Achieving a just transformation in Australia's renewable energy zones

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Abstract

To meet the emissions reduction targets by 2050 the Australian Energy Market Operator (AEMO) has identified 35 land-based and 6 offshore wind renewable energy zones (REZs). Each of the REZs have been identified based on their potential to generate energy relative to demand, and efficiency to augment the transmission grid. This will create a decentralised energy system that will have significant benefits for Australia, but may also bring potential impacts to communities, environmental values, economies, and land uses within rural Australia, and typically agricultural areas that are not planned to accommodate industrial-type infrastructure. The REZs do not necessarily align with bioregions or with statutory boundaries and do not have a centralised regulatory body. Consequently, there are a myriad of disconnected regulatory approval processes that fail to identify or mitigate key environmental, cultural, and social impacts across and between each REZ. The challenge is to find mechanisms to harness the opportunities associated with the energy transition to positively transform communities and to mitigate negative landscape level impacts. Healthy transformation is measured in terms of how communities within the REZ adapt to the comprehensive social, environmental, cultural, and economic changes associated with energy transition. This paper describes how the implementation of strategic environmental and social assessment as a key planning tool can provide all stakeholders with data to make informed decisions to achieve a just transformation and optimised outcomes through the planning and development of REZs.

Introduction

Australia's existing electricity transmission network evolved from the location of coal deposits and power stations to industrial demand centres (McDonald, 2023). Transitioning from a centralised coal generation system to decentralised solar and wind resources requires an entirely new approach to the planning and utilisation of the existing state and national transmission network. The new approach will need to connect the distantly located solar and wind resources to an existing transmission network that possesses limited capacity (McDonald, 2023). This will require consideration of how to develop new transmission lines, new solar and wind farms, and new storage systems, while also protecting the environmental, cultural, social, and economic values that host communities value highly.

The new planning approach that the Australian Energy Market Operator (AEMO) has adopted in its Integrated Supply Plan (ISP) is the development of dedicated Renewable Energy Zones (REZ's). REZ's are defined as *high-quality resource areas where clusters of large-scale renewable energy projects can be developed using economies of scale* (AEMO 2022).

Each of the state and territories within Australia are responsible for developing planning regimes for REZ's within their jurisdiction. These are at varying stages of maturity; however, none have created a development assessment process that integrates with the local and state planning policies or considered the important social, cultural, economic, and environmental values held by host communities within each REZ. Simply put, the REZ's are an overlay that identifies how the transmission, generation and storage system can be most effectively located to maximise efficiencies for energy generation, distribution, and storage. The scale of the new development associated with the new REZ's in Australia, includes:

- 10,000km of new transmission lines (Aziz and Ahmed 2022)

- 119 million hectares of land to replace coal, gas and oil with 50% sourced from solar and 50% from wind power. This is equivalent to 15 per cent of Australia's landmass, or approximately one -third of all Australia's agricultural land (You and Begg 2023).
- 450 GWh of storage will be required or the equivalent of 4,000ha of land to develop new pumped hydro energy storage systems (Blakers, Lu and Stocks 2017) to stabilise the national energy system when 100% of energy sources are renewable.

Limited consideration has been given to how the host community values are impacted by the development of the new energy infrastructure or the integration of the REZ's within statutory planning frameworks. Moreover, within each REZ:

- All developers of renewable energy generation, transmission and storage must apply to the AEMO to participate in the national electricity markets.
- All new developers of renewable energy generation, transmission and storage must apply either to the state (where a major project) or local government for approval prior to developing.
- All major project proponents must complete an EIS pursuant to the relevant state planning requirements.

Consequently, there are a myriad of disconnected regulatory approval processes that fail to identify or mitigate key environmental, cultural, and social impacts across and between each REZ. The challenge is to find mechanisms to harness the opportunities associated with the energy transition to transform communities justly and positively to mitigate negative landscape level impacts.

What is a just energy transformation?

Energy transition refers to the shift from a set of dominant resources such as oil, coal and gas to another such as wind, hydrogen and solar. Accordingly, the energy transition literature is expanding in its scope to consider the positive and negative impacts of the transition on households and host communities. Carley and Konisky (2020) maintain that transitions inevitably produce winners and losers which highlights the notion of energy justice in decision making such as social inclusion and benefit distribution and mechanisms to address these by governments in decision making processes and energy developers in the delivery of their projects.

However, consideration of what constitutes a just energy transformation remains disconnected from the source of the transition (one energy source to another), the communities most affected by the transition and the process that facilitates the transition (planning and development assessment). The notion of a transformation as opposed to transition suggests that moving from one set of resources to renewables will create profound and hopefully positive change to the social, cultural, economic, and environmental values held by those most affected by the transition such as communities in rural locales. The speed and scale of change that is required to transition to renewable resources to achieve net zero by 2050 requires a fundamentally different approach to the planning and development of REZ's. Delineating areas of renewable energy potential on a map applies a purely technocratic approach to transition and fails to acknowledge the deep connection and knowledge that local communities have to these same areas. Many rural spaces and places are already being contested and reimagined irrespective of the energy transition (Calvert et al 2022). Ongoing changes associated with climatic conditions that affect cropping and grazing communities, are further exacerbated by the broader impacts of global and regional economic reforms and more recent disruptions to global supply chains which must be considered within the process of energy transition. Healthy transformation should be measured in terms of how communities within a REZ adapt to the comprehensive social, environmental, cultural, and economic changes associated with energy transition.

