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Australia's can have a bigger and competitive manufacturing industry in a net-zero global economy.

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Response to the Inquiry, initiated via Senate reference on 12 August 2021, by the Senate Economics References Committee on the opportunities for development and expansion of Australia's manufacturing sector.

There are no restrictions on publication of this submission or requirements for anonymity. The submission contains no personal information of third-party individuals.

1 Summary

The Senate Economics References Committee has launched a new inquiry into the Australian manufacturing industry. The central concern is to better understand the future contribution that the industry can make to Australia's economy, the drivers for that contribution and the role that government can play.

Based on our published analysis, Australia's manufacturing industry could make a major contribution to economic prosperity and job creation based on our comparative advantages in critical resources and renewable energy.

Australia has a comparative advantage in large scale and, what should be, low-cost renewable energy and the minerals resources necessary in a carbon-constrained world. We can export these resources and/or we can add value to them to renew and expand a manufacturing industry that could replace export revenue from fossil fuels that will decline and jobs in carbon-intensive sectors that will disappear.

To realise this opportunity requires clear, long-term climate policy, support for technology development and a cooperative industrial policy focused on the strategic opportunities.

This submission provides responds to the Terms of Reference

We have not specifically addressed all the issues listed in the Terms of Reference as we do not claim competence to do so in several areas. Our submission is directly relevant to issues (e), (f), and (h).

2 Recommendations

2.1 Abandon the idea of a gas-led manufacturing recovery.

Governments should pursue policies that support the development and the deployment of technologies consistent with a low-emissions world. Natural gas has played a role in Australia's economy over the last 50 years. That role is continuing but its future is limited by resource availability and emissions.

2.2 Support research and development into low and zero emission technologies based on Australia's comparative advantages.

Australia's has a globally significant role in industries built on our minerals resources, including coal, iron ore and bauxite. To these we can add the minerals that will be critical in a carbon-constrained world such as copper, nickel, and lithium. We must ensure that we develop and apply zero-emission technologies to extract and process the minerals and metals that will be in-demand in a low-emissions world.

2.3 Continue to support development and deployment of low-emission energy technologies.

The NEM can transition to very high levels of renewable energy while maintaining reliability at reasonable cost. Governments should not subsidise coal or gas assets inconsistent with that future.

Governments should plan for how and when to eliminate the last few per cent of emissions from the NEM. They should maintain support for developing zero-emissions firming technologies and closely monitor the relative economics of these technologies and negative-emissions offsets. They should facilitate the deployment of these technologies when it becomes clear that reducing emissions to zero is lower cost for consumers than using offsets.

2.4 Energy market reforms

An effective and efficient energy market is necessary if the comparative advantages in our resource base are to be converted into competitive advantage in our manufacturing sector. Energy market reforms to ensure this is the case must be completed.

The energy market reform agenda critical to the success of Australian manufacturing includes the P2025 NEM reforms recommended by the Energy Security Board[1] and various gas market reforms intended to improve the transparency and liquidity of the wholesale and transport markets.

[1] https://esb-post2025-market-design.aemc.gov.au/final-advice-july-2021

3 Introduction

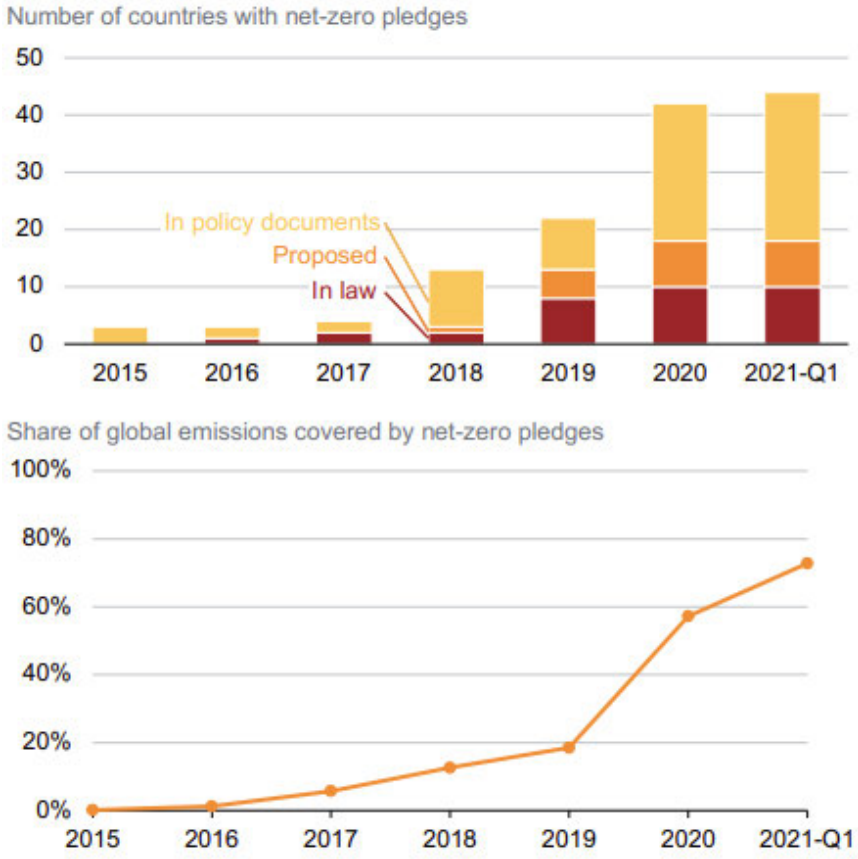
This submission is made by Tony Wood, Alison Reeve, and James Ha of the Grattan Institute. It responds to the Terms of Reference of the inquiry launched by Senate Economics References Committee on 12 August 2021. This is a broad inquiry that seeks to understand and support the opportunities for Australian manufacturing in a carbon-constrained global economy. The strategic issue is to assess the extent to which Australia's energy and primary resources provide a comparative advantage and the role of government in facilitating the realisation of the opportunities.

