times-of-crisis>

<sup>8</sup> <https://www.innovationaus.com/victorias-60m-manufacturing-fund-opens/>

environmental threats in the future. More effort will be required to understand the gaps in Australian capacity and engineer ways to fill them, if the government is to fulfil its primary duty of protecting this nation and its people from harm.

Until the COVID-19 crisis laid it bare, 30 years of growth driven by global free trade agreements, domestic deregulation, the mining boom and expansions in foreign tourism and education had masked the steady erosion of Australia's domestic manufacturing capacity by cheaper competition from China and other lower-cost suppliers.

The sudden and unprecedented end to foreign tourism and international students, increasing trade and geopolitical tensions and the demonstrable fragility of international supply chains in troubled times suggest the need to revitalise Australia's domestic manufacturing sector to ensure supplies of strategic goods, improve economic agility and preserve political freedom.

A strong economy is the best defence against known threats and unpredictable disasters of all kinds, but those 30 years of growth have only simplified, rather than diversified, the nation's economy. Australia's heavy reliance on primary production for export income, domestic services for casualised employment and foreign sources for all kinds of supplies left the country vulnerable when foreign trade was affected. Our lack of home-grown manufacturing, and the drive by all manner of firms to cut costs, staff and inventory in pursuit of ever 'leaner' processes, eroded our ability to absorb shocks to the system, and society has paid a heavy price in terms of subsidies and lockdown measures.

While the 'Asian tigers'<sup>9</sup> expanded through manufacturing, and nations like Norway invested their resource bounty in a sovereign fund, Australian government, industry and society assumed the good times would last forever – just as some still assume they will automatically return. If Australia is to learn the lessons of COVID-19, concern over international supply chains and domestic manufacturing capacity should form part of a broader re-evaluation of national sovereignty.

While government ministers and many industries might hope for a swift return to benign international trading conditions, they should acknowledge that the 'new normal' of the post-COVID world will affect trade as much as any other part of life. A recognition of the strategic, economic and employment benefits of a stronger, more agile and more capable domestic manufacturing sector does not require protectionist trade policies or wholesale nationalisation, but having been caught unprepared by the global pandemic, it would seem prudent for the government to prepare for future eventualities. Governments traditionally prepare for the 'most likely' rather than 'worst case' scenario, but given current global conditions, the alternatives may be close to the same thing.

<sup>9</sup> The Asian Tigers are made up of four countries in east Asia – South Korea, Taiwan, Singapore and Hong Kong, <http://developmentandglobalisation.weebly.com/the-asian-tigers.html>

A sovereign nation must buttress, rather than outsource, its self-reliance, and while state and federal governments have taken measures to protect and restore the economy in the wake of COVID-19, the broader long-term vision for domestic manufacturing and trusted supply chains outlined in this report would prepare the ground for a more sustainable recovery.

The Australian economy has proved remarkably flexible and responsive for 30 years, quickly recovering from the dot-com crash, the Asian financial crisis, the slowing of the mining boom, the global financial crisis and the recent drought. It can use that flexibility again to respond to a global trading system changed by COVID-19 and a darkening geopolitical situation. Just as past performance is no guarantee of future growth in the stock market, so relying on the free market for essential goods and automatic economic stabilisers for recovery may not be enough in the 'new normal' of the foreseeable future.

A string of supply chain interruptions, foreign manufacturing disruptions, procurement problems, political instabilities, and shortages as a result of future pandemics, climate change and natural disasters is becoming more likely than another thirty years of untrammelled trade. While every Australian may hope for global peace and prosperity in the future, it would be foolish to rely on benign conditions abroad as a substitute for security at home.

Domestic measures to increase resilience can build on Australia's existing domestic strengths and enhance its export trade. Cooperation with regional and global allies would not only strengthen long-standing ties but collectively improve comparative advantage.

In the light of past failures, present problems and future threats, Australia's national priorities should refocus on a suite of measures to boost domestic manufacturing to enhance resilience, boost employment, increase exports and cement our position as a valued partner.

While the immediate costs of such policies may be significant, the long-term cost of not investing in resilience is much greater, as COVID-19 has proved. *A World in Disorder*<sup>10</sup>, the latest report from the World Health Organization's Global Preparedness Monitoring Board estimates that current spending on COVID-19 would have bought 500 years of global protection.

The Australian economy was never very complex, but it was more sophisticated twenty years ago in terms of manufacturing capacity than today. Deliberate strategies will be required to increase its complexity, given the failure of the free market to do so.

Just as free trade abroad and deregulation at home enjoyed broad cross-party consensus since the 1980s, it may be hoped that the immediate problems caused by COVID-19 and the long-term threat of China may create a similar consensus around measures to improve social resilience, economic independence and national security. Long-term problems will need sustained efforts across changes in party leaders and political administrations to solve them, but that is an argument for greater effort, rather than less.

<sup>10</sup> [https://reliefweb.int/sites/reliefweb.int/files/resources/GPMB\\_AR\\_2020\\_EN.pdf](https://reliefweb.int/sites/reliefweb.int/files/resources/GPMB_AR_2020_EN.pdf)

### Three Types of Risk

Risks may be delineated into three main types:

- First-order risks may be large in scale but remain predictable by nature, given past experience of the world. These risks might include pandemics, droughts, migration and income inequality, and proven strategies and good management should be enough to handle them. Global risks such as climate change also have clear paths to mitigation, but this will require much greater effort from governments around the world, as well as in Australia.
- Second-order risks are consequences of first-order problems, and can be profound and long-lasting, but they also tend to be neglected, as more attention is paid to more visible first-order issues when they eventuate. These might include the long-term effects on children's education of COVID-19 measures, the damage done to small businesses forced to close by lockdown measures, or the effects on other aspects of public wellbeing and health.
- Third-order risks are, by definition, unpredictable. On current trends, half the companies on the Fortune 500 will slip from the list in 10 years' time, not because they were poorly financed or badly managed, but because their business was disrupted in unforeseen ways.

A domestic manufacturing strategy would help deal with all three kinds of risk by improving national capacity to handle them. Management in recent decades focused on 'lean' production – including, but not limited to, reducing costs – and overseas supplies, because Australia's enterprise metrics were tilted to reward them, but these incentives were artificially imposed and can be re-tilted to reward agile, manufacturing enterprises.

An example of an artificial tilt is offered by the USA's DARPA<sup>11</sup> Manufacturing Technology Office, which faced a crisis in that nation's defence industrial base in the late 1980s. The office observed that supply chain innovation was not sufficiently rewarded by capital markets and so it developed methods to evaluate so-called 'economic value added' in the supply chain two or three levels deep.

These draft EVA metrics were presented to the investment community as a way to better understand the innovative power of the whole enterprise rather than just the prime. Through a deliberate DARPA campaign, these metrics soon became embedded in General Accepted Accounting Principles and systems to support enterprise resource planning and supply chain management developed to enrich these metrics still further.

Similar approaches can be employed in Australia today. If a set of resilience metrics was defined and promoted, companies would gain value if they added them to their reports and improved their performance year over year, as they would offer more security to stockholders and be more likely to survive and prosper in the future. The National Resilience Institute proposed later in this paper could find, develop and publicise such metrics.

<sup>11</sup> Defence Advanced Research Project Agency

## Risks and Opportunities

There is now a broad, although ill-defined and perhaps temporary, consensus that Australia should develop explicit resilience strategies to ameliorate future crises. However, the enormous costs of recent lockdowns, a view of the pandemic as a 'once in a century event' and the frantic pace of state and federal electoral politics might also sap political will and ability to prepare for future calamities. There are also risks and costs involved with re-emphasising manufacturing as well as opportunities and benefits.

The arguments in favour of retaining and developing domestic capacity for strategic reasons in areas other than defence were valid before COVID-19 and were entirely ignored for reasons of cost and convenience. The hope that normal international trade and relations will bounce back to their pre-COVID state is natural, given recoveries from other crises in recent decades, and a consolidated national strategy to meet domestic critical requirements in times of crisis might soon appear expensive, superfluous and a bureaucratic impediment to trade during long periods of calm.

It can always be argued that businesses would already be providing this capacity if it were profitable, and while fresh investment might help create the economies of scale required to reduce costs, Australian firms will still face much larger companies and nations on global markets. Jobs have been created in casualised services in recent years, while firms have been unwilling to train their own workers or support the traditional jobs and benefits which skilled manufacturing demands. Health spending before the pandemic was already seen as unsustainable, and so sourcing more expensive domestic supplies might soon be seen as putting lives at risk.

The balance between protectionism, trade and national sovereignty will always be disputed, as will the definitions of these words, just as reducing reliance on foreign supply chains may have political as well as economic costs. As the bills for COVID-19 come in, arguments in favour of significant investment will be harder to make, and the risk of interest groups seeking permanent government subsidy in the name of the national interest will grow.

While the creation of a national cabinet to manage COVID-19 raised hope for a more streamlined national policy approach to other issues, the crisis has literally hardened state barriers, and a whole-of-nation recovery package may be difficult to coordinate. By the time a national industrial policy encompassing government, industry, research and innovation could be completed, public and political attention may well have moved on.

These and other issues will have to be acknowledged and explored, if broad agreement on improving Australian resilience in general, and boosting domestic manufacturing in particular, is to be reached. The long-term commitment required to revitalise manufacturing will need strong arguments on its side to achieve cross-party consensus, and formal agreement between the Commonwealth and States, if it is to be maintained as the pandemic ebbs and normal political service is resumed.

