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**Energy Efficiency Council 2024-25 Pre-Budget
Submission**

25 January 2024

Overview

The Energy Efficiency Council (EEC) welcomes the opportunity to make a submission to the Australian Government's 2024-25 Pre-Budget consultation.

The EEC is the peak body for Australia's energy management sector. A not-for-profit membership association, the EEC works to:

- Drive world-leading policy on efficiency, electrification and demand flexibility;
- Ensure we have the skilled workforce to deliver Australia's energy transition; and
- Support businesses and households to rapidly decarbonise.

The EEC commends the Australian Government on the initiative it has shown in addressing climate change, in particular the development of a National Energy Performance Strategy. Improving energy performance – including energy efficiency, energy management and flexibly matching energy demand to low-cost, low-emissions energy supply – has consistently been shown to deliver the lowest-cost emissions reduction available.

The role of energy performance in the transition

Energy performance¹ helps us make the best use of renewable energy resources. It does this in three ways:

- Energy efficiency **reduces the overall cost of the transition** by lowering overall demand for energy, reducing the amount of new infrastructure such as generation, storage and transmission that must be built;
- Energy management **accelerates the transition** by maximising use of current infrastructure, lowering supply chain and workforce pressures associated with new infrastructure build, and
- Demand flexibility **rapidly lowers emissions and marginal energy cost** by maximising the use of low-cost, low-emissions variable renewable energy resources and minimising use of high-cost, high-emissions fossil fuels.

Energy efficiency, energy management and demand flexibility are critical tools to deliver Australia's transition to net zero emissions at lowest cost, in the shortest time available, with the lowest possible amount of cumulative emissions added to the atmosphere.

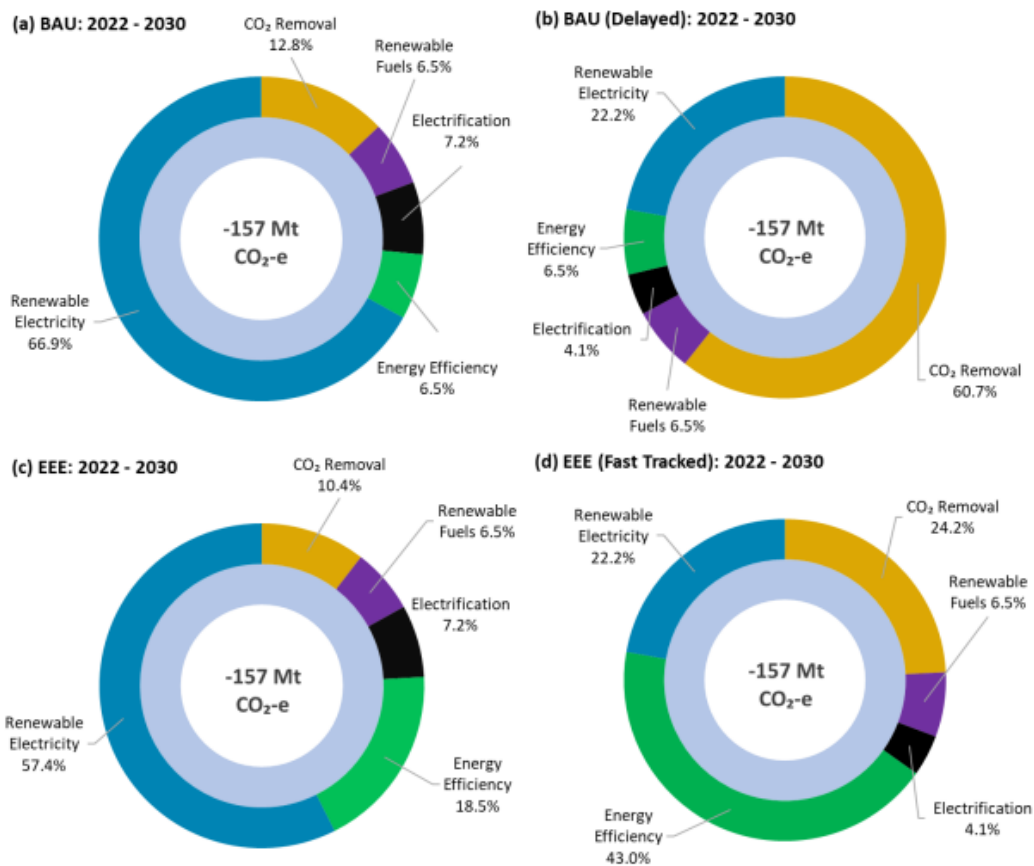
Better energy performance can help ease the transition to renewable energy

