

SUBMISSION TO THE PRODUCTIVITY COMMISSION REGARDING THE “INVESTING IN CHEAPER, CLEANER ENERGY & THE NET ZERO TRANSMISSION - INTERIM REPORT.”

INTRODUCTION

Properties I have lived in have been directly impacted by both the fossil fuel and wind energy industries. Their behaviours are the same in that they seek to maximise profit by externalising as many social and environmental costs as possible. Climate change along with other forms of environmental degradation are severely compromising liveability for people on this planet, especially for future generations. Little meaningful action is occurring as industry, which is driven by profit, is strongly influencing decision-making and politicians are lacking the courage to implement difficult but meaningful action. The interim report produced by the Productivity Commission is just more of the same, i.e. putting industry before the environment and justifying the recommendations using falsehoods such as clean and cheap energy.

Key Points

The report demonstrates:

- A lack of understanding of climate science by the Productivity Commission. Weakening the protections for biodiversity and ecosystems is counterproductive in terms of mitigating and adapting to climate change.
- A failure to acknowledge Australia's commitment to protect and restore biodiversity and ecosystems under international agreements.
- A failure to heed the warnings by Australian environmental scientists and international bodies such as the OECD that poorly-sited renewable energy projects and upstream impacts associated with the production of clean energy technologies must be avoided.
- A failure to conduct a proper cost/benefit analysis to consider the negative impacts on the productivity of other sectors of the economy and valuable ecosystem services from the energy transition.
- A failure to recognise that the conflict emerging from the energy transition is a result of poor government planning and poor governance over the renewable energy industry, the result of which is unacceptable harm to people and the environment.
- A lack of honesty and transparency regarding the financial, social and environmental costs of the energy transition.

SECTION 1: CLIMATE RISKS AND EMISSIONS REDUCTION.

This section is a response to the following statements from the Interim Report:

- *“Australia faces significant climate-related risks regardless of future emissions reductions.”*
- *“Reducing emissions from greenhouse gases is an important national priority.”*

(a) Climate change mitigation and adaptation requires the protection and restoration of biodiversity and healthy ecosystems. The justification for the transition away from fossil fuels is the need to act on the threat of climate change. The energy industry must not be given any exemptions under the EPBC Act is counterproductive.

A basic understanding of climate science along with a recognition of Australia’s commitments to protect and restore biodiversity and ecosystem health under various agreements highlights the absurdity of:

“Draft recommendation 2.4: Consider the energy transition in approval decisions

- *The Environment Protection and Biodiversity Conservation Act 1999 (Cth) should be amended to require the minister to consider the needs of the energy transition when deciding whether to approve an energy project that will have a significant impact on a matter of national environmental significance”*

Biodiversity and climate change are intricately linked. The potential impacts of climate change include a loss of biodiversity and ecosystem integrity as well as declines in agricultural productivity and increased frequency and intensity of natural disasters such as floods and bushfires. Biodiversity and healthy ecosystems are also essential to providing resilience to those impacts. Healthy ecosystems, biodiversity and healthy population sizes of individual species provide greater resilience and adaptability to changes in climate.

Healthy ecosystems also provide ecosystem services including carbon sequestration, flood mitigation, erosion control, pollinators for agriculture and clean water supplies. The myopic focus on the energy transition ignores the economic value of these ecosystem services. By prioritising energy over nature, we risk losing productivity in other sectors as well as greater economic losses from extreme weather events.

The economic value of ecosystem services have been quantified in a number of studies. For example, the study by H. Keith, M. Vardon, John Stein, Janet Stein and D. Lindenmayer, 2016, *Experimental Ecosystem Accounts for the Central Highlands of Victoria*, for the Australian National University quantified the economic value of the forests of the Central Highlands using the System of Environmental-Economic Accounting (SEEA). This system is recognised internationally and has been adopted by the Australian Government. The findings included:

- **\$2319 per hectare in the water supply.**
- **\$38.36 per hectare in carbon sequestration based on a carbon price of just \$12.25 and a comparison of logged and unlogged forest.**
- **\$2477 per hectare in ecosystem services to agriculture including pollination, abstraction of soil water, soil nutrient uptake and nitrogen fixation.**
- **\$354 per hectare in tourism.**

The importance of quantifying our reliance on nature economically has been reiterated recently in the article by Michael Vardon, 26/08/2025, *We're still not measuring our reliance on nature as we rush to boost productivity*, for The Conversation. This article was critical of the absence of natural capital considerations at the recent Federal Government's Economic Reform Roundtable. As stated in the article:

- *"If we draw down on natural capital without knowing how much we have, how much is needed, or how it contributes to the economy or wellbeing, we risk what Henry calls "intergenerational bastardry" – worsening the lives of future generations through our actions today."*

Australia also has a commitment to protect and restore biodiversity and healthy ecosystems under various agreements. As a signatory to the Paris Agreement, Australia should be:

- *"Recognizing the fundamental priority of safeguarding food security and ending hunger, and the particular vulnerabilities of food production systems to the adverse impacts of climate change,*
- *"Recognizing the importance of the conservation and enhancement, as appropriate, of sinks and reservoirs of the greenhouse gases referred to in the Convention,"*
- *"Noting the importance of ensuring the integrity of all ecosystems, including oceans, and the protection of biodiversity, recognized by some cultures as Mother Earth, and noting the importance for some of the concept of "climate justice", when taking action to address climate change,"*

Australia is also a signatory to the Kunming-Montreal Global Biodiversity Framework. The goals of this Framework include the protection and restoration of biodiversity and to prosper with nature. Specifically:

- *The integrity, connectivity and resilience of all ecosystems are maintained, enhanced, or restored, substantially increasing the area of natural ecosystems by 2050;*
- *Human induced extinction of known threatened species is halted, and, by 2050, the extinction rate and risk of all species are reduced tenfold and the abundance of native wild species is increased to healthy and resilient levels;*
- *The genetic diversity within populations of wild and domesticated species is maintained, safeguarding their adaptive potential.*

- *Biodiversity is sustainably used and managed and nature's contributions to people, including ecosystem functions and services, are valued, maintained and enhanced, with those currently in decline being restored, supporting the achievement of sustainable development for the benefit of present and future generations by 2050.*

Reports such as that by the OECD (2024), *Mainstreaming Biodiversity Into Renewable Power Infrastructure*, acknowledge the importance of healthy ecosystems in mitigating climate change by sequestering carbon and providing resilience in the face of climate change to threat of climate related hazards such as landslides and flooding. As stated in the OECD report:

- *"Maintaining or restoring the diversity of plant and animal species is fundamental for ecosystem resilience, and therefore the ability of ecosystems to continue providing mitigation and adaptation benefits in the future."* page 26.