Proponents of change must therefore strike while the iron is hot. The Business Council of Australia, for example, unsurprisingly urges the government to pick ten industry 'winners' to lead the country from recession and generate jobs for the million people out of work. Its chief executive, Jennifer Westacott, calls for policies to encourage investment and collaboration, combined with incentives to encourage next generation industries.<sup>12</sup>

However, critics of government support point to the generally dismal record of 'picking winners' and maintain that subsidising unsustainable industries – be they innovative or legacy – opens a bottomless pit in public finances. They contend that domestic markets and global supply chains have withstood an unprecedented global crisis and that a return to industrial policy would waste resources at home, negate comparative advantage abroad and slow economic recovery.

Manufacturing advocates might in turn observe that even China recently adopted its own 'Made in China 2025' strategy to boost domestic growth in ten high-technology sectors, such as electric cars, aerospace, cutting-edge information technology, robotics and artificial intelligence, a policy inspired by Germany's Industrial 4.0 development plan. There is a balance to be struck between the extremes of both positions. IIER-A therefore recommends a policy of 'smart sovereignty' to ensure Australia has the technological know-how, manufacturing capability and workforce skills required to support key areas of strategic importance and innovative growth.

### **The Importance of Manufacturing**

While Asian nations in general, and China in particular, powered their spectacular rise through increasingly high-tech manufacturing, a supposedly Asian-centric Australia has been content to dig and export unprocessed ore and develop domestic services since the free market reforms of the 1980s.

Australia has long been urged to diversify its economy to survive the end of the mining boom, but tourism, education and other services will not be enough on their own to support national prosperity, not least because the return of overseas visitors is still uncertain. If the wake-up call of COVID-19 forces Australia to assess its needs and ameliorate risks, then steps to rebuild domestic manufacturing and minerals processing could underpin a raft of other economic and social measures, as well as produce immediate social, economic and security benefits in itself.

While the eclipse of Australia's mass-market textile sector constrained our ability to produce more medical masks at the onset of the COVID emergency, a surviving handful of small but innovative textile firms were able to pivot and produce high grade personal protective equipment (PPE). While a few isolated success stories should not disguise the lack of scale and diversity in Australia's manufacturing sector, they do show the potential that a larger manufacturing industry could offer if a response to another major challenge is required.

<sup>12</sup> <https://www.smh.com.au/politics/federal/time-to-pick-winners-bca-says-new-approach-needed-to-end-recession-20200813-p55lee.html>

To continue with the COVID example, the lone Australian factory producing spunbond, the special fabric in surgical masks, closed in Albury in 2015 because it could not compete with cut-price overseas suppliers. State and Federal governments took no action, confident that supplies could always be sourced from abroad, but these supplies inevitably run dry as soon as they were most needed. There are a host of other essential manufactured goods whose overseas supply might similarly evaporate when demand for them becomes crucial.

While the creation of publicly owned companies, or outright nationalisation of potential domestic suppliers, may be politically untenable, the government could have co-invested in more efficient manufacturing techniques to reduce costs for Australia's last remaining spunbond manufacturer, helped fund research and development (R&D) into commercially attractive alternatives, or agreed an 'off-take' arrangement to keep the plant open and capable of scaling up when required.

Public and private health providers could still have sourced their day-to-day supplies on the global market, but a vital domestic capacity would have been retained for times of crisis at a fraction of the cost incurred when competing against other nations for suddenly constrained international supplies.

Similar examples could be found across all our vital sectors, given the long decline in domestic manufacturing which successive governments have not only allowed but essentially encouraged, viewing the sector as either obsolete, unfashionable or uneconomic. *The Fair Share for Australian Manufacturing* report<sup>13</sup>, produced in July 2020 by Dr Jim Stanford and the Centre for Future Work, found that Australia ranked last among 36 OECD<sup>14</sup> nations in terms of manufacturing self-sufficiency. Australia's relatively small population is no excuse for this parlous position when we trail behind nations like Chile, Latvia and New Zealand.

### **Barriers to entry for SMEs**

Small and medium firms should play an important role if Australia aims to build an advanced manufacturing base. However, there is often a prohibitive capital investment that SMEs need to make to be competitive.

For example, SMETEC on the south coast of NSW is owned by husband and wife veterans, and aims to become part of the supply chain for the Australian Army armoured vehicle programs and participate in numerous associated export opportunities. This would create many local jobs in a regional area as well as an advanced manufacturing jobs for the nation. However, capital equipment purchases required to support market entry would be in the order of \$3 million. Whilst the company has already demonstrated capabilities as the only ASEAN company to achieve Bundeswehr waterjet and laser cutting standards for military vehicles, and has been successful in obtaining grant funding, the uncertainty around the timing of project supply chain decisions means that securing investment financing is difficult.

<sup>13</sup> Stanford, J. (2020), *A Fair Share for Australian Manufacturing: Manufacturing Renewal for the Post-COVID Economy*, Centre for Future Work at the Australia Institute, July 2020

<sup>14</sup> Organisation for Economic Co-operation and Development

## Learning from Defence

Arguments in favour of retaining or improving sovereign capability in core industries traditionally centre around defence, and so the defence industry offers a blueprint which could be applied to non-military, but still essential, capabilities. Indeed, the approaches used in aviation, engineering and defence to ensure operational safety can also be repurposed to identify the types of manufacturing which need developing.

'Failure Mode Effects and Criticality Analysis' (FMECA) is employed in the design and use of aircraft systems, for example, to reveal potential points of catastrophic failure. These crunch points can then be redesigned to prevent relatively minor problems causing fatal crashes, or to at least reduce the likelihood of failure and its potential consequences to a manageable level. A FMECA process to identify vital choke points in the Australian economy would help target and justify government support for domestic capacity to ameliorate them.

Australia's critical lack of fuel refineries and onshore fuel reserves is an obvious example. Despite our wealth of other natural resources, our lack of oil refining and storage capacity leaves Australian firms and consumers badly exposed to disruptions in tanker supplies from whatever source – be it a trade dispute, political sanctions or a handful of hostile submarines. Efficient deliveries of refined fuel by supertankers crossing the Pacific in normal circumstances are no guarantee of their resilience in more pressing circumstances. An evidence-based analysis of Australian society would reveal similar weaknesses in a host of sectors, from finance and food to health and machinery, and increase support for developing domestic capacity.

The defence industry policy released in 2016<sup>15</sup> stressed the need for domestic production and support services to ensure operational independence and reduce maintenance costs across the Australian Defence Force (ADF). The government's drive to develop a domestic defence industry includes public-private partnerships in R&D, the safeguarding of intellectual property, and the underwriting of additional manufacturing capacity through off-take agreements, all of which are strategies which could be applied to other strategically important sectors.

While some of the new defence facilities are government-owned and contractor-operated, others involve long-term partnerships with commercial firms. While Australia still imports most of its defence hardware, and the programme has suffered its share of delays and stumbles, lessons from this approach could ease the path for broader expansion of manufacturing capacity. Agile, innovative and advanced manufacturing firms in Australia are now flourishing and delivering high-value goods and services to the ADF, Defence Primes and OEMs.<sup>16</sup> These firms and their peers can be encouraged to branch out in other spheres by a broader national industry policy.

<sup>15</sup> The Defence Industry Policy Statement – see Australian Government (2016), Defence White Paper, <https://www.defence.gov.au/WhitePaper/>

<sup>16</sup> Original Equipment Manufacturer

The international panic over ventilators in the initial wave of COVID-19 offers another apposite example. While there may be no pressing need for a domestic producer in normal times, the headlines in February and March were dominated by the need to retool and produce them when domestic demand spiked and foreign supply diminished. While the commotion over ventilators was overblown, as their use was always a last resort and patient numbers were kept in check, the need to develop domestic producers, or at least the ability to produce – or pivot and produce – vital goods, was made clear.

Most of Australia's remaining manufacturers are smaller firms which produce or assemble components, rather than finished goods, and few major products or platforms are produced with purely Australian supply chains. This means the importance of some core industrial capabilities are not properly understood by consumers, businesses or policy makers as these processes are not undertaken here. This lack of understanding bred the assumption that we did not require them, or could easily source them from abroad, but heavy manufacturing, larger equipment and more infrastructure will be required over time to underpin manufacturing efforts to meet sovereign demands.

As well as renewable energy and petrochemicals, for example, the need to develop sovereign capability in aluminium, steel and plastics and become largely self-reliant in our own country should be assessed, rather than exporting ores to have them refined or buying back value-added products.

The vital ability to cast and forge aerospace standard titanium, for instance, may always require an element of global supply chain support, but a larger domestic market would help justify the development of this capacity. The development of defence partnerships and trading relationships with our Five Eyes allies<sup>17</sup> could help ensure the required supply chains remain secure, alongside off-take agreements in normal circumstances and subsidies in times of emergency.

The decision to end support for the car industry dealt a blow to the nation's engineering expertise and domestic supply chains. Although the car makers were foreign-owned, Australia remained one of the few nations able to build a car from scratch, as even Italy and South Korea depend on Chinese components. The national engineering capacity and knowledge lost with the automotive shutdown is being rebuilt in some part by a major naval shipbuilding programme, and a wider industry policy could rejuvenate other vital areas.

Manufacturing has long been denigrated as obsolete, or at least old-fashioned, and so government, investors and the public will need education to appreciate its importance to innovation, security and prosperity. However, COVID-19 has shown that manufacturing still matters, and that countries which control supply chains in essence control the world. Two thirds of world trade still involves manufactured goods, and a nation which does not manufacture can be shut out of global trade.

<sup>17</sup> The *Five Eyes* is an intelligence alliance comprising Australia, Canada, New Zealand, the UK and the US.

A renewed focus on manufacturing would help create the high-skilled, full-time jobs required to pull Australia out of recession and reduce the casualisation of low-skilled, service jobs which contributed to people's financial vulnerability – and helped spread the coronavirus disease.

