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Wind shapes as valuable piece in modern energy jigsaw

By Satya Tanner and Amanda Caldwell

Australia's long-delayed energy system transformation is happening, and not before time.

Old coal-fired power stations are now too expensive, inflexible and unreliable as they limp towards retirement. Australia's \$220 billion in fossil-fuel exports in FY2023 will progressively meet their demise due to global trends. Climate change is here with heavy human and community consequences affecting people's lives and livelihoods in a seemingly relentless cycle.

The opportunity to transition to a new energy system and export economy using industrial scale renewable electricity is one Australia needs to grab, or risk missing out on lucrative investment opportunities and well-paid jobs that will come from the drive to emission reductions.

The scale of the energy transformation can be hard to imagine. For renewable energy, we need everything, everywhere, all at once. Diversification is key: rooftop solar, batteries and electric vehicles as batteries on wheels, and big solar and onshore wind coupled with large battery energy storage systems. All are needed to ensure there's a spread of supply options available.

Offshore wind is now another option; it can supply large, stable electricity for major energy consumers and regional employers, making it a valuable component, particularly as we move to and beyond 82 per cent renewables. That steady and firm supply is needed by companies such as Tomago aluminium smelter and explosives manufacturer Orica, and to attract more local businesses. They can harness the more consistent wind that blows offshore, and with Australia's vast coastline, projects can be placed near existing transmission in regional communities and demand centres. Their strategic locations can also be an advantage for future defence surveillance needs.

Yet we continue to see resistance, misinformation and identity politics driving a wedge among communities and threatening our economic future - even as our fossil-fuel exports are cancelled by overseas buyers, risking our standard of living and future economic prospects.

The Australian government is identifying where offshore wind projects might be established. The laws removing the regulatory barriers to establishment were introduced in November 2021 by the former Coalition energy minister, Angus Taylor, and passed by parliament in November 2022 with strict operational requirements.

Successful projects will have up to seven years for feasibility studies and site investigations, essential environmental assessments, and community consultation. During that time developers need to secure power purchase agreements and other licences and approvals. Only then will a developer be offered a commercial licence.

Offshore wind projects also offer an opportunity to help reframe, power and rebuild Australian regional communities, giving people a say through public consultation, partnering with First Nations, and different ways of asset ownership.

Denmark, for example, has a long history working with communities to negotiate partial infrastructure ownership. *Middelgrunden* nearshore wind farm off Copenhagen has a cooperative structure where a portion of the ownership was offered to individuals - community members or single groups, at a reasonable price (about \$A1000). Each shareholder has only one vote, irrespective of their number of shares, giving the community a democratic voice and a sense of ownership. The profit-sharing is proportional to the number of shares held.

Middelgrunden's consultations revealed concerns about the turbines' layout. A new design was subsequently accepted; the community felt heard; and its demonstration role has been significant. The turbine foundations also support an ecosystem of fish, eelgrass and shellfish.

We can see how offshore wind projects offer the chance for cultural change in energy projects by including aspects of community co-design and partial ownership in the modern Australian energy system.

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