Blue Economy CRC

Delivering innovation in sustainable seafood and renewable energy for a marine nation

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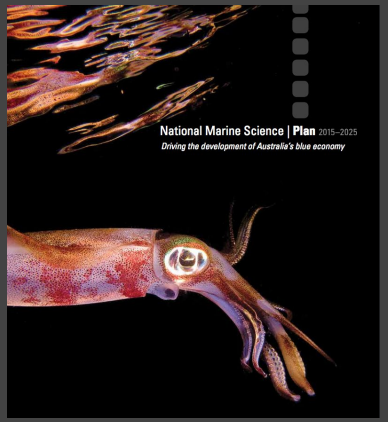
Solutions to meet global demand for food and energy

"Australia's vast oceans are the heritage, heart and economic future of our country. The value of this marine estate to the homes, work, play, energy, food, safety and security of all Australians is matched only by the enormous economic and environmental wealth that this national asset affords us."

National Marine Science Plan 2015-2025



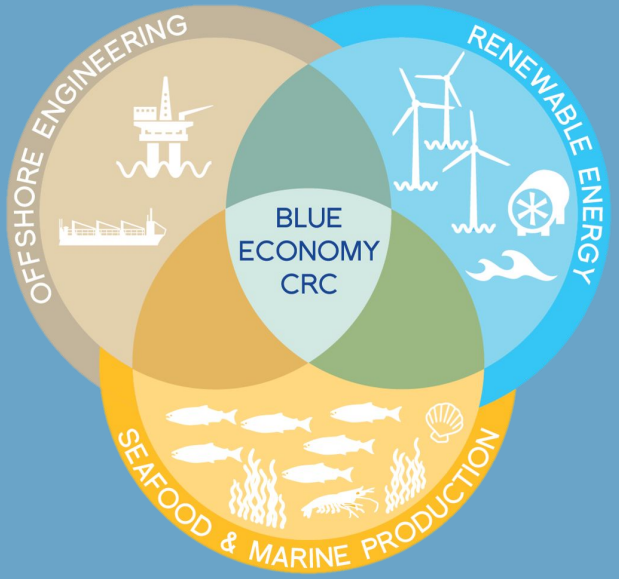
Aligned to Growth Centre Priorities:

FIAL
FOOD INNOVATION AUSTRALIA LIMITED
CATALYST FOR GROWTH

NERA
NATIONAL ENERGY RESOURCES AUSTRALIA
Creating connections for growth

~$150bn by 2025

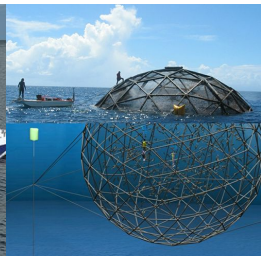
- Intensive seafood production in the coastal zone (<2Nm) is problematic and fundamentally constrained in terms of scope for expansion
- Offshore wind and marine renewable energy devices are still emerging but can compete offshore with a very high capacity factor
- The offshore engineering sector is looking for new markets to apply its skills, assets and knowledge base: 'Blue Growth'
- Natural synergies exist between these three sectors, with ability to leverage shared infrastructure and services, while defraying costs and maximising asset utilisation
- A new offshore production paradigm is required to enable all sectors to achieve scale and competitiveness over the long term



International Developments

Established precedents & networks

- Tropos
  - EU FP7 funded project focused on transport, energy, aquaculture and leisure
- Mermaid
  - Multi-purpose offshore platforms
- MARIBE
  - Biotechnology, Renewable energy, Coastal & Maritime Tourism, Mineral resources, aquaculture (‘Blue Growth’)
  - Fisheries, Offshore Hydrocarbons, Shipping & Tourism (‘Blue Economy’)
- H2Ocean
  - Offshore wind and hydrogen production



Vision

To enhance the development of Australia's blue economy through the delivery of world-class, industry-focused research into integrated seafood and renewable energy production systems.

Mission

1. By repurposing existing offshore infrastructure and/or by *de novo* design, develop offshore platforms that bring together state-of-the art aquaculture systems with innovative marine renewable energy solutions, to deliver a paradigm shift in the way we produce seafood, as well as harness and transport energy.

2. Position Australia as an early-adopter and world leader in this 21st century approach to sustainable food and energy production, and secure it for significant economic, employment and environmental advantage.

