

Response from Lumetior to the Productivity Commission's Interim Report on "Investing in Cheaper, Cleaner Energy and the Net Zero Transformation"

Date: 31/08/2025

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Introduction

Lumetior welcomes the opportunity to contribute to the Productivity Commission's inquiry. We work on decision making tools and creating valued partnerships to improve success rates in clean energy project development, planning and investment.

Our perspective emphasises three core priorities:

1. **Understanding short to long-term true-cost carbon pricing outcomes and policy signals** that drive efficient, low-cost decarbonisation.
2. **Integrated infrastructure and planning** across industry, government and research required to accelerate delivery of cleaner energy while building energy user and community trust.
3. **Proactive, transparent, and coordinated policies** that decide quicker, build resilience and adaptation measures, attract investment, secure productivity gains and quality of life.

Discussion

Australia can no longer rely on its "lucky" endowment of energy resources as the sole determinant of prosperity. In the energy transition, Australia—like any other country—has begun to experience that technological innovation, manufacturing at scale, and early-mover positioning will determine who captures market share, volume, and profits into the future. We have already suffered losing significant solar market share to China over the last two decades. China's dominance in solar PV and batteries is now the exemplary case in point, and we are witnessing similar dynamics emerging in hydrogen technologies, grid-scale storage, and digital energy platforms. Australia must therefore decide how to work more with global leaders such as China, Japan, South Korea, Germany, France, the Netherlands, Spain, Singapore, the UK, and the USA. At the same time, we need to pursue opportunities in emerging markets and engage more closely with our neighbours—New Zealand, Indonesia, and other Pacific nations.

Energy security itself is being fundamentally reframed. It is shifting from dependence on imported fuels to a reliance on imported technologies—turbines, batteries, electrolyzers—creating resilient domestic capacity and diversified supply chains a matter of national interest. This is why industrial policy is resurging globally, from the U.S. *Inflation Reduction Act* to Europe’s *Net-Zero Industry Act*. The key message for Australia is obvious: unless we move decisively to build and secure our own capacity—whether through domestic manufacturing, regional partnerships, or targeted investment attraction—we will remain exposed to geopolitical shocks, cost volatility, and lost opportunities for industrial growth. In such a scenario, we will not oversee our own jobs, profits, and growth. The implication is stark: without a deliberate strategy to strengthen energy technology sovereignty (as highlighted for example in Ross Garnaut’s work on Australia as an “energy superpower”), the nation risks trading one form of dependency for another, while also missing productivity and competitiveness gains already being captured by other countries. These risks are escalating precisely at the time when productivity is faltering. Yet this challenge is also an opportunity for Australia—and to maximise our chances of seizing it, we must reframe our understanding of risk and recalibrate our risk appetite.

The **evolving profile of risk** under ecologically sustainable development conditions is fundamental to future solutions, and it is spreading like a global contagion. For over a century, the key variables in energy systems have been volatile fuel prices, resource concentration, and the costs of extraction. But as we move into the post-2025 paradigm, we must contend with new uncertainties—and indeed complete unknowns—including access to critical minerals, grid stability under intermittent supplies from renewables, storage adequacy, and competing land uses for large-scale projects. These are not merely engineering problems—they are decision-making challenges that demand structured frameworks, cross-sectoral partnerships, community acceptance, and clear signals from government to de-risk private investment. Australia must be honest about its current maturity level in understanding and managing these risks, despite the many conferences and “talkfests” that override good decision making and rewarding sensible and needed risk taking across the energy landscape.

Fossil fuel markets were designed around extracted commodities. Clean-energy markets, by contrast, must be designed to integrate near-zero marginal cost resources, reward flexibility, and optimise system-wide efficiency. The rise of the “prosumer” collapses traditional boundaries between production and consumption, while electrification and digitalisation weave previously distinct sectors—transport, industry, households—into a single system. Markets themselves are undergoing a philosophical inversion (towards the “should” case), yet several factors continue to hold Australia back, and the consequences are beginning to show in declining measures of energy productivity (the “is” case).

A sustainable future demands two things from Australia: first, the development of **new energy productivity metrics**; and second, the adoption of **new behaviours** capable of coping with

true scale, complexity, and feedback loops present in the energy systems, while recognising emerging vulnerabilities and designing systems to grasp the new opportunities. Traditional regulatory approaches are struggling to keep pace. What is urgently required are better decision tools—structured expert judgment, transparent scenario building, and methodologies that account for genuine risks, uncertainties, and unknowns—so that policy, research, and industry can align and move decisively in the right direction.

