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14 July 2024

Secretariat
Unlocking green metals opportunities for a Future Made in Australia
Department of Industry, Science and Resources

By email: greenmetals@industry.gov.au

RE: Unlocking green metals opportunities for a Future Made in Australia: consultation paper

The Australian Industry Group (Ai Group) welcomes the opportunity to provide the following submission regarding the above consultation paper (the paper).

Ai Group is a peak national employer association representing and connecting thousands of businesses in a variety of industries and sectors across Australia. Our membership and affiliates include private sector employers large and small from more than 60,000 businesses employing over 1 million staff. For this submission we have consulted directly with members and associations affiliated with Ai Group.

Consultation with our members confirms a keen interest in the ambition to develop green metals industries in Australia.

That ambition aligns with global trends towards sustainability and net zero emissions. As the world grapples with climate change, industries are shifting towards more environmentally friendly practices. Green metals, produced using renewable energy or processes that minimise emissions, represent a significant step in this direction and are essential to decarbonise the world.

Further, that ambition offers economic opportunities. The global demand for green metals is growing, driven by industries such as electric vehicles and renewable energy, and ultimately a successful global response to climate change implies that use of green metals will become standard practice everywhere. By positioning itself for comparative advantage in this market, Australia can hedge against the expected long-term contraction of demand for emissions intensive exports, stimulate high quality job creation, drive economic growth, and secure a competitive edge in the global economy.

Finally, green metals may also help Australia meet its own climate goals to cut emissions 43% by 2030, with even deeper cuts under consideration for 2035 and net zero by 2050 legislated. Conventional production of the metals identified within the paper is a major source of greenhouse gas emissions. Transitioning domestically consumed metals production to greener pathways can significantly reduce Australia's

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industrial emissions, helping it meet its commitments under international climate agreements.[1]

Key Points

- Regardless of where members sit in a green metal value chain all are seeking smart, secure, high quality and competitively priced energy. The level of energy infrastructure involved will be significant, especially near centres of high energy usage. The ability to secure planning approval and social license for new clean energy infrastructure is central to Australia's competitiveness in green metals and many other activities.
- The level of demand for scrap metal for use as feedstock in electric arc furnaces (EAF) is projected to increase to millions of tonnes PA. Currently, significant levels of scrap metal that can be used as feedstock are exported overseas, often circumventing key regulations to police waste plastic and other materials.
- There is a need for an international standard and definition for 'Green Steel, Iron, Aluminium and Alumina'. Apart from concerns around greenwashing, from a metallurgical perspective, it provides clarity around investment decisions around technologies and other capital expenditure. Emissions intensity metrics, rather than technology-prescriptive definitions, may be the best approach but still involve complexities to be negotiated.
- Deep emissions reductions in production of many metals look like they will involve a significant and long-lasting cost premium. A market- or policy-driven 'green premium' is necessary to make cleaner production investable. In the absence of a large voluntary green premium for steel, some Ai Group members have suggested that mandating its use in future iterations of the National Construction Code can provide a complementary pull to many of the other mechanisms mentioned in the paper. However, we also note that the construction sector is already experiencing significant head winds and a focus on a single sector to the exclusion of others may cause market distortions.
- Assistance for the translation and modularisation of novel and innovative technologies to the Australian context will be crucial in assisting the metals industries to transition as the economy decarbonises.
- Further, there is an opportunity to develop new industries that assist existing industry to access low carbon and carbon neutral inputs with existing and proven technologies to assist with the transition.
- Some of Australia's green metals opportunities are global and some are domestically oriented. Our existing steel sector supplies important domestic needs and it is critical that it be able to transition. Our Alumina and especially Aluminium production is already large and export-oriented and also needs a transition pathway. The potential exists for a large new Green Iron industry based on

[1] Note that it would be possible for our domestic emissions to increase if we saw a substantial export-oriented expansion of metals production using technology pathways that have significant but substantially reduced residual emissions, such as gas-based Direct Reduced Iron. That would represent a global emissions reduction if it displaced conventional primary steel production. It is possible that bilateral agreements under Article 6.2 of the Paris Agreement could be negotiated with Australia's trade partners to allocate responsibility for the associated emissions and abatement so as to avoid both double-counting and disadvantage to Australia.