Grattan Institute is an independent think-tank focused on Australian domestic public policy. It aims to improve policy outcomes by engaging with both decision-makers and the community.

Australians have benefited from exports of our fossil fuel and mineral resources for many decades and Australian companies are world leaders in those sectors. Areas of Australian manufacturing have been built on access to low-cost, globally competitive energy, in the form of both electricity and natural gas.

Yet, in 2021 we can see a world in which addressing climate change means that exports of thermal and metallurgical coal and LNG will decline. The international community has shifted towards greater climate ambition in the past 12 months (Figure 1). The US has re-joined the Paris Agreement and committed to reduce emissions to net zero by 2050. The EU, having already made that commitment, is considering imposing carbon costs (equivalent to those from its own emissions trading scheme) on imports from nations with inadequate climate policies. Many of Australia's largest trading partners have now set net-zero targets, including China, Japan, and South Korea.

Figure 1: The international community is now serious about achieving net zero emissions[2]



Domestically, all Australian states and territories have targets to reach net zero by 2050 or earlier, and the Prime Minister says he wants to achieve that goal as soon as possible, preferably by 2050. Emissions in Australia's electricity sector have been steadily falling since 2015 and renewable energy is contributing to lower prices even as coal-fired power stations retire.

Eastern and southern Australia is running out of low-cost natural gas and the combustion of natural gas, common across household, industrial and power generation sectors will become inconsistent with achieving these targets.

The challenges created by these developments lead directly to the opportunities that lie with Australia's energy and mineral resources.

[2] https://www.iea.org/data-and-statistics/data-product/net-zero-by-2050-scenario

4 Issues identified in the Terms of Reference

Australia's natural advantages

Australian manufacturers benefited from a competitive supply of natural gas. This no longer the case and the proposition of a gas-led manufacturing recovery is unlikely to be realised[3]. This is the case for several reasons:

- Sources of low-cost gas on the east coast have been depleted and the market is now linked to regional markets.
- Only a very small number of jobs are at-risk from high-cost gas or would be created if low-cost gas supplies were to be available.
- The cost of gas is a material cost for several industries but has never been the sole driver of manufacturing to a significant extent as evidenced by the fact that the industries where gas makes up more than 10 per cent of input costs contribute only 2.4 per cent to total manufacturing activity, and just 0.1 per cent to GDP
- Gas is a fossil fuel, and its combustion will progressively be inconsistent with Australia's climate change targets.

For these reasons it would also be a poor use of public funds to support new gas infrastructure that would carry a high risk of becoming stranded.

Australia has resources that will provide a comparative advantage for energy exports and manufacturing in a carbon-constrained global economy. These include solar and wind on the energy supply side with the potential to produce competitively priced hydrogen, and mineral resources critical in ongoing and emerging industries, including iron ore, bauxite, copper, nickel, and lithium.

Many places in the world have strong wind – especially offshore – or good solar radiation. But few places have as much good-quality solar and onshore wind as Australia[4].

Renewable technologies have become cheap to deploy over the past decade, but it remains relatively expensive to 'firm' solar and wind. Australia's renewable energy resource endowment is both large and rare, giving us a comparative advantage - combined solar and wind partly smooths the natural variations of each individual resource, reducing storage requirements and lowering electricity costs.