Australia's lagging productivity in energy production and use has become a drag on national competitiveness and prosperity. Our economy is failing to generate the same efficiency gains as peer nations, in part due to regulatory delays, fragmented policies, slow uptake of new technologies, and limited clarity on our strengths and weaknesses—all of which constrain the speed at which energy projects can be delivered. To reverse this trend, we must prioritise reforms that improve productivity in the energy sector—through streamlined approvals, greater certainty for long-term investors, and deployment of advanced digital and manufacturing solutions that drive efficiency. Unlocking capital from both domestic and overseas investors will be critical, not only for financing individual projects but also for scaling supply chains and infrastructure that underpins system-wide productivity gains. Without such a shift, Australia risks falling behind in the global competition for clean energy investment and technology leadership.

Integrated energy systems and **deep partnerships** are also critical if Australia is to achieve its climate ambitions and broader national objectives. Meeting emissions targets, lifting productivity, ensuring equitable access to affordable energy, and sustaining long-term growth will not be possible without unprecedented collaboration across industries, government agencies, research institutions, communities, and international partners. The scale and complexity of the transition demand colossal partnering: aligning R&D with deployment, linking manufacturing with infrastructure, and connecting financiers with regulators and communities. Other countries are already moving at pace, forging alliances that accelerate innovation and de-risk investment. Unless Australia matches this level of coordination and global engagement, we risk being left behind by nations that seize the competitive and productivity benefits of integrated, partnership-driven energy systems.

To conclude, the transition marks a decisive shift from an energy paradigm built on scarcity to one of scale, abundance, and the intelligence to make it happen. To capture this potential, Australia must move beyond “resource luck” toward deliberate partnering—connecting innovators, manufacturers, financiers, communities, and policymakers in ways that **allow risks to be shared and decisions to be made** with clarity.

Section 1 – About Our Organisation

Lumetior is a clean energy advisory and development firm working across the entire value chain. We specialize in hydrogen and its derivatives, renewables, and international partnerships. Our work is powered by risk-informed decision making, using Bayesian Methods and Expert Judgement, to bridge strategy, innovation, and stakeholder alignment for an impactful energy transition.

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Section 2 – Reduce the cost of meeting carbon targets

Q1. What could be done to improve the cost-effectiveness and alignment of policies across the industrial, electricity, and transport sectors?

- **Nationally consistent carbon value framework:** Establish agreed, long-term carbon values and embed them into all major policy and investment decisions. This improves investor confidence and reduces the cost of capital.
- **Technology-neutral, sector-wide incentives:** Expand market mechanisms beyond electricity to industrial heat, heavy transport, and hydrogen production, ensuring policy is neutral, based on emissions reduction marginal costs, and open to innovation.
- **Integrated industrial decarbonisation planning:** Link renewable generation zones with industrial hubs, ports, and fuel export corridors to reduce duplication and unlock economies of scale. This kind of thinking emphasises shared assets and understanding where to build and invest capital for best results based on Australia's strengths and weaknesses. Australia is well positioned to lead; however, the abundance of renewable resources alone is no longer the decisive factor. The economics of energy have shifted from resource endowment to manufacturing scale, technology leadership, and supply chain control and countries with even less resources than Australia are making strong progress by strengthening these factors.
- **Blended finance for high-cost abatement:** more push and learning are needed across contracts for difference, concessional finance, and public-private partnerships to bridge gaps for hard-to-abate sectors. The examples are:
 - Bank loans and green bonds – regular finance tools, but linked to clean energy and backed by stable, long-term contracts.
 - International partners – overseas banks, developers and export credit agencies looking to finance projects when they plan to buy the clean hydrogen, steel, or ammonia.

- Insurance and risk-sharing – tools to protect projects against supply chain issues, technology risks, or big swings in prices.

Q2. Are there gaps that should be addressed?

- **Industrial process heat and non-power emissions** lack equivalent incentives compared to the electricity sector.
- **Cross-border carbon leakage safeguards** need clearer design, especially for trade-exposed low-carbon products (e.g., green steel, hydrogen).
- **Lifecycle emissions accounting** is missing from many current schemes, leading to incomplete carbon impact assessments.

Q3. Are there duplicative policies that could be streamlined?

- Align and phase out overlapping, jurisdiction-specific subsidies that distort investment choices.
- Consolidate EV incentives under the New Vehicle Efficiency Standard framework to avoid fragmented state schemes.
- Harmonise industrial facility reporting under the Safeguard Mechanism with energy efficiency and climate disclosure requirements to reduce compliance costs.
- Multiple targets and certificates lead to fragmented investment signals: Federal: Renewable Energy Target (RET) largely fulfilled, but still in place; and Each state and territory has its own renewable or emissions reduction targets and auction schemes.
- Streamline option: Harmonise into a national clean energy target framework with state flexibility on delivery.
- Align the current mix of different policies at different levels, including Federal: Hydrogen HeadStart (CfDs), ARENA grants, CEFC financing; States: QLD Hydrogen Industry Development Strategy, WA Renewable Hydrogen Strategy, VIC Hydrogen Energy Supply Chain, etc.
- Establish a national hydrogen and green exports framework that coordinates hubs, offtake agreements, and infrastructure funding: competing state incentives (land, grants, approvals) risk a “race to the bottom” and confuse investors.

