AUSTRALIAN
ALUMINIUM
COUNCIL LTD

Australian Renewable Energy Agency (ARENA)
https://arena.gov.au/funding/solar-sunshot/#step-2-consultation-process
31 May 2024

Dear Minister

Re: Solar Sunshot Consultation

The Australian Aluminium Council (the Council) represents Australia's bauxite mining, alumina refining, aluminium smelting and downstream processing industries. The aluminium industry has been operating in Australia since 1955, and over the decades has been a significant contributor to the nation's economy. Department of Industry, Science and Resources has recently forecast[1] that earnings for Australian exports of aluminium, alumina and bauxite are expected to rise from $16 billion in 2023–24 to $18 billion in 2024–25. More than $14B of this comes from the alumina and aluminium industries, as value adding mineral processing sectors. The industry includes six large bauxite mines plus several smaller mines which collectively produce over 100 Mt per annum making Australia one of the world's largest producers of bauxite. Australia is the world's largest exporter of alumina with six alumina refineries producing around 21 Mt per annum of alumina. Australia is the seventh largest producer of aluminium, with four aluminium smelters and additional downstream processing industries including more than 20 extrusion presses. Aluminium[2] is one of the commodities most widely used in the global transition to a clean energy future. It is also recognised for its importance to both economic development and low emissions transition. Aluminium is Australia's top manufacturing export. The industry directly employs more than 19,000 people, including 6,600 full time equivalent contractors. It also indirectly supports around 60,000 families predominantly in regional Australia.

On 28 March 2024, the Australian Government announced up to $1 billion funding for the Solar Sunshot program, to build Australia's solar photovoltaic (PV) manufacturing capabilities, including the manufacture of module frames. Aluminium accounts for more than 88% of the metal in a solar panel. The aluminium frame and rail are examples of aluminium extrusions, where Australia has knowledge and capability, but where there is an opportunity to further expand this manufacturing. The Council welcomes the opportunity to provide feedback to the Solar Sunshot Consultation Paper (the Paper) and will focus its response on selected questions.

Aluminium Industry Context

Aluminium is one of the commodities most widely used in the global transition to a clean energy future[3]. It is also recognised for its importance to both economic development and low emissions transition. Aluminium use is highly correlated with GDP, so as countries urbanise, per capita use of aluminium increases. It is expected that by 2050, global demand for aluminium will nearly double[4]. While an increasing proportion will be met through recycled aluminium, there will still be a need for increased production of primary aluminium requiring a comparable increase in global bauxite mining and alumina refining rates, including sourcing from Australia.

[1] https://www.industry.gov.au/publications/resources-and-energy-quarterly-december-2023
[2] https://www.worldbank.org/en/topic/extractiveindustries/brief/climate-smart-mining-minerals-for-climate-action
[3] https://www.worldbank.org/en/topic/extractiveindustries/brief/climate-smart-mining-minerals-for-climate-action
[4] International Aluminium Institute High Substitution Scenario

Australia is one of the very few countries which has bauxite mining, alumina refining, aluminium smelting and aluminium extrusion all within its borders, making aluminium one of only two commodities in which the raw materials are mined and processed all the way to a consumer product right here in Australia.

Work[5] undertaken by the Council in 2022 in conjunction with Deloitte and Coreo found that significant opportunities in Australian manufacturing in the existing integrated aluminium industry could be expanded by including a closed-loop mine-to-panel solar value chain. This includes not only the domestic extruders which already have the capability to produce frame and rail for the sector but that if solar panels are designed with recyclability in their design, then the aluminium frame and rail can be reused or recycled at the end of life.

Response to Consultation Paper

1. Supporting the Solar Supply Chain

Question 1.1: Which element(s) of the supply chain should be prioritised for support and why?

