

14th June 2022

Securing future innovation and global competitiveness in NSW - Green Paper – Australian Steel Institute (ASI) submission

Thank you for the opportunity to provide feedback on the Securing future innovation and global competitiveness in NSW Green Paper.

Please refer to the below comments by way of a response to the consultation questions that have been posed. The answers have been kept as brief as possible, but if more information and specific detail is required on any aspect, this is available. For context and detail, the answers to some questions make reference to additional background information contained in separate documents attached to this email.

1. Describe the top two or three transformative forces that will shape transition challenges and opportunities in your industry over the next 10 years.

Transition to net zero emissions by 2050 is the single biggest challenge and opportunity for the steel industry over the next 20 years. The steel industry contributes approximately 7 to 8% of national CO₂ emissions, and is considered to be in the 'difficult to abate' category. Whilst the industry is very actively engaged in a comprehensive range of short, medium and long-term strategies to reduce emissions, many of these rely on significant technological breakthroughs and/or massive capital investment in order to be realised.

Building a circular economy represents a unique opportunity for the steel industry. Not only is end-of-life steel infinitely recyclable, it is actually collected and re-used at a rate of more than 90% in Australia, making it one of the most recycled materials in common use. The recycled scrap is used to make new steel, thereby reducing the reliance on steel made from virgin materials such as iron ore. In addition to the opportunity for recycling, steel is also very well suited to re-use in new structures, but the greatest opportunity for improved sustainability lies in the increased adoption of Design-for-Deconstruction (DfD) principles. DfD is the name given to the practice of purposefully designed and constructed new buildings such that they can readily be dis-assembled and re-used in their entirety when the originally design use and purpose are no longer relevant. Steel is very well suited to this practice because of its durability, and suitability to construction techniques that allow for safe and efficient disassembly e.g. use of bolted connections.

The third opportunity lies in the key enabling role that steel has to play in decarbonising the supply of electrical energy. The construction of wind towers, solar farms, pumped hydro, and high voltage power transmission towers are all highly steel intensive. Given the projected massive increase in demand for renewably

generated electricity that is forecast globally, it is critical that the local demand for this infrastructure can be met via local supply chains.

More detailed information on NSW sovereign manufacturing capabilities is provided in Appendix I.

2. *What effects do you expect these transformative forces will have on your industry (or on your own business) over the next 10 years?*

The net effect of these transformative forces will be massive investment in new plant and technology right across the steel industry value chain. The purpose of these investments will be to both enable decarbonisation of the industry, as well as to provide for local capability and capacity to supply the expected demand arising from investments in renewably generated electricity supply.

More detailed information is provided in the Appendix II.

3. *What action is your industry or business taking, or intending to take, to address the effects of these transformative forces?*

All the major Australian steel producers have announced their intention to meet a net zero emissions by 2050 commitment, which in turn are supported by comprehensive, published sustainability plans. These plans include disclosure of a range of strategies and initiatives to decarbonise.

The ASI has established a scheme to encourage downstream participants in the steel supply chain, such as steel fabricators and steel product manufacturers, to improve the sustainability of their business. This initiative is called Environmental Sustainability Charter (ESC), which was established in partnership with the Green Building Council of Australia (GBCA) more than 10 years ago. The ESC scheme is currently being transitioned to a much broader based scheme that is inclusive of wholistic ESG principles. More information can be found at <https://www.steel.org.au/what-we-do/focus-areas/sustainability/environmental-sustainability-charter/>

As part of its core objectives, the ASI provides technical reference information, case studies, and other resources to its members and other stakeholders on a range of sustainability principles, including DfD.

Individual steel producers have commenced making investments in new steel manufacturing technologies, designed to improve capability and capacity for supplying key new economy products such as wind towers and solar farms. A good example of this is the recently announced \$217 million Advanced Steel Manufacturing Precinct around the Port Kembla steelworks. <https://www.minister.industry.gov.au/ministers/taylor/media-releases/securing-future-australian-steel>

More detailed information is provided in the Appendix II.

4. Are there critical constraints across the business operating environment (for instance, related to markets, skills, production capacity, technology, finance capital or infrastructure) that affect the capacity of your industry or business to take up opportunities?