(b) Exemptions for industry under the EPBC Act do not work.

Exemptions for industry under the EPBC Act have not worked. The native forest logging industry was exempted under the Act through the Regional Forest Agreements. These have been an abject failure as demonstrated by legal action taken against VicForests for breaching state laws and destroying habitat of the Leadbeater's possum, which is listed as critically endangered under the EPBC Act.

The Federal Court found that VicForests, the Victorian Government owned logging company, had in fact illegally logged and destroyed the Leadbeater's possum habitat and had not complied with the Regional Forest Agreement. It was argued that breaching the agreement and breaking state laws should disqualify VicForests from exemptions under the EPBC Act. The judges agreed that VicForests had breached state laws. However, it was ruled that Australian logging companies do not lose their exemption as a consequence. The High Court refused to hear an appeal against this decision.

Exempting any industry from the EPBC Act makes a mockery of environmental protection. It opens the door for abuse of the environment to industry. If the renewable energy industry is so clean, why is this exemption needed?

(c) The Principles of Ecologically Sustainable Development are being ignored. The mitigation hierarchy emphasises avoidance over reduction and compensation. However, decision-making in the energy transition is based on poor science, poor planning and the vested interests of industry.

Principles of Ecologically Sustainable Development that are being ignored include but are not limited to:

- Principle of Conservation of Biodiversity and Ecological Integrity.
- Precautionary Principle.

The protection of a listed species is not simply about saving that individual species. It is also about preserving the integrity of the ecosystem to which that species belongs. The decline in population or loss of a species can lead to an ecological cascade resulting in the degradation or alteration of the whole ecosystem, especially if the species is a keystone one. This is evidently not understood by the Productivity Commission.

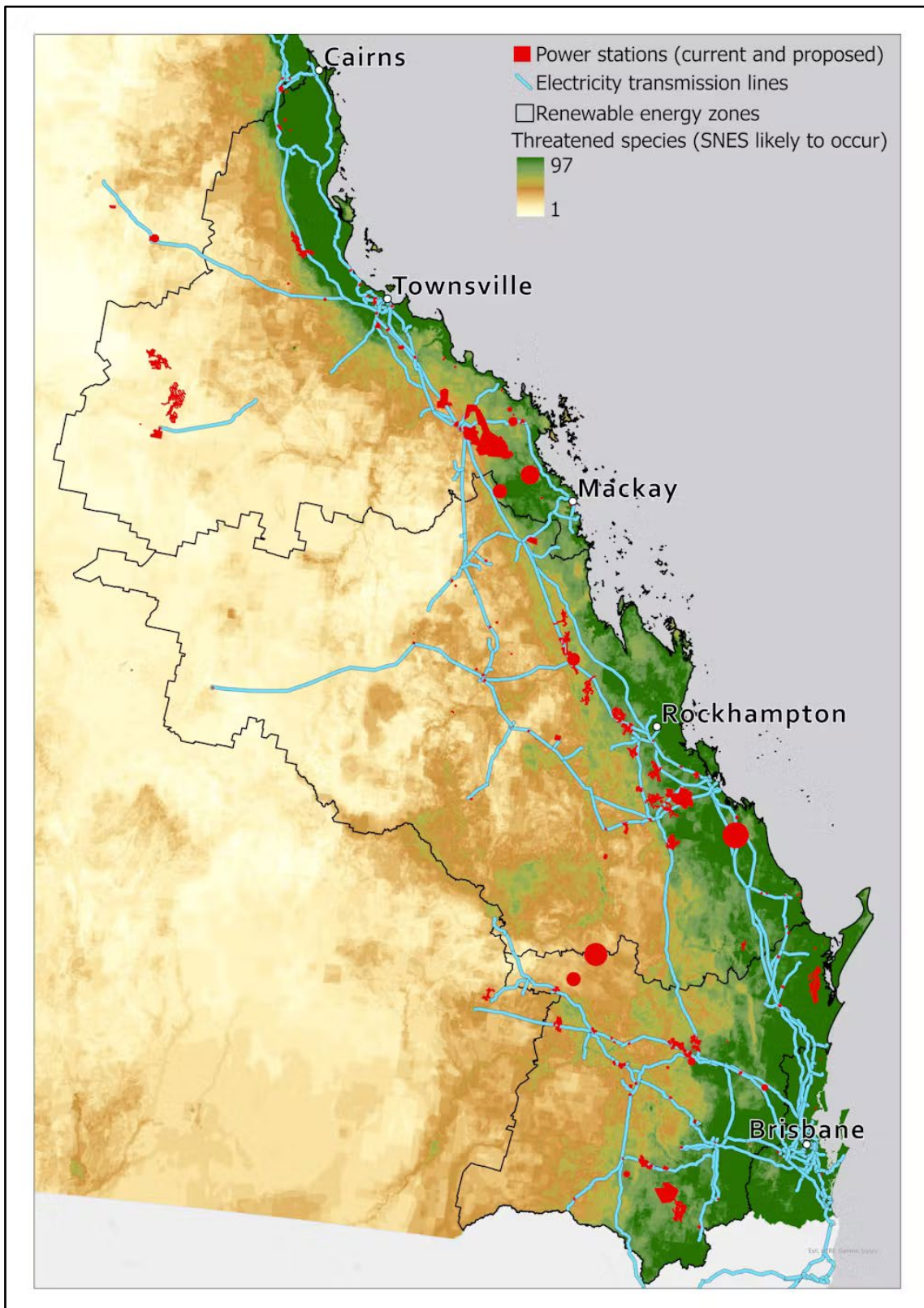
Australian environmental scientists are already calling out poorly sited renewable energy projects. As stated by Wintle et. al. and evident in Figure 1 below,