The Paper identifies module frames as one component of the supply chain. Aluminium accounts for more than 88% of the metal in a solar panel, predominantly in the frame. This aluminium frame and rail are examples of extrusions which could be made using existing manufacturing capability in Australia. For every GW of solar PV, 5.5 kt of aluminium extrusion is needed for frames and for every GW of rooftop solar, an additional 13 kt of aluminium extrusion is needed for rails and mountings.

Further support is needed to prioritise Australian made aluminium to supply Australia's solar panel module production, in the form of both frame and rail. One of the biggest threats to Australia manufacturing sector is imports below internationally accepted pricing standards. Ensuring the successful delivery of Australia's aluminium from mine to PV needs not only programs such as Solar Sunshot but also ensuring Australia's manufacturers operate under free and fair trade to be able to compete.

Question 1.2: What is your view and experience with market readiness across different stages of the supply chain?

Australia's extrusion industry remains a key downstream value adding manufacturing sector. Australia's extrusion industry today supplies around 120kt to the Australian domestic markets. Installed solar in Australia will need more than 1.5 M tonnes of aluminium extrusion by 2050, creating a substantial increase in demand for both aluminium and extrusions. But today more than 70% of all semi-finished aluminium used in Australia is imported and <3% of Australian extrusion capacity is supplied as solar rail and none as solar frame. Leveraging opportunities for Australian aluminium to be used in the development of a solar PV industry could see Australian bauxite become Australian made solar panels, which could be designed for end-of-life circularity. In addition, the upstream aluminium industry has a growing demand for renewables, including solar[6], which could further catalyse demand for solar PV manufacturing.

While the supply chain exists in Australia, meeting growing demand would require investment to increase capacity within Australia's supply chain. This would apply to both extrusions and supply of billet from smelters to the domestic market.

Question 1.3: What stages of the solar PV supply chain do you have an interest in developing or expanding in Australia? What are the timelines to deliver this (e.g. receive funding certainty from ARENA, Final Investment Decision, construction, operation)?

[5] https://aluminium.org.au/news/aac-deloitte-and-coreo-cast-anew-project/

[6] https://www.riotinto.com/en/news/releases/2024/rio-tinto-to-drive-development-of-australias-largest-solar-farm-at-gladstone and https://www.riotinto.com/en/news/releases/2023/rio-tinto-approves-new-solar-farm-and-battery-storage-to-power-its-amrun-bauxite-operations-on-cape-york

Question 1.4: To what extent do certain stages of the supply chain need to be progressed in parallel or jointly in integrated projects to be successful?

With existing capacity, Australian made aluminium for solar frame and rail could be supplied for the solar module manufacture today. However, the industry would need to see consistent demand signals for this product to support future investment in additional capacity. The Council expects this signal will be delivered through the Sunshot program and prioritisation of Australian aluminium in the supply chain in order to secure ARENA funding.

2. Program Structure

Recent analysis undertaken by the Council[7] outlined the specific Government policies which would be needed for the industry to both decarbonise and build on its aluminium supply chain to meet growing international demand. The Council's policy framework included a two-pronged approach for funding:

1. Production Credits. This policy pathway is being used effectively in a range of jurisdictions, including the US, China, India and Europe, to incentivise production of low carbon products and inputs into the clean energy supply chain. The credits are typically priced in a manner that bridges the relevant regional or global green production premium, through an implied cost of carbon required to support investment. The policy should be specifically relevant to aluminium metal production and could be doubly incentivised into domestic downstream manufacturing, such as extrusion, solar panel production etc.
2. Transformational Infrastructure and Technology Funding. The Government's existing grant funding through the PRF is currently two orders of magnitude smaller (relative to GDP) than similar programs in other jurisdictions like Canada, Europe and Japan. The scale being offered must be significantly increased with a fixed commitment to co-fund 50% of all green industrial capital investment across existing and new assets for both on and off-site investment. This will allow industry to then cost efficiently and competitively demonstrate technological innovation and deliver regional infrastructure upgrades, such as transmission. This would be particularly relevant for the alumina industry, where the principal barriers to decarbonisation are:
    - the capital cost of on-site transformation to low carbon production methods; and
    - the need to upgrade regional electricity infrastructure to deliver the requisite energy to the sites in a low margin mid-stream industry.