Currently, the single most critical constraint is the availability of skilled personnel to fill industry wide vacancies. These vacancies exist in every skilled and semi-skilled area of the industry, but are most pronounced in metal trades such as fabrication and boiler making. Similar shortages exist in specialised areas such as detailing, project management, structural engineering, and process operator roles. The ASI conducted a survey of members in the steel fabrication sector. Please refer to attachment for details of the survey response.

- *Fabrication Skilled Recruitment survey results (May 2021)*

The ASI is working closely with member businesses and TAFE NSW to introduce vocational training courses to address skills shortages in roles such as roll forming operation, steel shed assembly, steel distribution and processing, and welding for engineers. In addition, the ASI has developed a comprehensive online eLearning training platform that provides in-service training for structural engineers across a range of steel design and fabrication topics.

<https://www.steel.org.au/resources/elearning/>

A related constraint is in the availability of funding from industry innovation schemes to assist 'traditional' businesses to invest in new plant and technology. Most grant funding schemes emphasise high tech future industries such as aerospace. In fact, these future industries rely heavily on the existing industrial ecosystem for the supply of experienced staff, access to specialised skills and capabilities, and all the infrastructure needed for prototyping and initial trial manufacturing. Our future industries will not be developed in complete isolation from existing, mature industries, rather they coexist and have a mutually beneficial relationship. Therefore, a strong and 'healthy' manufacturing base helps to provide the essential ingredients for development of future industries that we look to for growth in new markets.

More detailed information is provided in the Appendix III.

5. Why would your industry be a suitable target for demand or supply side industry policy interventions over the next 10 years? Where in your supply chain would this intervention be most effective, and why?

The steel industry is seeking greater support and funding for TAFE NSW so as to increase its capability to deliver state-of-the-art training. As an example of this, the ASI recently submitted a letter of support to Investment NSW for TAFE to be able to gain access to Virtual Reality / Assisted Reality Welding and Robotic Welding Training capability.

The steel industry is also seeking greater emphasis on traditional manufacturing businesses in the design of industry innovation funding schemes. In the main, it is

the view of ASI SME member businesses that these funding schemes are not intended or designed for existing, traditional manufacturing industries to access; despite the very significant economic contribution these businesses make. The ASI recommends that in future the design of industry innovation funding schemes be expanded to include merit criteria that are focussed on assisting existing, traditional industries to invest in automation to improve labour productivity and overall competitiveness.

6. *What are the key areas and opportunities in your industry where there are opportunities for NSW Government programs and actions to accelerate ongoing economic growth?*

The ASI has provided significant input into the design of the NSW Renewable Energy Plan via participation in the Renewable Energy Sector Board. The ASI considers that it is vital for this plan to ensure that the local steel supply chain is given every opportunity to participate, ideally via minimum local participation targets. This is essential in order for industry to have the confidence to invest in new plant and equipment, which ensures their cost competitiveness and capability can meet requirements.

The ASI is a strong supporter of the various hydrogen hub and renewable energy zone initiatives that are being implemented by the NSW government. The ASI is leading a consortium of Hunter region industrial business and technology providers, which has submitted an EOI to the Clean Manufacturing Precincts initiative and is currently preparing for the RFT stage. The ASI encourages the provision of ongoing support and funding for these initiatives.

7. *Considering the transformative forces underpinning economic structural change, such as those described above, what are the benefits to NSW citizens of adequate and well-coordinated industry policies that accelerate this change?*

Referencing the example of the NSW Renewable Energy Plan, the benefits of adequate and well-coordinated industry policies are the simultaneous accomplishment of multiple objectives for all stakeholders. In this example, these include:

- Delivery of transformational infrastructure projects such as an electrical power grid that is completely decarbonised;
- Enablement of heavy industry decarbonisation via connection to this same power grid and the utilisation of green hydrogen produced from renewable electrical power;
- Investment in state-of-the-art domestic steel manufacturing capability that is highly efficient, cost competitive, and provides for greatly reduced reliance on international steel supply chains;
- Creation of high paying, future economy jobs, often with an emphasis on regionally located businesses and industries.