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Australia's potential advantage in highly scalable and cheap renewable energy to produce hydrogen as an iron ore reducing agent, and the apparently durable cost premium involved in oceanic exports of hydrogen over local use. On the other hand, distance from markets means that further upgrading iron to steel for export may not represent a large opportunity for Australia. Partnerships with global players not constrained by government mandates with regard to technology and production will be critical for technology transfer and scalability.

Q. We want to better understand future markets for green metals.

To develop globally significant green metals production industries, it would be easy to believe that Australia could leverage its abundant renewable energy resources and raw materials, offer incentives such as tax breaks, streamline permitting processes, and provide infrastructure support such as specialised industrial zones with integrated green energy solutions.

However, it is important to remember the ghost of Charlie Court who fundamentally believed Australia would have a steel industry because we had all the raw materials, and it would not make economic sense to ship our raw materials across the world. His 1961 steel strategy built the iron ore and gas industries we have today, but was a failure at getting any substantial growth in export-oriented steel production. If we rest on our assumed laurels of natural advantage, the outcome this time around will be the same.

The challenge to past steel strategies was that shipping ore and coking coal became very cheap, weakening the commercial case for producing iron in Australia beyond local needs. To the extent that steel users and the global steel sector seek low- or zero-emissions product, the economics of green iron look much more potentially favourable for Australia. If hydrogen becomes the dominant reducing agent, as currently looks plausible, physics appears to dictate substantial energy losses and high transportation costs for shipping it over oceanic distances. That could meaningfully advantage iron production in economies with cheap and highly scalable clean energy, even if they have relatively high labour costs.

Cheap, if largely high emissions, electricity was important enough to the aluminium sector to attract significant investment into Australia in the past. Green alumina, aluminium, iron and steel production will be so clean electricity-intensive that they are also capable of being attracted by sustainably low power costs.

That makes Australia's ambitions contingent on at least two big things going right: delivering on our theoretical potential for cheap and scalable clean energy, and the development of substantial demand for green metals.

While domestic and international customers in Australia inform suppliers they prefer green steel, it's worth noting that our members confirm most are not currently willing to pay extra for it. There is no market driven 'green premium' and for the most part the product is seen as the same as its existing non-green equivalent. The lack of a widely agreed definition of 'green steel' adds to the challenge.

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Domestically, members have informed us that there aren't many supply deals for green steel in the building & construction sector, however the demand for green steel is likely to rise as this sector aims to reduce its emissions.

Discussions with steel producing members has also shown that the development of an export-oriented green iron industry in Australia is not crucial to their future operations, even though it significantly reduces the carbon emissions associated with traditional ironmaking, which is the most carbon-intensive step in the steelmaking process.

The production of green iron can create new economic opportunities. For instance, regions with abundant iron ore but little steelmaking capability could open new markets.

Recycling steel with an Electric Arc Furnace (EAF) needs a steady supply of high-quality scrap steel. The quality of this scrap can influence the types of steel that can be made in an EAF. Most scrap comes from products such as cars and white goods which often contain impurities. This can make it difficult for EAFs to produce certain types of steel with highly specific performance requirements.

Right now, some of Australia's scrap stream, about 1 million tons per year, is being exported without being processed to remove associated plastics, textiles and other contaminants. Australia has export restrictions on unprocessed plastics, glass and tyres to prevent these materials from being dumped overseas rather than processed responsibly here. Applying these restrictions to unprocessed scrap would close a loophole in existing standards, help the environment globally and also provide more scrap for recycling within Australia's steel industry.

Q. We are interested in better understanding the factors influencing investment decisions in Australia and globally.

Due to the commercial in confidence nature of the specific amounts to be invested and technology to fit out we will defer any specific issues to members who choose to provide their own submissions to this consultation.

We can say regardless of where members sit on the value chain, the sums of money are significant. For global organisations such investments will be highly dependent upon the commercial attractiveness of Australia as an investment destination.

Beyond this we would highlight several major factors that will influence investment in green metals: first mover disadvantage; scale; energy costs; demand; and definitions.