3. Drive down the unit costs of sustainable production to underpin the long term competitiveness of the blue economy, including seafood, as well as provision of renewable electricity, gas and other liquids, such as hydrogen, liquid ammonia, and desalinated water.

Why Invest?

The challenge

01

The world is increasingly dependent upon and looking to its oceans to provide food and energy in the context of:

- increasing regulation
- spiralling energy costs
- heightened consumer awareness
- pollution control
- climate change
- skill shortages
- community acceptance

All of these and more threaten the long-term commercial viability of businesses operating in the blue economy sector.

Offshore engineering challenges include:

- Cyclical and/or permanent downturn in historical client/industry base means that new, long term markets/applications must be found
- Risk of underutilised manufacturing and engineering capability that is difficult to restore once lost
- Existing offshore assets are facing protracted periods of limited use or decommissioning costs

Seafood challenges include:

- Fewer concessions available in the near shore (<2NM), coastal zone to allow for significant production expansion
- Environmental impacts in the coastal zone are now under heavy scrutiny by regulators & community/NGO interests
- Limited experience of farming operations in offshore, *exposed* sites
- Accessing cost effective energy to support vertically integrated offshore operations

Marine **renewable energy** challenges include:

- Relative immaturity or limited deployment of devices
- Inability to compete commercially in mainstream electricity markets
- Lack of domestic demonstration and supported offshore deployment sites that can support commercial scale devices and associated ancillary services

The opportunity

02

- Australia has:
  - The 3rd largest exclusive economic zone (EEZ) in the world
  - Demonstrated expertise in high value seafood production
  - Significant untapped ocean energy and offshore wind resources
  - World-class offshore engineering and manufacturing capability
- **The University of Tasmania**, including **AMC** and **IMAS,** is uniquely positioned as a recognised leader and industry collaborator in all relevant research fields and is a natural co-ordinator of this initiative.

What could it look like?

03

The Blue Economy CRC will look to test new models, technologies and creative approaches to offshore production by combining forward-thinking partners with Australia's best researchers to deliver innovation in sustainable food and renewable energy systems.

What's in it for me?

04

1. Drive down the costs of doing business for all Australian blue economy participants through applied research and innovation.
2. Double Australian marine product exports by 2035; triple aquaculture by 2040, with 50% derived from offshore systems.
3. Establish a world-first 'living laboratory' designed to support the development of the blue economy.
4. Open up new opportunities for Australia's aquaculture, offshore oil, gas and engineering sectors.
5. Access leading technical and research capabilities and infrastructure to support innovation and solve 'real world' challenges
6. Communicate the benefits and trade-offs associated with offshore development for all relevant stakeholders
7. Develop a strong researcher base and community with a culture of industry engagement and innovation
8. Prepare a trained workforce equipped with the skills to support the growth of the blue economy

What is a CRC?

The Australian Government's Cooperative Research Centres (CRC) Programme is the largest and most popular program with industry. It supports industry-led collaborations between industry, researchers, government and the community. It's a proven model for linking industry with researchers to solve complex problems that have the potential to provide a major benefit to industry participants. Specifically, it aims to:

- improve the competitiveness, productivity and sustainability of Australian industries, especially where Australia has a competitive strength;
- deliver outcomes in line with government priorities;
- encourage and enable small and medium enterprise (SME) participation in collaborative research; and
- foster high quality research to help solve industry specific problems through collaborative research partnerships, and between industry entities and research organisations.

CRC's are funded for up to 10 years to catalyse collaboration between industry research and community sectors and to develop important new technologies, products and services.

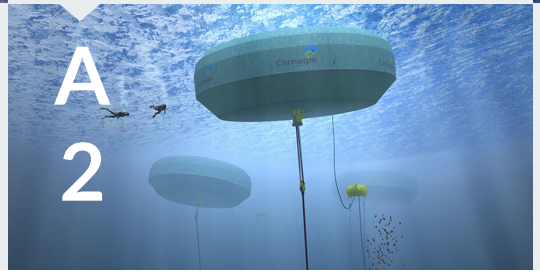
Research **Priorities**

Renewable energy

Overcoming the technical and scientific challenges in converting the vast energy of the ocean into electricity and energy carrying liquids, opening it up to world export markets.