- *“we are putting renewable energy projects in places that damage the species and ecosystems on which we depend.....Environmentally damaging projects put another nail in the coffin of species and ecosystems already under immense pressure. Even those that affect a relatively small area contribute to nature’s “death by a thousand cuts”.”*

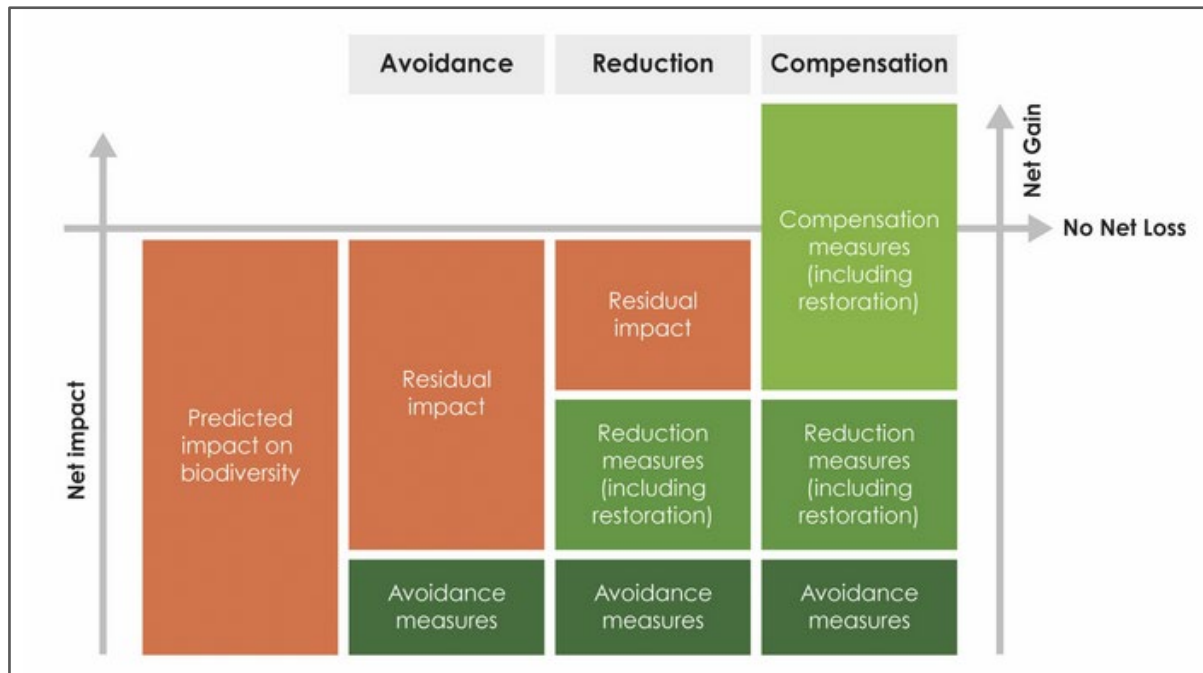
The Mitigation Hierarchy shown in Figure 2 prioritises good planning and the avoidance of harm to nature over offsetting. However, as elaborated in Section 2, poor planning, a lack of scientific knowledge and understanding of Australia’s natural environments, poor quality biodiversity assessments and a lack of rigour in regulatory oversight are increasing the conflicts between renewable energy projects and the environment.

While Draft recommendation 2.1: Reform national environment laws does call for “*accessible, high quality information about the environment and past assessment decisions*” it also states, “*make offsetting arrangements more efficient, such as by enabling developers to meet their offset obligations by contributing to an Australian Government offsets fund.*” This recommendation regarding offsets will be disastrous. It gives the industry the easy option of simply making a payment to the government and the result will be a net-loss in biodiversity and healthy ecosystems. As seen with the Delburn Wind Farm project, vegetation from Critically Endangered Ecological Vegetation Classes will be cleared.

Figure 1: Map of Queensland showing the conflict between renewable energy developments and areas of high conservation value.



Source: Wintle, B. Rogers, A. Watson, J. Ward, M. Bekessy, S. 7/06/2024. *A renewable energy transition that doesn't harm nature? It's not just possible, it's essential*, for The Conversation.

Figure 2: Mitigation Hierarchy

Source: Biodiversity & Infrastructure, A handbook for action. <https://www.biodiversityinfrastructure.org/handbook/3-mitigation-hierarchy/>

SECTION 2: FAST TRACKING THE ENERGY TRANSITION.

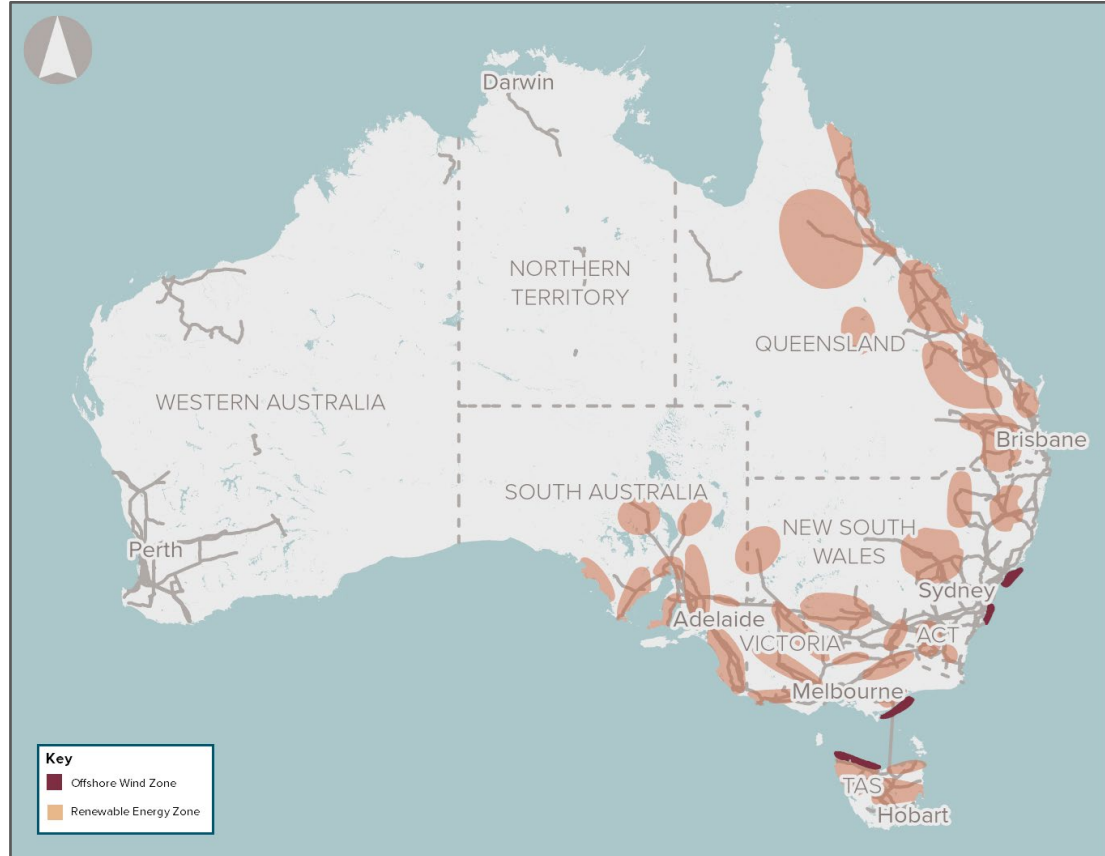
This section is a response to the following statement from the Interim Report:

“It takes too long to develop energy infrastructure”.

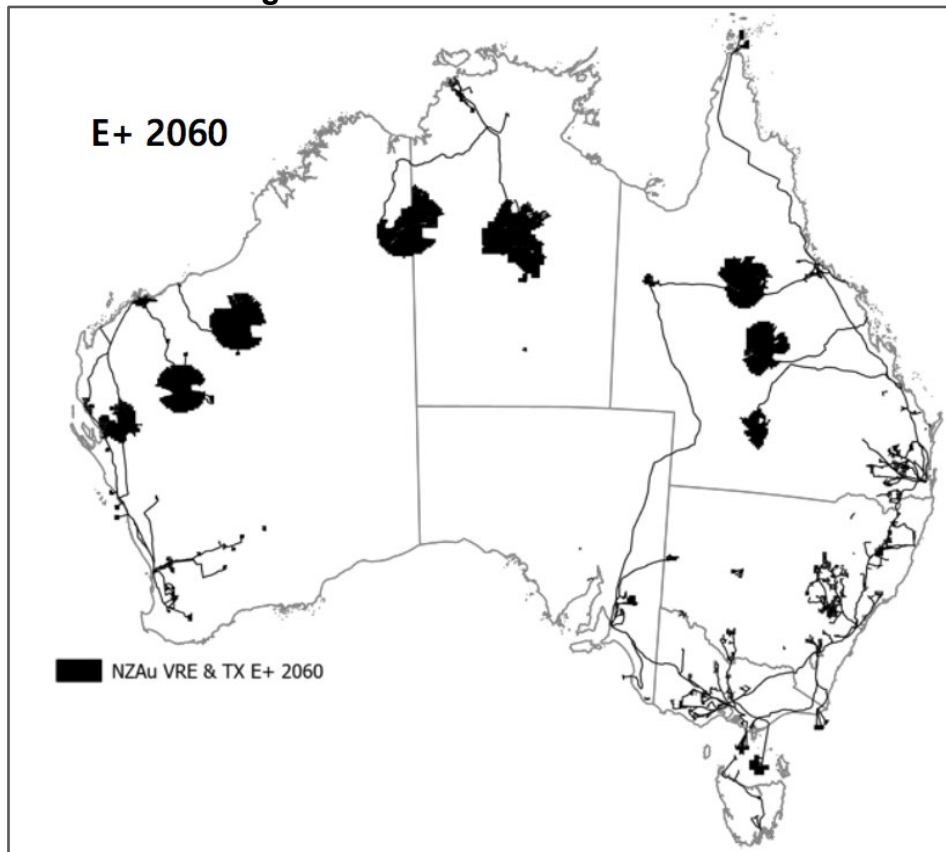
The reason the energy transition is taking too long is due to poor government planning and poor regulatory oversight. The answer is **not** to weaken protections further to ‘fast track’ developments but to restore confidence that transition is being properly planned and industry well-regulated.

(a) The State and Federal governments have not effectively planned the transition away from fossil fuels.

- Renewable energy developments have been opportunistic rather than well planned. Developers have focused on utilising regions where wind and solar resources are reasonable and there are landowners willing to host generation infrastructure. Little consideration has been given to compatibility with other land uses.
- As shown in Figure 3, Renewable Energy Zones are too broad. They lack the granular detail to identify areas where developments should not occur or should occur under strict guidelines within these zones.
- As shown by Figures 3 and 4 below, there is little similarity between the plans developed by NetZero Australia and AEMO.