First mover disadvantage is a fundamental challenge. Green metals production looks like it will have a pre-policy cost premium over conventional production for a long time. But early green production will also be more costly than later production – for instance through needing to invest in, or sign long term offtakes with, high-cost early green hydrogen production. Thus early green metals producers will be, in the absence of

supportive policy, uncompetitive against both incumbents and their eventual successors. Major policy support is needed to overcome this first mover disadvantage.

Energy costs are central to the viability of Australia's existing metals production and to the long term case for a large expansion in green metals production. Australia's underlying renewable resources are large and high quality; but harnessing them sufficiently to power clean industry expansion requires deployment of very large amounts of new energy generation, storage, transmission and transformation assets at a rapid pace and competitive cost.

Notwithstanding this, in the next several years it looks likely that global investment in green metals will flow to the most supportive policy environments rather than reflecting long-term comparative advantage.

Demand for green metals – substantial, growing, durable and willing to pay – is essential if any investment is to take place. Supply will come in substantial chunks, not smooth increments, and demand has to be large enough to support that. Many instruments can contribute to demand, and international demand is as vital to export expansion as domestic demand is to local transition.

There are potential benefits to those who purchase green metals, including alignment with sustainability goals, corporate social responsibility initiatives and some consumer demand. However discussions with our members who produce and purchase these commodities have confirmed that the market has not priced in a green premium so far.

Definitions are vital. The absence of international standards for green metals, including iron, steel, and alumina, presents significant challenges for investment in this sector. Without clear, universally accepted criteria for what constitutes "green" production, investors face uncertainty and risk. This lack of standardisation makes it difficult to compare sustainability claims across companies and regions, potentially leading to greenwashing and market distortions.

Consequently, the resulting ambiguity can deter investment, as financiers struggle to assess the true environmental impact and long-term viability of projects. Additionally, it complicates efforts to create consistent regulatory frameworks and incentive structures across different jurisdictions. This fragmentation can lead to inefficiencies in global supply chains and hinder the overall transition to more sustainable metal production practices.

As such establishing harmonised international standards would likely boost investor confidence, facilitate more informed decision-making, and accelerate the shift towards genuinely greener metal production methods.

Q. We are interested in your views on principles for community benefit sharing and how this might apply to the green metals industry.

The greatest community benefits from a green metals industry would be from its core operations and outputs: substantial value-adding economic activity producing jobs,

dividends and taxes that can support private and public objectives; and a contribution to the avoidance of dangerous levels of climate change. Those are the principal prizes to be won.

It also needs to be understood that green metals industries, while producing substantial value added, are not like resources businesses. They will have to buy their inputs or invest to produce them themselves, rather than extracting a national resource; and they are unlikely to regularly generate 'super-profits' for distribution, as the metals industries are highly competitive and likely to remain so.

Beyond these points, we agree that explicit community benefit sharing activities can be important to earn and sustain the support of local communities for major developments. The principles of community benefit sharing, which aim to ensure that communities affected by industrial projects receive a fair share of the benefits, can face challenges when applied to green metals.

Firstly, there's the issue of defining the project-affected community, especially First Nations people. It can be challenging to identify who should be included in the benefit-sharing arrangements and to what extent.

Secondly, the negotiation of benefit-sharing arrangements can be complex. It requires a balance between the rights, expectations, and perspectives of the community and the operational and financial realities of the industry.

Thirdly, there's the challenge of managing expectations. The prospects of increased operations near local communities can raise high public expectations, requiring governments to pay careful attention to the design and implementation of community benefit-sharing mechanisms.

Lastly, there's the issue of transparency. Communities need access to effective and accessible grievance mechanisms to bring forward complaints regarding the operation of community benefit-sharing arrangements.

Application to the green metals industry could include:

- Establishing community-owned renewable energy projects using the metals produced.
- Creating local recycling and circular economy initiatives.
- Developing educational programs focused on sustainable technologies and practices.
- Setting up community-managed environmental monitoring systems.
- Investing in local green businesses and startups.
- Implementing profit-sharing schemes tied to sustainability performance.
- Creating green jobs training programs for local residents.
- Establishing community trusts to manage long-term benefits from mining operations.