## Learning from abroad

Manufacturing has dwindled in most Western countries for the last 50 years in the face of cheaper, but increasingly sophisticated, Asian competition. Fortunately, many of our traditional allies are now assessing their vulnerabilities and taking steps to remedy them, and Australia would be the outlier if it relied on a restitution of 'business as usual'.

### *New Zealand*

New Zealand, to take the most local example, already imports a lower percentage of secondary goods than Australia, despite its manufacturers being overshadowed by its farmers throughout its history. The *Manufacturing Matters*<sup>18</sup> report, released in February 2020, noted a range of problems in New Zealand, including currency fluctuations, demographic change, environmental regulations and the challenges of Industry 4.0, which would be familiar to Australian firms but can still be addressed with targeted action.

The size and resilience of an animal population is generally in direct proportion, and a similar heuristic applies to manufacturing. New Zealand's manufacturing supply chains are regularly disrupted when a small supplier drops out, as there are few or no domestic alternatives. New Zealand firms are facing a 50% drop in orders, and the long-term impact of COVID-19 on the manufacture sector overall is uncertain. Australian firms face similar challenges.

Both Australia and New Zealand require the creation of an industry capability matrix and supply chain analysis to flag points of vulnerability if domestic suppliers disappear. New Zealand has only one firm offering high-quality 3D printing in titanium, for example, and while every source is replaceable, delays in finding alternatives could pose significant problems for the firms it supplies.

New Zealand's government recently announced a transformation plan for advanced manufacturing, and this could be extended in scope. However, in common with their Australian peers, New Zealand firms often rule out government intervention on a matter of principle, due to perceptions of World Trade Organization (WTO) rules. Favouring New Zealand firms in government procurement, for example, is ruled out on those terms, even when they may not apply.

Although the aim may be to reduce reliance on other nations, the Australian Government can learn from New Zealand and a host of other nations about ways to achieve it – in particular, the need to undertake detailed analysis, secure cross-sector cooperation and

<sup>18</sup> Jenkins, M. (2020), *Manufacturing Matters*, Final Report, 28 February 2020

improve manufacturing outcomes in a targeted, cost-effective manner. Cross-Tasman collaboration in research and development could also be productive, not least in digital services, given New Zealand's expertise in digital animation and film production.

### *Scotland*

Scotland offers another instructive example. The Scots benefited from generous British government and European Union (EU) funding in the late 1990s and early 2000s and secured significant promises of further foreign investment. Unfortunately, a number of major overseas firms reneged on plans to construct large factories, which, combined with a decline in tourism and whiskey production, prompted a collaboration between government, academia and industry to assess the nation's employment, training and research capacity and plan alternative growth and skills strategies.

Scotland's new growth strategy built on its existing renewable energy resources in the west, finance, defence and manufacturing in the centre, and health and science in the east. Competing universities were initially reluctant to cooperate, but the devolved Scottish Government forced their hand and created a trio of strictly monitored accelerator programmes to commercialise their research. Scotland's top 20 companies, all but one of which are foreign-owned or based in England, were also all asked to mentor three local SMEs.<sup>19</sup>

These measures bore fruit as Scotland soon secured contracts to build new ships for the Royal Navy, while feeder schemes helped Rolls Royce establish a new aero-engine plant in Glasgow, and an advanced nuclear research facility has also been constructed. Scottish universities now collaborate on larger commercially oriented projects, rather than competing for grants and overseas students, and regional centres of excellence have encouraged a more focused approach.

Scotland's success in building on its strengths, encouraging university cooperation and maximising the local value of shipbuilding expenditure could inform Australia's future plans. Australia's Naval Shipbuilding Plan, for example, could take note of the Royal Navy's use of digital design, advanced production techniques and integrated supply chains serves a long-term national manufacturing strategy.

The Scottish experience also underlines the need for Australian defence contractors to improve their cyber-resilience in the face of concerted foreign espionage, develop design skills as well as manufacturing capability and integrate SMEs into a national plan, all points touched on later in this paper.

<sup>19</sup> Small and medium-sized enterprises

## Rethinking supply chains

Wuhan rose to international infamy as the epicentre of the global pandemic, but its role in international supply chains is equally instructive. The city produces a tenth of China's fast-growing car industry and hosts over 100 parts suppliers to Honda alone. The lockdown belatedly imposed on Hubei province soon spread around the world, and the global supply chains which now dominate the world's intertwined economy were significantly disrupted. Shortages of consumer goods, exacerbated by just-in-time ordering systems as well as panic buying, became commonplace, while a rush for scarce medical supplies revealed the world's dependence on a handful of suppliers along chains of dubious provenance.

No sensible commentator suggests that Australia could or should manufacture all the goods it needs. Many products are not vital to national functioning, while others could not be produced at reasonable cost. Even an expanded manufacturing sector would rely on a plethora of raw materials or components from abroad. Regional and global supply chains have undeniably helped fuel an unprecedented rise in the planet's prosperity over the last 30 years, but the concentration of lowest-cost products from dubious sources have quietly increased the risks faced by consumers, businesses, workers and the nation, and taking action to rebalance the ledger is clearly both possible and desirable, given current and likely future circumstances.

Improved domestic capacity in essential manufactured goods and diversified supply chains would seem a prudent combination. A national policy to strengthen trading ties to long-standing allies, for example, will not only encourage mutual economic recovery while lessening the leverage of China but reinforce the cultural and security relationships required to contain China's growth and ambitions.

Other nations are already adopting this approach. As early as May, the Japanese government devoted ¥243.5 billion (A\$3.6 billion) of its COVID-19 support to shift supply chains from China to Japan or Southeast Asia. The USA's admittedly chaotic response has included executive orders and cross-party bills to reduce its reliance on Chinese pharmaceuticals, while senior members of the Australian Government have at least acknowledged the need to look at domestic economic sovereignty.

Australia will stay in step with its allies, if it develops supply chains with trusted partners and steps up domestic industrial production, rather than divorce itself from them. The election of Donald Trump, Britain's exit from the EU, widespread concerns over immigration and fear of China's tightening grip were already pushing a more sceptical agenda in many Western democracies. COVID-19 has accelerated the trend away from unfettered globalisation and the divorce of private profit from any other considerations towards a new balance of national capability and mutually supportive political and trade alliances in the democratic world.

Every nation would still build on its strengths under this new scenario. Australia could develop its potentially lucrative rare earths industry to exploit its mining expertise, while British engineering, American productive capacity and Southeast Asian pharmaceuticals could reduce the need for Chinese goods. Scandinavia could retake the lead on mobile

communications, while Germany could continue to develop its advanced manufacturing sector. Such specialisation would reap the benefits of comparative economic advantage while reducing the political and security risks of relying on China, although government support might be required to counter Chinese firms subsidised by the state.

Efforts to diversify Australia's supply chains and build verifiable and trusted networks around the world would therefore complement, rather than contradict, an expansion of domestic manufacturing. European and other nations might be hard-pressed to identify the contribution Australia makes to global trade beyond coal, iron ore and wheat and a sunny destination for a foreign holiday, and so the development of manufacturing capacity and closer trading ties with nations which will actually buy from us may help increase the volume of foreign trade, rather than diminish it.

## Part 2 – Proposals for change

### **Cross-sector cooperation**

Australian stakeholders have a rare opportunity to unite in a truly national effort to improve sovereign industrial capacity by building on the remaining solidarity forged by COVID-19. The pooling of expert knowledge and pursuit of a coordinated, bipartisan and sustained policy of national renewal would benefit everyone. Indeed, only plans which are produced in consultation with all major stakeholders – government, employers and employees – will generate the buy-in required to see them accomplished.

A number of possible approaches are outlined below, all of which could be assessed and developed over time. Not everything can be a priority, and success will require 'give and take' on all sides, with elements of various schemes and approaches being shaped into a coherent and practical whole.

Furthermore, if government demands greater manufacturing capacity, it should offer those companies orders. If businesses want employees with greater skills, they should pay them fair wages and train them adequately. If citizens want the comfort of Australian goods in their stores, they should be willing to pay a premium for them. Sustainable national prosperity and security are in the best interests of all, but they will have shared costs, just as the burden of lockdowns and closures had to be shared in the pandemic.

This is not an impossible dream. Naval shipbuilders already engage in tripartite talks with labour unions and the government, for example, and prime contractors are encouraged to support local SMEs by sharing intellectual property and developing domestic manufacturing supply chains. Nations which have retained their manufacturing power, such as Germany, are characterised by formal cooperation between unions, employers, government and academia.

The planning and implementation of a more rigorous and relevant TAFE system could offer an initial opportunity for tripartite cooperation between government, employers and industry, with opportunities to expand this cooperation into issues around investment, innovation and planning once trust is established between all stakeholders.

The creation of a federal reconstruction agency or independent National Resilience Platform, outlined below, might develop these proposals further and facilitate stakeholder discussions over the longer term.

## Government

### *A National Industry Policy*

A national industry policy has been unfashionable for 30 years, but a new strategic approach may be essential to ensure that mapping of Australia's critical needs and capabilities is followed by a strategic framework for renewal.

As well as identify particularly sensitive or important products which require domestic sources of production, government policy should also encourage both the heavy engineering required to support it and the advanced manufacturing technology required to pivot quickly to new products as required. No government has the foresight to predict the precise nature of crises to come, although admitting a range of geopolitical and environmental realities would be a good start, but they can help ensure the nation has the basic capacity to handle them.

A new and dedicated structure may be required to deliver the strong leadership, national cohesion and a comprehensive recovery framework. To demonstrate political commitment and overcome the departmental silos which hamper holistic policy delivery, a new Commonwealth agency modelled on the Department of Post-War Reconstruction might offer a clear starting point.

