Submission No 7

INQUIRY INTO IMPACT OF RENEWABLE ENERGY ZONES (REZ) ON RURAL AND REGIONAL COMMUNITIES AND INDUSTRIES IN NEW SOUTH WALES

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Legislative Council Inquiry into the Impact of Renewable Energy Zones (REZ's) on Rural and Regional Communities and Industries in New South Wales (NSW)

Submission by:
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12 October 2024

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The Committee Chair

Hon Mark Banasiak MLC

Dear Sir and Committee,

RE: Enquiry into the Impact of REZ's on Rural and Regional Communities and Industries in NSW

Introduction

In response to the Upper House committee for the regional New South Wales inquiry into the impact of Renewable Energy Zones (REZ's) on rural and regional communities and industries in New South Wales, I as a New England grazier offer the following compilation in defense of the rural landscape, the social fabric of rural Australians and the natural environment.

The Great Dividing Range and Western Slopes are Australia's most productive, biodiverse, and substantial topographic features. They have served as a dependable food bowl and producer of plantation timber to the Australian economy for centuries. These commercial activities, essential to the Nations prosperity, cannot continue to be viable without fossil fuels as the driving energy source well into the foreseeable future.

The Range's National Parks and reserves that encapsulate the greatest biodiverse forests in Australia, which apart from being home to critically important ecosystems, also provide enjoyment to thousands of people including many tourists seeking relief from the built environment.

The dryland cropping/grazing and irrigated horticultural farming lands in the highly productive Riverina region of NSW complements The Great Dividing Range and is another vitally important resource. Reticulation of water from the Murrumbidgee River by a maze of irrigation channels is key to this region providing one-quarter of all fruit and vegetables products in NSW. The Riverina is an extremely environmentally sensitive region and a vitally important food bowl for NSW and export markets, that has coexisted with mother nature for generations.

But the obsession by the current governments in offering up these rich, biodiverse regions to wind and solar farm proponents on which to build thousands of enormous new generation turbines, millions of solar panels, thousands of mega-batteries, and tens of thousands of kilometers of interconnecting high voltage power lines; potentially transforming the landscape into an industrial wasteland. The turbines and solar panels will render thousands of acres of fertile agricultural land sterile. The new transmission grid will cut a swathe thousands of kilometer's long through magnificent forests and prime farms, rendering the land to that of a worthless moonscape.

As this poorly planned travesty unfolds, it is becoming increasingly evident that it can bring only human misery to bear on our rural communities and the willful destruction of the natural landscape, and in so doing will threaten the nation's food, energy, and ultimately sovereign security.

Sadly, I feel the renewable energy rollout has the potential to develop into an uncompromising divide between City *vs* Country – and possibly **'***the great divide'* of this Nation could be in our midst. I am in no doubt that this reckless rollout will be unequivocally denied by the will of ordinary country folk of this nation to the very end.

Advanced economies – including most of Europe, much of the United States, Canada, Australia, New Zealand, and others – have embarked upon an impossible mission to decarbonize their economies and achieve *net zero* emissions of carbon dioxide ($C0_2$) and other greenhouse gases by 2050. The *net zero* plan turns almost entirely on building large numbers of wind turbines and solar panels to replace reliable and affordable generation facilities that use fossil fuels (*coal, oil, and natural gas*) to produce electricity. The idea is that, as enough wind turbines and solar panels are built, the former coal, oil, and gas-burning power stations can gradually be retired, leaving an emissions-free electricity system. That idea might be credible if one was to ignore the carbon emissions already embedded in the renewable energy infrastructure and the backup problems associated with energy storage e.g., Snowy 2.0, that will be required to deliver reliable electricity twenty-four seven.

Community Consultation

Despite all the hype and spin from the previous NSW government, there was zero consultation prior to the announcement of the NE REZ, which concept has never secured '*social licence'* with the communities of the New England.

The badly planned and potentially ruthless rollout of wind, solar and high voltage interconnectors across our rural landscape is only made possible by absentee tenants hosting renewable energy developments. They are large corporations and Industry Superannuation Funds from the *'big end of town'*, lured by government guaranteed returns and the hubris of their CEO's. These absentee landholders sit in boardrooms without any duty of care for the anguish and human misery they are bringing about on rural people.

Rural Australians feel oppressed, we feel neglected, and we feel helpless in stopping this runaway renewable juggernaut that is destroying our landscape and livelihoods. Anxiety, stress, and uncertainty is tearing the bush apart.

Most of the general population don't have a clue about the real-life turmoil unfolding in rural Australia, and the people sitting in board rooms don't give a damn about the people in the bush, but we are the ones bearing the brunt of this grand fraud, that we don't want a bar of.

So called '*Community Engagement Forums'* have been convened by government agencies and proponents, as an opportunity to simply tell us what they intend doing to us and our landscape. Seldom has any dialogue resembled meaningful consultation. Whatever issues we raise have been ignored, leaving us in a constant state of flux, without any tangible plan having been tabled going forward to the proposed construction phase of these developments.

A period of a decade or more will see an influx of thousands of itinerant workers descend on localities, villages, towns, and inland cities - driving many residents and businesses out, their places to be filled by carpetbaggers, who come for short term gain. There will also be massive disruption to our transport routes causing chaos and further stress. Once the wind and solar farms are completed, the interlopers will leave, and we will be left with yet another ghost-like village or town in our landscape.

Then the operational phase will come for a further twenty years to endure - watching thousands of these monsters, the size of city skyscrapers, pumping out harmful levels of noise, infrasound, BPA and shadow flicker. These are the things that literally drive people mad and cause them to get sick, so sick that many abandon their acoustically toxic homes, and flee.

When the wind and solar farms have reached their use by date, we are told they will be decommissioned. But will they be decommissioned, or will they be left as stranded assets surrounding guttered communities now without soul and set in a landscape resembling an industrial graveyard. Or will the government just compulsory acquire more land at substantially reduced valuations (*on average forty per cent*), and stealthily restart the cycle. There is growing sentiment in the bush that when governments don't consult, and stop serving their people, they no longer have any legitimacy to govern.

Embedded Carbon - $C0_2$

Embedded carbon is the CO_2 emissions created in manufacturing and the transport to a job site and the construction practices used to assemble, erect, and dispose of structures.

Put simply, embedded carbon is the *carbon footprint* of an infrastructure project before it becomes operational. It also refers to the CO_2 produced in maintaining the infrastructure and eventually decommissioning it, transporting the waste to landfill, or recycling it.

So, it is important to account for the embedded CO_2 emissions resulting from the manufacture, deployment, construction, and disposal of all the wind turbine towers, blades, solar panels, mega – batteries, roads, transmission towers and transmission lines. There is no disputing the fact that the total amount of electricity that will ever be generated by industrial wind turbines and PV solar panels will never in their short lifespan compensate for the embedded CO_2 emissions resulting from the manufacture, deployment, construction, and disposal of all that massive infrastructure.

It simply doesn't stack up economically (*without subsidies*) nor environmentally.

Energy Storage

Wind and solar facilities provide only intermittent power, which must be fully backed up by something – fossil fuel generators, nuclear plants, batteries, or some other form of energy storage – so that customer demand can be matched at times of low wind and sun, thus keeping the grid from failing. The Federal government has mostly or entirely ruled out fossil fuels and nuclear as the backup, leaving some other form of storage as the main or only remaining option. They have then simply assumed that storage in some form will

become available. The consideration of how much storage will be needed, how it will work, and how much it will cost has been entirely inadequate.

Energy storage to back up a predominantly wind and solar generation system to achieve net zero is an enormous problem, and very likely an unsolvable one. At this time, there is no proven and costed energy storage solution that can take a wind and solar electricity generation system all the way to net zero emissions, or anything close to it. Governments are simply setting forth blindly, without any real idea of how or whether the system they mandate might ultimately work or how much it will cost. The truth is that, barring some sort of miracle, there is no possibility that any suitable storage technology will be feasible, let alone at an affordable cost, in any timeframe relevant to the announced plans of the politicians, if ever.

Baseload and Peaking Power

To understand why wind or solar power, even with battery backup, will not be sufficient to supply the electric power needs of any modern industrial economy, one must first understand how an electric power system works.

A large-scale power grid consists of two segments. Baseload power and peaking power:

Baseload power is the minimum amount of energy required for normal daily operations. Coal and hydro have satisfied our Nations baseload for the past century because they operate full time. It is interesting to note that wind turbines require baseload electricity to start up, before the blades gather sufficient momentum to turn by the force of the wind.

Peaking power is the additional power that is needed when the system is forced with unusual amounts of demand. Natural gas has served to provide peaking power because it can be cycled on and off quickly, as needed.