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Q. We are interested to understand how quickly it is feasible to achieve different 'green milestones' as we move towards zero emissions production.

The progression towards green metals is crucial for reducing carbon emissions, but in view of the significant capital expenditure, inherent immaturity of critical technologies and inputs such as hydrogen, there is a risk of stranded assets for those either seeking a first mover advantage or driven by local aggressive regulatory requirements.

Discussions with members have identified barriers which include:

- Cost gap now with conventional production, and anticipated cost gap with later-generation clean production.
- Absence of a green premium.
- Inadequate demand at pre-policy prices.
- Ability to access or deploy large scale new clean energy generation, as well as the costs of managing variability of clean energy.
- Technology uncertainty/choices.

While most of these barriers are tractable with sufficient policy support, the unfamiliarity of newly commercialised or not yet commercial technologies will be slower to overcome. The timelines needed to deliver major industry projects should not be underestimated either – internal planning and financial approval can take several years for large investments, to say nothing of regulatory approvals.

We note the term 'green milestones' and think that it would provide industry more certainty if this was more clearly defined. Are the milestones related to emissions intensity (e.g. reductions of a quarter, a half, or 90% compared to the current average global intensity for primary metals production); technology related (achievement of gas direct reduction with Australian low-grade ores; achievement of hydrogen direct reduction with the same; integration of DRI with other processes for highly controlled metallurgy); or market-based (transition of existing domestically-oriented production; transition of existing export-oriented production; development of new export capacity)? Milestones would need to be metal-specific and reflect relevant metallurgical standards and market conditions.

Ai Group was an active stakeholder in the Australian Industry Energy Transitions Initiative, in which several of our members collaborated with researchers to chart transition courses for sectors including metals. We encourage the Government to consider the pathways explored in the ETI's reports.

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Q. We are interested in understanding what external constraints may be limiting the production of green metals, including capital investment, technological barriers and access to renewables and hydrogen.

Engagement with members has identified that:

- We can strongly expect that the cost premium for many clean technologies will decline with strong global deployment, as we have seen with solar PV, wind and lithium batteries. This learning rate dynamic will benefit green metals at least through further declines in the cost of clean energy inputs and firming technologies. The extent to which metal-making technologies will decline in cost is less clear; some associated technologies are already familiar (gas DRI with high grade ores) and may be mature; others have a short track record from which to estimate learning rates (hydrogen electrolysis) or almost no record (Molten Oxide Electrolysis). While pleasant surprises are certainly possible, at this stage it is most plausible that green metals will remain more expensive to produce than conventional metals, pre-policy, for many decades to come.
- Long term policy support is crucial. The proposed levels of capital expenditure and length of time for projects to be undertaken and built does not naturally align with state and federal election cycles. Broad political support for enduring policy and financial commitments is required for investment certainty.
- Access to smart, secure, high quality and appropriately costed energy is critical in making investment decisions. A significant number of renewable energy projects have been delayed waiting for planning approvals (and, for transmission projects, economic approvals). Further, there is recognition that the energy market and grid as a whole has to become smarter, incorporating significant large scale and distributed storage and using it adroitly to meet demand;
- Assistance for the translation and modularisation of novel and innovative technologies to the Australian context will be crucial in assisting the green metals industries to transition as the economy decarbonises.
- With regard to steel, "green" can mean one of two things. Electric arc furnace (EAF) minimills which recycle scrap steel, with or without using green electricity, are very familiar and involve significantly lower emissions than conventional primary steel, but cannot replace all needs – primary steel is still needed. By contrast developing new direct-reduced iron (DRI) mills can replace the blast furnace to make iron from iron ore and combine with other technologies to make steel. The technology and economics of the two plays are completely different. (1) is simple electrical engineering that increments an existing industry; (2) implies the global development of a new steelmaking technology for the first time in a century. Commercial and policy discussions need to distinguish between these two totally distinct pathways. This paper fails to do that.
- Using hydrogen as a heat source is a very different cost comparison to using hydrogen as a reductant.