Figure 3: National Electricity Market: Renewable Energy Zone expansions

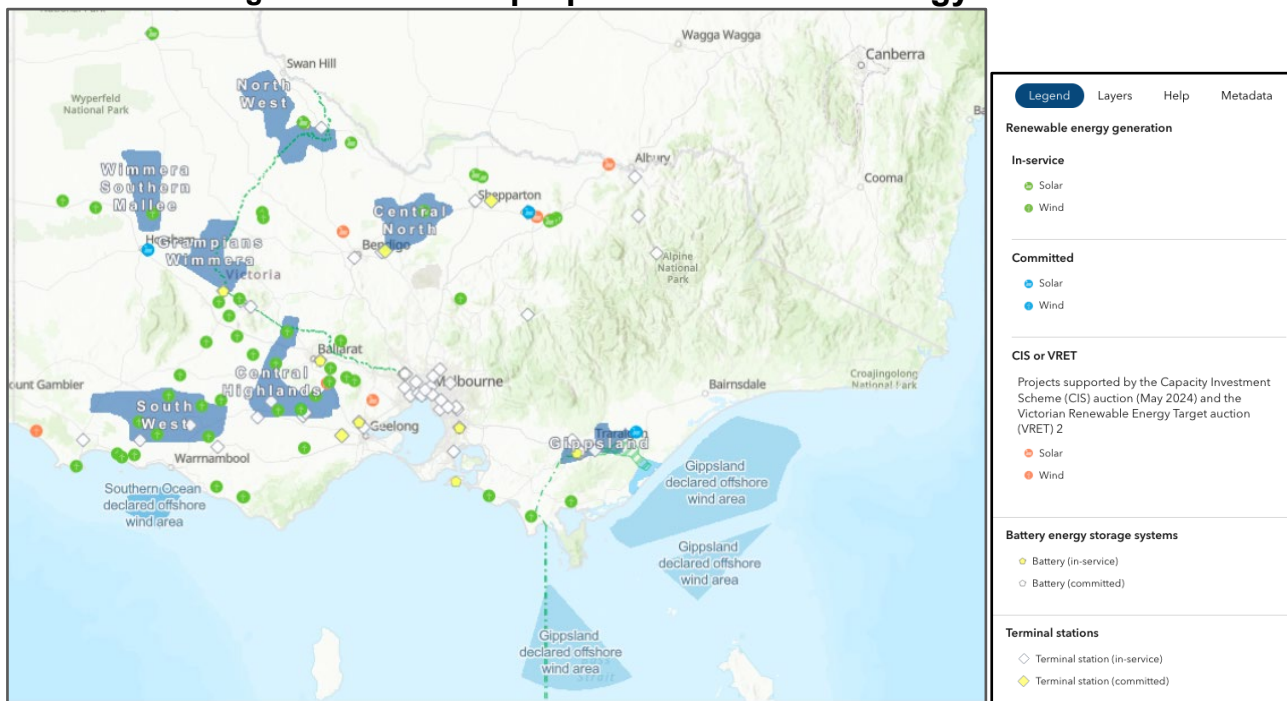
Source: Australian Government, [Infrastructure Australia](https://infrastructure.gov.au/energy/infrastructure/infrastructure-australia)

Figure 4: NZAu E+ 2060 scenario

Source: NET ZERO AUSTRALIA: NZAu [Final Results Summary, 19 April 2023](https://www.netzeroaustralia.gov.au/our-work/our-reports-and-publications)

- Even NetZero Australia has acknowledged that *“it has fallen short in terms of the comprehensive and systematic approach needed to effectively incorporate biodiversity conservation in its modelling”* Net Zero Australia, *Downscaling – Net-zero transitions, Australian communities, the land and sea*, 19 April 2023 report, page 24.
- As evident in Figure 5, renewable energy zones are still in draft form in many jurisdictions despite it being 2025. These zones are actually meaningless given the number of developments and proposals that sit outside the zones. An example of this is the Kentbruck Green Power Hub, which is wedged between RAMSAR listed wetlands and national parks in the southwest of Victoria and has already been successful in its tender under the Capacity Investment Scheme. The support of such an environmentally irresponsible project by the Federal Government is another example of why there is growing community outrage over the energy transition and distrust of the government decision-making processes.

Figure 5: Victorian proposed renewable energy zones



Source: VicGrid for the Victorian State Government,

<https://experience.arcgis.com/experience/d56187332fe34d3282cdb952684bfcdf/page/Renewable-energy-zones?views=Legend>

(b) Governments have failed to provide rigorous regulatory oversight of renewable energy developments. Protests and legal challenges stem from these failures.

Many renewable energy developments lack independent oversight. Proponents pay for assessments. There is a conflict of interest when the company assessing compliance with planning regulations and permits is reliant on the industry for future work. Not only is there evidence of poor quality assessments and the manipulation of findings in favour of the Proponent, it is clear that government authorities are failing in their duty to ensure assessments are rigorous and that projects are compliant with acts to protect biodiversity such as the EPBC Act.

Example 1: Biodiversity assessments

The EPBC Referral submitted by the Proponents for the Delburn Wind Farm, OSML, was supported by an incomplete assessment of Matters of National Environmental Significance. When DAWE (now DCCEEW) was advised that the assessment was a draft, that the surveys of listed species had not been completed let alone analysed at the time of writing and that the impacts on the environment were significantly understated compared to the final biodiversity assessment for the same wind farm design, the following written response was received:

- *“It is acceptable to include the best available information at the time of submission - this may include draft reports and incomplete studies.”*

The following are examples of the failings in the Biodiversity Assessment Final Report for the Delburn Wind Farm:

- Recent recorded sightings in the Victorian Biodiversity Atlas of the White-bellied Sea Eagle, a protected species under the EPBC Act, and the Powerful Owl, listed under the FFG Act, were omitted from the desktop survey.
- The wetland surveyed to the southeast of the wind farm site was actually a fish hatchery for exotic species such as goldfish.
- The Darlimurla Forest Block that neighbours the wind farm site was not surveyed despite being significant for its biodiversity. It was declared an Immediate Protection Area in 2019 by the state government. As stated in the *Future Use And Management Of Mirboo North And Strathbogie Ranges Immediate Protection Areas Recommendations Of Eminent Panel For Community Engagement* for the Victorian Government,
 - *“The Mirboo North IPA along with the adjoining Mirboo North Regional Park and Lyrebird Walk are significant forests. This includes for the threatened species supported by them” and “the forest is supporting higher than usual levels of species and that expanding protections throughout the region is critical to maintain and enhance biodiversity.”* page 6.

Example 2. Fire risk assessments

Broad acre farming regions with low populations have typically been the sites of wind farms. This is changing. Wind farms are now being sited in plantations with native forests intersecting and abutting the sites (e.g. Delburn Wind Farm, Kentbruck Green Power Hub, The Pines Wind Farm) or within native forests themselves (e.g. Kaban, Lotus Creek and Clarke Creek wind farms). These are high fire risk environments. Fires will be more difficult to manage with the turbines posing a hazard to pilots of fire-fighting aircraft.

As the findings in the study by Miller, L. and Keith, D. 2018, *Climatic impacts of wind power* show, wind farms can actually increase local temperatures. This, combined with the increase in sunlight and wind speed at ground level due to the clearing of forest for road and turbine construction, actually increases bushfire risk. These developments are only exacerbating an impact of climate change, which is an increase in the frequency and severity of bushfires.