Non-financial means of support – particularly the streamlining of regulatory approvals – are also critical to lowering investment barriers.

The Council welcomes the recognition of similar approach in the Program structure which includes both production-linked payments and/or capital grants in order to meet specific objectives.

Question 2.1: Do you agree with the proposed Funding Round approach that proposes to launch Round 1 as module manufacturing, allowing greater time for project and market development for supply chain stages beyond modules?

Question 2.2: How can the Program design best support vertically integrated projects? For example, would you consider simultaneous development of projects across different stages of the supply chain and hence consider applying to Round 1 and Round 2 if both Funding Rounds were open for application over the next 12 months? Is the success of these projects contingent on funding of the other(s)?

As outlined in response to Questions 1.3 and 1.4, with existing capacity, Australian made aluminium for solar frame and rail could be supplied for the solar module manufacture today. The industry would need to see consistent demand signals for this product to support future investment in new capacity. A coordinated but flexible approach to Round 1 and 2 would therefore be required to support this.

[7] https://aluminium.org.au/wp-content/uploads/2023/11/Aluminium-Critical-Mineral-Report-Nov23.pdf

4. Financial Support

Question 4.4: What other policies or support not listed here could Government consider that would complement the Program?

In considering its response to Section 4, the Council believes that further articulation of the Government's Future Made in Australia plan, including support for green metals such as aluminium, is needed in order to assess the intersection of SunShot with other funding needs and policies.

Round 2 Solar Supply Chain Manufacturing Support

16. Funding target areas

Question 16.2: Do multiple stages of the supply chain present advantages in being co-located, or vertically integrated in Australia? If so, what are these advantages and how could the Program be structured to allow any such benefits to be captured?

As previously articulated, Australia is one of the very few countries which has bauxite mining, alumina refining, aluminium smelting and aluminium extrusion all within its borders, making aluminium one of only two commodities in which the raw materials are mined and processed all the way to a consumer product right here in Australia. The pandemic underscored the importance of local downstream manufacturing. Australia's aluminium extrusion industry was able to maintain supply to the dependent construction and manufacturing sectors. Prioritising the use of Australian aluminium in the SunShot program, from mine to market, will help ensure this security of supply while also ensure that the aluminium used meets Australia's high environmental, social, and governance credentials.

Question 17.2: What type of funding mechanism would most suit your proposed area of the solar PV supply chain? How much concessional funding support is required (range) and over what duration?

Analysis undertaken by the Council[7] outlined the specific Government policies which would be needed for the industry to both decarbonise and build on its aluminium supply chain to meet growing international demand, including demand for Australian solar panel modules,

1. Deliver internationally competitive supplies of clean energy;
2. Use of Production Tax Credits and a Transformational Infrastructure and Technology Fund to enable Australia to be sufficiently competitive to be able to attract global decarbonisation investment;
3. Prioritise the Australian aluminium value chain, as a strategic material, within industry development policies;
4. Environmental approval processes across the supply chain that appropriately balance the environmental rigour and protection with timelines that reflect commercial needs; and
5. Development of long-term strategic partnerships with likeminded countries.

Capital follows the strongest investment signals and Australia's signals are currently too weak to attract globally relevant industrial and manufacturing investment. To succeed, Australia must be sufficiently competitive to be able to attract global investment for both decarbonisation and growth.

The Council welcomes the role of ARENA in developing and implementing the Solar Sunshot program as one of the first steps in the Government's Future Made in Australia. There is great potential for Australia in a mine to PV program and the Council looks forward to continuing to work with ARENA and the Government on the next steps in this process. The Council is happy to provide further information on any of the issues raised in this submission.

Kind regards,

Marghanita Johnson
Chief Executive Officer
Australian Aluminium Council
M +61 (0)466 224 636
marghanita.johnson@aluminium.org.au