



Turn your idea or tech into  
a wave of opportunity

**Marine  
Bioresources**

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**OCEAN  
STARTUP  
CHALLENGE**

[oceanstartupchallenge.ca](http://oceanstartupchallenge.ca)

# Challenge Statements

Now is the time for you to take advantage of rapid growth in the ocean economy, projected to reach \$3 trillion by 2030.

Oceans are the foundation for much of the world's economy. More than 3 billion people rely on oceans to provide jobs and livelihoods. Oceans feed us, regulate our climate, and generate 50% of the oxygen we breathe. Oceans are valuable sources of renewable and non-renewable resources and you can make a big impact.

## **Curious what ocean sectors present big opportunities to innovate? We have you covered.**

We sought input from industry and thought leaders who shared their top pain points across the following areas: aquaculture, fisheries, biosciences, healthy oceans and ecosystem services, transportation, energy, and enabling technologies and data analytics. Common themes that run across those areas are the need for data, information, knowledge, decision-making tools, and enabling technologies.

Be innovative. Desirable attributes of solutions might include being: low cost, easily deployable, easily maintained, rugged for harsh environments, accurate, low power, real-time, remote, and safer for human operators.

We need diverse entrepreneurs and innovators from rural, Indigenous and urban communities across Canada, and internationally.

Step up to make a positive impact by solving one or more of the ocean industry priorities listed in the areas below.

## **Marine Bioresources**

Marine bioresource companies create new value from resources within the marine environment and support additional value creation for operators in fisheries and aquaculture. Businesses and consumers are quickly realizing that there are many valuable products that can be derived or manufactured from marine resources, such as high-quality additives for food, cosmetics, pharmaceuticals, coatings, and even pet treats. There are additional opportunities to create a circular economy by utilizing the byproducts of fisheries and aquaculture processing (fish and shellfish waste) to create higher-value products. Sustainable aquaculture of fish and seafood can help feed the world's growing population. For that to happen, new, safe and effective tools and technologies are needed to address animal health, nutrition and production. More effective prevention and treatment methods as well as diagnostics and monitoring tools are required to detect, prevent or treat bacterial, viral and parasitic diseases. Increased aquaculture production also equates to a growing demand for raw material feedstocks and a desire for novel, sustainable, and locally sourced feed ingredients.

The marine bioresources industry has identified the following priorities for technology innovation and development:

### **By-products / Bioconversion**

- Develop new, value-added products, using invasive species, underutilized species and problem species such as green crab, tunicates, sea lettuce, and sea lice, which could become separate bio-resources for new businesses.
- Develop an alternative, commercial scale use for fish and shellfish waste.

# Challenge Statements

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## **Marine Biosciences**

- Develop an efficient screening mechanism to identify bio-active compounds in marine life.
  - For example, creating an endotoxin assay for horseshoe crab blood.
- Develop a novel methodology for the comprehensive characterization of biodiversity in marine environments.
- Develop a low-cost, and easy-to-deploy from small vessels, sediment sampling technology for identification and discovery of microbes in challenging environments, such as the Arctic and deep-water habitats.
- Develop a natural, effective and safe sea lice repellent or exterminator.
- Discover a new therapeutic that incorporates natural marine and marine life products, with selective activity against virus strains, for example COVID-19, and that is non-toxic to mammalian cell lines.
- Discover a new therapeutic that can enhance the microbiome in common fish species with the intent of improving fish health and performance.