Improving the energy performance of Australia's homes, businesses and industry could play an important role in achieving Australia's target of achieving 82% renewable energy by 2030. As the important work of rapidly replacing Australia's ageing fossil fuel plants with new renewable energy resources and storage, additional challenges have come to light. Supply chain and workforce constraints, coupled with difficulties in acquiring social licence for renewable energy developments means that achieving the Government's target is likely to be more difficult than initially anticipated.

Fortunately, there are solutions that can be deployed to provide insurance against further unexpected challenges in accelerating the renewable energy transition. Modelling undertaken by energy consultants Northmore Gordon has shown that in the event of a delayed transition to renewable electricity sources, energy efficiency and electrification can help achieve our 2030 emissions target.

¹ Energy performance is used here in the sense described in the Commonwealth's National Energy Performance Strategy "encapsulat[ing] the broad management of energy demand. It includes energy efficiency, load shifting, fuel switching and behaviour change."

As the following figure shows, under a business as usual scenario (figure a) much of the 2030 target will be delivered through renewable electricity. Under business as usual, it would also be possible to enhance our energy efficiency and electrification policies to reduce reliance on renewable energy and carbon removals (figure c). However, should the deployment of renewable electricity be delayed (figure b), Australia will have to rely far more heavily on carbon removals. This risk can be ameliorated by fast-tracking deployment of enhanced energy efficiency and electrification policies (figure d).



This means that delivering energy performance improvements can provide the Government with a valuable, no-regrets insurance policy for achieving our 2030 emissions reduction targets, and can help deliver those targets faster, cheaper and with fewer emissions along the way.

The EEC commends the Government on progress and commitments made to improving energy performance to date but notes several areas that require additional attention. The EEC recommends that the Government consider additional measures in the 2024-25 budget to ensure our emissions reduction targets stay on-track. These measures are:

1. Setting up efforts to rehabilitate Australia's housing stock for success;
2. Fully commit to the grand challenge of industrial decarbonisation;
3. Expand Australia's energy research, development and innovation capacity.

Rehabilitate Australia's residential building stock

The energy performance of Australia's homes has recently come into focus, particularly as people spent more time at home during the COVID-19 pandemic and often noticed their homes failed to maintain safe and healthy internal temperatures at an affordable cost. Improving the energy performance of homes has rightly been identified as a priority of the Commonwealth under the National Energy Performance Strategy, with initial budget measures establishing the Household Energy Upgrades fund and the \$300 million co-investment in upgrading social housing.

These initiatives are an excellent start and will help catalyse the Australian housing retrofit marketplace. Improving the energy performance of Australian homes helps both to improve the health and financial wellbeing of householders, but also directly supports Australia's transition to a low-emissions energy system. Although residential buildings use a relatively small amount of energy overall, their energy use peaks during times that are highly mis-aligned with low cost, low emissions energy supply.

The challenge

Based on CSIRO's Australian Housing Dataset, we estimate that some seven million homes rate less than two stars on the Nationwide House Energy Rating Scheme, indicating a poorly performing house that requires large amounts of energy to heat and cool. Upgrades like improving the thermal performance of buildings with insulation and draughtproofing, and upgrading to efficient electric appliances, can reduce the energy use of a home by around two-thirds. While these upgrades are widely understood to be the first steps in making homes healthy and comfortable at an affordable cost, there are a range of challenges to doing so.