Established as early as December 1942 by Prime Minister John Curtin, the Department of Post-War Construction began to plan Australia's progress into peacetime with a new generation of talented and professional public servants. While modest in size, it did not lack for ambition, and it helped coordinate the work of other agencies towards a common aim. Treasurer Ben Chifley was Australia's first minister for post-war reconstruction while H.C. 'Nugget' Coombs was his first departmental secretary. Working together, they ensured their department not only pushed for the full employment policy which helped boost post-war prosperity, but also revamped social welfare and created the Pharmaceutical Benefits Scheme.

Sweeping proposals for new federal powers were rejected by referendum in 1944, but the Department found more subtle ways to secure state cooperation. Section 96 grants offered the states federal funding on terms set by the Commonwealth, for example, while Canberra took on funding responsibilities for housing, hospitals and, in time, universities. Official industry bodies boosted coal and aluminium production, while Chifley and Coombs ensured Australia backed the Bretton Woods agreement which laid down the rules of post-war international finance and trade which helped boost Australia's recovery.

The resulting post-war plan contained several complementary features: stimulating domestic manufacturing (through ambitious policies such as a national car strategy); building national transportation and communications infrastructure; extending the conciliation and arbitration system; expanding public education and welfare programs; a coordinated vocational training system (including assistance for returning soldiers to transition to peacetime employment); and intensive labour market planning (featuring a new Commonwealth Employment Service, formed in 1945). Expansionary macroeconomic

policies (marked by rising government spending, continued deficits, and accommodative interest rates) reinforced the focus on job-creation after the war. Indeed, the landmark *White Paper on Full Employment* (also published in 1945) explicitly committed the post-war government to creating productive work for every willing worker. Australia will need an equally ambitious plan to reconstruct the economy after this more recent 'war' against COVID-19.<sup>20</sup>

Of course, the economy and the labour market have changed immensely since the post-war reconstruction of the 1940s and 1950s. The significant increase in the participation of women in paid work has changed the labour market, service industries are much more important now, and the urgent need to reduce carbon emissions must help shape all our economic policies. The core goal of that earlier post-war reconstruction – namely, ensuring that all willing Australians are able to work in a prosperous and inclusive post-war economy – is as valid and timely now, as it was then.<sup>21</sup>

The current National Cabinet of federal and state premiers, which replaced COAG<sup>22</sup> to manage the pandemic, has the air of a wartime cabinet. In the post-COVID recovery, a new 'Department of Development' could modernise its predecessor's role in concert with other government action on tax and welfare reforms, infrastructure projects and a belated push for clean energy. As a first priority, it might look to restore independent petroleum refining, echoing the Commonwealth Oil Refineries which operated from 1919 to 1952, to ensure Australia's parlous fuel security.

The new agency might also advise on the revitalisation of other sectors hit hard this year, such as tourism, education and aviation, but national security demands it retain a central focus on manufacturing. The Department of Post-War Reconstruction appeared a bold experiment in its time but proved a bipartisan success which laid the foundations to decades of prosperity.

### *Combining a National Economic and Environmental Reconstruction Plan*

Even the biggest plan must start with some initial steps. To that end, we propose the following five specific job-creation initiatives that are consistent with the broader vision of national reconstruction described above, and which start to move government policy in that direction

#### **#1: Early Childhood Education and Care Strategy<sup>23</sup>**

Economic studies have confirmed that public investments in early childhood education and care literally pay for themselves, once the additional output (and taxes) resulting from women's increased labour force participation are considered. Women's labour force participation in Australia is far below rates in comparable

<sup>20</sup> Australian Unions (2020), *Australia's Economic Reconstruction after COVID-19: A National Jobs Plan, And Five Ways to Get Started*

<sup>21</sup> Ibid.

<sup>22</sup> Council of Australian Governments

<sup>23</sup> Australian Unions (2020), *Australia's Economic Reconstruction after COVID-19: A National Jobs Plan, And Five Ways to Get Started*

industrial countries. If Australian women between 25 and 45 participated in the labour market as much as men do, the economy would benefit from 475,000 potential new workers, providing an enormous boost to economic growth, government revenues, and family incomes. If those women were working, Australia's GDP would be \$70 billion per year higher, and family incomes would be boosted by \$30 billion per year. Early childhood education also provides children with significant educational benefits – helping to improve their employment, income and health outcomes later in life. Universal access to early childhood education and care is thus essential not just to increase women's participation in the workforce, but also to better the lives of future generations of children.

The provision of appropriately funded, free childcare would boost the disposable income of households with young children and provide an effective form of stimulus to consumer spending and, in turn, overall demand in the economy. Constructing a quality, accessible, publicly funded, not-for-profit early child education and care system holds outstanding potential to contribute to Australia's post-COVID reconstruction. It is a highly effective job-creation stimulus in the short term; it has the capacity to boost long-term labour force participation and hence economic growth; it will enhance the wellbeing and capacities of the children who benefit from this education and care. It literally 'pays for itself', via the tax revenues paid from the increased employment and production of employed parents

## ***#2: Training for Reconstruction***<sup>24</sup>

We propose a national Training for Reconstruction (TFR) program to strengthen the ability of Australia's deeply troubled vocational education and training (VET) sector to respond to the urgent needs for training and retraining that will ensue because of the pandemic.

The TFR program would include several components:

- The Australian Government would sponsor a new nation-wide free TAFE program, similar to initiatives already in place in Victoria and Queensland, to provide free TAFE courses in priority areas for any students who wish to take them (the program would include Commonwealth support for the existing programs in those two states.) The program would cost \$1 billion per year, and would support an estimated 150,000 free TAFE spots per year. It would also underpin the maintenance or creation of 10,000 ongoing jobs in the TAFE system.
- Together, the Australian and state governments would commit that a minimum of 70% of all government vocational education funding is directed to TAFE, as the core anchor of vocational training in Australia.
- The TFR program would also include a \$3 billion fund, to be allocated over three years, to support capital improvements in the TAFE system, including updating and modernising existing facilities, and expanding TAFE facilities (with a particular focus in regional areas). This work would support 7,500 person-years

<sup>24</sup> Australian Unions (2020), Australia's Economic Reconstruction after COVID-19: A National Jobs Plan, And Five Ways to Get Started

of construction work over three years, and facilitate more hiring by TAFEs once those facilities are complete.

- Through this strategy, the Australian Government would commit to a target of 70% of all public VET spending and subsidies being received by public providers (particularly the TAFEs).
- To support the uptake of apprentices and trainees in employment, the Australian Government would offer a 50% subsidy of the ordinary time wages of apprentices and trainees in either direct employment or engaged through group training programs, paid for the life of the apprenticeship/traineeship. This program would support up to 100,000 subsidised apprenticeships at a cost of about \$2.5 billion per year. Subsidies would be paid through a combination of an initial grant, rolling monthly payments and a completion grant. The completion grant would be paid to an employer that engages a completed apprentice / trainee for at least 12 months continuous employment post training in the occupation associated with their training. The program would operate under transparent implementation rules with clear employer obligations. This component of the TFR program would help to address the catastrophic decline in apprenticeship positions which has only been accelerated by the pandemic.
- The Australian Government would also leverage its investments in public infrastructure and expanded public services to support more apprentices, establishing minimum apprentice/trainee/cadet ratios in construction, operation, and public service functions (and remove any instruments which restrict ratios such as the building Code). Complementary requirements will be established (backed by necessary changes to industrial laws) to hire apprentices and trainees from targeted sectors of the workforce (including targets for women, workers from Indigenous and immigrant communities, and workers with disability).

### **#3: Rediscover Australia**<sup>25</sup>

Consumer-facing hospitality, retail, tourism and arts industries were the first and hardest-hit by the health-required shutdowns in the economy. Workers in those sectors have been devastated by job loss, reduced hours, and pay cuts – on top of the elevated risks of COVID-19 infection they already faced by virtue of the public-oriented nature of their work. Millions of migrant and short-tenure casual workers (very common in the hospitality, tourism and retail sectors) were unfairly excluded from *JobKeeper* – and most migrant visa workers cannot qualify for any other form of income support, either. Many other arts and entertainment workers were effectively excluded by virtue of their unique and insecure employment relationships. Cuts to government-funded cultural institutions (which often commission or host artistic endeavours) and the ABC have exacerbated the crisis in the arts and entertainment sectors.

<sup>25</sup> Australian Unions (2020), Australia's Economic Reconstruction after COVID-19: A National Jobs Plan, And Five Ways to Get Started

These hard-hit industries must be a primary focus of government back-to-work policies. An integrated Rediscover Australia sponsorship and internal tourism program will facilitate internal travel, restore consumer and tourist confidence, and help sustain the broader tourism and hospitality sectors until the time comes when normal international tourism flows can be restored. Since international tourists will not be able to visit Australia for some time to come, and Australian outgoing tourism will also be restricted, this is a time for Australians to 'rediscover Australia': visiting domestic cities, towns and attractions, even those within their own states

### *The National Reconstruction Investment Plan*<sup>26</sup>

Australian governments and public agencies reduced their combined investment in public capital projects by 3% in the March quarter of 2020. This retrenchment in capital projects contributed to the decline in GDP recorded in that quarter (which heralded the beginning of Australia's first recession in almost 30 years). Despite all the announcements of grand new projects made by political leaders over the past year, these have not translated into actual increases in public capital spending. The reality of infrastructure spending has not matched the rhetoric, or the public need. This needs to change.