Seafood & marine products

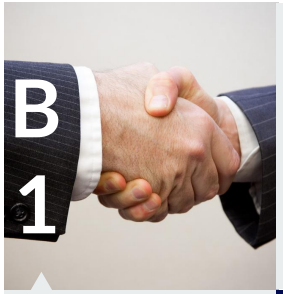
Developing, testing and evaluating innovative aquaculture production and processing systems for a range of commercial species.



Offshore engineering

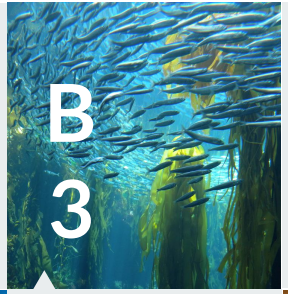
Delivering innovative engineered solutions through infrastructure that facilitate offshore development in the blue economy.

Cross-cutting **Themes**



Economic Development

Exploring new business models to support commercialisation of marine products & offshore renewable energy developments.



Education, Training & Outreach

Delivering targeted education & training to support the growing needs & challenges posed by marine and maritime industries.

Consumer Markets & Product Applications

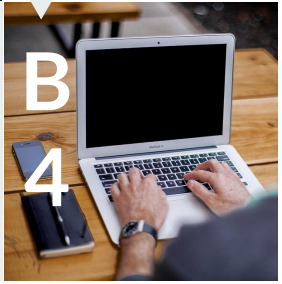
Tracking changing consumer and market demands, food provenance and ecolabeling, product marketing and end-use energy applications for exportable renewables.

Governance, Management & Policy

Developing the governance options for safe, sustainable and appropriate development of offshore platforms and associated industries.

Environment & Ecosystems

Implementing food and renewable energy systems that meet the expectations of sustainable development and healthy ecosystems.



New Technologies

Investigating the integration of new technology into the blue economy supply chain, including robotics, AI and autonomous vehicles.

International Energy Agency - Ocean Energy Systems

"The oceans contain 97% of the earth's water and 71% of the earth's surface is covered by seawater. Approximately 3 billion people live within 200 km of the coast and migration is likely to cause this number to double by 2025. Ocean energy will supply electricity, drinking water, seafood and other products at competitive prices, creating jobs and reducing dependence on fossil fuels."

Who might be involved?

Already, the Blue Economy CRC bid is attracting interest from a range of cross-sector stakeholders. These include (albeit is not limited to) the following:

01 | Aquaculture & fisheries - farmers, aquafeed, processors, distributors

02 | Renewable Energy - tidal, wave, offshore wind, solar PV, storage, hydrogen, micro-grids, project developers, network providers, gas distributors

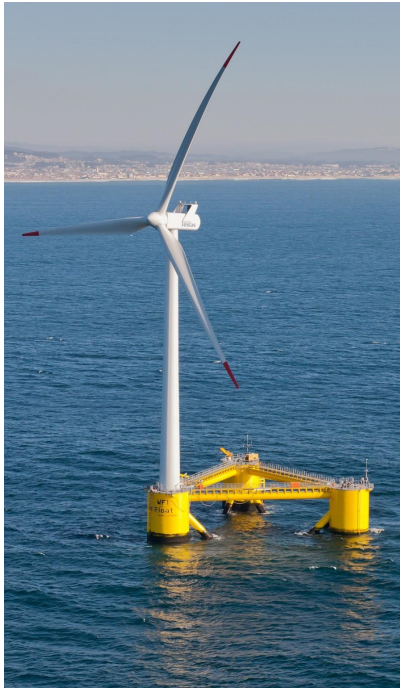
03 | Engineering - offshore, marine, naval architects, EPC/O&M contractors, consultants

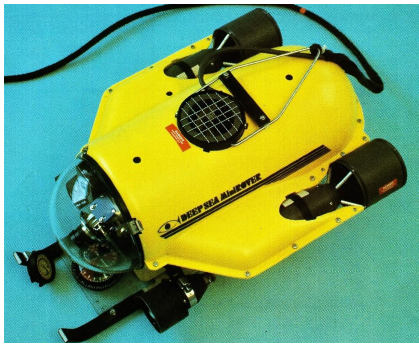
04 | Research - universities, VET providers, Commonwealth & private research agencies, RTOs

05 | Government & NGOs - local, state & federal primary industry, environmental, planning, export and regulatory agencies, Growth Centres

