



Submission from Energy Research Institutes Council for Australia (ERICA) to the Strategic Examination of Research and Development discussion paper

The Energy Research Institutes Council for Australia (ERICA) welcomes the opportunity to comment on the Strategic Examination of Research and Development discussion paper.

Executive Summary

ERICA is a council of Australia's major energy research institutes that provides research-led advice on the nation's energy future. Based on an independent assessment of the discussion paper, the following key issues are put forward in this submission:

1. Australia has deep and broad R&D capabilities within its universities, with nine included in the top 100 universities in the world as ranked by QS World University Rankings. It is crucial that the government prioritise its support for Australian universities when considering opportunities for extending R&D funding.
2. ERICA strongly supports calls for Australia to increase its support for R&D to at least 3% of GDP in line with comparative economies.
3. Energy-related R&D only currently accounts for 5% of our national R&D effort despite accounting for 75% of global greenhouse gas emissions, a crucial challenge of our time.
4. A recent survey and assessment of energy technology innovation undertaken by the International Energy Agency (IEA) across 34 countries highlighted that "around 35% of the emissions reductions needed to enable net-zero CO₂ emissions globally still rely on technologies not yet demonstrated at commercial scale."
5. ERICA recommends the ten areas of policy attention for a thriving energy innovation ecosystem recommended by the IEA.
6. ERICA continues to call for a \$1 billion allocation to support breakthrough research for the energy transition alongside the establishment of a dedicated centre for integrated energy R&D.
7. ERICA also strongly supports the research recommendations put forward by First Nations Clean Energy Strategy.

Please contact Dani Alexander (Chair, Energy Research Institutes Council for Australia (ERICA)) regarding this submission (dani.alexander@unsw.edu.au) or other Directors of ERICA listed as authors in relation to specific areas of expertise.

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The Energy Research Institutes Council for Australia (ERICA) is a council of university energy research institutes that collectively aim to provide:

- National capacity across a broad spectrum of cutting-edge energy research, in both specialised and inter-disciplinary fields;
- High-level, evidence-based, energy policy advice to government;
- An over-the-horizon perspective on future energy opportunities and challenges that can only be informed by cutting-edge research;
- A research touchpoint for industry and government on energy issues of national and international significance; and
- A research-led education network for students and young researchers.

Australia has deep and broad R&D capabilities within its universities, with nine included in the top 100 universities in the world as ranked by QS World University Rankings. It is crucial that the government prioritise its support for Australian universities when considering opportunities for extending R&D funding. This is particularly relevant in the context of a declining ability for universities to cross-subsidise research efforts from income related to international students.

ERICA strongly supports calls for Australia to increase its support for R&D to at least 3% of GDP in line with comparative economies. Australia is currently lagging other OECD nations, currently only at 1.68% of GDP compared to the average of 2.71%.

ERICA strongly argues that the uplift in R&D spend should be focused on high-impact areas, including decarbonising our energy sector. The International Energy Agency (IEA) has calculated that energy accounts for more than three-quarters of global greenhouse gas (GHG) emissions¹.

However, “energy-related R&D only currently accounts for 5% of our national R&D effort”² (1.65% of GDP). Analysis led by the Australian Council of Learned Academies (ACOLA) found that this spend has been in decline since 2012-13³. Further, based on a 2019 IEA 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 development⁴. 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 definitely does not reflect the importance of the energy transition, which is likely to be the most pressing and urgent challenge of our time.

In 2024, the Energy Efficiency Council stated that “coordination of energy and decarbonisation RD&I is limited... a fully integrated energy RD&I capability remains elusive – meaning that our transition will be slower, more expensive and give rise to more emissions than is necessary.”⁵

A recent survey and assessment of energy technology innovation undertaken by the IEA across 34 countries highlighted that “around 35% of the emissions reductions needed to enable net-zero CO₂ emissions globally

¹ [Greenhouse Gas Emissions from Energy Data Explorer](#) (International Energy Agency, 2024)

² [Getting the energy transition right: The case for an integrated energy RD&I initiative](#) (Energy Efficiency Council & ERICA, 2024)

³ [Australia’s Funding of Energy Research – Quantum and Comparison](#) (Australian Council of Learned Academies, 2022)

⁴ [State of Energy Research Conference 2024 Communique: How can we accelerate the energy transition?](#) (ERICA, 2024)

⁵ [Energy Research, Development and Innovation](#) (Energy Efficiency Council, 2024)



still rely on technologies not yet demonstrated at commercial scale.”⁶

The IEA further stated that “the health of all parts of the innovation system determines the state of energy technology innovation”. The report identifies ten areas of policy attention in the short-term that are recommended to deliver a healthy innovation ecosystem to bring more technologies to market (see: Attachment A).