Our National Reconstruction Investment Plan would contain the following:

- The National Reconstruction Investment Plan will boost public capital spending back to 6.5% of GDP, and maintain it there for the rest of the decade. This implies an additional \$30 billion of new capital spending per year on the full range of qualifying public capital projects. Those would include transportation, community and public housing, other urban infrastructure, cultural and public service facilities, forest and fire management investments to better prepare for future fire seasons, and renewable energy assets and efficiency upgrades.
- Infrastructure Australia will receive a broader mandate to identify, negotiate and manage qualifying projects including specific effort on reducing the costs and fees of transactions and prioritising a role of Australian superannuation funds as principal investors.
- Strong benchmarks for minimum Australian-made content in all funded projects will be mandated, including:
  - 75% Australian content in structural primary metals
  - 75% Australian content in other manufactured inputs
  - 90% Australian content in engineering and design service
- The National Reconstruction Investment Plan would support the creation of 75,000 direct jobs in construction, and over 100,000 additional indirect jobs in supply and consumer industries.

<sup>26</sup> Australian Unions (2020), Australia's Economic Reconstruction after COVID-19: A National Jobs Plan, And Five Ways to Get Started

While the Coalition Government may be intellectually inclined to take an austerity approach, a more expansionist policy may be forced upon it, given low levels of consumer spending, risk-averse businesses and the need for environmental and strategic rethinking. Just as short-term measures to lockdown the economy to contain the pandemic had an environmental effect in reducing pollution, so long-term measures to recover after COVID-19 could be tailored as part of a much greater effort to tackle the climate crisis which poses a much greater threat to Australia's national resilience.

The Government has taken a step in this direction by announcing plans to invest \$1.9 billion over the next decade to develop clean technology in industry, agriculture and transport. While the funding will not ensure a rapid shift to a low emissions economy, it signals awareness of the wider problem at hand, and shows how targeted schemes can support both environmental and industrial elements of improving national resilience, rather than viewing environmental and industrial goals as opposed to each other.

An expansion of its remit beyond renewable energy supply and an additional A\$1.4 billion over the next decade will allow the Australian Renewable Energy Agency (ARENA) to encourage industrial energy-efficiency schemes and new processes. These could include 'green' steel production fuelled by hydrogen or other renewable energy sources, local manufacture of lithium batteries and components required for transmission upgrades, and carbon-capture and storage schemes in industries such as cement, chemicals and fertiliser. Its focus will now also include soil-carbon sequestration approaches long advocated by Global Access Partners and its advisories.

While this sum is less than the A\$1.6 billion allocated over the last ten years, the acceptance of a wider range of measures in industry and beyond to reduce carbon emission shows the Government is now willing to contemplate measures which serve long-term environmental goals – given that a healthy environment is a prerequisite of national resilience and security.

An expansion of these measures, in concert with targets and policies to reduce carbon emissions from coal, transport and land clearing, could help generate economic as well as environmental benefits. Announcing the measures, Prime Minister Morrison, said the renewable energy industry had enjoyed a 'world-leading boom'<sup>27</sup> and no longer required government subsidies, an argument which might be used to justify initial support for other environmental measures which could generate profit in the long term.

R&D resources may now be directed to a new generation of low-emissions technologies, reducing their cost, increasing their effectiveness and boosting their adoption by domestic users and foreign markets. While the Coalition does not have an explicit net zero emissions target or carbon price, schemes which reduce energy use, promote renewable sources, capture carbon or even turns it into building products – as one pilot already proposes – demonstrate how environmental and industrial goals can be simultaneously achieved to improve domestic manufacturing capacity and environmental resilience.

<sup>27</sup> <https://www.pm.gov.au/media/investment-new-energy-technologies>

The establishment of a 'manufacturing resilience bank' might take the concept pioneered by other investment banks in the past, and the Clean Energy Finance Corporation today, to support the revitalisation of domestic manufacturing.

### *Human Resources*

Beyond any amount of sun, coal or iron ore, a nation's population is its greatest asset, and their welfare and wellbeing should be the aim of every policy. Strengthening economic resilience will require attention to social cohesion and inclusion, for example, and female, regional, public sector and service jobs as well as those in private industry.

Australia has lower rates of female workforce participation than comparable OECD nations due in part to expensive childcare, for example, and so free, universal and accessible early childhood education – rather than merely childcare – would help more women to return to the workplace as well as boosting children's performance at school.

One of the long-standing trends exposed by the pandemic was the large numbers of workers in insecure jobs. Australia also has a higher percentage of workers in casualised jobs than most OECD nations, and many of them have suffered due to COVID-19 measures. A more sophisticated labour market, with higher training and skills, would boost economic complexity and productivity as well as improving family security and social cohesion.

TAFE can help improve workforce skills, just as it did 40 years ago when automation and computerisation were first being adopted, but industry cooperation is also required. Companies are often reluctant to help TAFE institutions update their machinery, as future changes will render the skills they teach redundant. This problem helped motivate the creation of the National Shipbuilding College to improve skills in domestic naval shipbuilding. The shipbuilding primes have taken a lead, but better analysis of skills gaps in Australia, as well as supply gaps, is required to target resources.

A decentralised regional approach could also be encouraged to improve the diversity and relevance of training. A mix of vocational education, on-the-job training and short college courses could be more productive than relying entirely on TAFE, although investment in training and collaboration with local businesses and communities could see free TAFE courses and improvements in facilities. Employers should also be integrated into the training process, as well as older employers and employees who may not be 'digitally native'. Tradespeople may not have well-developed IT skills, for example, and will need help to participate in more sophisticated iterations of their chosen trade.

### *Infrastructure and Procurement*

Inadequate national stockpiles of medical goods and other vital supplies to survive short-term emergencies can only be tackled through greater government procurement. Creating better levels of redundancy incurs costs, but COVID-19 has proved the much greater toll of inadequate preparation. Finland, for example, has a National Emergency Supply Agency which coordinates reserves of a broad range of commodities, including medical supplies, oil, grains, agricultural tools and raw materials, which Australia might learn from.

Once stockpiles are secured and COVID-19 fades from the headlines, hospitals and other organisations will soon resume their quest for the lowest-cost products from international suppliers. However, if industry is being asked to invest time, effort and resources into innovative solutions and domestic production, they might expect governments to ensure that a certain percentage of procurement is reserved for domestic firms.

Where public goods are purchased from abroad, the government might insist on vital goods being sourced from verifiable, transparent, ethical supply chains, given the problems of sub-standard goods being supplied in the current crisis.

Additional public investment in strategic infrastructure would deliver a range of additional social and economic benefits, as well as boosting the construction industry. It would build the skills base and industry footprint which Australia needs, while a mandate to favour Australian goods and firms in new infrastructure and public service procurement would boost domestic jobs, innovation and research.

Government procurement would then drive the expansion of the manufacturing sector, and might at the same time encourage more affordable and sustainable uses of energy or better workforce terms and conditions. The Hawke government's 'partnership for development' programme used procurement to stimulate domestic manufacturing with some success and might be worth revisiting.

We also have more Australian examples of what good policy looks like to encourage more local content and support manufacturing. For example, the Victorian Renewable Energy target auction set a local content target of 64%, as well as targets of 90% for local operations and 90% for local steel. According to a state government fact sheet on the auction: "Projects that exceed the threshold scored higher than those that only met the minimum threshold."<sup>28</sup> These local content requirements saw towers manufactured at Keppel Prince, steel components in Tasmania and cabling from Victorian manufacturers.

### *Energy*

Recent administrations have shied from a comprehensive energy policy for a plethora of practical, political and ideological reasons, but under a new national economic plan, public loans could be given for renewable energy developments and support for major gas and electricity users to modernise their equipment. A rapid decarbonisation could even be encouraged by technology grants to support commercial R&D in manufacturing and energy. Australia is an energy-rich country, whether it be carbon-intensive or renewable, and so should be able to leverage this as a competitive advantage.

Heavy industries and manufacturers should not be shutting down citing high energy costs, and an energy and climate policy that guides Australia towards net zero emissions would give industry the certainty it needs to invest and expand. Rather than the current vacillation between coal, gas and renewable energy sources, a proper long-term plan could deliver cheaper energy prices, while at the same time putting Australia back on track to meet its international environmental obligations.

<sup>28</sup> [https://www.energy.vic.gov.au/\\_\\_data/assets/pdf\\_file/0023/391172/VRET\\_FAQ.pdf](https://www.energy.vic.gov.au/__data/assets/pdf_file/0023/391172/VRET_FAQ.pdf)

The Government's current Energy Policy Blueprint<sup>29</sup> proposes rolling reforms to place put downward pressure on electricity and gas prices and ensure the nation's energy markets are well-regulated and transparent. It also looks to encourage new reliable supplies and technology as well as investing in new ways to make our energy system cleaner and more efficient.

## **Business**

### *Investment*

Although unemployment figures are fluctuating, real unemployment may soar above 10% in the wake of COVID-19 lockdowns. Although appropriate skills training and long-term strategies to create new employment opportunities in manufacturing and beyond will help ease the situation, any decline in skills and capacity threaten to undermine national resilience and increase the impact of threats to national prosperity.

Around 200,000 jobs have already been lost in manufacturing over the last 20 years, and investment has fallen from between \$12 billion and \$14 billion to around \$9 billion since the 2007-09 global financial crisis.

Australia will be left behind by Industry 4.0 if the nation fails to invest in its capital infrastructure and labour force. Mid-tier firms in particular need further investment and finance. The Clean Energy Finance Corporation (CEFC) is an effective model that uses innovative financing models to develop industry and could be replicated in other sectors.

### *Repurposing existing assets*

Just as Australia's manufacturing remaining manufacturing sector performed admirably in retooling to meet medical needs during the COVID-19 crisis, Australian industry and government should look to use existing assets in the uncertain 'new normal' we face as well as develop additional capacity.

