



## COMMUNIQUE

### State of Energy Research Conference 2024 **How can we accelerate the energy transition?**

*We are living through climate collapse in real-time – and the impact is devastating.*

UN Secretary-General António Guterres, 30 November 2023

Global temperatures are already tracking at 1.2 °C above historical averages, with the warmest ten years occurring in the last decade. Whilst Australia has set emissions reduction targets of 43% below the 2005 base year, our emissions are still rising. The principal cause of these emissions relates to the source of energy consumed by households and industries. Although there is a move away from fossil fuels, the change is just not happening fast enough. The increasingly apparent impacts of climate change and the slow progress to address mitigation were the key reasons 170 researchers, along with representatives from industry and government, came together at Curtin University in Perth (14–16 February) for the State of Energy Research Conference to answer the question: *How can we accelerate the energy transition?* The annual Conference is organised by the Energy Research Institutes Council for Australia, which is currently comprised of 17 member universities.

When the Australian Coalition of Learned Academies (ACOLA) first published Australia's Energy Transition Research Plan (AETRP) in 2021, expectations of what might be achieved were high. However, Emeritus Professor Ken Baldwin's opening conference presentation on the AETRP gave a bleak overview of Australia's energy transition research funding landscape. Despite the efforts by governments and industry to increase the deployment of renewable energy sources, we are sadly lagging behind in investment in energy research, impacting our ability to develop new technologies and new approaches to an energy transition that meets the needs of the Australian environment. Based on a 2019 International Energy Agency comparison of energy research funding, the Australian Government's spending ranked 25th out of 27 key country economies, well behind the countries that Australia competes with in international trade and technology development. Further analysis by ACOLA highlighted that between 2004 and 2020, Australia's public energy spending on research, development and demonstration (RD&D) had decreased both in absolute terms and when compared to other countries. While the figures do not encompass private funding and the money received through the RD&D Tax Incentive (an important issue to be resolved), the outlook is far from encouraging. It was highlighted that it is not just energy

where Australia performs poorly — but across all forms of RD&D funding. For example, Australia's total RD&D funding was equivalent to 1.68% of GDP in 2021 compared to the world average of 2.71%. Therefore, radically scaling up finance and investment in overall RD&D is important, but Australia will also need to increase the proportion spent on energy research to accelerate energy transition outcomes.

As demonstrated by the Cooperative Research Centre (CRC) program, Australia is seeing the benefits of investment in decarbonisation. Our panel of five CRC leaders, paired with industry representatives, discussed how the process of researchers responding to industry-identified challenges is leading to high-impact outcomes. The model also provides an avenue for closer working relationships between researchers, government and industry. The need for a closer working relationship between industry and academia was echoed in the first panel session, which highlighted the need for collaboration, energy depoliticisation, risk acceptance, and a long-term vision.

From an economic perspective, Professor Frank Jotzo remained positive, suggesting that the world is in a far better place than imagined, as it was not long ago that most envisaged fossil fuels remaining the cheapest form of fuel forever, which would, therefore, need substantial policies to suppress its use. However, Jotzo reported that we have seen the rapidly changing nature of renewable energies. Solar PV is now one of the cheapest forms of energy, and as electric vehicle uptake increases, there is an opportunity to think even more ambitiously about what can be achieved. It was argued that Federal Government initiatives, including underwriting the Capacity Investment Scheme, the Safeguard Mechanism, and the Long-Term Energy Service Agreements, all help provide more certainty for investment to drive renewable energy penetration in Australia. While not without their criticism, these mechanisms help underwrite the transition to electrification that will ideally create a low-cost, productive, clean energy system of the future, which will help us move towards further export opportunities.

The Conference profiled research from across the country and explored themes of Resources, Systems and Technologies; People, Society and Institutions; and Markets Policy and Regulations. One of the key takeaways from the Conference was that the energy transition demanded a human-centred approach if the sector is to gain social acceptance and a social licence to operate. Chris Sounness, CEO of the Wimmera Southern Mallee Development, was enthusiastic about regional contributions to Australia's underlying economy and the potential for a decentralised energy system to provide further economic development opportunities. He stressed the need for new energy and resources projects to understand the communities they intend to work with. Sounness outlined that spending time understanding what is important and unique about a region will help set project discussions up for greater success. In his example of the Wimmera, the contrast between the socio-economic status of farmers compared to

those living in the town was stark, creating its own set of unique challenges. Such differences can help to explain the range of responses that are emerging in the regions as new energy projects come to town. It was clear that renewable energy really is the 'golden thread' that can connect communities to greater prosperity and opportunity. However, for projects to be successful, it was evident that the benefits of renewable projects needed to be shared with local communities through investment in local infrastructure (housing, water, telecommunications, roads, etc.) that would support and encourage new energy workers coming to town without creating unnecessary stress on local communities.

Dr Kate George highlighted a novel way to understand the contributions and rights of First Nations People to Australia's cultural heritage. Suggesting that if all the aspirations of humans on earth were compressed into one century, then Indigenous people would have been here for at least 50 years, while Captain Cook would have arrived only last week. George reinforced that things must be done differently for the energy transition, to avoid the fourth wave of colonisation and not repeat the mistakes of the agricultural and mining revolutions, where First Nations' rights were completely overlooked. The need for fairness and equity was highlighted with an early example of Australia's aspirations for the rollout of electric vehicles (EVs). George pointed out that there are very few roads in remote Australia where EVs can safely drive, let alone be conveniently recharged or survive in the heat of the far north. Evidently, a vastly different approach is required to decarbonise remote communities successfully.

In addition to the 'people problem', there was an identified need to create a flexible and adaptive regulatory framework that not only meets the needs of decentralised energy but also recognises the importance of coordination through the grid and system security. Professor Penelope Crossley suggested that 'the biggest resistance to energy transition is the resistance to changing our regulatory model'. While historically, major technology transitions have been accompanied by major legal reforms, Crossley argued that Australian regulators are ill-prepared for the scale and nature of change associated with the energy transition. A core issue is the slow pace of change and limited adaptability of legislature, especially when it comes to the allocation of risks and liability. Something which is not only poorly understood by consumers but, in many instances, by the regulators. Crossley suggested the solution needed is to create a flexible and adaptive regulatory framework that not only meets the needs of decentralised energy but also recognises the importance of coordination through the grid and system security and that the best way to do this was through a national system rather than the current model that is devolved to state and local governments in some instances.

Over the course of the conference it was clear there were a range of topics being tackled by the research community. Some of the issues warranting further research and action to accelerate the energy transition included:

- Ensuring greater levels of engagement to build trust and collaboration between stakeholders, including communities, industry, government, researchers and First Nations People as rightsholders
- Developing enhanced technical standards for distributed energy resources through more systematic collection of, and access to, data
- Rolling out more effective and efficient policies and regulations to enhance consumer protection, address competition issues and increase the deployment of infrastructure projects at scale
- Increasing the allocation of funds for energy research including for the development and deployment of new technologies
- Planning for decommissioning where appropriate

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