Neither wind nor solar can be relied upon for either baseload or peaking power necessary to drive industry**,** wind turbines generate power only when

the wind blows between certain speeds, and the power they generate fluctuates constantly as wind gusts vary. Solar provides no power at night, and only reduced power on cloudy days, during storms, or when dirty. Battery backup, the power source that is supposed to fill the gaps when wind and solar are not producing electricity or are producing less than what is in demand, will not exist in the needed capacities for decades to come, if ever. There simply aren't enough batteries, not enough being built and not enough of the raw materials needed to build them being mined and refined.

These realities, mean every megawatt of wind and solar added to the electric grid requires a megawatt of backup from traditional sources to run constantly at less-than-peak levels as spinning reserve, to regulate the flow of fluctuating power delivered to the grid from turbines and solar panels when they are operating and to take up the slack during periods when either or both sources of weather-dependent power are not operating.

High Voltage Transmission

Because wind and solar renewable energy generation is widely acknowledged as being inherently weather dependent, there is a belief by the Australian Energy Market Operator (AEMO) that this intermittency of power supply can be averaged out by regional interconnectors, which it hopes will improve reliability through geographic diversity. If one region is experiencing a wind or sun drought, then AEMO hopes other regions won't be and will generate enough surplus power to supply the ones that are short.

Nation building is not built on the hope that something might work, but on proof that it will work, long before committing hard funding. There is no proof whatsoever that a massive overbuild in high voltage transmission will solve the basic flaw of wind and solar generated electricity, that is it is weather dependent. Power lines are more susceptible to faults and blowing over during severe weather conditions, and the longer the high voltage grid stretches across our continent, the greater the likelihood there will be of

interruptions to supply resulting in blackouts. More power lines will only compound and further exacerbate the underlying problem of renewable energy, and that is it is totally dependent on idyllic wind and sunlight.

Analytical economic social and environmental studies together with indisputable modelling need to be carried out by independent experts *(at arm's length from the CSIRO)* before any more money is wasted on excess high voltage transmission, transmission that will only encourage an imprudent overbuild in wind and solar farms. Further expansion (*completely unnecessary if the nuclear option of generating baseload power is implemented alongside existing or brownfield coal-fired power station sites*) of the grid will only cause more harm to the rural landscape and natural environment and render valuable farmland next to worthless.

A consequential reduction in farm values *(on average forty per cent*) should be an obvious and tangible negative cost of the devil's thread of renewable energy. It is unacceptable just to pay landowners compensation for easements, when the erosion of property values is realized by all neighbouring properties that are in view of the transmission lines. This negative cost to the broader community needs to be the subject of far greater research and an independent inquiry.

Footprint

Notwithstanding these realities, the government intends to shut down all baseload and peaking power sources as fast as it can, and then to meet net-zero electric power needs, wind turbines and solar panels will need to carpet a disproportionally high percentage of Australia's land mass that is likely to consume one-third of all prime agricultural land.

Using data supplied by the International Energy Agency (IEA), and the International Monetary Fund (IMF), the Institute of Public Affairs (IPA) has recently forecast in a report titled "Analysis of Land Use by Variable Renewable Energy Production by 2050" – produced December 2023, that

energy demand in Australia, and that of our trading partners, will grow by 4.25 per cent per annum to 2050. Therefore, the amount of energy that is currently produced by coal, gas, and oil is estimated to increase to 15,459 terawatt hours by 2050. To replace this with wind and solar generation will require between 57 million hectares and 181 million hectares of Australian land (*depending on production mix)*, in addition to the land that is currently used to generate energy from wind and solar today. The land required for a 50/50 (*a conservative estimate that falls well short of the target of net-zero*) mix of wind and solar to replace energy generated by coal, gas, and oil to meet the forecast demand is estimated at 119 million hectares, equivalent to 15 per cent of Australia's landmass and approximately one-third of Australia's agricultural land, or an area larger than the size of South Australia.

In comparison, despite producing massive amounts of electricity, a typical 1,000 megawatt (MW) nuclear facility needs no more than 2.5 square kilometers of land to operate, and no more new high voltage power lines. Wind farms require 360 times more land area to produce the same amount of electricity, and solar farms require 75 times more space. To put that in perspective, you would need more than 3 million solar panels or more than 400 (*6MW plated = 2MW generating capacity)* wind turbines to produce the same amount of power as a typical commercial 1,000MW nuclear reactor.

Believing that industrial wind and solar farms are destined to improve the environment, and our well-being requires a high level of cognitive dissonance. It demands that one ignores the wholesale destruction of the environment and the loss of extremely limited productive agricultural land (***it is important to note that only 4% of Australia is arable*)** needed to place 3,800 wind turbines, 64 million solar panels and string together 28,000 kilometers of high voltage transmission lines, if we are to reach the ambitious target of eighty-two per cent renewables by 2030.

Mining

Today, the material intensity of industrial solar and wind farms and EVs is still of minimal consequence because those technologies account for only a few percentage points of the global energy system. But the material demands will become hard to ignore if the world's economies all simultaneously pursue similarly ambitious policies to displace the fossil fuels that currently supply over eighty per cent of all energy. Prompting a global "gold rush" for unprecedented exploration of energy materials that will take miners into every corner of Earth, mostly in remote wilderness areas that have previously maintained high biodiversity because they haven't (yet) been disturbed.

An energy system powered by clean energy technologies differs profoundly from one fueled by traditional hydrocarbon resources. Building solar photovoltaic (PV) plants, wind farms and electric vehicles (EVs) generally require more minerals than their fossil fuel- based counterparts. A typical electric car requires six times the mineral inputs of a conventional car needing 200,00 tons of raw materials to be extracted to make one EV car battery. An onshore wind farm (*non-dispatchable energy*) requires nine times and an offshore plant thirteen times more mineral resources than a gas-fired power plant (*dispatchable energy*), which additional mineral resources require an immense mining footprint, on average requiring a ten-fold increase in the quantities of materials extracted to produce the same amount of energy.

Supply and investment plans for many critical minerals fall well short of what is needed to support an accelerated deployment of solar panels, wind turbines and electric vehicles. Many minerals come from a small number of producers. For example, in the case of lithium, cobalt and rare earth elements, the world's top three producers control well over three-quarters of global output. China is the largest producer of metals used in solar PV and wind technologies, with the largest share of production for aluminum, cadmium, gallium, indium, rare earths, selenium and tellurium. In addition, China also has a large influence over the market for cobalt and lithium for batteries. While Australia is the largest producer of lithium, the majority of this is shipped to China for

processing. The largest lithium mine, Greenbushes in Western Australia, is majority owned by a Chinese company. Similarly, while the Democratic Republic of Congo mines more than half of the world's cobalt. This high geographical concentration, the long lead time to bring new mineral production on stream, the declining resource quantity and quality in some areas, and many environmental and social impacts; and moreover, geopolitical consequences, all raise concerns around reliable and sustainable supplies of minerals to support the energy transition.

To meet present targets, mineral demand for clean energy technologies almost triples by 2030 and quadruples by 2040. Given this trajectory, the development of diverse, resilient and sustainable clean energy supply chains for critical minerals is an essential task and scaling up solar, wind, and batteries also means significantly scaling up the mining of the refined minerals they require. There is a dreadful environmental impact associated with the sheer tonnage of earth that must be moved and processed to produce these refined minerals. To produce one ton of purified elements, a far greater quantity of ore must be extracted and processed. Copper ores, for example, typically contain only about 0.5% by weight of the element itself: roughly 200 tons of ore are dug up, moved, crushed, and refined to produce 1 ton of copper. The rare earth neodymium Nd), which is used to make magnets that orientate wind turbines into the wind, requires mining 160 tons of ore. To obtain 1 ton of Cobalt (used in most batteries) occurs at a grade typically lower than 1 ton of the element per 1,500 tons of ore. Batteries also require lithium, whose mining needs 2 metric tons of water for every 1 kilogram (kg) of extracted metal. To put things into perspective, each typical car battery requires about 10 kg of lithium, which means that 20 metric tons of water are needed for each battery.

The calculus of the upstream environmental footprint should also include the massive overburden, the necessary removal of even more tons of rocks and dirt to access a single ton of the buried mineral-bearing ore.

The pollution resulting from rare-earth mining has created soil incapable of supporting crops and water supplies have been contaminated. Chinese officials have attempted to counteract these threats by shutting down many mines, especially the smaller and the illegal ones, but there are still severe, large-scale threats that remain unresolved. From north near the Mongolian border to south in Guangdong, China is struggling to clean-up the environment polluted by mining and some claim they are making things worse. The clean-up process is expensive and time-consuming, and some say it could be 50-100 years for the environment to recover.