Concerns about the increasing fire risk from wind farm developments is reflected in the recommendations of fire authorities such as the CFA.

- *“Renewable energy facilities are to be located in low-risk environments wherever possible, to reduce the risk of external fire impacting the facility and its consequences.”*
- *“Indicators of a lower risk environment where development should be directed, include:*
 - *Grassland.*
 - *No continuous other vegetation types within 1 - 20km of the project site.*
 - *Generally flat topography, some undulation may be present.*
 - *Slopes are less than 5 degrees.*
 - *Good road access with multiple routes available to and from the project site.*
 - *No Bushfire Management Overlay applies.”*

Source: CFA Specialist and Fire Safety Unit, 2023, *Design Guidelines and Model Requirements Renewable Energy Facilities v4*.

Clause 44.06 of the Victorian Planning Provisions, Bushfire Management Overlay, states its purpose is:

- *“To ensure that the development of land prioritises the protection of human life and strengthens community resilience to bushfire”.*

Clause 13.02-1S in the Victorian Planning Policy Framework states the objective of the policy is:

- *“To strengthen the resilience of settlements and communities to bushfire through risk-based planning that prioritises the protection of human life.”*

Strategies to achieve this objective include:

- *“Prioritising the protection of human life over all other policy considerations” and*
- *“Reducing the vulnerability of communities to bushfire through the consideration of bushfire risk in decision making at all stages of the planning process.”*

The approved Delburn Wind Farm is to be constructed in plantation forests on land owned by HVP, a multinational corporation. Land within 5 kms of the wind turbines includes the townships of Boolarra, Yinnar, Darlimurla, Driffield and Narracan. Land zoned residential and rural living exists within 3 km of the turbines. A Bushfire Management Overlay sits over the site.

The Delburn Fires of 2009 resulted in the loss of 44 homes. The final report from the Royal Commission into the Delburn Fires, Volume 1, Chapter 3, pages 40 to 49 includes a map and timeline of the fire. The origins of the fires were sites within and near the plantations. This project clearly increases bushfire risk for the surrounding population. The energy infrastructure itself is also at risk of being destroyed by fire. It should never have been approved.

The fire risk assessment by Fire Risk Consultants (FRC) was flawed. This was evident under questioning by a representative from the Victorian Country Fire Authority (CFA) at the Planning Panel hearing for the Delburn Wind Farm who identified, among other things, errors in BAL rating calculations for wind farm infrastructure.

As documented in the Planning Panels Victoria (2022), *Latrobe City, Baw Baw Shire and South Gippsland Shire Planning Permit Applications Delburn Wind Farm: Panel Report*, the CFA submission stated:

- *“damage and destruction of assets [wind farm] by bushfire is likely if the proposal proceeds”, page 117,*
- *“FRC had failed to deliver effective analysis for decisions on what is acceptable defensible space against bushfire for the Project’s structures. CFA said the FRC analysis had not addressed how much ember attack, radiant heat and flames will enter the defensible space. It submitted ember attack will attack the turbines no matter what. The CFA said a defensible space must be calculated correctly including variations in slope. It said it is not clear from the Applicant’s evidence what radiant heat the Project is designed for.” page 121.*

While the Panel Report stated *“The CFA submitted it did not object to the permit application on basis of impacts on aerial firefighting”* on the basis that the turbines are located at least 300 metres apart to support aerial firefighting, it did acknowledge that *“Pilots operate under Visual Flight Rules and where there is no smoke.”* page 124.

The Victorian Royal Commission report into the 2009 Delburn Fires stated:

- *“the Delburn fires were fought with a great deal of aerial support. Mr Owen told the Commission he ‘pretty well had his own air force’. On both 30 and 31 January a large number of the state’s firefighting aircraft were working on the Delburn fires...Mr Owen agreed that the plentiful supply of air resources greatly assisted in combating the fire.”* page 48.

Figure 6 is from the Fire Risk Consultants report for the Delburn Wind Farm. It shows aerial fire fighting around turbines in a broad acre farming region where vegetation and, therefore, fuel loads are low. This results in little smoke. Figure 7 is from the Victorian Royal Commission report into the 2009 Delburn Fires. It clearly shows the high smoke volumes that result from a forest fire. Fire-fighting capability will be compromised with turbines and met masts hidden in the smoke, thereby increasing the threat to people and property.

Figure 6. Evidence of Aerial Fire-fighting at Wind Farm in the Delburn Wind Farm Fire Risk Assessment.



Source: Fire Risk Consultants 2020, *Delburn Wind Farm: Bushfire Risk Assessment & Mitigation Plan*, page 37.

Figure 7. Delburn Fires, 2009

Source: Victorian Bushfires Royal Commission Final Report 2010, Volume 1, Chapter 3, page 47

Example 3. Noise Assessments

Marshall Day Acoustics is a private company regularly used by the Wind Energy Industry to produce noise assessments pre- and post- construction. This company was used as an example of a company that manipulates data to favour industry in the Senate Select Committee on Wind Turbines in its Final Report, 2015. The manipulation is discussed in Box 4.3 on page 45 of Chapter 4 with the example of the Cape Bridgewater noise compliance assessment. Tabled documents 11 to 14 also raise serious concerns about the practices of Marshall Day Acoustics and the accuracy and reliability of findings in noise assessments for Waubra Wind Farm.