Retrofitting homes requires effective coordination across governments and industry

Retrofitting millions of homes will involve a wide range of stakeholders, governments, businesses, trades and professions, training organisations, finance institutions etc. Coordination of national needs, standards, skills and supply chains will help reduce barriers to retrofit and help drive high-quality national retrofits that will support the transition to a zero-carbon ready built environment.

While the retrofit task is national, much of the oversight, facilitation and regulation of components of residential retrofits is managed by state and territory governments. Independent regulatory efforts and varying compliance results in a fragmented approach to retrofits.

The experience of homeowners is central to success

The EEC notes that the success of the rehabilitation task will depend on the experience of householders in undertaking upgrades: householders must have a smooth experience finding trusted information on their options, accessing finance, and engaging and managing tradespeople to conduct the upgrades. Problems encountered at any one of these steps could derail efforts to retrofit the housing stock, no matter how much money is allocated to the problem.

The solution: A national coordinating body for residential retrofits

The EEC recommends that the Commonwealth fund and establish a formal inter-jurisdictional partnership including Commonwealth, state and territory governments to plan, coordinate, promote and support a residential retrofit effort at a national scale. While there are existing resources within Commonwealth and State departments, developing the standards, knowledge and economic ecosystems to guide the retrofit revolution would benefit from a dedicated, expert body.

This task requires a focus on a relatively narrow area of policy development – much of it operationally-focussed – and needs the independence and ability to consult with a wide range of stakeholders to develop national guidance. Such a body would share some similarities with the Australian Building Codes Board, where it would develop model standards, codes and guidance for jurisdictions to implement in their own law and practices – although the remit of this body would extend beyond codes and standards to guiding industry development to be able to complete the national retrofit task. This partnership would fill a significant gap – while we currently have a dedicated body for developing codes and standards for new build residential dwellings, we don't have a similar function for the complex task of building retrofit.

Ideally, inspiration for this initiative would be drawn from successful overseas examples like the Sustainable Energy Authority of Ireland, which is responsible for driving and overseeing a residential retrofit program in that country.

This partnership could take several forms, but formal representation from all governments would be critical to success. This program will need longevity to catalyse a high-quality retrofit industry and should be overseen and advised by a board that includes people with expertise in consumer, welfare, energy and building issues. This partnership could have a number of responsibilities, including:

- **Identifying and mapping the necessary skilled trades and professions** that will conduct residential retrofits. For example,
 - Ensuring appropriate training is available and accessible to build the number of skilled trades and professions; and
 - Monitoring the number of workers in these trades and professions, and working with industry to maintain an adequate supply of skilled workers;
- **Identifying and implementing key national regulatory reforms** necessary to support the coming residential retrofit revolution, including:
 - **product standards and regulation** (such as Greenhouse and Energy Minimum Standards and relevant electrical and plumbing safety standards);
 - **licencing requirements** for trades and professions, including examining whether integration of licencing can be possible (e.g. ensuring plumbers have easy access to restricted electrical licencing to allow them to install heat pump hot water systems quickly); and
 - **critical safety and compliance pathways** to ensure state and territory regulators are tooled up to confidently oversee residential retrofit activity;
- **Identifying critical supply chains** and working with industry to diversify those supply chains to minimise risk to achieving retrofits within necessary timelines.
- Ensuring that appropriate **quality control and risk control systems** are in place, and developing such systems where necessary;
- **Building knowledge and expertise** in high-quality residential retrofits and ensure knowledge can inform government policy through pilot and demonstration projects;
- Designing and allocating **incentives and coordinating finance** for retrofits, with a vision of achieving a 'one-stop shop' for residential retrofits. This would be

inspired by the Sustainable Energy Authority of Ireland, which has developed a highly successful residential retrofit industry in that country; and

- Developing **marketing campaigns** and accessible, easy-to-understand advice for households on rehabilitating and retrofitting homes.

Importantly, such a body would dramatically reduce the transaction costs associated with regulations and incentives that support residential retrofit activity, making easier for the Commonwealth and state and territory governments to implement such policies.