8. *Where do you think the NSW Government could make the biggest difference to encourage industry innovation and growth?*

The single most effective means of encouraging local industry innovation and growth is to set mandatory local participation targets for major projects. This is effective because provides 'certainty' for SME businesses to commit to capital investment, staff hiring and training, and the introduction of new innovations.

This policy in combination with the requirement for all businesses tendering to NSW government projects to have demonstrable sustainability credentials (such as ESC mentioned in the answer to question 3), and to meet all Australian Standards for quality assurance. This would help to ensure a 'level playing field', such that local businesses are not disadvantaged by their having invested in sustainable business practices and the ability to fully comply with Australian Standards.

9. *Are there any risks or costs from intervention that the NSW Government should consider?*

The ASI is not in a position to comment on this question.

10. *What information would you like to see to demonstrate how progress is being made towards accelerating industry growth through NSW Government programs and actions?*

No suggestions to offer.

11. *What are your views on how well the current selection of NSW Government programs and actions enable change at the industry level?*

Please refer to comments made on industry innovation funding schemes (question 5) and the Net Zero Industry and Innovation Program (question 6).

12. *Describe any current programs and actions that have made a notable difference to productivity and competitiveness in your industry?*

Please refer to comments made on industry innovation funding schemes (question 5) and the Net Zero Industry and Innovation Program (question 6).

13. *Could any programs be merged to be more effective, or should any be ceased?*

The ASI is not in a position to comment on this question.

14. Are there any actions, or examples of effective practice in other jurisdictions (within Australia or overseas) that the NSW Government should consider to better support economic structural change in NSW industries?

The South Australia Industry Participation Policy, Industry Advocate Act, and associated Steel Industry Plan, in combination have proven to be highly effective in encouraging the growth and development of the steel industry value chain in that state. It is recommended as a best practice example.

<https://www.industryadvocate.sa.gov.au/policy-and-resources>

15. How can the NSW Government generate program outcomes that drive growth and value? How should the NSW Government work to achieve these outcomes with your industry, private sector and other levels of government?

The ASI would like to offer two suggestions in regard to the design of programs that drive growth and value.

The first is that where funding is provided for purposes such as regional development, particularly to local government for iconic projects, or major infrastructure improvement, that quantified targets for local job creation are attached to the funding criteria. Further, the achievement of these targets should be monitored and reported. This recommendation is made in response to two examples of state and commonwealth funding being used on such projects, which subsequently had all of the steel supply and fabrication imported. In response to concerns raised by members, the ASI provided written details of each example to the relevant authority in each case. Please refer to these attachments for details:

- *Batemans Bay Regional Aquatic Centre (January 2021)*
- *Transport for NSW Dubbo Maintenance Facility (December 2020)*

The second suggestion is that when NSW government procurement guidelines call for specific quality assurance requirements, that the compliance with these requirements be monitored and reported. As an example, the structural steelwork requirements in the above-mentioned examples called for either accreditation to the ASI Environmental Sustainability Charter (ESC) or to Steelwork Compliance Australia (SCA) schemes. The successful tender in each case did not have these accreditations, whilst many of the unsuccessful bidders were appropriately accredited. The rationale for requiring these accreditations is that they improve sustainability outcomes and/or greatly increase the level of compliance with Australian Standards for structural steel fabrication and installation.

In the absence of these requirements being enforced, there is a net loss of growth opportunities for local businesses, loss of economic value creation for the communities they operate in, and a loss of confidence in the need to comply with standards and codes for construction. Just to emphasise this point, whilst the structural steelwork for the Dubbo Regional Rail Maintenance Facility was imported, there was ultimately a requirement for significant quality rectification to be undertaken by local fabrication businesses after it was delivered.

About the Australian Steel Institute (ASI)

The ASI is the nations peak body representing the entire steel supply chain, from the primary producers through to end users in building and construction, resources, heavy engineering and manufacturing. The ASI membership base includes approximately 6,000 individuals that are associated with more than 500 corporate memberships and over 350 individual memberships.

A not-for-profit organisation, the ASI's activities extend to, and promote, advocacy and support, steel excellence, standards and compliance, training, events and publications. The ASI provides marketing and technical leadership to promote Australian-made steel as the preferred material to the resources, construction, and manufacturing industries, as well as policy advocacy to government.