Section 3 – Speed up approvals for new energy infrastructure

Q1. Are planning and approvals processes taking too long? Causes of delay?

- Yes. Delays stem from fragmented federal–state processes, multiple agency sign-offs, and late-stage community objections arising from insufficient early engagement.
- Data gaps in environmental baselines often prolong assessments due to repeated information requests.
- Skillsets and not near enough training, education and knowledge sharing.

Q2. How can processes be sped up without compromising standards?

- **Single-window coordination:** A nationally coordinated approvals pathway with clear timelines, role definitions, and escalation protocols. Streamline National REZ framework under AEMO, with state alignment but single approval pathway with shared federal–state assessment to cut red tape.
- **Upfront strategic planning:** Pre-assess Renewable Energy Zones, including cumulative environmental and cultural heritage impacts, before project-specific applications.
- **Digital permitting tools:** Shared geospatial platforms for project proponents and regulators to reduce duplication of data collection.

Q3. Should clean energy projects be treated differently?

- Support consistent, technology-neutral approval frameworks for all projects contributing to net zero, provided they meet robust environmental and social standards.

Q4. Building local community support

- Engage communities and Traditional Owners **before** site selection to shape development priorities.
- Offer benefit-sharing tied to local priorities—e.g., energy bill reductions, training programs, infrastructure upgrades.
- Provide transparent, cumulative impact assessments at the regional level to address concerns about multiple concurrent projects.

Section 4 – Encourage adaptation by addressing barriers to private investment

Q1. Barriers and enablers

- **Barriers:** Lack of clear climate risk data at the property level, split incentives between landlords and tenants, high upfront retrofit costs, and inconsistent insurance signals.

- Enablers: Publicly accessible risk maps, resilience-linked finance products, and integration of adaptation goals into building codes.

Q2. Information needs

- Location-specific hazard exposure (heat, flood, cyclone, bushfire) in a standardised format.
- Cost–benefit analyses of resilience upgrades to guide investment decisions.

Q3. Cost-effective retrofit options

- Roof and wall insulation upgrades, cyclone strapping, ember protection for bushfire-prone areas, and passive cooling designs.
- Benefits include reduced damage risk, lower insurance premiums, and improved occupant health and productivity.

Q4. Role of minimum standards

- Progressive tightening of minimum resilience standards in the National Construction Code, combined with incentives to upgrade existing housing stock.

Q5. Leading practice and improvement areas

- Best practice: Queensland’s cyclone building standards and the US FEMA floodplain management program.
- Improvement areas: National consistency in resilience ratings, integrated precinct-scale adaptation planning, and linking insurance pricing to verified resilience measures.
- Securing investment includes investing in R&D which has a return on investment for investors and the economy in general. The following offers suggestions for advancing energy research in Australia.

Final Words - Research and Development as an Enabler of Energy Productivity

A substantial body of research is currently underway in Australia and internationally to advance energy productivity and accelerate the uptake of cleaner fuels. While there is broad agreement on certain priority areas, there remain differences of opinion on the level of priority to assign to others. For instance, there is consensus that Australia holds significant opportunities in the export of low-emissions commodities such as hydrogen, its derivatives,

and green steel/iron. However, debate persists over whether Australia should allocate further resources to the development of technologies such as electrolyzers domestically or instead leverage advances occurring internationally and focus domestic efforts on areas where Australia has a stronger comparative advantage.

There is a particular need for additional research into storage, distribution, and end-use applications of cleaner fuels, as well as exploration of new and unanticipated applications. Greater emphasis on techno-economic analysis, systems integration, and technology acceptance research will be critical to determining the most effective role for cleaner fuels in Australia's domestic energy mix, relative to their use in international markets.

Recommendations

1. **Establish a mechanism to identify, monitor, and refine R&D priorities** for energy productivity and cleaner fuels. This mechanism should be linked to broader monitoring of industry development to ensure that priorities remain relevant as technologies and markets evolve. Reporting of identified priorities should be undertaken regularly to provide transparency and support informed government and industry decision-making.
2. **Strengthen collaboration between industry and the research sector** by developing engagement programs and activities that facilitate co-design of research agendas, align research with industry needs, and accelerate the translation of findings into practice. Such collaboration would ensure that public investment in R&D delivers maximum impact in terms of productivity gains, emissions reduction, and international competitiveness.