Required funding

The EEC suggests that an initial budget of around \$10 million per year is likely to be required, with a staff establishment of around 50 FTE. Should the collaboration's work move beyond development of groundwork and enablers into retrofit program finance and/or development of one-stop shops, budgets would need to increase commensurately.²

² For example, the SEAI has around 235 employees, and a total annual budget of around AUD\$575 million, but the bulk of this expenditure is on program costs. Ireland's population is around one-fifth of Australia's.

Step up industrial decarbonisation efforts

Context

Industry is responsible for around 31% of Australia's direct GHG emissions (excluding land-use change), principally from mining and manufacturing.

Some parts of industry will be easier to decarbonise than others. For example, many manufacturers that currently use relatively low-grade process heat will be amenable to electrification of their activities, allowing them to take advantage of zero emissions renewable electricity. Other industrial activities – such as cement production and steelmaking – are likely to require technological advances to allow an emissions profile ultimately compatible with net zero.

The Government has made an important start on the industrial decarbonisation path with the establishment of the Powering the Regions Fund and ARENA initiatives, but the task before us is large and the EEC views industrial decarbonisation as a significant gap within the Government's policies to reduce emissions. Presently, Australia's largest emitters are faced with a legal obligation to reduce their emissions under the Safeguard Mechanism, but other industrial facilities face virtually no incentive or requirement to reduce their emissions.

The problem

Decarbonising industry will involve a range of methods, including energy efficiency, fuel switching and technological advances to replace sources of process emissions. However, energy efficiency and energy management should be the first priorities for industrial decarbonisation, because they are cost-effective and widely available. Feedback from industry professionals indicates there is significant untapped opportunity to reduce emissions through relatively simple improvements to the way energy is used.

Unfortunately, owing mainly to our historical access to cheap energy, Australia has not traditionally had a strong culture of industrial energy efficiency. In fact, Australia's performance in industrial energy efficiency was ranked last of all developed countries surveyed in the American Council for an Energy Efficient Economy's 2022 scorecard, with Asia-Pacific competitors India, Thailand and Indonesia eclipsing Australia's performance by a significant margin.

The Commonwealth's Powering the Regions fund is a good start in providing finance for industrial decarbonisation. However, the EEC believes finance is not the most significant barrier to industrial decarbonisation and encourages the Government to consider additional measures to jump-start Australia's progress in industrial decarbonisation.

While there can be technical barriers to improving industrial energy performance, the EEC understands that many barriers can be 'soft' or cultural barriers, such as a lack of organisational motivation or executive buy-in to progress energy efficiency measures. In some cases, businesses may simply not know where to start, or not have the resources to effectively create a decarbonisation plan.

Given that 76% of the world now faces planned or proposed net zero targets,³ Australia is now in a 'race to the top' and should Australian businesses fail to engage with decarbonisation, there may be consequent risks for business and the economy more broadly, such as business exit and wider unemployment. This provides a strong reason for Governments to assist industrial businesses to decarbonise, to ensure Australia preserves competitive advantages and sovereign capabilities across a range of manufacturing and resource sectors.

³ Net Zero Tracker 2023, [Net Zero global stocktake 2023](#)

The solutions

1. Assist businesses to understand and plan for decarbonisation

In many cases, particularly in small to medium sized enterprises without access to dedicated energy managers, businesses will require expert assistance to understand their energy use and emissions profiles, and the opportunities to reduce both. Assisting businesses to access energy advisors and other skilled professionals who can advise on energy management and emissions reductions, will help build a baseline understanding of their energy use and emissions reduction opportunities – often with limited capital expenditure.

The EEC recommends the Commonwealth, in partnership with states and territories, establishes a program to provide bespoke energy advice targeted to small to medium size enterprises, at scale.

2. Consider extending existing regulatory frameworks to drive engagement

While the reformed Safeguard Mechanism should drive some engagement with energy performance, there are still a large number of enterprises outside the coverage of the mechanism who face no regulatory or financial pressure to decarbonise their operations. This presents an equity issue – an entity that lies just below the threshold for safeguard will not be required to reduce emissions, and may therefore acquire a windfall competitive advantage compared to a competitor captured by the Safeguard Mechanism.