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- Proximity to appropriately priced hydrogen for iron manufacturing will be crucial. Research via the International Renewable Energy Agency has shown that seaborne transport of H2 is expensive in energy losses and capital requirements that are likely intractable for physics reasons. That transport cost is the best economic argument for Australian production of green metals.
- A frank appraisal is required to differentiate between domestic and export demand for the metals mentioned in the consultation paper. Green iron, alumina and aluminium lend themselves to significant export potential through existing routes to market, the location of current global demand and the lack of a plausible and generalised Australian cost advantage in the manufacturing of high volumes of more complex metal products. Green steel lends itself to a focus on local demand for the same reasons.

There are examples of green premiums being applied to green metals, but so far usually attributed to high end goods that account for low shares of total metals demand, such as Apple products. Planning should assume that major buyers will continue to take a commodity approach. If that is right, what matters is the post-policy cost competitiveness of green metals in major relevant markets, as most consumers will not distinguish between green and existing metal value chains based on how they are produced.

The policy tools to close the cost gap include variations on production and consumption subsidies; demand mandates (such as building codes or public procurement rules); and carbon prices combined with carbon border adjustments. Combinations are likely to be needed in major markets. For example, the European Union is phasing in a Carbon Border Adjustment Mechanism that, by applying a level cost of carbon to all suppliers of covered goods including steel and aluminium, will raise the selling price of those goods by more than it raises the supply cost of cleaner suppliers, who will be more profitable and viable than otherwise. At the same time, EU member states including France and Germany are providing substantial long term subsidies to the initial wave of green steel investments to bridge the remaining gap for investability.

Q. We are interested in understanding how existing policies are shaping decarbonisation strategies and investment decisions.

The Government has provided clear and unambiguous expectations that the country needs to accelerate the decarbonisation of industry.

The current suite of climate and energy measures including the Safeguard Mechanism have provided a clear message to the market place and are an important impeller of the domestic transition. However the detailed future evolution of these policies is uncertain.

A particularly important issue to resolve is how to achieve a level competitive playing field on carbon as the Safeguard Mechanism tightens further over. The current Carbon Leakage Review is being closely watched by Australian industry as it grapples with these questions and the options to resolve them.

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Among those options, an Australian Carbon Border Adjustment Mechanism has the potential to be an efficient, effective and sustainable guarantor of equal treatment between domestically produced and imported products. However an Australian CBAM:

- Would need to fully respect Australia's trade commitments under the WTO and bilateral and plurilateral arrangements.
- Could help resolve issues for domestically-oriented green metals production, but would not be relevant to export-oriented production.
- Would take extensive development and consultation to be suitably implemented given the complexities of metals markets.

Border adjustments in major export markets could be extremely helpful for Australia's industrial ambitions, as long as they are implemented in a practical and non-discriminatory manner. Regulatory harmonisation between like-minded nations pursuing such adjustments would minimise transaction costs and promote more accessible markets for clean products.

Another vital issue is around the speed of approvals and social license. Decarbonising existing industry and building large new clean energy-intensive industries will not be possible without extensive deployment of new energy infrastructure, including solar farms, wind farms, energy storage facilities, peaking generators, and transmission lines. The pace of development and implementation for this infrastructure needs to pick up dramatically. We welcome the Government's existing attention to turning this around, including the 2024-25 Budget funding for faster approvals and the energy agreements it is negotiating with the States. We encourage the Government to go further, including by completing substantive reforms to the Environment Protection and Biodiversity Conservation Act to streamline approvals such as the development of national standards that can be applied by the States.

Other key initiatives such as the initial Future Made in Australia policies and the National Reconstruction Fund can't be judged as they are either not yet fully in place or have yet to provide funding to key projects and opportunities.

We note the substantial gap around funding and advice to assist most existing industry, especially small to medium enterprises, to emerge from their existing business models into those that allow them to participate in the supply chains and future envisioned by the government. The Powering the Regions Fund is positive, but it has limited funds and broad objectives, and so far has been most relevant to Safeguard Mechanism entities.

State and Local Governments are also implementing their own initiatives including equivalent Net Zero Authorities. While there is goodwill, we need to be watchful for clashing or duplicative policies and over-regulation that imposes an unhelpful burden to industry already seeking certainty and clarity during a time of significant change.