The humanitarian repression involved in mining and processing the minerals and suite of rare earths for the manufacture of turbines, solar panels and mega-batteries is another major issue that governments worldwide continue to sweep under the carpet in the interest of 'The greater good'.

I refer to a report documenting the hazardous conditions in which artisanal miners, including thousands of children, mine cobalt in the Democratic Republic of Congo. Using basic hand tools, miners dig out rocks from tunnels deep underground, and accidents are common. Often illegal immigrants are preferred over national citizens as miners because there are no records of their employment and no recourse on the mining company when accidents happen. Despite the potentially fatal health effects of prolonged exposure to cobalt, adult and child miners work without even the most basic protective equipment. The report is the first comprehensive account of how cobalt enters the supply chain of many of the world's leading brands. *(DEMOCRATIC REPUBLIC OF CONGO: "THIS IS WHAT WE DIE FOR": HUMAN RIGHTS ABUSES IN THE DEMOCRATIC REPUBLIC OF THE CONGO POWER THE GLOBAL TRADE IN COBALT - Amnesty International Report - 19 January 2016)*

The material realities associated with solar, wind, and storage technologies do not obviate an expanded, or even a substantial, role for these energy systems. However, believing that such technologies make possible a rapid and wholesale replacement of fossil fuels ignores the underlying physics, engineering, and economics of a renewable transition. Even more troublesome, putting so much effort and money into these technologies will

lead the world down a path, because of embedded carbon in the infrastructures, that won't meet targets to reduce carbon dioxide emissions in any case. But will only cause massive collateral damage to economies, farmers livelihoods, seed human repression, and destroy the rural landscape and natural environment.

Terrestrial Biodiversity

The wholesale slaughter of millions of birds and bats; including rare and protected raptors which have a *'certain classification'* risk of collision with turbine blades, like our iconic Wedge-tailed Eagle being smashed to smithereens year in year out by wind turbine blades, until their extinction needs to be recognised by all those aspiring to be conservationists. Raptor densities are often higher along ridgelines; however, this is also the preferred location for turbines – right in the path of these birds that rely on updrafts to get airborne. ***'This is the perfect storm'***. Proper surveys carried out by independent world-renowned ecologists in Southern California (*Wiegand 2012*) and Tasmania (*Debus 2022*) have now confirmed a raptor habitat population sink of approximately 80% since wind farms began operation.

Apart from the salient impacts of bird strike, there are the less obvious consequences to terrestrial fauna, like our iconic Koala, from clearing of habitat and the reduction in connectivity between patches of remnant woodland used for feeding, resting, commuting and dispersing during extreme events. Another critical concern is the phenomenon of ground heating. Wind turbines alter local atmospheric conditions by disrupting natural wind patterns, leading to localized warming and drying out of the ground, commonly referred to as the '*heat island effect'*. This effect not only has an immediate impact on koalas and other vulnerable wildlife, but finally leads to tree dieback resulting in relocation of fauna populations to less desirable habitat. And then there is the '*noise annoyance'* repercussions to consider. Research *(Martin 2024*) in Far North Queensland by wildlife biologist Roger Martin has found that infrasound & low frequency noise (ILFN) generated from

wind turbines can cause Koalas to abandon high quality habitat, and it masks long range contact calls, thereby decreasing their breeding success.

In a recent NSW Independent Planning Commission Hearing (Thunderbolt Wind Farm, SSD – 10807896), the applicant developer with the support of the Department of Planning, Housing and Infrastructure (DPHI) said this about an endangered species of turtle endemic to the New England Region: "the Bells Turtle *requires waterholes at least 1.5m deep to persist. Based on the biodiversity surveys undertaken across the Development Corridor, including aquatic habitat assessments, none of the creek lines or drainage lines present support the deep waterholes required for Bell's Turtle ".* But there are often much more to ephemeral streams than what appears on the surface where below lies a myriad of biodiversity, and in support of this statement, I refer to the following excerpt from DCCEEW (2023): *"The western saw-shelled turtle (M. bellii) lives in habitat that often forms deep pools (~2m deep) characterized by granite boulders and bedrock, separated by either riffles or dry beds (Chessman 2015; Fielder et al. 2015). The aquatic habitat is complex with underwater caverns, aquatic macrophytes and course granite sand substrate (Fielder et al. 2014)".* It is significant that Fielder refers to *"underwater caverns*" habitat that supports Bell's Turtle, an observation that had been reportedly overlooked by the applicant developer's biodiversity consultants and the DPHI. The point is that woodlands and ephemeral streams on grazing lands may not appear to be habitat to a lot of biodiversity, but often these areas are home to a plethora of hidden fauna and flora, which is too often overlooked by consultants in their haste to satisfy the wanton desires of renewable energy proponents.

No amount of '*biodiversity offsets credits'* will ever bring these native animals back to life or replace their breeding habitat with '*like for like'*. This incongruous scheme (*Biodiversity Offsets Scheme*), which allows wanton damage in one location to be offset by investment in biodiversity elsewhere, is seriously flawed and morally bankrupt in many aspects and is in urgent need of review, particularly with respect to wind farms proposed on lands with remnant woodlands adjacent to National Parks and Reserves. These

woodlands serve as connectivity corridors for wildlife to freely commute in and out of the Parks and provide refuge in times of bushfire events, common in Australia. Eighty five percent of many National Parks were burnt out in the 2019/20 Black Summer bushfire event, but fortunately most of the adjacent woodlands on freehold lands were saved and so were many wildlife, that have since repopulated and migrated back to the Parks. The woodlands are just as important, if not more important, as the Parks themselves in serving as sanctuaries and breeding habitat for wildlife. Expansive wind farm footprints however are severely compromising the Parks and adjacent Woodland Connectivity Corridors primary purpose, i.e., to provide sanctuary and breeding habitat for flora and fauna during and post bushfire events.

There are over 90 Parks and Reserves with adjacent woodland habitat on The Great Dividing Range, many of which are or will be severely impacted by wind farm and solar farm developments and, all are home to protected and endangered species of flora and fauna. The importance of these areas is demonstrated by the many plants and animals that are listed on both the NSW BC Act and the Federal Environmental Protection and Biodiversity Conservation Act (EPBC Act) e.g., iconic Koala *(endangered*), Little Eagle (*endangered*), Brown Falcon (*vulnerable*), Glossy Black Cockatoo (*endangered*), Southern Greater Glider (*endangered***),** iconic Wedge-tailed Eagle (*protected*), Spotted-tailed Quoll (endangered), Brush-tailed Rock-wallaby (*endangered*), Echidna (endangered)and Bells Turtle (*endangered*) to name but a few. And countless varieties of rare vegetation including *hollow bearing* trees that predate European Colonisation of this country, that will be sacrificed in the aim of reaching net zero.

Why is it that these protected areas, some containing UNESCO World Heritage listed Gondwana Rainforest, are no longer protected once a renewable energy developer applies to government to build a wind or solar farm. Why is the *'rule book'* suddenly tossed out the window, completely ignoring all existing constraints contained by law in the Federal EPBC Act 1999, and then the door left wide open for mainly foreign owned conglomerates and foreign financial institutions, including some having

undisclosed geopolitical conflicts of interest to walk in and irreparably destroy our environment and take home the lucrative subsidies.

It is an outrageous contradiction in terms, to continue to approve ***'killing fields'*** on, and adjacent to wildlife sanctuaries and breeding grounds.

What passes for environmentalism these days has absolutely nothing to do with the conservation of our natural and rural landscapes – this obsession with wind and solar farms is now unleashing ecocide and actively vandalising the environment. The irony is that the acute threat to Australia's biodiversity comes not from the slow warming of the planet, supposedly by CO_2 the gas essential in the biological process of photosynthesis and hence the planets panacea for life, but from the reckless deployment of wind turbines and solar panels in our most beautiful and fragile ecosystems on The Great Dividing Range, Western Slopes and Riverina Plains.

Marine Biodiversity

The expansion of offshore wind farms poses significant risks to marine biodiversity. Offshore wind turbine survey and construction impacts on whales and dolphins is now universally understood. In New Jersey USA, where seismic exploration for offshore turbines is underway, between 5 December 2022 and 16 June 23, fifty-three cetacean (*whale and dolphin*) deaths have occurred. Prevention is better than cure. World renowned environmentalist and author Michael Shellenberger's investigation of whale deaths on the east coast of the USA exposed: "*The dozens of ships surveying the waters off New England and New Jersey in preparation for wind farm construction, blasting the sea floor with sounds as loud as high-powered weapons, 24 hours a day*".