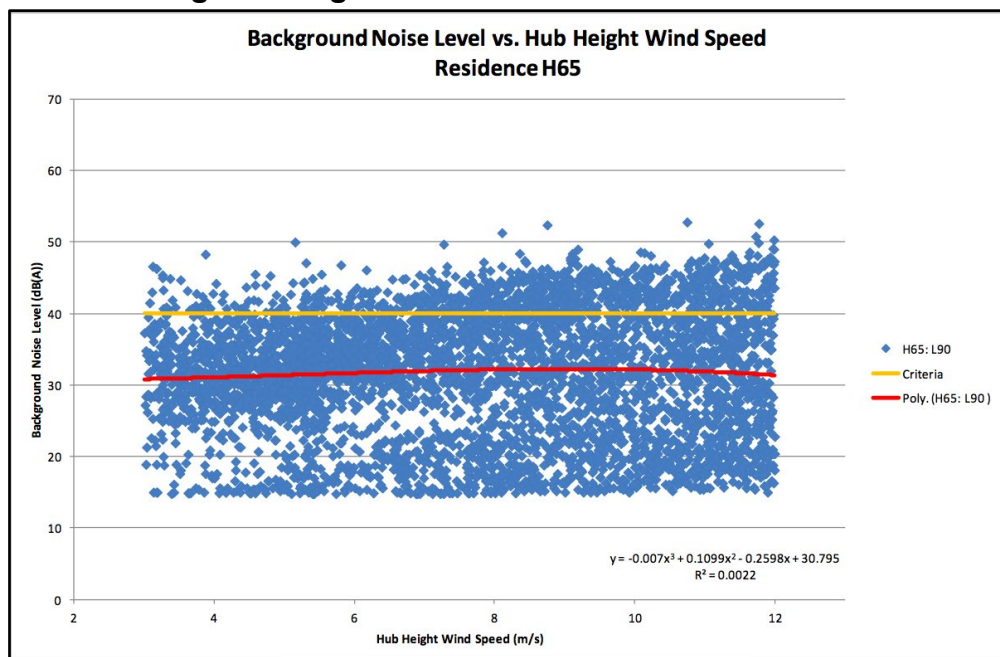
In 2021, the Supreme Court of Victoria published the judgment in the case of Noel Uren and John Zakula versus Bald Hills Wind Farm. As stated in the judgement, *“MDA reached the remarkable conclusion that the noise levels at both residences were lower overall than the background levels used for comparison.”* page 83, *“The findings MDA [Marshall Day Acoustics] expressed in both reports are obviously unsound, and do not demonstrate permit compliance at either property”*, page 85, and *“The noise assessments MDA conducted at both locations in 2015 and 2016 were plainly flawed”*, page 96. Unsurprisingly, the judge found that the Bald Hills Wind Farm had failed to comply with the noise conditions in the permit and determined the Plaintiffs were entitled to damages.

Accurate measurements of background noise levels prior to the construction of a wind farm wind is critical in assessing compliance with noise standards post construction. Any additional noise post-construction can be attributed to the wind farm. Section 7: Measurements of the Noise Standard for Victoria, NZS 6808:2010, states:

- *“If there is a poor correlation between wind speed and sound level, further investigation of wind conditions should be undertaken, possibly including wind-flow modelling, local knowledge, site observations or local wind monitoring.”*

The graph in Figure 8 is from an Environmental Noise Assessment by Sonus for Murra Warra Wind Farm in Victoria, Document S4453C13, May 2016, Appendix D, page 24. An R^2 value of 1 represents a perfect correlation between wind speed and noise levels. while an R^2 value of 0 represents no correlation. The R^2 value stated on the graph is 0.0022. No correlation between wind speed and noise has been established. The data is junk and the standard has not been properly applied. Therefore, this assessment offers no protection for the neighbour of the wind farm against noise pollution.

Figure 8. Correlation between Wind Speed and Background Noise for a neighbouring residence of the Murra Warra Wind Farm



The noise standard for Victoria, NZS 6808:2010, also states under Section 4: Land-Use Planning,

- Wind farm sound *“has the potential to affect nearby noise sensitive activities”*
- Wind farm sound may be the *“dominant sound heard at a noise sensitive location for a significant portion of the time while the wind farm is operating”*.

Therefore, the amenity of properties neighbouring wind farms can be significantly degraded.

(c) **Governments have actively weakened protections for people and the environment and tried to silence communities raising legitimate concerns. Confidence in the government to protect people and the environment from the impacts of industrial developments is lacking and social licence for the transition to renewable energy is being lost.**

- The Victorian Government has removed protection for people from the nuisance of noise emissions from wind farms from the Public Health and Wellbeing Act 2008.
- As evident in Environmental Protection Regulations 2021, S.R. No. 47/2021, the Victorian EPA Act has been weakened in support of the wind industry. As stated in Chapter 5 - Environmental Management, Part 5.3-Noise, Division 3 - Unreasonable and aggravated noise from commercial, industrial and trade premises, Section 117 - Noise sources that must not be taken into account in this Division:

*(1) In this Division, when the level of noise emitted from commercial, industrial and trade premises is assessed, the following sources of noise must **not** be taken into account -*

(c) noise from-

(xiv) wind turbines at wind energy facilities (used to generate electricity by wind force)

As evident in Chapter 6, Part 6.1, 164 (c), the Victorian EPA does not conduct independent tests to assess compliance with the Standard for noise emissions from wind farms. It only audits a wind farm to see if the testing has been done in accordance with the Standard, i.e. an assessment of the methodology, not the accuracy of the data. As can be seen in the example of Marshall Day Acoustics and Sonus above, the accuracy of the data cannot be trusted.

- The Victorian Government has also removed the right to challenge approvals for renewable energy projects through the Victorian Civil and Administrative Tribunal. Challenges can now only be made through the Supreme Court, which is prohibitively expensive for the average person or grassroots organisation. This action effectively silences many community voices and independent experts.
- The Victorian Government recently released their 2025 Handbook for Renewable Energy Development in Victoria, further lessening industry responsibility for the protection of biodiversity.

SECTION 3: THE LIE OF CLEAN, CHEAP ENERGY & NATIONAL CARBON ACCOUNTING.

Interim Report Title: “Investing in cheaper, cleaner energy..”.

The premise underpinning the report by the Productivity Commission is that renewable energy will be clean and cheap. This is false and undermines the legitimacy of the whole report.

(a) There is no such thing as clean power generation.