Yours sincerely



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Appendix I

Unique sovereign manufacturing capabilities in NSW

The recent disruption to global supply chains associated with the COVID-19 pandemic and ensuing impacts on the cost and availability of international shipping have highlighted the importance of sovereign capability in the form of fully capable and self-reliant domestic manufacturing value chains.

NSW has world leading manufacturing capability in many areas of steel product application. Some examples include wear resistant and ballistic plate steels for mining and defence applications, grinding media for mineral processing, strata control products for underground mining, wire rope for open cut mining, wheels for both mainline and heavy haul railway applications, strapping for load restraint, engineered bar and resultant products such as automotive springs and specialty fasteners, racking and shelving for automated warehouse solutions, highly durable coated steel water pipe for infrastructure, and a myriad of specialised components for building, construction and defence industry applications. Essential components for transport infrastructure such as highway guard rails, safety barriers, overhead signs, stanchions, light poles, and fences are all made by a number of local producers. Please refer to the attachment for additional detail:

- *NSW steel industry capability overview (March 2022)*

The new or expanded manufacturing capabilities that NSW requires in order to meet future demand are in the field of renewable energy infrastructure. These capabilities include, but are not limited to, large scale capacity to produce:

- Wind towers and their foundations;
- Solar farm support structures and their foundations;
- High voltage power transmission towers and their foundations;
- Pumped hydro infrastructure;
- Off shore wind power generation.

Appendix 1

Overview of steel industry investment trends

The key investments currently being made in the steel industry fall into two main categories. Firstly, those designed to improve efficiency and cost competitiveness, which often involve some form of automation. The second category is sustainability, which encompasses a wide spectrum from enabling circular economy initiatives through to decarbonisation of hard to abate heavy industrial processes.

A typical automation investment would be a robotic welding cell that acts to reduce worker exposure to welding, improves weld quality, and increases fabrication productivity. This type of investment would cost between \$500,000 and \$750,000 depending on the capabilities required. The businesses involved are mostly SMEs, with annual turnover of \$20 million to \$50 million, so the investment represents a significant commitment to improving their capability and competitiveness.

Sustainability investments can take many forms, ranging from those with immediate tangible benefit to those that are highly reliant on technology development and 'breakthrough' R&D. In the shorter term, steel industry participants right through the value chain are investing in improved energy efficiency, increased use of renewable energy sources, greater reuse of co-products, as well as increased recycling rates for scrap steel. Some specific examples of these are: conversion to variable speed drives for crane operation to reduce electrical power consumption, establishment of power purchase agreements with renewable energy suppliers for sourcing of wholesale electricity requirements, use of shredded automotive tyres and other plastic wastes as a steelmaking raw material, and greater use of scrap steel in the actual steelmaking process through improved thermal efficiency measures. These investments range in cost from several to tens of millions of dollars.

There is also a huge amount of effort being put into investigation of new technologies that enable the steelmaking process to be decarbonised. These are mostly at the pilot scale, whilst their potential is being evaluated. Some examples include the use of hydrogen generated from renewable electricity as a partial substitute for coke in ironmaking, and as a partial substitute for natural gas in steel heating processes. The NSW steel industry is engaged with several of the NSW government initiatives such as Clean Manufacturing Precincts and Hydrogen Hubs, that have been designed to support and enable commercialisation of the types of technologies described. Large scale decarbonisation is expected to require multiple decades to achieve and billions of dollars in investment. It presents both a huge challenge and an opportunity for R&D capabilities in NSW.

Appendix III

Overview of NSW Steel Industry Skills base

The specific technical skills associated closely with the NSW steel industry include applied materials science (e.g. welding), mechatronics, and structural engineering. These align with universities such as University of Wollongong, University of Newcastle, University of Sydney, and UNSW. Of particular note is the ARC Steel Research Hub, headquartered at University of Wollongong, which is carrying out world class R&D across a number of Australian universities, in partnership with Australian steel producers. <https://www.uow.edu.au/steel-research-hub/>

Also hosted at the University of Wollongong is the Facility for Intelligent Fabrication, which provides simulation and prototyping capability and implementation expertise for businesses investigating bespoke industrial automation projects. <https://www.uow.edu.au/engineering-information-sciences/research/facility-for-intelligent-fabrication/>