

Enhancing marine production through innovation

Developing a sustainable blue economy



Vision: To deliver innovative sustainable offshore marine production solutions for an Australian blue economy.

Mission: To develop Tasmania as an internationally recognised centre of research into the development of offshore marine production technologies

Rationale: Australia has sovereign rights over the world's third largest exclusive economic marine zone, larger than its land area and with global interest in developing the blue economy, Australia is ideally situated to develop its marine estate. As the world's population increases, so too the need for increased food and energy. As Australia's largest seafood producing state (by value), Tasmania has the opportunity to build on its reputation for quality high valued seafood from fisheries and aquaculture and for its innovation in marine science and technology. By harnessing the skills and expertise of Industry, Government and research there is significant potential to develop new and innovation food, marine renewable energy and marine construction industries around offshore marine production systems.

The University of Tasmania has a strong focus on marine research and hosts

key Australian marine science Institutes: The Institute for Marine and Antarctic Studies (IMAS) and the Australian Maritime College (AMC). These Institutes have strong national and international reputations for excellence in research into fisheries and aquaculture, and marine and renewable energy engineering, especially in offshore and extreme environments. IMAS leads the world in the development of lobster aquaculture, being the only Institute that can routinely provide pilot scale numbers of juvenile lobsters of many species. The University has recently invested in a state-of-the-art experimental aquaculture facility, the largest in the southern hemisphere. The joint University-CSIRO Centre for Marine Socioecology brings together national expertise in the multiple use management of Australia's marine domain. The AMC is ideally positioned for leading Australia's research effort into the design, installation, operation and survivability of offshore marine platforms. The AMC has expertise in marine engineering and renewable energy and off-grid electricity generation, and specialist hydrodynamic facilities including a tow tank, model test basin, circulating water channel and ship simulator.

“As demand for seafood continues to rise, aquaculture presents a tremendous opportunity not only to meet this demand, but also to increase opportunities for the seafood industry and job creation.

Expanding U.S. aquaculture in federal waters complements wild harvest fisheries and supports our efforts to maintain sustainable fisheries and resilient oceans.”

Kathryn Sullivan,
NOAA, USA.



Tasmanian advantages

1. Is Australia's largest, by value, producer of seafood
2. Host Australia's largest aquaculture industry
3. Hosts Australia's key marine and maritime Institutes: IMAS & AMC
4. Receives some of the highest global prices for quality seafood (lobster and abalone)
5. Global reputation for quality, safe and sustainable seafood
6. Is located in the World's best climate for wave energy
7. Only global organisation to be able to produce pilot quantities of rock lobsters from eggs
8. Tasmania's biosecurity is unique in the world due to famously clean air, clean water and freedom from the outside world's pests and diseases
9. Tasmania has a natural competitive advantage in renewable energy, with its proven hydro and wind resources and emerging ocean, geothermal and biomass resources
10. Enhanced skills, new technologies, and design and systems integration in order to drive innovation in the maritime industry

Australia's key marine seafood exports are reef-based products: lobsters and abalone, which are also Tasmania's most valuable fisheries. Tasmania supplies over 25% of global wild caught abalone and receives the highest global prices for abalone and lobsters, often exceeding over \$100/kg (ex-vessel) as live product. Tasmania also hosts Australia's largest aquaculture industry and is recognised internationally for its sustainable and low impact production of high quality fish and shellfish species. Management of Tasmania's marine resources is built around a strong co-management arrangement built on strong industry, government and research participation. The State Government has identified the need to seize new opportunities – especially in premium food production.

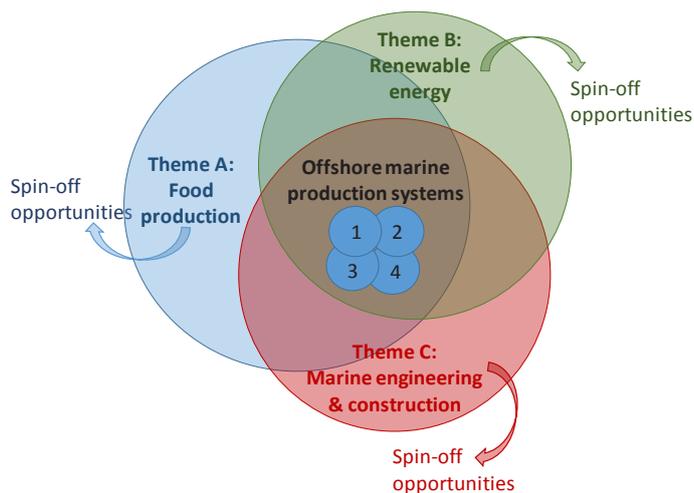
The development model being proposed by the current University of Tasmanian project team is built around three core themes: food production, renewable energy and marine engineering and construction. Each of these themes is underpinned by a transdisciplinary research

approach wherein researchers from various disciplines work with industry expertise across the key research areas of innovation and experimentation, monitoring and evaluation, policy, economics and management, and communication, engagement and education.

European oceans will be subject to massive development of marine infrastructure in the near future. The development includes energy facilities, e.g. offshore wind farms, exploitation of wave energy, and also development and implementation of marine aquaculture.

www.cordis.europa.eu/project/rcn/101743_en.html

Developing a sustainable blue economy: potential themes and research areas



RESEARCH AREAS

- 1 Innovation & experimentation
- 2 Monitoring & evaluation
- 3 Policy & management
- 4 Communication, engagement & education

Globally the world is looking to its oceans to enhance ecosystem goods and services including food, health products and renewable energies. We will partner with these research organisations and associated industries to combine strengths but also differentiate ourselves in the seafood we produce.

While the northern hemisphere focuses primarily on fish, Australia has the opportunity to become a world leader in innovative offshore marine production systems focused on high value and sustainable reef species.

With over 50% of the world's population based in Asia, and a rapidly growing middle and upper class, the production of high value, sustainable and accredited seafood from the world's cleanest seas provides enormous opportunities for Australia.

Benefits to industry and government:

- Industry led research for enhanced development of food production, ocean renewable energy and offshore engineering
- Access to Commonwealth funding opportunities
- Access to world class researchers
- Access to world class research facilities
- Increased potential "spin-off" product development
- Access to international industry-research collaboration.
- Profile as an Australian leader
- Creating opportunities for marine and manufacturing sectors which are an important and valuable contributor to the State's economy.



“The population is growing and food for this increase in numbers will have to come from the sea. But, if we are to be successful in this effort, the people who understand technology, i.e. the engineers, will have to cooperate with those who know a lot about fish; the biologists. The research people will also have to cooperate with industry, because if they don't, it will be impossible to put the technology to practical use.”

Professor Torger Reve
Strategy and Industrial Competitiveness,
BI Norwegian Business

With the third largest exclusive economic zone (EEZ) in the world, there are considerable opportunities for increased use of our marine domain. The blue economy is estimated to exceed \$42b annually (Oceans Policy Science Advisory Group 2013). This economic activity is expected to grow at a faster rate than terrestrial economic activity, more than doubling in value over the next decade (National Marine Science Committee 2015).

Contacts

Associate Professor Irene Penesis

Australian Maritime College | National Centre for Maritime Engineering and Hydrodynamics
T +61 3 6324 9770 | E i.penesis@utas.edu.au

Professor Stewart Frusher

Director – Centre for Marine Socioecology
Institute for Marine and Antarctic Studies (IMAS)
T +61 (0)439378743 | E stewart.frusher@utas.edu.au