06 | Industry bodies - seafood, energy, engineering, sustainable business

07 | Investors - public, institutional, fund managers, private, grant agencies





Funding

Bidding for a CRC is a highly competitive and resource intensive process. There are two ways to get involved in the CRC; become a **core participant** or a **supporting participant**. Flexible investment and tailored participation agreements will be developed to ensure that the CRC's business model meets the partner's needs. **Core participants** have an opportunity to shape the CRC's business model and direction. **Supporting participants** commit a smaller amount of funding that may be made on a per-project basis. Flexible terms can be tailored to suit particular business requirements and situations.

Bid contributions (Core participants)

$50K ea

Seeking core participants willing to invest in the bid itself, along with UTAS

Seeking CRC cash contributions totalling

$50m

Targeting the maximum of $5m p.a. over 10 years

CRC budget total

$150m+

Matching participant cash of $5m p.a. + in-kind contributions equivalent to $5m p.a. + CRC funding

Governance

The Blue Economy CRC will offer flexible IP and commercialisation agreements. In principle, IP resulting from Blue Economy CRC funded projects will be owned by CRC participants only and beneficially distributed according to the project shares defined in individual Project Agreements. Companies sponsoring a project will retain pre-defined rights in relation to the commercialisation of the IP developed in that project, with the CRC acting as a co-ordinator and arbitrator on IP matters.

The Blue Economy CRC will be an incorporated company limited by guarantee with an independent and predominantly skills-based Board of Directors that will provide oversight of the CRC's direction, activities and performance, as follows:

- Core participants will be represented on a Participants Committee and will also be eligible for Board positions.
- The CRC will retain a small, dedicated Secretariat to support operations, IP management and research co-ordination.
- The company will be a 'for-profit' company as no net tax is likely to be payable provided all income is expended on research, training and related activities. This will enable direct benefits to flow to participants and can allow flexible IP and licensing arrangements.

Timing and process

NOV 2017

Bid Prospectus Launched

Bid prospectus circulated for comment and engagement, with key activities and critical dates communicated.

FEB-APR 2018

CRC Participants Engaged

A fully funded bid campaign will be ready for launch in earnest from the new year, with dedicated resources committed to the development of the CRC application and to engaging with key participants, researchers and industry stakeholders.

MAY-JUL 2018

Stage 1: Expression of Interest

Engagement with industry & research stakeholders will take place to define the bid detail, including scope, goals and partners while addressing the selection criteria.

AUG-NOV 2018

Stage 2: Business Case & Interview

A detailed business case is submitted, inclusive of budget, team, research outline and completion of the CRC Impact Tool. This is followed by presentations and interviews to determine the viability and overall merit of the bid.

DEC 2018

Funding Offer Made & Negotiations Commenced

Once a funding offer is made and accepted, negotiations can commence with the Department of Innovation, Industry & Science regarding a Funding Agreement.

JAN-JUN 2019

Funding Agreement Executed - CRC commences operation

After execution of the relevant documentation by all parties and participants, the CRC is ready to commence activity for the contracted funding period.

Next Steps

- Familiarise yourself with the **obligations for CRC participants** (pg 8).
- Please register your interest at **www.blueeconomycrc.org.au** or talk to one of the bid team. We'll get in touch as soon as possible to hear your ideas, answer your questions and to discuss the scope and nature of your potential investment.
- Once a general 'fit' has been determined, over the coming months **we will host a series of workshops, webinars and 1-on-1 conversations to map out the research and commercialisation program in more detail**, provide detailed guidance on specific application requirements and to generally seek your input into the development of the bid.

Bid Team

We're hitting the ground running and looking for innovative, like-minded research and industry participants willing to support the development of our bid and who want to be a part of this exciting research and commercialisation program. Feel free to get in touch via:

enquiries@blueeconomycrc.org.au

Bid Director
Prof Stewart Frusher
stewart.frusher@utas.edu.au

Bid Director
A/Prof Irene Penesis
i.penesis@utas.edu.au

Bid Engagement Consultant
Dr Scott Grierson
scott.grierson@blueeconomycrc.org.au

Bid Engagement Consultant
Greg Spinks
greg.spinks@consultingis.com.au

Contact Us

enquiries@blueeconomycrc.org.au