For those companies currently covered by the National Greenhouse and Energy Reporting Scheme (NGERS) that are not covered by the Safeguard Mechanism, an opportunity exists to introduce phased additional requirements to drive attention to managing and reducing energy usage and emissions.

At a minimum, entities whose scope 1 emissions exceed the NGERS threshold should face some type of additional requirements designed to help them to start decarbonising, such as a requirement to demonstrate that the business has an effective system in place to manage energy use and emissions. The EEC also encourages the Government to consider lowering the NGERS threshold for inclusion to scope 1 emissions of 10,000 t CO₂-e per annum at both corporate and facility level. This could result in a graduated scheme that imposed greater requirements with increasing energy and emissions:

Scope 1 emissions (t CO ₂ -e/annum)	Requirement	Signal to decarbonise
0-10,000	None	Educate, incentivise
10,000-25,000	Include in NGERS	Measure and report energy and emissions
25,000-100,000	NGERS + Energy management reporting	Measure, report and manage energy and emissions
100,000+	NGERS + Safeguard + Declining baselines	Legally required to decarbonise

3. Collect better information on industrial energy use and accelerate policy development to create opportunities for industrial decarbonisation

Industrial decarbonisation is one of the most difficult challenges of the transition, and there are currently insufficient resources devoted to developing policies and programs to help industry decarbonise. The EEC would like to see the Government rapidly expand its capability to engage with this task.

As a first step, the EEC recommends the Government develop a better knowledge base of industrial processes and energy demand to inform decarbonisation opportunities.

While the NGERs Act has been instrumental in helping Australia identify the largest industrial energy users and emissions sources, a better understanding of where, when, and how energy is used in Australian industry is required – and how it can be linked to sources of renewable energy. This is particularly important for Australia to unlock the sizeable demand flexibility and demand response resources in industry – capabilities that will be increasingly valuable in the energy system of the future.

Other jurisdictions have already realised the importance of understanding this data – for example, New Zealand is developing the Regional Heat Demand Database to map process heat demand across the country. This will be used to understand additional demand for electricity expected to occur as some industrial processes – particularly heating – are moved from gas or other fossil fuels to renewable electricity. This type of exercise will also be important for Australia as fuel switching occurs over the next few decades,

The EEC acknowledges the important start the Government has made in this area, by commissioning our colleagues at the Australian Alliance for Energy Productivity and the University of Technology Sydney to commence a boiler and burner mapping project. The EEC encourages the Government to continue and extend this work to develop a granular understanding of commercial and industrial energy usage, that could help inform system planning processes and renewable energy development.

There will also be other benefits from the development of a knowledge base of Australian industrial energy usage. It could:

- Inform requirements for R&D to decarbonise particular processes;
- Indicate regions that may be at significant risk of structural adjustment;
- Inform and guide the development of the AEMO Integrated System Plan;
- Help guide and facilitate investment in new, clean industry; and
- Provide opportunities to expand engagement with businesses that could benefit from measures to improve energy performance.

Government is well-placed to develop (or to facilitate development) of this knowledge base, and its development will inform policymaking in this space. There is a need for a substantial commitment to industrial decarbonisation, as it is one of the most difficult parts of the net zero transition.

It is the crucial first step in developing appropriate and targeted policy approaches to help industry decarbonise. However, a long-term expansion in Government's capability to develop policy in this area is required, and the EEC is keen to support the Government's efforts to transform Australian industry into a valuable national asset that thrives in a net zero economy.

Prepare for the challenges of the transition through increased RD&I.

Australia faces many challenges in the energy transition. Some of these challenges are technological (such as technology to decarbonise steel and cement production), while others relate to business models, political, economic, and social issues, and legal frameworks to implement the solutions to the energy transition. In many cases Australia will need to adopt technology, processes and practices from overseas, reflecting our position as a net importer of knowledge and technology. However, there is a need for Australia to maintain and expand its own energy research, development and innovation capability to design, develop and deploy solutions to decarbonisation and energy challenges that are uniquely Australian.

