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The ARC Centre of Excellence for Climate Extremes

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Submission batteries@industry.gov.au

Dear Consultation Chair,

National Battery Strategy: issues paper

The Australian Research Council (ARC) Centre of Excellence for Climate Extremes is Australia's leading climate science centre across five partner universities - The University of New South Wales, Monash University, The Australian National University, The University of Melbourne and The University of Tasmania as well as multiple national and international partner organisations. Its research focuses on understanding the underlying processes of climate extremes to reduce Australia's economic, social and environmental vulnerability.

Thank you for the opportunity to comment on the National Battery Strategy: issues paper. The Centre supports the strategy's ambition to develop and grow the battery industry in Australia and to support other countries in the transition to a renewable economy.

The transition to renewable energy is a climate change mitigation imperative to achieve the Australian government's emissions reduction target of 43% below 2005 levels by 2030 and net zero emissions by 2050. The Centre supports the crucial role that a National Battery Strategy will have in reaching these targets and the target of 82% renewable electricity by 2030, outlined in the Powering Australia plan.

We confine our comments to two key recommendations: reducing emissions and understanding the risk of climate extremes on the manufacturing industry.

1. Reducing emissions is urgent.

The direct link between greenhouse gas emissions and climate change is unequivocal. It is vital that minimising emissions is at the forefront of the National Battery Strategy. Australia's climate has warmed by 1.47 ± 0.24°C since 1910, slightly faster than global average warming[1].

Every additional fraction of a degree of warming increases the risk of extreme events.

Climate extremes already affect many facets of Australian society including health, soil and water, agriculture, infrastructure, energy security and financial security, posing significant risks to the global and Australian economy. Our region will face more frequent and intense extremes in the future, even with rapid and deep cuts in greenhouse gas emissions. For example, the probability of weather events like the one that caused extreme rainfall in March 2021 is projected to increase by 80% in Sydney by the end of this century due to climate change[2].

The extent of global warming depends on the amount of future global greenhouse gas emissions. The last Intergovernmental Panel on Climate Change report[3] underlined the urgent need for emissions reductions, and the increasingly small global carbon budget remaining to limit warming to well below 2°C, as stated in the ambition of the Paris Agreement. Australia's action, as a signatory to the Paris Agreement, on emissions reductions is essential to address climate change.

Currently, we are not on track to limit warming to 1.5°C. It is possible that warming will exceed 2.8°C unless urgent reduction in emissions occurs[4]. Although it is pleasing to see the government's action in the renewable sector, decreasing emissions as fast as possible is essential. It is therefore important that this policy is rolled out urgently, to assist the renewable energy transition.

Recommendation 1a:
We urge the Australian government to act quickly and accelerate the transition to a renewable energy system to reduce emissions.

It is vital that wherever possible, emissions from battery production and supply are minimised. Acquiring critical minerals and manufacturing batteries produces significant emissions. The amount of carbon dioxide released in battery production varies with how materials are attained, which materials are used, and the energy source used for manufacturing[5]. Establishing thorough and genuine Environmental, Social and Governance (ESG) standards and using renewable energy sources for battery production will assist in reducing emissions.

We support the Australian government's commitment to the highest ESG standards and low emitting practices in the battery supply chain.

Recommendation 1b:
Every effort should be made to ensure emissions related to battery production are net zero.

2. Understanding the risk of climate extremes on the manufacturing industry

Climate extremes such as heatwaves and short-duration heavy rainfall have already increased in frequency and intensity in Australia. Extremes such as extreme heat, drought and heavy rainfall causing flooding will impact infrastructure, energy supply and distribution chains. The risk of these events increases with every fraction of a degree of warming. These extreme events must be considered when planning projects under the National Battery Strategy. In effect, projects need to be designed to be resilient to significantly higher temperatures, and significantly more intense rainfall that have been observed over the last decade.

The ARC Centre of Excellence for Climate Extremes is undertaking important research that improves our understanding of how these extremes are likely to change in the future, including their dependence on climate change and natural variability. This knowledge enables better preparation for Australians. We are happy to offer expert advice on future climate risk to support the Australian government.

It is not possible to provide accurate predictions of weather and climate extremes for specific projects. However, climate science can inform a project about the kinds of risks that need to be planned for, including how climate change will change the frequency, magnitude, and duration of some kinds of events. We can also provide information around the limits to predictability, and where future risks cannot be accurately predicted. Clearly identifying those risks which are understood robustly and those that are unknown is important to prevent heavy investment in managing risks that are implausible, and prioritising investment that has a material impact on reducing risk.

Advice of this kind has to be case-by-case with risk assessments undertaken in close collaboration with each project.

Recommendation 2:
It is important that the risks associated with weather and climate extremes are assessed for all projects under the National Battery Strategy.

We support the National Battery Strategy, with the recommendations outlined above to assist the Australian government in reaching Australia's emission reduction targets.

Thank you for considering our submission, we would be happy to provide further advice if required.

Regards,

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Centre Director
ARC Centre of Excellence for Climate Extremes

References

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