Foreign companies invested heavily in Australian mining, for example, and while this influx of capital eroded the complexity of the economy as a whole, the rapid development of mining technology also stimulated the manufacturing and services sector. Indeed, companies which made machinery for the mining sector were able to segue into medical equipment, while current improvements in shipbuilding skills, for example, can also be applied to other sectors. Advanced skills developed in defence, agriculture, mining and manufacturing, including data analysis and automation, have a wide range of further applications.

A model developed over the last two years can be used to map, improve and coordinate the resilience of every Australian company. Its co-design approach allows business owners to incorporate resilience principles into their businesses in appropriate ways, rather than bear the burden of prescriptive regulations.

<sup>29</sup> <https://www.energy.gov.au/government-priorities/a-fair-deal-on-energy>

America's Federal Emergency Management Agency (FEMA) gauges the seriousness of a disaster by the ability of its local Waffle House to remain open, given that firm's robust resilience approach. Local companies can do much to sustain their employees, customers and communities through difficult times, and a trusted network which outlined the capabilities of every firm in the country would help highlight risks and capacities.

Accreditation through such a scheme would offer an incentive for firms and workers to increase their capabilities, and adoption of this plan would allow every firm in Australia to achieve an appropriate level of contribution and participation.

Business resilience is a product of the attitudes and decisions of chief executive officers and managers as well as government agencies. Too many industry sectors saw appeals for public subsidy as their first and only option rather than improvising to make the best of fast-changing circumstances. Retailers, the banks and other sectors have long been slow to respond to internet competition, for example, and a new approach from managers will be required to embed greater resilience at every level in the economy.

A more resilient immune system for corporate Australia will require CEOs to address long-term vulnerabilities as well as manage immediate risks, stress-test their organisations, seek advice and share core infrastructure such as human resource systems, office space, warehouses, and even IT with other firms to reduce costs. Moving to the cloud, or pooling onsite IT platforms, for example, could help harden their information technology systems against cyber-threats while freeing more money for front-line production.

### *Advanced Manufacturing*

Limited manufacturing capability, university graduates with little industry-relevant training, and the offshoring of commercial innovation based on Australian research have long hampered Australia's ability to meet more of its domestic needs and diversify its exports, and the hopefully temporary problem of COVID-19 may again prove the catalyst to their long-term solution.

An explicit government commitment to strategic long-term planning and investment in technologies and research would help boost business confidence and unlock the substantial private investment funds which are currently withheld. The development of Industry 4.0 manufacturing sites would bring Australia to the fore in high-tech manufacturing, increasing domestic independence, high-skilled jobs and the agility required to respond to unanticipated needs and developments in the future.

A focus on graduate skill training through the expansion of programs like the Australian Research Council's Industrial Transformation Training Centres program would support expanded vocational offerings, while imaginative investment in cutting-edge projects would help Australia develop new strengths as well as rely on resources such as coal and iron ore. An expansion of CSIRO's Advanced Biologics Facility would support the rapid and cost-effective manufacture of biotech products, for example, and reduce the cost of

onshore development, allowing smaller biotech companies to grow and compete in overseas markets without having to move offshore.

Sustainable manufacturing clusters could be created around lithium battery and value-added manufacturing, renewable hydrogen production, green primary metal manufacturing, electric vehicle manufacturing and servicing, technical and medical textiles, and renewable energy machinery. Following the recommendation of Ross Garnaut, a Superpower Investment Fund should also co-invest in new sustainable manufacturing activities.

If Australia worked towards a better balance of manufactured imports and exports, it could create 400,000 manufacturing jobs and 265,000 more in manufacturing supply chains at a time when a host of insecure, unskilled jobs are being lost in the service sector. Far from being a drain on the national economy, this would generate \$180 billion every year in additional manufacturing output and tens of billions of dollars of tax revenue.

### *Cyber-resilience*

Social distancing has accelerated the trend towards digitalised work, and while Australia should put itself at the forefront of robotics, online education and machine learning to benefit the whole economy, it should also take greater care to protect those digital assets and data from criminal activity and state-sponsored attacks and espionage. Australian internet hardware is also vulnerable, as 95% of Australia's internet traffic is carried by less than two dozen undersea fibre optic cables. If these were cut or damaged by whatever cause, the whole economy would grind to a halt.

The security of the burgeoning defence industry is particularly compromised by cyber-vulnerabilities in the supply chain. Second- and third-tier companies are routinely targeted by criminals and hostile state actors, and so a national response is also required to bring SME cyber-security up to a more acceptable standard.

### *Small and Medium Enterprises*

Nine in ten Australian manufacturers are small businesses employing less than 20 people, while previous Global Access Partners' research has identified medium-sized firms<sup>30</sup> as the economy's major engine of job growth,<sup>31</sup> and so developing capacity in small and medium-sized firms should be a priority as manufacturing is re-energised. Major industrial producers will need a raft of smaller, local suppliers – just as the car industry once did – to reduce their reliance on foreign supply chains.

While businesses are still operating, their uncertainty about the short-term outlook creates a wider anxiety about the future. State and federal plans charting a way out of lockdown would help rebuild the confidence they need, particularly for Victorian firms. SMEs in rural and regional Australia tend to be more exposed to market volatility and revenue risk than their metropolitan peers, and so research might track their relative health and understand the barriers they face in becoming more resilient and adaptable.

<sup>30</sup> Companies employing between 20-199 people

<sup>31</sup> [https://www.globalaccesspartners.org/A\\_Vision\\_for\\_Australia\\_2017\\_Summit\\_Report.pdf](https://www.globalaccesspartners.org/A_Vision_for_Australia_2017_Summit_Report.pdf)

While COVID-19 stimulus funds have supported their immediate cash-flows and wage bills, measures to encourage investment in strategies which permanently reduce costs and increase productivity – including but not limited to digitisation – should be designed. SMEs in the regions are also hampered by a shortage of skilled labour, and additional incentives for migrants or unemployed workers to relocate from over-crowded cities, including the provision of low-cost rental accommodation and childcare, could also play their part.

Encouraging manufacturing capacity in the regions could also help stabilise local economies which have become overly reliant on particular agricultural crops or seasonal tourism. The Small Business Concierge programme has proven successful at state level, and could be expanded into both local and federal government to offer business advice and administrative assistance to manufacturing companies.

In the medium term, a national manufacturing policy should begin with an analysis of what Australia is capable of and the gaps in provision across manufacturing as a whole, as well as defence. Government incentives and tax breaks do not encourage private investment in uncertain times, but a national strategy would offer the certainty which businesses need to expand capacity.

More specific measures can also be adopted. Despite – or perhaps because of – its free market rhetoric, the United States government has been able to maintain a small business set-aside programme<sup>32</sup> for over 40 years, for example. This programme guarantees that at least 10% of spending in a variety of sectors is reserved for small US firms. A similar scheme could be adopted in Australia to not only support smaller firms but offer them a springboard for expansion. A range of other schemes employed with great success abroad could be researched and applied in this country.

In the long term, encouraging research and innovation in smaller firms, with investment funds for commercialisation of Australian ideas, could bear significant dividends as the ambition, as well as capabilities, of these firms is unleashed. Israel, Singapore and other small nations have encouraged a host of small technology firms grow quickly into highly profitable international concerns by offering them the support they need at each stage of growth.

A few Australian success stories in this field has blinded policy makers to the need to offer domestic firms similar support to increase the numbers that not only survive but enjoy swift but sustainable expansion. Such support need not involve direct government subsidy, but could offer tax breaks to private equity players and venture capitalists investing in such companies. Government policy can mobilise additional sources of finance, as well as directly fund it.

Once the most important sovereign sectors are identified, advocates for them could be appointed or identified, with sector managers reintroduced by government to look for opportunities within their sectors to encourage collaboration and take on new manufacturing tasks.

<sup>32</sup> <https://www.sba.gov/partners/contracting-officials/small-business-procurement/set-aside-procurement>

*Defence SMEs*

Development of advanced manufacturing capability could be encouraged by expanding the investment opportunities available to Australian SMEs in the defence sector. Whilst the Department of Defence's Centre for Defence Industry Capability offers generous matching grants,<sup>33</sup> the Australian Government could also learn from the success of US Government programs to reduce barriers to entry. An Australian counterpart to US Sec. 308. Government-Owned Equipment<sup>34</sup> regulation would allow GFE<sup>35</sup> to be provided to SMEs on a lease/buy arrangement.

The plight of SMEs in the domestic defence industry also exemplifies problems which other small firms may face in turn if broader manufacturing capacity is to be expanded. Their supply chains are hampered by a lack of skilled workers, for example, leaving the firms to choose between training workers at their own expense or outsourcing to countries with cheaper and often exploited foreign workers.

TAFE does not necessarily produce the skills which defence SMEs need, given variations and advances in plant and technology, and so more attention should be paid to adequately funding and resourcing TAFE and train people for the shop-floor, as well as developing engineering innovations, in Australian universities. The Department of Defence, in many cases, tends to revert back to known foreign suppliers as opposed to working with domestic SMEs to develop their capabilities, and steps to improve the capabilities of SMEs using outmoded technology could advance their capability levels.

These firms are also concerned by high energy costs, although prices have fallen slightly this year. Energy can consume a third of a company's expenditure, with another third spent on wages, and so any national energy plan should look to reduce energy costs for industry as well as encompass consumer concerns and environmental obligations. Cyber-vulnerabilities are also much discussed in this sector, but the costs of adequate cyber-security can be high for an SME which will derive no immediate financial benefit from it.

Domestic and international travel restrictions impede defence SMEs' search for new customers and contracts, as the industry revolves around personal relationships. Up to ten visits might be required to a prime contractor before a contract is contemplated, let alone signed, and so the ripples from COVID-19's travel restrictions may extend for several years.