In particular, there is a clear need to expand R&D focusing on the *demand side* of the energy system to identify opportunities to deploy energy efficiency, energy management, demand response and decarbonisation. R&D involving science, technology and engineering is certainly needed, but there is an increasing need for social science expertise to help implement political, social and economic reforms needed to successfully deploy decarbonisation technologies.

The EEC is concerned by the trend in recent years towards lower R&D expenditure in energy. The Science, Research and Innovation budget tables show that investment in energy R&D has declined significantly in the last decade (Figure 1). Australia is also falling behind other countries, ranking 16th amongst IEA members for energy R&D investment / GDP, after ranking as high as 11th in 2009 (Figure 2). This situation is not tenable if Australia is to successfully navigate the technological, social, economic, political and legal challenges that the energy transition will present.

The EEC recommends the Government return investment in energy R&D to 2013-14 levels at a minimum as an urgent priority to ensure that we have the technology, processes and practices to achieve our emissions reduction targets.

Secondly, additional R&D is likely to be necessary to help Australian industry decarbonise. Technological breakthroughs, as well as further development of nascent technologies, will be needed to abate a range of industrial emissions. Australia has a strong R&D sector, with already-existent mechanisms like ARENA and the RACE for 2030 CRC designed to help transfer knowledge into industry. Continuing and strengthening these mechanisms is an important enabler to bringing new technologies, processes and expertise into the market in Australia.

In many cases, Australian industry will need to adapt technologies used internationally for local conditions and circumstances. This means that Australia's R&D capabilities will be useful both for creating new technologies and knowledge in industrial decarbonisation, but also to provide a pool of knowledge and skills to 'fast-adopt' global technologies. The role of ARENA as an agent for knowledge sharing and transfer (as well as a facilitator and coordinator of research activity) is important, and should be continued and expanded, taking into account ARENA's new remit in energy efficiency.

The EEC recommends the Government consider additional R&D for industrial decarbonisation, as part of a broader energy R&D funding measure. An initial commitment of an additional \$100 million over five years devoted to industrial decarbonisation would help focus attention and resources on the task, and aim to crowd-in further resources towards 2030.

Figure 1. Australian Government investment in energy R&D as a share of total R&D and as a share of GDP, 1989 to 2023