While the sources of wind and solar energy are clean, the infrastructure to capture, store and distribute is not. As stated in the UNECE 2022 report, *Carbon Neutrality in the UNECE Region: Integrated Life Cycle Assessment of Electricity Sources*, page 8:

- *“With no exception, every electricity generation technology generates environmental impacts over its life cycle; and these impacts may vary widely with the implementation site and other design choices. Proper energy policy should be informed by lifecycle assessments of all generation technologies and supporting infrastructure of the total energy system.”*

The assumption in this UNECE Report is that there would be no heavy modifications to the environment such as land clearing, land sealing or mountain top removal. This is simply not the case in Australia with intact forests being cleared and fragmented for renewable energy projects. The report also “*excludes load balancing systems such as storage elements and grid connections.*” (page 8) from its assessment of impacts. Therefore, the costs and environmental impacts of storage and the expansion of the transmission network are not taken into account. These impacts are considerable as demonstrated by the Hume Link and Snowy 2.0 projects.

Wind and solar power generation have very large land footprints. This is simply a question of physics. They are low-density energy sources. Large areas are required to capture this energy and convert it into electricity. As wind and solar power generation grows, so does the footprint and the risk of conflict with other land uses, particularly conservation and agriculture.

Wind and solar power generation, the expansion of the transmission network to connect increasingly dispersed generation and the storage infrastructure required to support variable renewable energy result in a very large mineral footprint. This is recognised in the 2022 report by the IEA, *The Role of Critical Minerals in Clean Energy Transitions* and the 2020 report by the World Bank, *Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition*. Both the IEA and World Bank reports acknowledge the social and environmental risks associated with the mining and processing of these minerals. The World Bank even calls for ‘climate smart mining’, a standard yet to be achieved in the mining sector, in recognition of the risk of greenhouse gas emissions.

The OECD also warns of the “upstream impacts” associated with clean energy technologies in its 2024 report, *Mainstreaming Biodiversity Into Renewable Power Infrastructure*. The report states:

- *“The spatial and ecological footprint of renewable power expansion extends beyond electricity generation, transmission and distribution infrastructure.”*
- *“Wind turbines, solar photovoltaics, batteries and other low- emission technologies are resource-intensive. An onshore wind plant, for example, requires nine times more mineral resources than a gas-fired power plant (IEA, 2021[31]).”*
- *“Mining (mineral extraction and processing) can impact biodiversity in multiple ways...Mining can also pollute air, land and water with gaseous waste (e.g. CO₂, SO₂, NO_x), particulate matter and solid wastes.”*
- *“Current mining activity ...potentially influences 50 million km² of land, which is 37% of global land area excluding Antarctica...Most current mining areas³ (82%) target materials required for renewable power production (Sonter et al., 2020[38]).”*
- *“Low-emission technologies are becoming the fastest growing segment of mineral demand (IEA, 2021[294]), which is itself projected to increase.”*
- *“...half of global metal ore extraction in 2019 took place at 20 km or less from protected areas, and 8% took place within protected areas (Luckeneder et al., 2021[304]).”*
- *“the past decade has seen a significant increase of mining in ecologically vulnerable regions and there is substantial debate around deep-sea mining.*

Many of the upstream impacts are experienced in other countries. These impacts are not accounted for in national carbon accounts. Until greenhouse gas emissions are accounted for along the supply chain and in the waste stream, greenhouse gas accounting is meaningless. The growth of mining in Australia is impacting productivity in other industries. For example, the approved Donald Mineral Sands Project in Victoria will negatively impact agricultural productivity.

(b) Renewable energy is not cheap.

The cost to the consumer and the taxpayer of this energy transition is significant. Many renewable energy projects are receiving additional financial support through various reward and underwriting schemes. Much of the revenue from the renewable energy sector is going offshore. There is a lack of transparency about the cost of the transition, especially for schemes such as the Capacity Investment Scheme.

There is also a lack of accountability. Is this the best use of limited resources such as time and money to combat climate change? Would there be better outcomes from investing in the protection and restoration of ecosystems, public transport, housing and urban design, research into energy technologies and improved energy efficiencies, improved agricultural practices to improve carbon sequestration in soils and other energy technologies such as nuclear energy?

An example of a rewards scheme is the awarding of large scale generation certificates to renewable energy generators under the Renewable Energy Target scheme. An analysis of Hepburn Wind Farm’s annual

reports from 2012/13 to 2019/20 (i.e. pre-COVID and the war in Ukraine) highlights the benefits of this scheme to the renewable energy industry and the cost to the consumer:

- **Average cost of production (operation expenses and depreciation): \$86.62 per MWh**
- **Average revenue from electricity sales: \$62.81 per MWh**
- **Average revenue from Large Scale Generation Certificate sales: \$52.10 per MWh.**

In addition to the subsidies Hepburn Wind Farm received through the sale of government awarded certificates, nearly \$2 million had been awarded to Hepburn Wind Farm up to 2019/20 through various state government grants. Of note, Simon Holmes à Court often refers to Hepburn Wind Farm as a success story. Citing just the wholesale price of electricity is disingenuous given it is just one component of the energy bill. The cost of rewards schemes are reflected in the Environmental component of a power bill while the costs of expanding the grid and storage are reflected in the Network component. Government grants are an additional cost outside of the electricity bill.

The costs of various government schemes to incentivise investment in renewable energy and the cost of expanding the grid to connect new, dispersed renewable energy generation and to store energy are being borne by the consumer and taxpayer. The money given back to the community as part of any 'community benefits scheme' is really consumer and taxpayer money diverted via the industry back into the community in an attempt to gain social licence. The amount of money returned to the community as 'benefits' is a fraction of the money that is retained by industry.

Economists have consistently stated that penalty schemes for greenhouse gas pollution (e.g. carbon tax) are far more effective than reward schemes. They are technologically agnostic and drive innovation in order to drive down costs. Penalty schemes promote the protection of biodiversity and the rehabilitation of ecosystems due to their capacity to sequester carbon as well as provide essential environmental services.

CONCLUSION

The report by the Productivity Commission is based on a false premise that renewable energy is cheap and clean. Consequently, it is recommending that environmental regulations be weakened to fast track renewable energy developments. The Productivity Commission has failed to consider the important role biodiversity and healthy ecosystems play in climate change mitigation and adaptation and the economic value of ecosystem services. It has failed to consider the impact of the transition on the productivity of other sectors of the economy. The conflict over the energy transition is a consequence of poor planning and poor governance. There is good reason for members of the community to distrust the decision making processes of the government around the energy transition as little regard for the impacts on communities and the environment has been demonstrated.