*Urban manufacturing*

Changes in urban planning could aid the return of the small manufacturers, which were once a feature of every town, and help solve some of these problems. Urban manufacturers could fill niche markets, support larger producers and employ local workers. Urban planner and

<sup>33</sup> <https://business.gov.au/cdic/grants-for-defence-industry>

<sup>34</sup> <https://obamawhitehouse.archives.gov/the-press-office/2012/03/16/executive-order-national-defense-resources-preparedness>

<sup>35</sup> Government Furnished Equipment (US), <https://acqnotes.com/acqnote/careerfields/government-furnished-equipment-gfe>

designer Carl Grodach, for example, sees the post-COVID world as 'a golden moment to revive manufacturing' across the nation's state capitals and major towns.

A long-standing advocate of small-scale urban manufacturing, Professor Grodach calls for a relaxation of the zoning laws which have forced small firms to the urban fringes. He argues that historic inner-city industrial sites should become workplaces for local makers, rather than apartments, as modern manufacturing would not produce the noise and pollution of traditional industrial plants. Encouraging urban manufacturing by SMEs would therefore diversify the monoculture of modern cities dominated by residential and retail properties.

Prof Grodach agrees with the need for an initial audit to assess current imports, domestic capacity and future potential, and for vocational education to furnish young people with the skills they need in a sector which has received little publicity. From biotech to small scale cultural product making, manufacturing could take its place in mixed use and office zones and compensate for the loss in our major cities of discretionary consumer spending on services and the decline in immigrant labour and demand for real estate. As high-tech industries are also the prime targets of foreign sanctions, export restrictions and cyber-espionage, a 'low tech' approach might offer a competitive advantage worth exploring as well as the inevitable quest for high-tech innovations.

Light manufacturing may be a more difficult way to make money than service provision or real estate, but it remains a more effective way to generate social wealth, activity and employment. While working from home has become *de rigour*, the density and energy of real-life interactions is what creates cities and satisfies human social needs.

## **A National Resilience Platform**

Long before the onset of COVID-19, IIER-A have been raising concerns that 90% of Australia's fuel and medicine is imported, along with almost all the nation's PPE. The shipping which Australia relies upon is also foreign-owned, and there are no minimum stocks of important supplies such as fertiliser, or any risk analysis of the problems this might cause.

IIER-A has consistently urged the government to assess the capabilities Australia would need in a crisis and ensure the nation has sufficient manufacturing, information technology, research and development, workforce skills and domestic supply chains to cope, alongside increased Australian ownership of critical capabilities. In the first instance, it calls for up-to-date models for fuel, medicine and other critical supplies to be produced, along with a specific risk analysis of our reliance on foreign-owned shipping. As well as the problems in each domain, a comprehensive picture of risk should account for overall system impacts.

IIER-A acknowledges that Australia will still be connected to global supply chains for some critical functions, but believes these should be diverse, transparent and verifiable. Holistic government thinking is also required to escape the constraints of departmental

'stovepipes', as even the Department of the Prime Minister and Cabinet admits it lacks the ability to undertake proper system-level analysis.

Given the absence of a part or current government plan, IIER-A supports the creation of a National Resilience Framework, strategy and action plan as well as a preparedness guide. Furthermore, the analysis underpinning it should be independent in nature, as government studies can be influenced by political sensitives and media pressure.

If the government opts against creating a specialised department to chart a post-COVID manufacturing-driven recovery, the founding of an independent National Resilience Platform would at least allow these complex issues to be viewed holistically. The Platform might be supported by a range of private and public bodies, and invite stakeholders from state and federal governments and opposition, manufacturing industry, labour unions, SMEs and civil organisations for 'second track' style discussions as well as undertake the necessary detailed research.

The Platform would allow participants to share knowledge, build consensus and understand each other's point of view in pursuit of the common goal for a more secure and prosperous Australia. A resilience platform could help build the public-private partnerships and understanding required to not only navigate, but help reshape, a more contested and volatile world.

Given recent controversy over Victoria's involvement in China's Belt and Road Initiative, the issue of foreign investment could be discussed as a priority. Federal fears of Chinese influence are increasingly at odds with the state and commercial thirst for capital. The National Resilience Platform could analyse Australia's vital areas of interest for assets which should remain Australian-owned, while charting alternative lines of supply. The creation of a shared database, built and used by all stakeholders, would allow a common baseline for discussion, while the Platform might also encourage collaborative efforts to cyber-security, research and the development of new markets.

The measurement of sovereign capability would be an obvious initial priority to explore areas where further investment is required. The development of a robust sovereign capability measurement framework would be an asset to government planning and offer an agreed set of figures to inform the wider political debate.

There are successful models in niche sectors which could offer a template for this approach. The National Medical Countermeasures Initiative (MCMi)<sup>36</sup> at DMTC was established in 2015, in collaboration with the Defence Science and Technology Group and CSIRO, to build sovereign industrial capability and capacity to support Australia's defence and health security requirements. Over the following five years, DMTC has led the expansion of the MCMi and the growth of medical technology and pharmaceutical organisations participating within the MCM network in vaccine, therapeutic and diagnostic development programs (*see Case Study Overview attached*).

<sup>36</sup> National Health Security Resilience Assessment (NHSRA) 2020

A bespoke, independent national resilience platform could propose, analyse and advocate a broader swathe of measures to federal and state government, commercial entities, civil society and individuals, but its value would not end there, as it should also have a remit to explore more fundamental issues.

COVID-19, or more precisely the economic and social lockdowns enforced to prevent its spread, have wreaked unprecedented havoc across the Australian economy, but although the virus was new, the type of threat it posed was containable by the public health system with relatively little adaption.

At its root, resilience is not about restoration of the status quo after a disruption, nor the adequacy of services in the face of emergency, or even national independence in the shadow of a hostile superpower. It is instead the ability to navigate challenges of any kind, regardless of their nature, while at each turn preserving and possibly improving the values and ideals that define us as a nation and individuals. Resilience is about being wise enough to plan, of course, but it is also an emergent quality from the structural abilities and resources required to be clever, composed and agile when wars, climate upheavals or any other events happen 'out of the blue'.

Traditional decision support infrastructure is based on facts, given the assumption that if decision makers have enough data, and understand the human dynamics and natural laws involved, they can understand likely events enough to engineer appropriate responses. However, human activities are more complex than weather events or viral outbreaks, and political tipping points or 'black swan' events can still take us by surprise, as the future is not always a continuation of the past.

As well as the political, commercial and community will to accept resilience as an issue, and the good stewardship required to ensure adequate stocks and productive resources, the nation also needs the 'intrinsic resilience' required to respond to unexpected but serious events with little or no prior warning.

Here again, a development of manufacturing expertise – and the broader acceptance of a manufacturing sensibility – could prove vital, as there are some well-known principles in the manufacturing enterprise and supply chain management that the nation as a whole could usefully follow. In general, if physical and human resources have more than one core competence and the ability to learn, for example, they contribute to an agile system.

However, this is not enough in itself. A business enterprise is simple compared to societies produced by teeming human imperatives tempered by national values. Beyond recommendations for particular incentives or schemes, a national resilience institute would have the time and space required to explore the more fundamental problem of what a modern agile and resilient society should look like, and how it should be achieved. This is beyond the scope of any government department or remit of any industry interest group. Only an independent, dedicated body like the National Resilience Institute, might be able to furnish the answers we need. Our current methods are inadequate, and merely crunching more data will not suffice, because the nature of resilience must evolve as quickly as the ever-growing threats to it.

## Conclusion

There is nothing novel in a call to reinvigorate domestic manufacturing. It has been a stated ambition of recent governments from both sides of politics, despite the push for high value services, digitalisation and e-commerce garnering more publicity.

One of Kevin Rudd's first statements when he became Labor leader in 2007 was to say "I don't want to be a prime minister of a country that doesn't make things any more", while Tony Abbott's administration outlined an ambitious industry plan in 2014 to create 'growth centres' for food and agribusiness, mining equipment, energy resources, medical technologies and advanced manufacturing. These priorities are echoed in Scott Morrison's budget plans to fund expansion in resources, food and beverages, medical products, recycling and clean energy, defence, and space.

2008 – rather than 1978 – marked the high-water mark of Australian manufacturing.<sup>37</sup> The Rudd government's first year in office saw manufacturing production contribute \$119.5 billion to GDP, a figure which has since declined by \$14.2 billion, after adjusting for inflation. Manufacturing output has been dropping in real terms for a dozen years, and was in decline for much longer as a percentage of GDP. The sector comprised a full quarter of the economy in the 1970s compared to just 5.5% today, thanks in part to spectacular growth in both mining and services. In terms of added value, the secondary sector was 40% larger than the resources industry in 2008, but now is only two thirds its size.

While government support for fresh production in key areas is clearly welcome, those industries will not thrive – and will not be independent of international supply chains – if the rest of the sector continues its absolute, as well as relative, decline. Private investment across the sector as a whole is not enough to counter-balance the gradual depreciation of existing plant and equipment, for example, let alone provide a solid base for future growth.

The value of the plant and machinery owned by Australia's manufacturers has fallen by over a quarter since 2008, a figure of \$20 billion in inflation adjusted dollars. Despite the emphasis on new technology – a call made for at least the last forty years – this includes a 14% fall in IT hardware and nearly a third in other electronic and electric equipment. A portfolio of tax measures around accelerated depreciation could help reverse this trend.

Broad and sustained government action reaching beyond any single department or administration will be required to turn this large ship around. The establishment of an independent but government-supported National Resilience Institute would help ensure the cross-party, multi-administration commitment required for success.