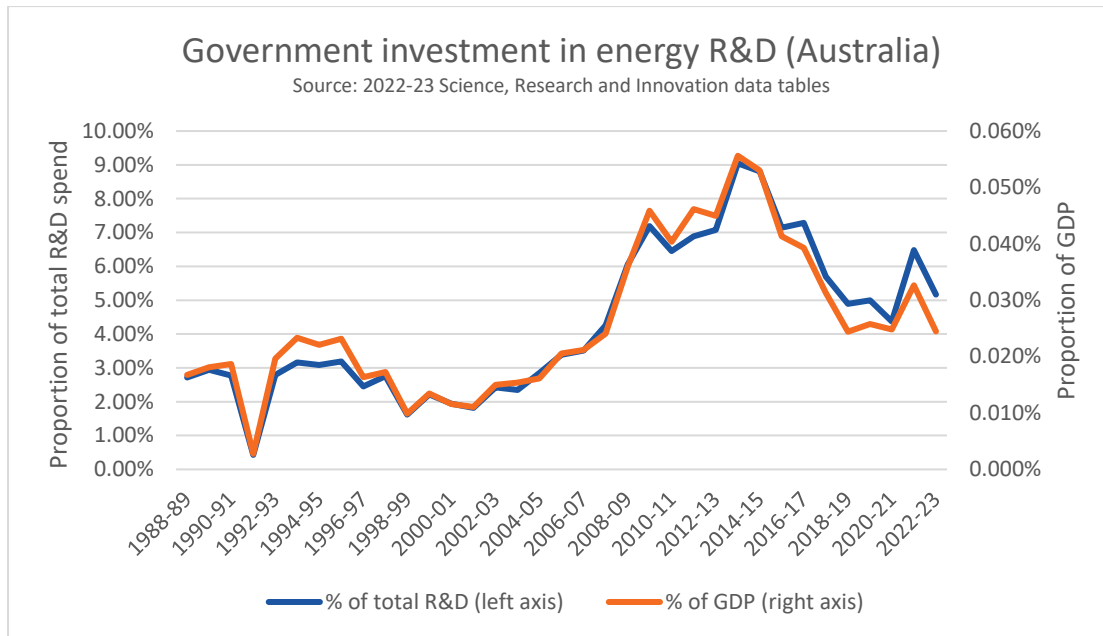
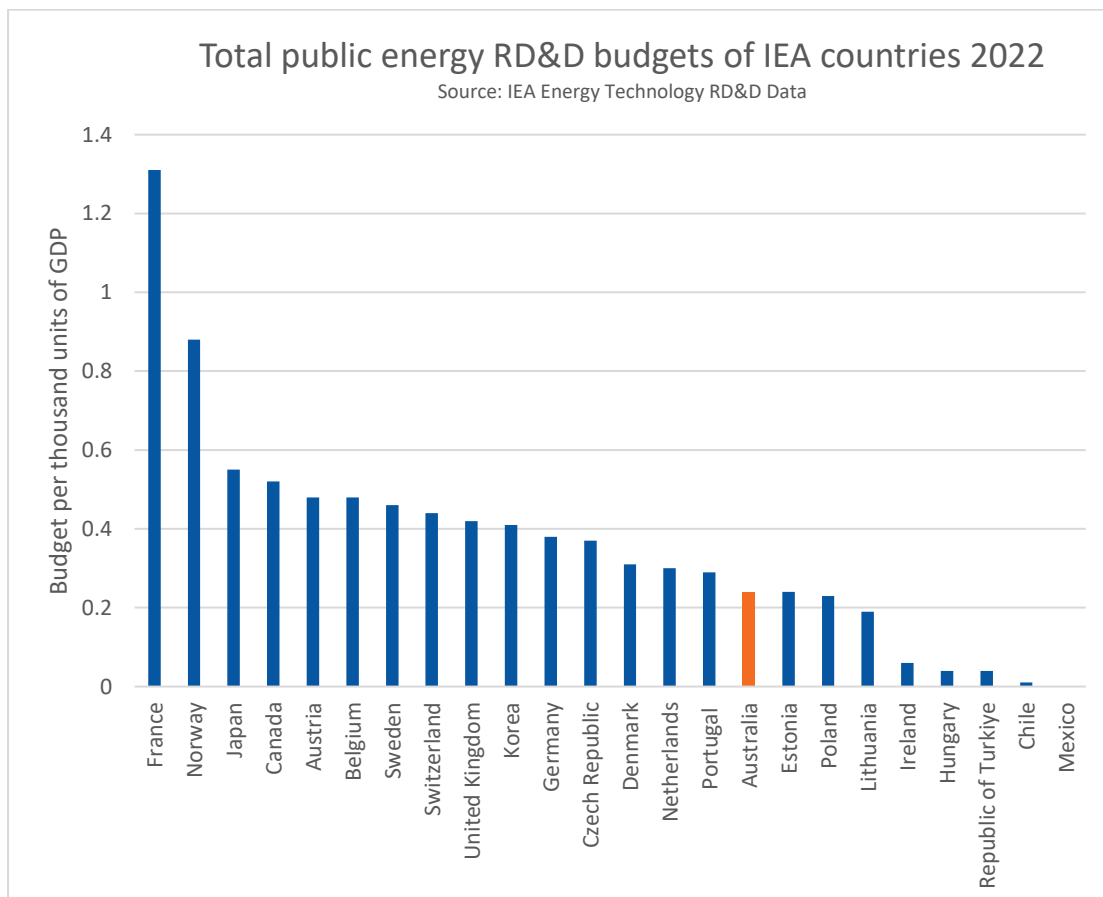