Here in Australia the Federal EPBC Act Policy Statement 2.1 – Interaction between offshore seismic exploration and whales

Australian Government Department of the Environment, Water, Heritage and the Arts September 2008, extract states: *"The effects of human-made sound*

in the marine environment are a concern for marine life. This is particularly true for cetaceans (whales and dolphins), which may be sensitive to certain sound levels. The impact of human-made sounds may potentially result in physical and/or behavioral changes for these animals. The impacts of seismic surveying on whales are not fully understood. Accordingly, precautionary mitigation measures aimed at preventing physical damage and minimising detrimental behavioral changes and significant impacts should be applied to ensure protection for whales."

The east coast of Australia is named the "*Humpback Highway*" because over 40,000 whales migrate north each year to calve in the warm waters of Queensland and then return to Antarctica with their calf beside them.

It is well documented that whales and dolphins are extremely sensitive to audible and inaudible noise (*by means of infrasound whales communicate with one another across entire oceans*) and the unbearable noise generated by seismic sounding and drilling disorients the mother from its calf, causing them into a panic state leading to loss of communication, navigation and finally their death.

Under the terms of the Australian Federal Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), offshore oil and gas exploration, and drilling is banned in waters that cetaceans frequent. There is no reason why this same standard of the '*precautionary principle'* should not apply to offshore wind farms to ensure there is no possibility of harm coming to these gentle giants of the deep.

Seabirds, which rely on coastal and marine habitats for nesting and feeding, are also at peril from offshore wind farms. The construction of turbines in migratory paths leads to abnormally higher mortality rates resulting from a '*certain classification'* due to fatal collisions with turbine blades. Additionally, the presence of wind farms disrupts feeding grounds, forcing seabirds to travel greater distances to find food, which reduces breeding success and significantly increases the risk of population declines (*Environmental Science & Technology, 2023)*.

No other Australian industry is allowed to operate with such impunity. It is time to end this blatant bias and exemptions for the wind industry, which industry must be held to the same standards, laws and regulations that apply to the offshore oil and gas industries, and other marine industries.

Federal and State governments approval of these developments, despite the obvious and acknowledged environmental impacts, raises serious questions as to their commitment to protecting Australia's natural heritage. Approval of offshore wind farms is clearly in breach of the objectives of the National Strategy for Ecological Sustainable Development (ESD) guidelines as outlined in the Australian Federal EPBC Act Section 3A part b): "*If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation (the 'precautionary principal')".* And so, by adopting the ESD '*precautionary principal'*, the surveying and construction of all offshore wind developments should be banned off the Australian coastline to ensure there is no possibility of harm to cetaceans, seabirds, or other marine species.

Infrasound and Low Frequency Noise (ILFN)

Wind turbines not only generate electricity but also noise *annoyance* and *silent* infrasound.

Infrasound (inaudible sound <20Hz) and low frequency noise (inaudible sound <160Hz) are common phenomena and occur where large masses are in motion. This happens in nature with wind, storms, earthquakes and ocean waves for instance, and many animals including elephants, whales, koalas and reptiles use infrasound to communicate on their own private channels over vast distances. Whales communicate with one another across entire oceans.

As previously mentioned, wildlife biologist, Roger Martin, has found that ILFN generated from wind turbines can cause koalas to abandon high

quality habitat and it masks long range contact calls, therefore decreasing their breeding success.

Place-bound animals such as horses, cattle, sheep, dogs, and pets on properties near wind farms have also shown changes in behaviour, including signs of stress, conception difficulties and adverse neonatal outcomes. On a property near a wind farm development in Goderich, Ontario, Canada, farmers observed health problems with their livestock which began shortly after the turbines were commissioned. The cattle were reported to exhibit unusually aggressive and erratic behaviour, "*including cows kicking their newborn calves, prolapse birthing, weight loss, a high incidence of mastitis, calves being deformed at birth, and a high incidence of stillbirth*". It is therefore important to note that ILFN symptoms observed in farm animals and native fauna **cannot** be attributed to a "*nocebo effect",* one that is supposedly perceived by humans – as government authorities and their mendacious consultants would have us believe.

An expert on ILFN, Bruce Rapley PhD, explains in his latest book '*Conversations for a Small Planet - Volume 3: Biological Consequences of Low-Frequency Sound'*, the origins of infrasound:

In the early 1960s, a Russian born French scientist by the name of Vladimir Gavreau started investigating why people felt ill in certain buildings, commonly referred to as '*sick building syndrome'*. He concluded that it was infrasound, which was to become a consuming interest for the remainder of his life. What he had discovered was that low-frequency sound, often because of internal structural resonance, was a widespread phenomenon. So really, he had stumbled onto what has become a common problem, frequently because of heating, venting and air-conditioning systems - HVAC.

Gavreau reasoned that if low-frequency sound could adversely affect people, perhaps there was a potential military application for it as a weapon. Thereafter followed much research and speculation, fuelled by a hungry media. And so it was that much misinformation was published, and after his death, much disinformation. But indeed, a real infrasound weapon in the form of a low-frequency sound generator was developed by the

British military, and it was suspended underneath a helicopter which was then flown over a rioting crowd in Northern Ireland, during the time of '*The Troubles'*. When it was switched on, immediately about one-third of the crowd collapsed with epileptiform attacks. The weapon was subsequently banned by the Second Geneva Convention 1976, and never used again.

Gavreau died as a result of his own infrasound experiments. He died of empyema caused by vibrating his internal abdominal organs against their suspensory connective tissue leading to septicaemia. Sadly, twenty-four hours after he died, so did his lab assistant who was working with him at the time. Upon their deaths, the military confiscated all papers and equipment, never to be seen or heard of since.

Modern society has greatly increased its generation through technology and industry, including industrial wind farms. Opening the window of a car traveling at 100km/hr for example exposes the passengers to acute levels of infrasound as high as 125dBz. This increase in exposure to infrasound is historically unanticipated and has led to a growing concern among the public regarding its safety. This concern has been compounded by a wide spectrum of complaints, which have been reported worldwide among populations exposed to infrasound, especially between individuals who are exposed to chronically high levels due to occupational conditions or by residing near industrial sources such as natural gas compressor stations, sewage pumping stations, industrial air conditioners and other power plants, like wind farms.

Thousands of people from around the world have lived near wind farms for twenty years or more. They have found the noise *annoying* and quite loud at times, but it hasn't until recently made them feel ill or caused prolonged sleep deprivation. It has taken some time to realise the problems are a result of **re-powering**. That's when small wind turbines are replaced with bigger, more efficient models and now those same people are complaining to government and wind farm proponents. The standard response from government bodies such as the German Environment Agency is that the infrasound is drowned out by the background noise. In other words, a

perfectly normal noise level arises from which it is no longer possible to filter out the unique features of infrasound over 700 metres or so.

ILFN is also measured in the Free State of Bavaria, however, to identify possible explosions from nuclear weapons. Here the Federal Institute for Geosciences and Natural Resources (BGR), operates a measuring station on behalf of the German Government. Because wind farms could affect the measurements, back in 2004 the BGR team led by Dr Lars Caranna examined infrasound emissions from a small single turbine. They found that every time the blade passed the tower it produced an infrasound signature, which is referred to as blade pass harmonics, that emerge from the background noise with a distinctly higher acoustic pressure or energy, if you like. For bigger wind turbines, scientists made a model calculation based on a 5MW turbine. **They found that an infrasound signal would be generated beyond 20klm**. Far more than the background noise projection of 700 meters nominated by The German Environment Agency.

So how can this huge difference be explained. It is customary in acoustics to focus on bands. In other words, a group of frequencies, whereby the peaks are evened out and not on individual frequencies. So, an averaged reading is normally recorded, and this protocol is what government and wind farm proponents have been relying on until recently. **This would appear to be a deliberate ploy to ignore the infrasound peaks created by turbine blade pass harmonics**.

This is significant. Unembellished data is now being called upon by the regulatory authorities. Here in Australia exhibition of the Jupiter wind farm Environmental Impact Statement (EIS) was initially rejected by the NSW Department of Planning & Environment (DPE) on advice from the Federal Administrative Appeals Tribunal (AAT). The AAT in December 2017 directed that: There is a well-established pathway from *annoyance* to adverse health outcomes; A significant proportion of wind farm noise is in the low-frequency range; humans are more sensitive to ILFN and it can therefore cause greater *annoyance* than higher frequency sound; Even if it is not audible, ILFN may have other effects on the human body which are not mediated by hearing but also not fully understood; **Noise measurement**

using dB(a) is an inadequate measure of relevant wind farm noise and wind farm noise measurement should not average noise over time and frequencies; Wind farm low frequency noise can be greater indoors than outdoors at a dwelling. Thus, an acoustical graph flattened to such a degree can no longer provide wind farm proponents or government with the argument that infrasound and low frequency noise from wind farms is swallowed up by background noise.