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Q. We are seeking views on the types and design of supply side options that should be considered

The well considered design of incentives of supply options requires careful and ongoing engagement during their rollout. The costs of individual projects may be relatively fixed for their first 10-15 years due to necessary commitments to associated energy and hydrogen supply. But the frontier of new project costs will shift, and so may the prices achieved by sellers of cleaner metals.

Such incentives must assist, not coddle the development of green metals industries. There are two competitiveness challenges for green metals: green metals versus conventional metals; and Australian production versus other potential sources. As argued above, policy is likely to be needed for a long time to come to drive preference for green metals over conventional. But Australia can rationally aspire to build an underlying competitive advantage among green metal suppliers. There must be clearly sign posted phasedowns and end points for Australian-specific production supports lest industry to ensure a clear driver for industry to become competitive on the global stage.

Direct supply supports are important to consider, but a broader ecosystem of supportive policies has been important to other industrial development policies worldwide and deserves consideration. How might we accelerate the implementation of innovative technologies in a manner that aligns to the Australian environment? How could we accelerate technology transfer out of Australian Universities?

Scenario planning is a powerful option to guide development of incentives. For example, consider the idea of building a beachhead in an industry we expect to scale later. The case for this is that Australia can be big eventually but needs local experience, supply chains, customer relationships, and credibility to build on. The implication is to focus on the kinds of technology that will be relevant in the end state; build full supply chains; establish customer relationships and partnerships; and sufficiently match other early supports elsewhere to attract a core of investment.

But what if we don't turn out to be as competitive as we thought? What if the demand for green metals doesn't show up at the speed or scale we hope for? What if it comes faster? And what if different technology pathways prove more attractive than those we expect now? Policy design needs to be robust and adjustable in the face of such variables. Scenario planning will be helpful.

The paper mentions a wide variety of different supply side support options including tax incentives, grants and contracts for difference. Government as a shareholder and taking equity positions in key enabling infrastructure are also imaginable.

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In considering tax incentives, grants, and contracts for difference (CFDs) and based on the current market and member feedback, Ai Group's best judgments are as follows:

Tax incentives:

- Simple, straight forward and familiar method of stimulating specific industries or sectors. Specifically, a reward for actually undertaking specific actions such as capital expenditure.
- They are proven tool to attract foreign investment.
- They can encourage research and development (though the history of the R&D Tax Incentive highlights the tension between rules for qualifying expenditure that are simple enough to be applied by industry without large accounting complexities, but robust enough to give government confidence in the quality of activity supported).
- Maximise Australian Industry Participation and engagement.
- Support environmental initiatives.
- Are relatively open-ended in their potential fiscal cost (a direct concern for government, but an indirect concern for industry given the potential that a support becomes unsustainable due to high demand and must be subsequently altered).
- Are relatively inflexible to other market and policy developments – the simplicity and certainty of a tax incentive comes at the cost of potentially under- or over-supporting activities depending on how product prices, green premia, and policies such as border adjustments evolve.

Grants:

- Provide direct financial support for specific projects.
- Can encourage various positive activities via grant conditions including:
    - innovation, collaboration and research;
    - small businesses and startups participating in major projects;
    - funding for public interest initiatives and community engagement;
    - promotion of economic development in targeted areas and First Nations communities.
- Can be complex to design, apply for and award.
- Provide full control for government over the cost of their commitment.
- Can provide more confidence that construction milestones are reached than that commercial operation is sustained – that is, grants are better at addressing capital costs than the operating cost premium that can be expected with some green metals.

Contracts for Difference:

- Reduce investment risk in projects by providing confidence about minimum prices or revenue that will be achieved if a saleable product is delivered.
- Encourage long-term capital investments and provide confidence that well-managed operating costs will be recoverable.
- Help achieve policy goals (e.g., emissions reduction).

- Facilitate market entry for new technologies.
- Awarding the CFD requires a competitive process to discern efficient credible proponents, and very careful contractual drafting. Both have benefits but can be complex to implement.
- A CFD provides less control over government costs than a grant (as payouts will depend on subsequent conditions), but more than a tax credit (as the volume of production awarded contracts can be strictly controlled).
- With appropriate contractual terms, a CFD can flexibly reflect the evolving market price and policy framework facing covered goods – including green premia, border adjustments, hydrogen-specific supports and so on. These developments could substantially cut the public cost of a CFD compared to a fixed tax credit or grant.
- The design of a CFD needs to allocate risk appropriately so that proponents are incentivised to manage projects well and follow market needs.