Private investment fled from manufacturing into the resources boom unhindered by government, despite the obvious security danger of relying on one type of export to a single country whose political ambitions stand in direct contrast to ours. While this is commonly acknowledged, the government also encouraged investment in the services

<sup>37</sup> Stanford, J. (2016), *Manufacturing (Still) Matters: Why the Decline of Australian Manufacturing is NOT Inevitable, and What Government Can Do About It*; Briefing Paper, Centre for Future Work at the Australia Institute; <https://www.tai.org.au/sites/default/files/Manufacturing%20Briefing%20Paper%20FINAL.pdf>

sector, given its multiplier effect as various service providers circulate the same money at much greater velocity. Monetary investment locked into manufacturing plant may take years to repay itself and generate profit, while money pumped into services can pass through many hands more quickly.

COVID-19 has changed the world in many ways, but it has not altered the geographical, economic and demographic realities that place Australia as a small country in population terms with high labour costs placed far away from most potential markets. Furthermore, not only does Australia produce few manufactured goods from scratch, it has failed to integrate itself into the global supply chains it now seeks to, however partially, extricate itself from. While its ores may supply China's manufacturers for now, few Australian parts are bought by international manufacturers of cars, smart phones or aeroplanes.<sup>38</sup>

One often overlooked fact is that China assembles many parts produced overseas as well as producing its own. Indeed, up to 50% of the value of China's exports is generated in other countries which sell parts to China for assembly or further processing. However, in Australia, the imported content of our exports is less than 20%. Australia has profited from selling the primary goods which underpin global value chains, and Australian consumers are keen consumers of goods manufactured abroad, but foreign companies send almost nothing to Australia for further processing.

The OECD notes that Australian manufacturing is less competitive than its peers, with the exception of a few niches in low technology industries based on primary production such as non-ferrous metals, pulp and woodchips, and food and drinks. When competitive high-technology industries such as pharmaceuticals do have a presence in Australia, it is because multinational enterprises want to access lucrative government contracts, rather than because Australia offers capabilities which cannot be found elsewhere.

Rather than focus entirely on high-profile, high-technology industries, as the current government has done, a rebirth of manufacturing might build on a broader platform of success in less glamorous industries. While the success of Cochlear, CSL and Austal is always lauded, they stand out because they are the exception, rather than the rule. Indeed, some of Australia's most successful manufacturing enterprises have been in important, but less eye-catching areas such as packaging. Australia's dearth of PPE was a major issue earlier in 2020, but Australia's own Ansell group expanded its rubber glove business into the world's biggest PPE concern with production in 55 countries.

Picking winners can work, as the Clean Energy Finance Corporation has proved, but a broader effort to restore Australian manufacturing is required to boost both local jobs and national resilience. This will only occur in the private sector if manufacturing becomes a more profitable option, but ironically China's steps to cut imports of Australian food and minerals to punish our nation for its political stance may help strengthen, rather than weaken this nation.

<sup>38</sup> OECD (2015), Australian Manufacturing in the Global Economy, Study for the Australian Government, Department of Industry, Innovation, Science, Research and Tertiary Education; [https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/IND\(2012\)20/FINAL&docLanguage=En](https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/IND(2012)20/FINAL&docLanguage=En)

Minerals and agricultural exports will become less profitable if their main market shrinks or becomes more risky, which will encourage a reallocation of private capital to more productive uses. Government statements and spending can flag approval for this change of course, just as independent analysis can substantiate the arguments in its favour, but ultimately only private enterprise can deliver it, and will only do so for sound economic reasons.

## Participant List

<b>Keith Besgrove</b>	Policy Adviser, Energy Consumers Australia, and Vice-Chair, Internet Australia
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<b>AVM (Ret) John Blackburn AO</b>	Chair, Institute for Integrated Economic Research Australia (IIER-Australia Lead)
<b>Prof Ted Goranson</b>	Principal Research Scientist, Griffith University & Deputy Director at Institute for Integrated Intelligent Systems
<b>Renae Hanvin</b>	Founder & Director, Corporate2Community
<b>Stephen Hayes MBE</b>	Chairman, GAP Taskforce on National Resilience; Chairman Gravity Group, Naval Shipbuilding Industry Facilitator
<b>Nerissa Kavanaugh</b>	Executive Producer / MD, Blackbird
<b>Craig Lockhart</b>	Managing Director, BAE Systems Maritime Australia
<b>Sid Marris</b>	General Manager, Minerals Council of Australia
<b>Tamara Martin</b>	Industry and Innovation Manager, UNSW
<b>David McLachlan</b>	Chairman, Industry Capability Network Limited
<b>MAJGEN (Ret) Paul McLachlan AO</b>	Executive Director, Elbit Systems of Australia Pty Ltd
<b>Michele O'Neil</b>	President, Australian Council of Trade Unions
<b>Steve Patrick</b>	Head of Strategic Projects and General Counsel at DMTC Ltd
<b>James Ritchie</b>	International Resilience Advisors Network, Germany
<b>Dr Karen Stanton</b>	Director – Strategy & Corporate, HTA Group
<b>Glenn Thompson</b>	The Assistant National Secretary of the Australian Manufacturing Workers' Union
<b>Innes Willox</b>	Chief Executive, Australian Industry Group

# Case Study - National Health Security Resilience Assessment (NHSRA) 2020

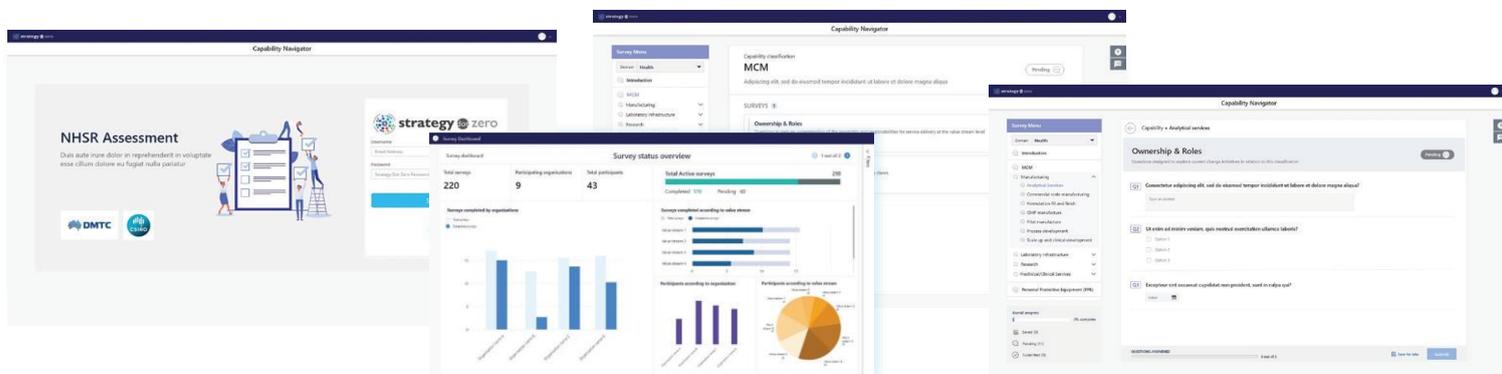
The National Medical Countermeasures Initiative (MCMi) at DMTC was established in 2015, in collaboration with the Defence Science and Technology (DST) Group and CSIRO, to build sovereign industrial capability and capacity which can support Australia's defence and health security requirements. Over the last five years, DMTC has led the expansion of the MCMi and the growth of medical technology and pharmaceutical organisations participating within the MCM network in vaccine, therapeutic and diagnostic development programs.

The activities within the MCMi are based on the outcomes of two National Capability Audits undertaken in 2012 and 2017. These Audits helped to quantify Australia's medical countermeasure research and development (R&D) capability and capacity, while highlighting where strategic investment could impact further growth of the sector. These Audits were intended to run on a five-year rolling schedule, however, the COVID-19 pandemic has led to a request from government to bring the next Audit forward by twelve months and to have an expanded remit.

## National Health Security Resilience Assessment (NHSRA) 2020

The current COVID-19 situation highlights the need for Australia's health security to be underpinned by a nationally coordinated approach to sovereign preparedness, prevention, response and recovery (PPRR). With a strong focus on supply chain resilience and in-country manufacturing capacity, the NHSRA 2020 will assess the strengths and vulnerabilities of Australia's PPRR ecosystem. NHSRA will extend beyond previous Audits of Australia's medical countermeasures capability to include end-to-end research, development, manufacturing, and distribution in six (6) critical sectors including Medical Countermeasures, Medical Devices, Personal Protective Equipment (PPE), Modelling and Simulation, Hazard Management and Sensing Systems.

The NHSRA is being carried out by DMTC in partnership with the Defence Science and Technology Group. The data generated by the NHSRA will be used by the MCMi Stakeholder Group (including representatives from Defence, Health, Foreign Affairs and Trade, Industry & Home Affairs) to inform policy and provide insights where strategic investment may enhance sovereign resilience.



## The NHSRA 2020 & StrategyDotZero

Conducting a whole-of-country assessment with multiple stakeholders and potentially hundreds of respondents across various supply chains is a complex endeavour. There are challenges at each stage, from the design of the assessment through to delivery. To overcome these challenges, DMTC has partnered with Gravity iLabs to leverage its StrategyDotZero platform which will streamline the collection of data and – subject to appropriate security controls –enable approved stakeholders access to visualise and interrogate the data in real-time.

The platform will digitise and automate various workflows and provide relevant analytics and reports. It is anticipated that through use of the platform the outreach of the assessment can be significantly increased, accelerate report delivery and maximise project outcomes. Another key aim of the platform is to enable stronger and coordinated stakeholder collaboration.