Not only was the AAT critical of government methodology having the vast majority of studies from wind farms not accurately measuring the presence of infrasound & low frequency-noise (ILFN), but the World Health Organisation (WHO) also supports these findings. This failure by public health authorities and governments worldwide to monitor the impact of ILFN on exposed individuals by continuing to ignore the *"Precautionary Principle*", impedes the proper interpretation of results, which is not consistent with the WHO report "*Guidelines for Community Noise*" that states: *"When prominent low-frequency components are present, noise measure based on A-weighting (averaging) is inappropriate, and it should be noted that a large proportion of low-frequency components in noise may considerably increase the adverse effects on health",* and among these problems are *"sleep disturbance, cardiovascular effects, tinnitus, aggressive behaviour, hormonal responses (stress hormones) and their consequences on human metabolism, and immune system problems".* **The WHO also cites sleep disturbance from environmental noise at 40dB(a) as having adverse health impacts**.

ILFN has a very long wavelength (almost flat) compared to audible sound, which enables infrasound by means of reflection, refraction, and diffraction to pass through and around different obstacles such as buildings and terrain. The long wavelength also allows infrasound to maintain energy, remaining relatively stable after travelling very long distances. For this reason, common noise barriers are usually ineffective against it.

It is also common for infrasound to generate high energetic standing waves inside rooms of houses. This kind of resonance sometimes leads to an increase of levels of up to 25dBz higher than the measured level outside

the house and why complaints are more often about indoor disturbance instead of outdoor. For example, while some outdoor measurements may read 80dBz at the same time in a nearby bedroom over 100dBz can be present. This could explain why the resident neighbours of the Bald Hills windfarm, who *“had disturbed sleep hundreds of times after the wind farm began operation”* would seek relief by sleeping in their cars at the local beach. Fortunately for them in 2022 the Victorian Supreme Court awarded in their favour, albeit after they had abandoned their homes. This is not uncommon, as many people living near wind farms get sick, so sick that they abandon (as in shut the door and leave) their homes. Nobody wants to buy their acoustically toxic homes. The lucky ones get quietly bought out by the wind developers, who steadfastly refuse to acknowledge that *‘Wind Turbine Syndrome’* exists (and yet the wind developers thoughtfully include a confidentiality clause in the sales agreement, forbidding their victims from discussing the matter further).

“What you can’t hear, won’t hurt you”. There is no scientific evidence to support this statement, but there is a colossal amount of scientific evidence indicating otherwise:

Infrasound has also been linked to how the brain deals with stress management. A team led by Professor Simone Kuhn at the Max Planck Institute has speculated that we are not able to defend ourselves against high levels of infrasound because what we consciously hear can be assessed and if necessary, ignored. But things that are only perceived subconsciously generate stress and perhaps even fear.

At present, infrasound and low frequency noise are agents of a disease that goes unchecked. Vibroacoustic disease (VAD) is a whole-body pathology that develops in individuals chronically exposed to ILFN. Since VAD is caused by ILFN and explained through Mecha-transduction pathways, it is not surprising why it is taking so long to be fully understood. It was first identified by Portuguese scientist, Dr Nuno A. Castelo Branco in the 1980s as a result of an autopsy of an aircraft worker at OGMA, Alverca do Ribatejo, near Lisbon. His research into the disease followed for the next 25 years and he found that chronic exposure to ILFN causes thickening of

cardiovascular tissue (findings more recently confirmed by the WHO) and respiratory structures leading to stroke, decreased cognitive skills and many other medical disorders.

Berlin researcher, Dr Ursula Bellut-Staeck has been studying the effects of infrasound on microcirculation and endothelial cells since 2004, and her research suggests that all organisms react to ILFN, and she has recently said "*that due to the extremely low frequencies the new larger turbines are* emitting, *we may have a huge, previously unrecognised threat to the entire biodiversity on our hands from the* ILFN *generated by wind turbines."*

There is also plenty of evidence regarding the damaging effect of infrasound on the heart. Another German research team led by Professor Christian-Fredrich Vahl at Mainz University Medical Centre conducted experiments on the exposure of heart tissue to infrasound. Every test revealed that infrasound did have a distinct effect on heart muscle tissue and a clear reduction in heart muscle strength. Professor Vahl went on to add that "*whether we hear it or not, every form of energy has physical effects and infrasound is particularly dangerous, because we don't hear it". They concluded their research with the following footnote: "As medical researchers, it is strongly recommended that infrasound levels generated by wind farms do not approach pathological levels. I****t is the recommendation by this research group to set the level of infrasound no higher than 80dBz*** *(20dBz below the critical value of 100dBz) as the maximally tolerated limit for chronic exposure"*.

As Sydney based naturopath Phillip Alexander so eloquently put it in his letter to the editor of the Apsley Advocate, 14 September 2022 – "*The stronger the heart the more blood it can pump uphill against gravity, to the brain. The more the brain is suffused with blood, oxygen, and nutrients the stronger, more functional, and resistant to stress it is"* - that makes perfect sense to me.

Insomnia, nausea, heart problems, perception disorders, VAD, endothelial dysfunction, stress, fear, mood swings, depression, epilepsy, burn out, nosebleed in the middle of night, and fight or flight response. These are some of the disease symptoms that can be caused by ILFN. Doctors

believe 10 and 30% of people react to it and that more people are affected by it the longer they are exposed to it. And that means it could impact on thousands of people in rural Australia alone, not to mention the tens of thousands of farm animals and native fauna. Given the research, a correlation of stress in humans, livestock and fauna would seem to be a reasonable hypothesis, and particularly to when potential commercial production losses are considered due to unappealing tough eating, dark cutting meat – '*a dark cutter'*. Nevertheless, the mass experiment with wind power on a scale that beggar's belief, continues to carpet forever increasing acres of valuable productive agricultural land throughout Australia.

The 6-7MW wind turbines that are proposed for NSW REZ's are new generation and no one really knows exactly what amplitude of infrasound they will be emitting. Data is still only available on much smaller turbines in the 2-3MW range that transmit averaged (a flattened graph ignoring blade pass harmonics/peaks with an A-weighting amplitude expressed as dBa) outdoor readings of 50-60 dB(a).

We do know however, the larger the turbines the lower and lower the frequencies are getting, reaching as low as 0.25Hz. This makes infrasound far more problematic and dangerous than previously thought, and with lower frequencies come higher sound pressure energy levels or amplitude if you like.

So modelling, probability and common sense would suggest that a **6-7MW turbine will exceed the critical health threshold amplitude (80dBz) of chronic exposure set by the Mainz University Research Centre on infrasound beyond 20klms**, which will present as a deleterious health problem to any human or animal living in a 20klm radius and more of a 6-7MW wind turbine. Thereby affecting numerous localities, villages, townships and regional cities across NSW.

Public Liability Insurance

An anomaly particularly with respect to solar farms and BESS is Public Liability Insurance, as solar farms and BESS are often built on or amongst arable cropping lands. Fires often occur on farms through negligence. If a neighbour to a solar farm is found negligent for starting a fire that spreads into a multimillion-dollar solar farm, the farmer would be sued by the sola, as solar farms are often bu, as solar farms are often built on or amongst arable cropping lands.ilt on or amongst arable cropping lands.r farm's insurance company for damages, replacement costs, clean-up costs and loss of income whilst out of operation. A ten or twenty million Public Liability Insurance Policy is not going to cover fire damage to say, a 750-million-dollar solar farm. So, the solar farms insurance company would more than likely force a property sale on the negligent neighbour to help recover financial damages.

Due to lack of regulation, government continues to accept applications for solar farms in Bush Fire Prone Zones among intensive farming operations and appears to be unaware of the looming insurance issues and unintended financial exposure being caused to neighbouring property owners.

Contamination, Waste Management and Food Security

Australia's population is growing very quickly, so it follows that demand for electricity is going to grow exponentially over the next two decades, meaning we will need to build even more wind turbines, solar panels, batteries, roads, and high voltage transmission lines than presently estimated, if we are to meet net zero by 2050. And by then that infrastructure will have reached its comparatively short end of life (*20 years*) and will need to be replaced with the next round of renewable energy infrastructure. One could liken this ridiculous situation to - *a dog chasing its tail'*.

Then there is the long-term problem of toxic contamination finding its way into soil profiles and waterways including; rivers, creeks, farm dams, town water storage systems, city water storage systems, oceans and The Great Barrier

Reef; and the waste management arising from wind, solar and BESS components, that every level of Australian government from Federal and State to LGA's and respective EPA agencies is sweeping under the carpet, as no level of government will acknowledge (*formally*) that there is an issue with contamination from eroding blades, leaking solar panels and batteries, or has a Waste Management Plan in place for the spent renewable energy infrastructure. It's time the government stopped putting renewable targets ahead of the nation's food security.