This large resource alone does not guarantee Australia's future as an energy powerhouse. Other factors contribute to the cost of renewable electricity: engineering, labour, and transport costs are each likely to be higher in Australia than many other countries. Economies of scale can bring down costs, but Australia's electricity market is relatively small in terms of demand – supplying Australia's domestic needs alone would barely take

[3] https://grattan.edu.au/wp-content/uploads/2020/11/Flame-out-Grattan-report.pdf

[4] https://grattan.edu.au/wp-content/uploads/2020/05/2020-06-Start-with-steel.pdf

advantage of the vast renewable resources or the possible economies of scale.

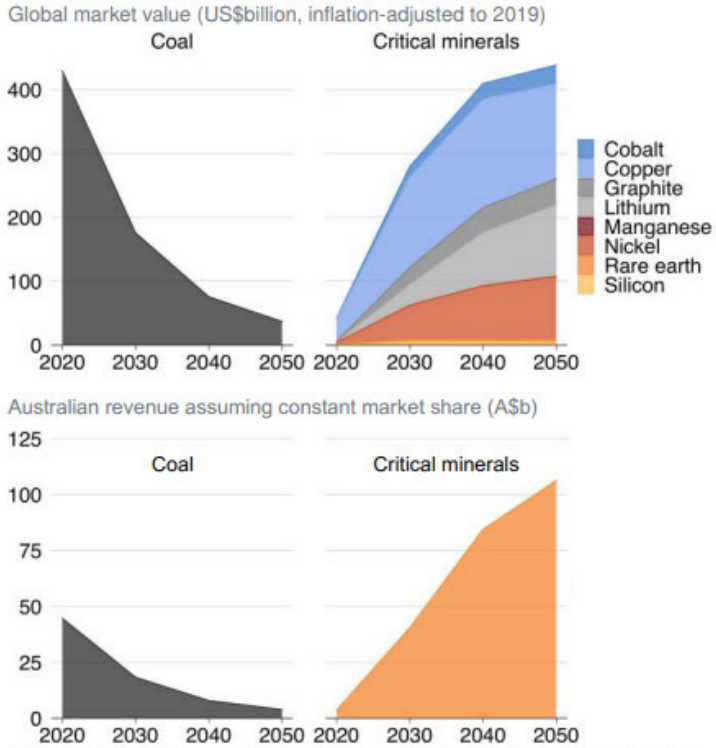
Export is the obvious conclusion. There is no reason for Australia not to pursue opportunities to export energy itself as electricity, hydrogen or ammonia while also looking to value-adding opportunities such as green steel.

Capitalising on these opportunities will require support for focused research and development on technologies that match zero-emission energy or feedstock with demand. Governments have a role her as exemplified through ARENA and CRCs.

This will not be enough. The scale and pace of the transformational changes that will be necessary to decarbonise existing manufacturing and to realise the export opportunities will require a focus on government-business cooperation that is rarely, if ever, seen in Australia[5]. Ranging from steel, alumina and aluminium to cement, pilot plants, first-of-a-kind demonstration projects and early-stage deployment of zero-emission technologies carry risks that can be best mitigated and shared through such cooperation.

New areas of potential global leadership

As shown opposite minerals critical to low-emissions technologies are expected to be in high demand over coming decades



Notes: Includes total revenue for coal and for selected critical minerals used in clean energy technologies. The prices of critical minerals are based on conservative assumptions about cost increases (about a 10-to-20 per cent increase from current levels to 2050). Australia's share of the global coal market is taken from IEA (2020), and minerals from Bruce et al (2021). Exchange rate is assumed to be 0.73 USD per AUD.

Source: Grattan analysis of IEA (2021, p. 163).

Excluding coal mining, minerals extraction, minerals processing and refining, and metals production create around 25 million tonnes of emissions per annum. The processing of these

[5] https://grattan.edu.au/wp-content/uploads/2021/08/Towards-net-zero-Practical-policies-to-reduce-industrial-emissions-Grattan-report.pdf

materials is strongly emissions intensive. This means that decoupling growth in mining, minerals, and metals from growth in emissions will require finding substitutes for the coal and gas currently used to provide high-temperature heat for processing. Hydrogen may be one option, concentrated solar power may be another

The role for reliable, cheap, renewable energy

Delivering a zero-emissions energy supply system to meet the domestic demand of Australia's 2050 economy, including energy-intensive manufacturing will require major investment and, in the case of the transmission and associated infrastructure, major planning. Meeting the expansive opportunities identified in this submission will require a step change in the infrastructure investment. The scale and pace of this transformative agenda is unprecedented and will need to be planned accordingly.

The relevant work of the Energy Security Board, the energy market agencies and the Energy Reform Committee of the National Cabinet is central to that outcome. The hard work is still ahead.