

SHORT SUMMARY

P.4.20.006 Risks & Opportunities for the Blue Economy

KEY POINTS

- » We co-developed a general approach to ranking hazards with 46 experts from 16 organisations, who represent multiple disciplines. This approach can be applied across all sectors of emerging offshore blue industries.
- » We used expert elicitation to identify 56 hazards with potential to impact Blue Growth. These hazards potentially pose risks to the establishment and operations of Blue Economy activities, such as offshore aquaculture and renewable energy generation, as well as to the marine environment.
- » Experts ranked hazards in a series of workshops. We then developed a decision tree to help triage hazards, based on their ranking, and to identify hazards that need to be progressed to full risk assessment.
- » We undertook a literature review on Indigenous perspectives of risks and opportunities associated with Blue Growth in Australia and elsewhere.
- » By summarising 22 conceptual models of how offshore activities operate, we also identified 13 potential 'opportunities' arising as a result of growth in the offshore Blue Economy. These opportunities spanned: Technology; Policy and Regulation; Business Development; and Environmental, and warrant further investigation by the Blue Economy CRC.



Figure 1. Conceptual workflow of the integrated hazard analysis methodology. Out of workshop sessions were led by a core team while workshops included all project participants.

THE CHALLENGE

Growth in the offshore Blue Economy is predicted to accelerate as emerging industries look to expand out of crowded coastal waters and into high energy offshore environments. An important first step for emerging industries is to be aware of direct and indirect hazards that exist and may emerge when expanding into environments in which industries have not previously operated.

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THE OPPORTUNITY

Realising the opportunities for economic and social development that the offshore Blue Economy offers requires new infrastructure. Any new industry also poses novel opportunities and risks to operators, the environment, society and regulators. These risks and opportunities are not all of equal importance – some have a very low likelihood of ever occurring, others may be more likely but have minimal impacts, while others could have significant impacts though with low likelihood.

Understanding what might pose a hazard and then identifying which hazards may become a real risk helps provide a firm foundation for planning and for discussing the different concerns that communities, industries and governments might have regarding new kinds of activities in Australian waters (and beyond).

OUR RESEARCH

IDENTIFYING AND RANKING HAZARDS

In this project we co-developed an approach to identify and rank hazards across six general domains linked to the emerging Blue Economy – including aquaculture, marine engineering, renewable energy, and their associated social (including policy), economic, and environmental interactions.

We use expert elicitation and multi-criteria decision analysis to identify and rank hazards to the establishment and operations of Blue Economy activities and those hazards that the activities may create for other parts of marine systems.

TOP HAZARDS

Experts ranked ‘climate change’s influence on ocean properties’ as the hazard with the highest overall score. Hazards pertaining to ‘altered ecosystem functioning’, ‘biosecurity’, ‘the inadequate assessment of cumulative effects’, ‘structural failure due to high energy environments’ and ‘public opposition to development’ were also highly ranked.

HAZARD TRIAGE

We developed a decision tree to help triage hazards based on the expert rankings. Where hazards are deemed significant, a more detailed and rigorous risk analysis can be considered to identify appropriate evaluation, regulatory requirements and mitigation measures to reduce the consequence or likelihood of a particular hazard (See Figure 2 for examples).

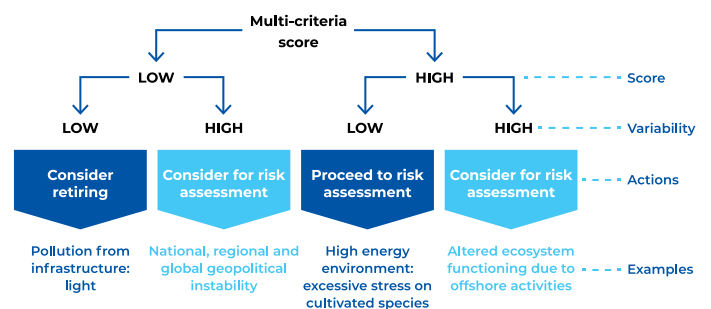


Figure 2. Decision tree for managing ranked hazards. Orange hazards need to be progressed to full risk assessment, yellow hazards can be considered for either retirement or risk assessment, and blue hazards can be safely retired. Example hazards from the current hazard analysis are displayed for each decision endpoint.

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INDIGENOUS PERSPECTIVES

While significant advances have been made in inclusion and recognition of Indigenous Peoples as rights holders in Blue Economy activities around the world, progress is still needed in enabling Indigenous-led enterprise and partnerships in Blue Economy activities and in facilitating opportunities for Indigenous innovation in social licence to operate. We identified some starting steps in this space, but much remains to be done.

ONLINE RISK REGISTRY

To make the collective knowledge compiled during this project more widely available, we developed an interactive online risk register. This register is structured to help disseminate the findings from the hazard ranking exercise and to let people explore the results in ways best suited to their needs. The register is intended to be primarily used as an initial screening tool, scanning across a wide range of possible hazards to operators, the environment, society and regulators.

Users can explore hazards that are considered unlikely to occur (or those with minimal impacts) that could then potentially be retired from further consideration, by proponents or regulators. This kind of prioritisation allows for the focus to be put on more important hazards, where more thorough risk analysis is likely required to provide rigorous, detailed and precise estimates of risk; and to ensure the most appropriate risk mitigation measures identified and applied.



[RISKS & HAZARDS ONLINE REGISTRY](#)

GOING FORWARD

The intention is for this register to remain open and updateable into the future as more information on offshore developments accumulate. The methods developed in the project have also been made available for use in any future integrated assessments.

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PROJECT REPORTS/PUBLICATIONS

- » Turschwell et al. (In Prep): A synthesis of approaches for hazard analysis in emerging offshore food and energy production centered blue economies.
- » Turschwell et al. (In Prep): Co-designing a multi-criteria approach to ranking hazards to and from Australia's emerging offshore Blue Economy
- » Lyons et al. (In Prep): The Blue Economy and Indigenous Perspectives of Risk – Working Toward an Indigenous Centred Social Licence to Operate
- » Workshop report 1: Risks and Opportunities Expert Workshop 1 summary June 2021
- » Workshop report 2: Risks and Opportunities Expert Workshop 2 summary October 2021
- » Workshop report 3: Summary report April 2022

SHORT SUMMARY AUTHOR

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