All epoxy resins contain Bisphenol A (BPA) or similar bisphenol components. Epoxy resins are used in almost every part of our daily life (in a confined state) such as paints, plastic drink bottles, flooring etc. and in the manufacture of wind turbine blades.

BPA is a highly toxic synthetic compound recognised by the World Health Organisation (WHO) as an endocrine disrupter that has been linked to about 80 diseases including cancer and reproductive disorders and can be lethal for young children. In September 2023, turbine manufacturer Vestas confirmed that epoxy resins containing BPA are used in the manufacture of the turbine blades for their wind farms. The blades, however, will wear and then shed a fine dust of BPA throughout their life. This dust is spread wide and far by wind and if only one gram of it gets into dam or town storage waters, 10million litres of water is polluted and then rendered unusable. This dust (BPA in an unconfined state) from eroding blades has already covered large areas of our planet in proximity to wind farms and BPA is leaching into soils and waterways. Furthermore, the process is accelerated when the blades are cut up, dumped (on-site) and buried

The wind industry openly admits that any turbine will shed at least 60kg of microplastics per year into the atmosphere which will find their way into soil profiles and waterways. That would be the equivalent of about 50 tons of pure unadulterated BPA pollutants over the life of a typical 100-turbine wind farm (20 years) finding its way into catchments. Now think about that number and its consequences for the environment and farm produce!

Europeans, however, have far more experience with wind turbines than us ringing alarm bells regarding toxic Bisphenols (BPA) eroding from the leading edges of the blades as a fine microscopic dust. They draw the analogy of 'The Trojan Horse Affect', when micro-particles of BPA enter the intestinal systems of fish and animals and going up the food chain. Finally finishing up on our dinner table – 'The Trojan Horse Affect'. The World Health Organisation (WHO) has recognised the dangers of this highly toxic chemical for some time and now thankfully this research has been passed onto the EU Chemicals Register – ECHA/REACH, which body is preparing new stricter regulations and recommendations regarding the manufacture, deployment and disposal of wind turbine blades in Europe.

Toxic PFAS 'forever chemicals' imbedded in lithium-ion batteries also present a dangerous source of chemical pollution that recent research carried out by Jennifer Guelfo PhD of Texas Tech University and Lee Ferguson PhD of Duke University found in their peer reviewed paper published in various science journals July 2024, threatens the environment and human health as the industry scales up. They found alarming levels of the chemicals in the environment near manufacturing plants and discovered that waste from batteries disposed of in landfills was a major pollution source.

PFAS are a class of man-made compounds most often used to make products resistant to water, stains and heat. They are called 'forever chemicals' because they do not naturally break down and have been found to accumulate in humans. The chemicals are linked to cancer, birth defects, liver disease, thyroid disease, plummeting sperm counts and a range of other serious health problems.

The Guelfo/Ferguson paper notes that few end-of-life standards for PFAS battery waste exist, and the vast majority ends up in landfill where it can leach into waterways, accumulate locally or be transported long distances. Detection of the chemicals in snow far from manufacturing plants or landfill suggests the chemicals, like BPA, easily move through the atmosphere.

The study noted previous research that bis-FASI can be reused, though as little as 5 per cent of lithium batteries are recycled. That could yield a

projected 8 million tons of battery waste by 2040 if battery recycling is not dramatically scaled up with demand.

As an accredited LPA livestock producer selling beef into the Grass-Fed market, I am very aware of the strict compliance requirements of the rules and regulations set down by Meat Standards Australia in regard to hormonal growth promotant (HGP), grain or feed containing grain, feed containing animal fats, by-product stockfeed, feed containing chemical residues within a Withholding Period (WHP) when harvested, and any livestock still within a WHP or Export Slaughter Interval (ESI) as set by APVMA or SAFEMEAT following treatment with any veterinary drug or chemical, and their slaughter for export.

To meet these criteria a National Vendor Declaration (NVD) must accompany all movement of livestock and there is an obligation that I must be absolutely satisfied that I have correctly completed all parts of the NVD and that I understand that any misleading or unverified statements may result in prosecution, heavy fines or loss of my LPA accreditation thereby precluding me from trading.

Australia's reputation for clean green '*food and fibre'* has been built over generations on the back of good practice and strict governance. A priceless reputation, second to none and envied by our competitors. Export destinations like the US, Japan, Korea, China and Europe are already very aware of the dangers of BPA in foods and packaging. If they were to get a whiff that our beef or lamb could be contaminated with BPA, heavy metals or other toxins like 'forever chemicals', our brand built over generations would be destroyed overnight.

International public health advocates are sounding alarm bells over the need to find alternatives to the toxic chemicals and heavy metals imbedded in renewable energy components for the transition to progress cleanly. Accordingly, there needs to be a far greater focus on the toxic contamination risks arising from wind and solar farms and BESS potentially causing leaching of not only 'forever chemicals' but also numerous heavy metals such as

cadmium, cobalt, lead, lithium-copper, mercury, and nickel to our agricultural land, water resources and atmosphere, and also a greater focus on the associated Occupational Health & Safety (OHS) risks, Intergenerational Equity for our children and grandchildren and potential elevated stock toxicity levels, to protect livestock producers thereby ensuring food security for future generations.

The transition has not been properly thought through and it has far too many *'unintended consequences'* for it to be fit for purpose as presently there is no plan for where the hundreds of millions of toxic solar panels, millions of tons of dangerous batteries, and hundreds of thousands of poisonous BPA ridden turbine blades will end up. This is a ***'ticking time-bomb'*** of massive proportions that can only end in intractable litigation and be a cross to bear for future generations to come.

This nation cannot afford to let public health and food security to be undermined by this unparalleled travesty and until such time as environmental, property and food chain protection plans have been established, I call on the NSW government to apply the '*precautionary principle'* and initiate a moratorium on all wind and solar farm applications with associated BESS.

Decommissioning

No Australian government agency imposes decommissioning bonding on wind and solar farm developers (*landholders*). A substantial development site *cash bond* or *bank guarantee* should be paid by the developer prior to any works commencing, as is mandated and as is standard practice in the mining and construction industries. And that *cash bond* or *bank guarantee* should reflect 100 per cent of the collective decommissioning and rehabilitation cost *(including the removal of concrete footings and electrical cables*) and be put in place to ensure that rehabilitation of the development site can be

undertaken by the appropriate regulator should the developer (*landholder)* or host *(landowner*) not meet their statutory obligations.

Technological Transformation

Proponents of net zero admit the technological transformation required is akin to a wartime effort. If net zero is to be accomplished, all manufacturing will have to be directed away from whatever products we make now and be diverted to the production of millions of turbines, panels, electric vehicles, batteries, transmission towers and power lines, battery packs and associated technologies for the net zero economy. The government will have to conscript factories, and by extension their workers, into a warlike net zero crusade against chimeric climate change. It would all be for naught, moreover, because global greenhouse gas emissions would continue to rise due to embedded emissions in renewable infrastructure, and due to powering economic growth in developing countries that are not foolish enough to impose fossil fuel restrictions on themselves.

Developing nations view coal, oil and gas as their key to jobs, modernity and prosperity. China, Russia and their allies perceive the West's fixation on climate change and green energy an opportunity to control Australian, US and EU supply chains, thereby limiting the West's geopolitical options, military and economic capabilities.

Then there are the labour demands of the net zero transition. Even if all the thousands of truck drivers, fuel station and convenience store employees, oil and gas field workers, coal miners, workers at chemical refineries and power stations, and others put out of work by the net zero ambitions could seamlessly transition to jobs in mining, refining, building, installing, and maintaining renewable energy technologies, Australia would have to open its borders to millions more migrant labourers in order to get the job done in the truncated timeline required. We simply cannot build, manage, and maintain

the equipment, tools, vehicles, and appliances needed with the labour force currently residing in Australia.

Wind and solar farm developers by way of massive subsidies (*improper*) can offer workers irresistible renumeration and as the construction of these renewable energy projects unfold it is placing unprecedented demand on regional labour. Cracks are already starting to appear here in regional NSW (*and Australia wide*) with labour shortages putting extreme downward pressure on livestock markets with abattoirs now on a no-quote basis and kill space stretching out to 8 weeks *(normally 1-2 weeks*). Processors are struggling to find labour and, they say if they had the work force, they could kill an extra 2,000 head of cattle a week at each abattoir. As one processer said recently – "*If abattoirs across the country had the labour, then we may very well be looking at a different market*".