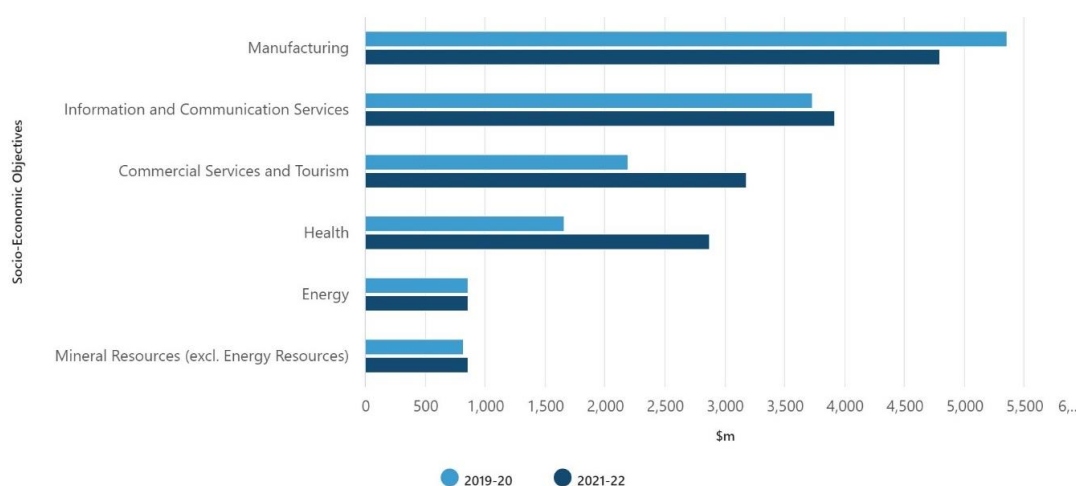
Figure 2 - Total public energy RD&D budgets of IEA countries per thousand units of GDP by country, 2022.



Additionally, there is an urgent need for an uptick in innovative activity among businesses in Australia. Businesses will be the engine room of the transition, bringing innovative goods and services to market that will be critical for decarbonisation. Without business innovation, deployment of clean energy technologies will be severely delayed. Presently, fewer than two percent of businesses brought a new-to-world innovation to market in Australia and only around half of businesses are innovation active⁴ – this is a situation that requires urgent attention.

The EEC calls on the Government to urgently consider how business innovation in energy technologies – including energy efficiency, energy management, demand response and electrification – can be accelerated. Business activity in R&D in energy is significantly lagging other areas of innovation such as manufacturing and ICT (Figure 3)

Figure 3 - Business expenditure on research and development (BERD) by socio-economic objective



Source: Australian Bureau of Statistics, Research and Experimental Development, Businesses, Australia 2021-22 financial year

A comprehensive set of policies to rapidly scale-up energy sector innovation is needed, to counter forces such as the US Inflation Reduction Act which is reportedly already drawing capital and expertise⁵ away from the Australian energy transition. While initiatives such as the Small Business Energy Incentive and related initiatives are useful, they do not directly support innovation and are time-limited, meaning they don't build the confidence that businesses need to take innovative risks.

The EEC recommends the Government invests heavily in encouraging business innovation in Australia through grants, tax incentives and procurement processes that encourage Australian companies to apply innovative solutions to decarbonisation problems facing Australia at this point.

⁴ See ABS 2022, [Innovation in Australian Business 2020-2021](#). Statistics computed from 'Goods and services innovation' download.

⁵ The Guardian, 4 September 2023, *US clean energy drive fuels shortage of engineers in Australia*, <https://www.theguardian.com/australia-news/2023/sep/04/us-clean-energy-drive-fuels-shortage-of-engineers-in-australia>

Concluding remarks

While the Australian Government's commitment to improving energy performance in Australian homes and businesses are welcome, the EEC is concerned that several large gaps remain in our approach to decarbonisation, and urges the Government to consider how these might be filled in the 2024-25 Budget.