This aligns with ERICA’s view that a holistic approach to energy R&D is required to maximise efficiency and impact that considers both the supply and demand sides of the energy transition on a level playing field. This includes integrating perspectives from the research community, consumers, businesses, governments and other stakeholders. Multiple perspectives also extend to a greater focus on interdisciplinary R&D (including STEM and HASS disciplines) to tackle the multi-faceted “wicked” problems that the energy transition faces.

Nonetheless, ERICA still strongly supports the basic and applied research that will be required to discover new technology solutions. For example, there are significant technology hurdles to deliver electricity grids that can rely on 100% renewable electricity and efficiently and effectively decarbonise hard- or late-to-abate sectors in cases including sustainable aviation fuel, green hydrogen, and zero-carbon steel and cement.

Thus, as highlighted in its joint statement with the [Energy Efficiency Council launched at COP29](#), ERICA continues to call for at least a \$1 billion allocation to support breakthrough research for the energy transition alongside the establishment of a dedicated centre for integrated energy R&D². Such a centre would bring together academics, government, market bodies, industry and NGOs to help develop knowledge, expertise and solutions to solve energy problems with an integrated, holistic approach.

As part of this allocation and initiative, ERICA also strongly supports the recommendations put forward by First Nations Clean Energy Strategy including: a need for greater First Nations-led data and research on First Nations people’s experience of energy systems, research to address inadequacies with existing research sampling approaches, especially concerning the lack of quality data from remote areas; research to improve and extend consumer protections for First Nations people living outside the main electricity markets; and support for First Nations-led community scale projects to progress through the project development lifecycle to construction and operation⁷.

Thank you for the opportunity to provide this submission. We would be pleased to discuss or clarify any of the comments or recommendations. **If feasible, our directors would also appreciate the opportunity for a collaborative discussion with the independent expert panel.**

Sincerely,

A stylized, handwritten signature in black ink, appearing to read 'Dani Alexander'.

Dani Alexander

Chair, Energy Research Institutes Council for Australia (ERICA)

⁶ [The State of Energy Innovation](#) (International Energy Agency, 2025)

⁷ [The First Nations Clean Energy Strategy 2024–2030](#) (First Nations Clean Energy Network, 2024)



Attachment A: Ten areas for policy attention for energy R&D recommended by the IEA

1. Raise public energy R&D and demonstration spending to attract private sector co-funding, boosting competitiveness and growth.
2. Ensure that the overall level of public and private support remains stable in priority areas through economic cycles, maintaining access to operating capital.
3. Co-operate to bring a global portfolio of large-scale energy demonstration projects to fruition, especially for near-zero emissions steel and cement, aviation (including fuel production) and CO₂ removal.
4. Ensure that publicly funded research supports accessible training datasets so that energy innovators can grasp the full potential of AI-driven R&D.
5. Support access to testing facilities and “living labs”, which can significantly shorten times to market for building energy management, geothermal, long- duration energy storage, heat networks and others.
6. Work to reduce bureaucracy and align processes with innovators needs. Experiences with creative solutions – including permanently open calls, shared evaluations and multi-stage prizes – should be shared among governments.
7. Tailor support to each technology’s innovation needs. In sectors such as building energy efficiency, the critical bottlenecks are largely non-technical.
8. Strengthen energy innovation systems in emerging and developing economies. There is untapped potential for more effort within these countries, among countries facing similar challenges, and via international partnerships.
9. Maximise innovation impacts from public investments in first-of-a-kind projects by sharing findings and policy experiences during project implementation.
10. Foster markets that give confidence in robust future demand for the products of the most successful innovators. Government support can spur demand, competition and competitiveness.