Fossil Fuels

Nobel laureate Harold Urey's theory, the '***Urey reaction'*** *(1952 a, b,1956*) describes how over millions of years, carbon dioxide has been continually depleted from the atmosphere and absorbed into the Earth's crust to be locked up in carbonates (limestone, marbles, corals etc.), underpinning flora and fauna life-forms to survive, but carbon dioxide is also the essential ingredient allowing that life to exist. Fortuitously, over mefossilose life-forms have fossilized forming vast amounts of carbon dioxide being stored in hydrocarbon deposits - *Mother Nature's battery*, which mankind has some measure of control over by being able to recycle that carbon dioxide contained in the fossil fuels back into the atmosphere to nourish the plants that humans need to survive.

Coal has served humanity exceedingly well in enabling the Industrial Revolution to evolve and has saved millions of lives since that time by providing reliable and affordable power. There is no escaping the fact that fossil fuels have the lowest global footprint, by far, for providing electricity, although they emit carbon dioxide, but what doesn't for that matter.

Embedded CO_2 should not be forgotten in the manufacture, deployment, assembling and erecting of wind turbines, solar panels, and mega-batteries and, then the disposal of same.

Coal remains the largest source of power globally. Coal is used to produce 70 per cent of the world's steel, 90 per cent of cement, and 60 per cent of aluminum, and given its wide availability and reliability, it is likely to remain so for the foreseeable future. It is important, however, to draw the distinction between two types of coal. There is anthracite *(black coal*) and there is lignite (brown coal). Anthracite is mostly burnt and exported from here in Australia *(apart from in Victoria where they burn lignite*), whereas lignite is more commonly resort to in the Northern Hemisphere. Anthracite is a clean burning coal, whereas lignite is recognised worldwide as a toxic highly pollutant coal. Thankfully the Australian economy continues to rely on anthracite (*black coal*) for export revenue and as a source of affordable, reliable electricity, as it matches the requirements for modern high efficiency Ultra Super Critical High Energy Low Emissions (HELE) coal fired power plants and, in the production of alumina, chemicals, cement and steelmaking to name but a few. I feel it is important to note that the two critical building blocks, cement and steel, cannot be cleanly and commercially produced by any other means than by anthracite *(black coal*).

In comparison, the wind and solar farm footprint projected to cover a totally unjustifiable expanse of Australia's land mass, impacting mainly on The Great Dividing Range, Western Slopes and the Riverina Region will be far too great and have far too many reaching consequences for any reasonable person to contemplate. And despite this utterly preposterous footprint, renewable energy is still far too weak a source of electricity to drive Australian industry on a commercial basis.

Petrochemicals derived from oil and natural gas make the manufacturing of over 6,000 everyday products including high-tech devices possible. Modern life relies on the availability of these products, a few of the essential ones are listed as follows: Ammonia in ferliser production, adhesives, anesthetic,

antiseptics, artificial limbs, asphalt, aspirin, band-aids, batteries and BESS, chemicals, clothes, cosmetics, cortisone, diesel fuel, detergent, electrical equipment, fertilisers, feedstocks, food additives, fuel, glue, hearing aids, heart valves, ink, insecticides, insulation, insulin, medicines, mobile phones, laptops, lubricants, packaging, paint, perfumes, pharmaceuticals, pacemakers, petrol, plastics, soap, solar panels, tyres, toothpaste, tooth brushes, vinyl flooring, vitamin capsules, water and sewage pipes, and wind turbine blades.

The laws of physics and the challenges of engineering mean the near instant shift to net zero emissions, many expect simply cannot occur, period. The modern world was built to run on fossil fuels which are ingrained in almost every facet of everyday life, and any transition *(unjust*) to renewables will take much longer than we have so far imagined, if it can be achieved at all.

Nuclear

Delivery of affordable, abundant, reliable, clean, and emissions-free electricity to customers is very important to the modern quality of life. Achieving this is threatened by a vulnerable grid and the intermittency of wind and solar electricity generation methods. To meet the coming power supply crisis for the demands of datacenters and AI, it's time for grown-up conversations about electricity generation to meet the needs of the end users.

The nuclear power systems developed for the US Navy have functioned well for five decades. All commissioned U.S. Navy submarines and supercarriers built since 1975 are nuclear powered. Other military services are now getting on board. If such a profoundly reliable and resilient system for the generation of emissions free electricity that is continuous and interruptible can be extended to the commercial power market, it would allow a variety of suppliers to compete for the business of the end user, allowing greatly reduced electricity prices.

Today, about 440 nuclear power reactors are in operation in 32 countries. As of August 2023, the United States had 54 nuclear power plants with 93 operating commercial nuclear reactors in 28 states. These plants generate about 20% of the country's electricity. Nuclear power has the competitive advantage of being the only baseload power source that can accommodate the desired expansion of an electricity supply to the end users that is emission free, continuous, and uninterruptible.

It is probably true however that wind and solar are lower cost generators at their points of connection to the grid than nuclear energy. Many people therefore base their case for renewables on the low Levelised Cost of Electricity (LCOE). The case for renewables, however, fails when we try to integrate them into a grid to provide useful energy 24/7. Storage and lots of it must be added. That means batteries or pumped hydro, either way it's expensive. It also means that at 100% electricity generation we need a lot more transmission – AEMO tell us we will need at least 28,000 kilometers of new high voltage transmission that hasn't been properly costed. Renewables will cause the highest cost parts of our electricity bills to at least double and we see this now in South Australia where, despite low generating costs they have the highest retail costs in the market.

Renewables furthermore fail on a rebuild cost factor. No accountability of costs has been made at this point in any LCOE model for the replacement of renewable infrastructures *(towers, turbines, blades, panels etc.*) every twenty years at best, whereas a properly maintained nuclear power plant will still be producing reliable dispatchable electricity around the clock well into the next century.

Based on today's physics and technology, the only path to an energy system with a material intensity lower than hydrocarbons and renewables would be one focused on nuclear power. In the pantheon of energy-producing machines, none is more remarkable than the nuclear reactor. Nuclear fission offers a potential hundredfold reduction in material intensity over

combustion, and a thousandfold reduction over wind and solar, achieved on the tiniest of footprints and with next to neglectable waste.

The nuclear power production industry has the best industrial safety record among all industries for electricity production. The confirmed death toll in nuclear power accidents in the last 70 years is 33. Two plant workers died on the night of the Chernobyl disaster, and 28 first responders died later from acute radiation syndrome. The only other fatal malfunction of a nuclear reactor was at Fukushima in 2011, when one plant worker died from acute radiation syndrome and two others died from heart attacks. That makes nuclear the safest way of generating electricity by far. There have been just 0.0011 deaths per TWh, making it 18 times safer than solar which is responsible for 0.02 deaths per TWh. It is 36 times safer than wind (0.04 deaths), more than a thousand times safer than hydro (1.3 deaths) and more than 4000 times safer than biomass (4.8 deaths).

But the fear of most people that needs attention is the one surrounding spent nuclear fuel, which is commonly referred to as “nuclear waste”. Although nuclear waste is infinitesimal when compared to other energy generation sources and repositories have already been established or planned, that fear remains. The solution, then, lies in educating heads of state, main street media, and policymakers, by extending the concept of recycling to include the unspent energy in used nuclear fuels, a method that can convince people that the “nuclear waste” issue is being dealt with, the cost of power is competitive, and that the production of nuclear power is safe. Unlike renewable energy that has NO plan for recycling or waste management, nuclear has a plan for both.

Recycling Slightly Used Nuclear Fuel (SUNF) in a Fast Breeder Reactor (FBR) provides a plan in a way that is competitive and publicly acceptable. The advantages to recycling used nuclear fuel in Fast Breeder Reactors are many:

- It provides an alternative to the disposition of the stockpile of SUNF
- Current inventories of SUNF provide an essentially unlimited supply of domestic fuel.

- The fuel material is already mined, so the energy produced is much closer to 100% clean and further environmental degradation from mining operations is not required.
- The public would be more receptive to nuclear power because “waste” is being used as “fuel”, reducing the retention of unspent fuels and diminishing perceived risks.
- The design is intrinsically fail-safe. This means that the reactor is designed to cool sufficiently in the case of an accident without human intervention.
- The current stockpile in repositories of SUNF has a value of $10 Trillion when the electric power that it produces is sold at 1 cent per kWh.

Nuclear power can be the only sensible way of achieving net zero and maintaining reliable affordable dispatchable power. We could use 24 gigawatts of the emerging small nuclear power plants such as the BWRX 300 from GE Hitachi or we could commence the build out in selected locations using known licensed large-scale reactors that are currently available such as the APR 1400 from South Korea. Small modular reactors (SMR’s) could be a possible replacement for baseload generators at Australia’s remaining coal fired power plants or could be run in parallel with those existing plants. For instance, just four SMR’s stacked in sequence at Liddell would comfortably cover the gap left by the withdrawal of coal at that plant or double the capacity if run in parallel.