For the purposes of this paper, energy transformation describes the capacity of the affected community to adapt to the type, scale and intensity of change caused by the energy transition. Accordingly, the hazard resilience literature (see for instance Harwood et al 2014) describes adaptive capacity as the ability of a community to adapt to change in a positive and effective way. Rather than viewing the change as a stressor from which they need to recover from, transformative change is about adapting to new knowledge as the trigger of change. The collective capacity to adapt is influenced by the way that proponents introduce their developments to affected communities and the planning and development assessment frameworks that guide public decision making.

There are four key justice considerations underpinning the notion of a just energy transformation, namely (after Carley and Konisky 2020 and Bennett et al 2019):

1. Distributional justice – the decision-making system acknowledges ways to equitably distribute benefits and burdens over time, space, between groups and across populations.
2. Procedural justice – creating and managing fair, equitable, inclusive, transparent, and accountable decision-making processes. This form of justice also describes the governance procedures that the proponents apply internally in their decision making such as grievance mechanisms, building local capacity to participate in decision making and co-ownership/management.
3. Recognitional justice – the decision-making system recognises and seeks to reconcile the historic and ongoing inequalities such as acknowledging pre-existing rights and tenure (including customary tenure), the integration and inclusion of diverse worldviews, perspectives and values and identifying and differentiating the rights holders and stakeholders in the decision-making processes.
4. Restorative justice – which requires the intervention of the government or other intervention to avoid distributional, procedural and recognitional injustices and to apply the appropriate governance processes in decision making procedures to correct these.

To achieve a just energy transformation in Australia's REZ's requires a decision-making system that not only addresses the four abovementioned justices, but also supports community adaptation to the profound changes associated with the energy transition. Fundamentally, Australia's REZ's requires a more strategic approach that enhances social, cultural, economic, and environmental opportunities, mitigates adverse risks and impacts, delivers certainty to both the host community and energy developers, supports policy making, guides long term regional planning, includes affected communities in knowledge production (ie sensitivity mapping) and delivers time and cost efficiencies in assessment processes.

The role of strategic environmental and social assessment in facilitating a just transformation

The International Association for Impact Assessment (IAIA) maintains that traditional environmental impact assessments applied at the project level have proven to be insufficient to deal with the bigger picture beyond project level impacts (IAIA 2023). This is particularly relevant in REZ's where multiple generation, transmission and storage projects are developed within the one region simultaneously.

There is currently no development certainty provided to either the community or the developers of renewable energy in Australia's REZ's. Developers wear all the risk in identifying the most viable and acceptable location to the community and are required to develop community engagement, benefit sharing and First Nation strategies commensurate with project level impacts prior to gaining a licence with the AEMO or the completion of an environmental impact assessment (EIA). The financial costs are significant to the developer, and the lack of uncertainty experienced by the affected residents and community impacts their well-being and reduces the levels of social acceptance of renewable energy development. Developers and regulators do not have access to a central database

with which to make development decisions relative to the community expectations and limits of acceptable change to important social, cultural, economic, and environmental assets and values.

Achieving net zero by 2050 is a global and national goal, yet developers hold the risk, and local communities experience the consequences of a lack of regional co-ordination in Australia's REZ's to achieve net zero. The application of a government led strategic environmental and social assessment (SESA) in each REZ could proactively identify the social, cultural, economic, and environmental effects of the proposed renewable energy system, guard against consultation fatigue associated with simultaneous and multiple developments, provide communities with an opportunity to collectively develop strategies to mitigate impacts and identify catalytic development opportunities to sustain their economies into the future. However, the most valuable feature of the SESA to Australia's REZ development is proactively addressing the cumulative impacts that are currently exacerbated by the lack of regional intervention and co-ordination of mitigation strategies. These include impacts on transport networks and critical municipal infrastructure (water supply, sewage treatment), housing and accommodation shortages, capacity to create catalytic social investment strategies, capability of local supply chains to engage in regional scale development, investment in workforce skill development and training, increased demand on limited health service provision, under resourced volunteer emergency services, heightened stress and anxiety for residents and communities from development uncertainty, lowered levels of community cohesion created by community opposition to renewable energy development, reduced viability of regional agricultural industries from lowered production volumes at local and regional markets, and potential biosecurity risks on valued natural resources and environmental values. Furthermore, not all jurisdictions in Australia require the completion of a social impact assessment as part of the EIA. This oversight invariably means that historic and ongoing inequalities experienced by First Nation peoples and vulnerable populations (youth, unemployed, gender identity) are neither recognised nor restored as part of the EIA and the energy transition.

Conclusion

This paper has described how the implementation of a strategic environmental and social assessment can be used as a key planning tool to provide all stakeholders with data to make informed decisions about renewable energy development in Australia's REZ's. Achieving a just transformation in Australia's REZ's is dependent on a government lead intervention to create a more efficient and collaborative approach to siting decisions that in turn provides heightened certainty for the host communities and developers alike.

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