Further, detailed design consultation will be needed and the right answer may differ for different metals. Ai Group's provisional view is that contracts for difference may be particularly worth investigating for incubation of an early wave of lower-emissions metals projects.

A very important question to address for any mechanism to address is how clean production or projects must be to qualify. Again, this is likely to require different answers for different metals and mechanisms. The Safeguard Mechanism, potentially bolstered by a border adjustment, appropriately provides a directional incentive for cleaner production rather than mandating a particular level or threshold. Broadly we would suggest that for possible contracts for difference, grants or tax incentives, expectations or thresholds are defined in terms of emissions intensity rather than technological pathway.

As argued above, an appropriate and (as far as possible) internationally aligned definition, scope and accounting approach is needed for judging metals emissions. Ongoing reporting will be needed to ensure a committed intensity is sustained, most obviously through the National Greenhouse and Energy Reporting System but potentially with additional elements (such as covering externally produced hydrogen).

The role of the International Trade Remedies System should also be considered as metals are the highest users of the system. Current rules do not distinguish between general steel subsidies and subsidies for low emission technologies.

Q. Demand side actions to foster green metals

While there can be metallurgical differences that are important in specific high-performance contexts, the principal difference between green and existing sources of iron, steel, aluminium and alumina is just the manner in that it is produced. The existing use cases and market drivers for the use remain the same. Global demand for these metals will increase.

Globally, if decarbonisation is to be achieved then green iron, steel, aluminium and alumina will become the generic products, not a special class of commodities. That will require policy mechanisms across all major markets – preferably mutually consistent – that provide a strong signal for low-carbon products. Australia's participation in the Climate Club, our discussions with a range of economies about industrial transition and approaches to border adjustment, and our bilateral relationships with trade partners are all important avenues to promote the development of markets for the products we hope to excel in.

In the absence of a green premium for steel, some of our members have suggested that mandating the use of low-emissions steel use in the National Construction Code can provide a complementary pull to many of the other mechanisms mentioned in the paper. However, we also note that the construction sector is already experiencing significant head winds and a focus on a single sector to the exclusions of others may cause market distortions.

Government procurement could also be considered, and may be very useful for some low-emissions products. However, in the case of steel and aluminium, total public-sector demand is unlikely to be enough on its own to justify investment in a low-emissions metals facility. Stacking credible public and private demand would be necessary.

Q. Anything else?

International partnerships with Japan, Korea, and China are critically important for the development of green metal industries in Australia for several reasons:

- These economies are both important markets for metals and host much of the current regional processing capacity. Their collaboration will be needed to grow demand for green metals and to restructure their value chains.
- An enormous scale of investment is required to achieve the fullest vision of a green metals sector in Australia. Existing local players may be rational to focus on the transition and strengthening of their existing businesses, rather than dramatic expansion. Foreign direct investment may be essential.
- Access to critical minerals, technologies for batteries and renewables, green ammonia for fertilisers and industry, and green hydrogen are needed to assist the transition to a more sustainable future;
- The Regional Comprehensive Economic Partnership (RCEP), which includes China, Japan, South Korea, Australia, New Zealand, and the Association of Southeast Asian Nations (ASEAN), is the world's largest and most influential free trade area. This partnership could boost the green trade between these countries, including the trade of green metals; and
- Resilience of Supply Chains: International partnerships can enhance the resilience of supply chains, especially for critical minerals necessary for the clean energy transition.

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These partnerships not only facilitate the exchange of resources and technologies but also promote economic growth and sustainability in the region. They are vital for the development of a green metal industries in Australia and the broader global transition towards a more sustainable future.

Should you wish to discuss the matters raised in this submission, please contact our Director of Emerging Industries and Innovation at david.martin@aigroup.com.au.

Sincerely yours,

Louise McGrath
Head of Industry Development and Policy