But Energy Minister Bowen continues his mantra, that nuclear power will push up electricity prices and take too long to come online, insisting that wind and solar are cheaper and will be a faster path to net zero. This war cry is baseless as is evident by his obstinate refusal to engage in any rational debate on renewable *vs* nuclear power generation. Anytime he does present costings on wind and solar he refers to the CSIRO GenCost Reports, which reports conveniently and consistently leave out the $1.2 to $1.5 trillion cost for an entirely new (*of gigantic physical proportions*) high voltage transmission grid

that is required for the renewable energy option, which cost will be passed on mainly to unsuspecting urban consumers. And he continues to argue that 82 per cent of our electricity demand will be satisfied by renewables by the end of the decade.

What Minister Bowen doesn't mention is that nuclear SMR's could be up and running at Liddell in a similar timeframe. This scenario is perhaps a more likely outcome, firstly because of the dialogue and cooperation (*despite the prohibition on nuclear*) that continues via the 'Australian Treaty Series 1981 No 8' between Australia and Canada, and secondly that the existing transmission grid can be utilised - thereby negating any need to build a new one.

The French and Canadians have put paid to the argument on cost; their consumers pay about half what the wind and solar powered Germans do for example. And the French don't suffer the indignity of routine power rationing and blackouts like their German neighbours, who have a deep reliance on non-dispatchable wind and solar. Indeed, it's nuclear power from France, coal-fired power from Poland and natural gas from Russia, that keeps Germany's near-terminal power grid from total collapse. But unlike Germany, Australia is an Island Nation that doesn't have an umbilical cord to enable us to plug into dispatchable power from a neighbour, whenever renewable energy lets us down.

There are 32 countries in the world right now that are nuclear,19 being G20 nations (*Australia being the only G20 country that hasn't gone nuclear),* and for them the economics stack up. And there are another 50 countries that are embarking on nuclear programs or seriously assessing it right now; for them a critical path method (CPM) or timeframe if you like, the economics and dependability of nuclear also stack up. The main growth of electric power usage is coming from new datacenters housing AI technologies. It is expected that over the next few decades, 50% of additional electric power will be needed just for AI, but datacenters CANNOT run on the unreliable electricity generated by wind and solar - they demand certainty.

Having a civil nuclear industry would also increase our sovereign independence with additional long-term benefits to the AUKUS initiatives. Whereas, non-dispatchable renewable power will only make Australia more geopolitically vulnerable, than we already are to the whims of China.

The failure to lift the Federal prohibition on nuclear energy is denying Australians the opportunity to let the marketplace decide between two energy generation options:

- Unreliable, unaffordable, environmentally destructive, wind farms, solar farms, and mega-batteries, connected by a new disorderly maze of 80m high transmission towers (*height of the Sydney Harbour Bridge Pylons)/* high voltage power lines crisscrossing our rural landscape and rendering prime agricultural and grazing land useless and next to worthless.

Or

- Reliable, affordable, environmentally friendly high energy low emissions (HELE) anthracite fired power stations, nuclear reactors, gas turbines, and hydropower, utilising our existing energy infrastructure, including the existing national transmission grid, and all on the present-day footprint.
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'Voluntary' Acquisition

In a NSW Independent Planning Commission - IPCN (Commission) case presently being heard, the Applicant (*developer* of a proposed wind farm) has suggested that the NSW Department of Planning, Housing and Infrastructure (Department) should give very little (if any) weight to a Complying Development Certificate (CDC) at a neighbouring property (DAD01), when balanced against the public Interest in renewable energy generation in NSW, and two of the turbines (T53 &T63) should be reinstated based on the following:

"*The Public Benefit in renewable energy generation outweighs the private disbenefits [the rights] of individual landowners"*.

"T53 and T63 have some of the highest yields, and the removal because of DAD01 would set a dangerous precedent for other wind farms developments in NSW".

These two statements are basically saying that a private corporation should be given the right by government to override Planning Guidelines and principals of the Department and then be able to deliberately adversely impact the neighbouring non-consenting property DAD01, and then because that property is adversely impacted the developer should then be given the opportunity to mandatorily acquire (***by means of an insidious method of compulsory acquisition masquerading as being discretionary***) the impacted property under the convoluted pretence of '*voluntary acquisition*', per a condition of consent set down by the Department in consultation with the Applicant (developer).

I would argue quite to the contrary and say if the Commission accepted the Departments recommendation, it would set up an intractable precedent of *'voluntary acquisition'* on all future renewable energy generation projects which would give any Applicant a complete freehand to recklessly develop at their will and then acquire at their discretion, thereby casting assessment based on merit to the wind.

In other words, any project that generates renewable energy should be automatically recommended for approval without having any regard whatsoever for its economic environmental or social consequences. This desperate precedent can only cause further fear, anxiety and uncertainty in all rural communities now that will be living with the constant threat of '*voluntary acquisition*'.

Conclusion

Renewable energy is environmentally, economically, and ethically flawed. It has not been properly thought through and it has far too many '*unintended consequences'* for it to be fit for purpose. And in their haste to roll it out, governments, in being complicit with the '*big end of town*', have failed to recognize mental health as a major casualty. Government is driving its own people in rural and regional Australia to relationship meltdowns and depression - leading to suicide.

The renewable energy industry has been built on lies and run on subsidies and as such has a reputation problem that just won't go away, and it's getting worse as time goes by: It is "*All fur coat and no knickers"*. Consequently, rural Australians are galvanised in defending our communities, our homes, our land, our farms, our farm animals, native flora and fauna, and ourselves against the greed of foreign owned conglomerates, who are encouraged and supported by political zealots driven by ideology - not reality. Rural communities are fighting to save all Australians from a fatally flawed unreliable, unaffordable, environmentally destructive patchwork quilt of wind and solar generators, across the eastern states of Australia, proposed to be connected by a hideous web of high voltage transmission lines, thereby rendering prime agricultural and grazing land next to worthless.

Government has a perverse misunderstanding of the term '*social licence'* and continually argues that the public benefit or "*the greater good*" of renewable energy outweighs the basic rights of individuals, the social amenity of affected communities or the cumulative adverse impact on the rural landscape and natural environments. All which conflicts with Article 2 of the 2015 Paris Agreement that states:

"This Agreement…aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to ***eradicate poverty****, including by:"*

"(b) Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, ***in a manner that does not threaten food production****".*

One would think that the overarching principal goals of the 2015 Paris Agreement should prevail over governments proclaiming in favour of the distorted viability of non-compliant industrial enterprises being built on ecologically sensitive and productive agricultural lands is somehow of a public benefit in a '*just transition*' and is by some means in balance with the basic rights of individuals and the basic rights of farmers to produce food and fibre - it seems not.

The actions of communities in fighting against the renewable invasion has prompted Government agencies to seek a '*social licence*' from rural Australians. Make no mistake, this pursuit will be unequivocally denied by the backbone of this nation. Communities all along The Great Dividing Range, Western Slopes and Riverina Plains have now joined forces to do everything we can to stop this futile violation of rural Australia further unfolding.

The existing grid has served our Nation well for generations and is one that can cope with increased demand well into the future. That is, if we continue to generate baseload dispatchable electricity. But the radical idea of reversing that generation by way of wind and solar, will need an overbuild in capacity by a factor of three or four-fold, which means '***Rewiring the Nation'***, and that will require thousands of kilometers of gazetted rights of way (ROW) resulting in substantial land devaluations of at least forty per cent, that are crucial issues for '*social licence*'. I am in no doubt that the gargantuan issue of rights of way – a 'ROW' as the acronym suggests, together with numerous other renewable energy issues; *environmental, health, energy security, food security, roads, transport and indigenous,* can only end in intractable litigation.

Here in Walcha NSW, there is documented proof held by the Walcha Council that in November 2022, 79.7 per cent of people expressed concerns and consequently objected to the proposed wind and solar farms in the Walcha LGA. That survey, however, was taken well before any serious consideration

had ever been given to the impacts of the impending new 80-meter-high voltage transmissions towers and power lines needed to connect those developments to urban end users. Now that EngeryCo have tabled their plans for a new transmission grid, I would suggest that more than 90% of the community would respond vehemently against the monstrous proposed spiderweb to crisscross our beautiful district.

Australia cannot afford to let the social fabric of the bush and the food security of the nation be undermined any further by this unparalleled travesty. And for this nation to prosper, we must regain a fundamental respect for an unspoiled landscape and so regain a fundamental respect for our quintessential Australian way of life.

Renewable energy is NOT clean, NOT green, NOT zero.

Ian McDonald, Grazier