

# Growing Canada's Ocean Economy

Canada's ocean industry at a glance

**465+**  
members  
and **280**  
project partners  
across Canada



**71**  
approved **Ocean Supercluster** projects  
that will help Canada tackle  
**globally-shared challenges**



**\$360 million+**  
in total **project value** to date

**110+**  
new **made-in-Canada**  
ocean products, processes, and  
services to sell to the world



**100%** of projects include  
**SME partners**



**86%** of projects are  
**led by an SME**



**4,500 jobs**  
created from **Ocean Supercluster** projects

**350,000+**  
people employed  
by the Canadian  
ocean economy



**500%**  
economists and analysts expect a  
five-to-one ROI made in the  
sustainable ocean economy  
over the next 30 years

**\$4 trillion:**

the expected value of the  
global ocean economy by 2030

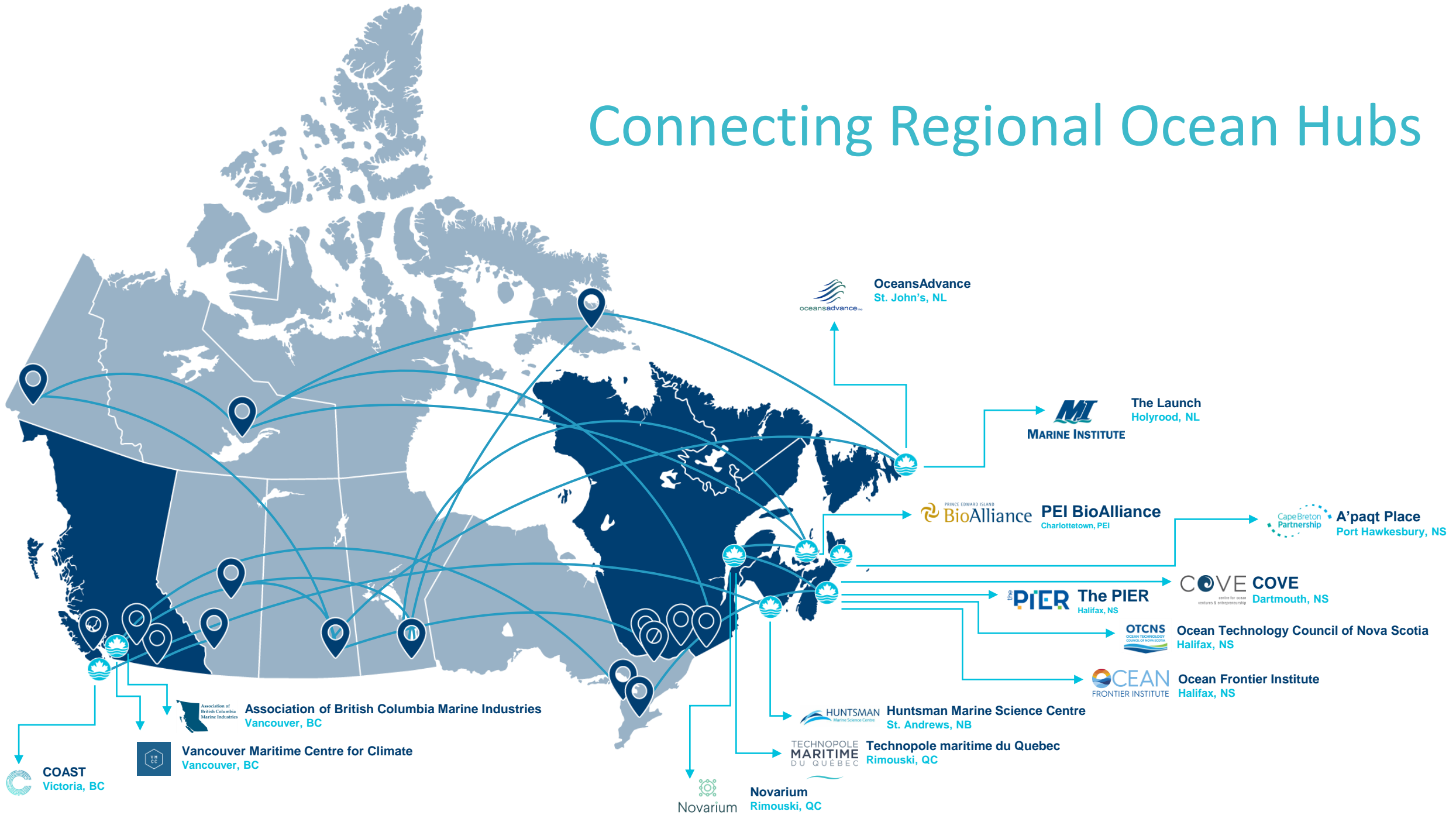
**\$31 billion:**

the contribution of the Canadian  
ocean and marine sectors to the  
national economy each year

**30+** new  
**ocean companies**  
established

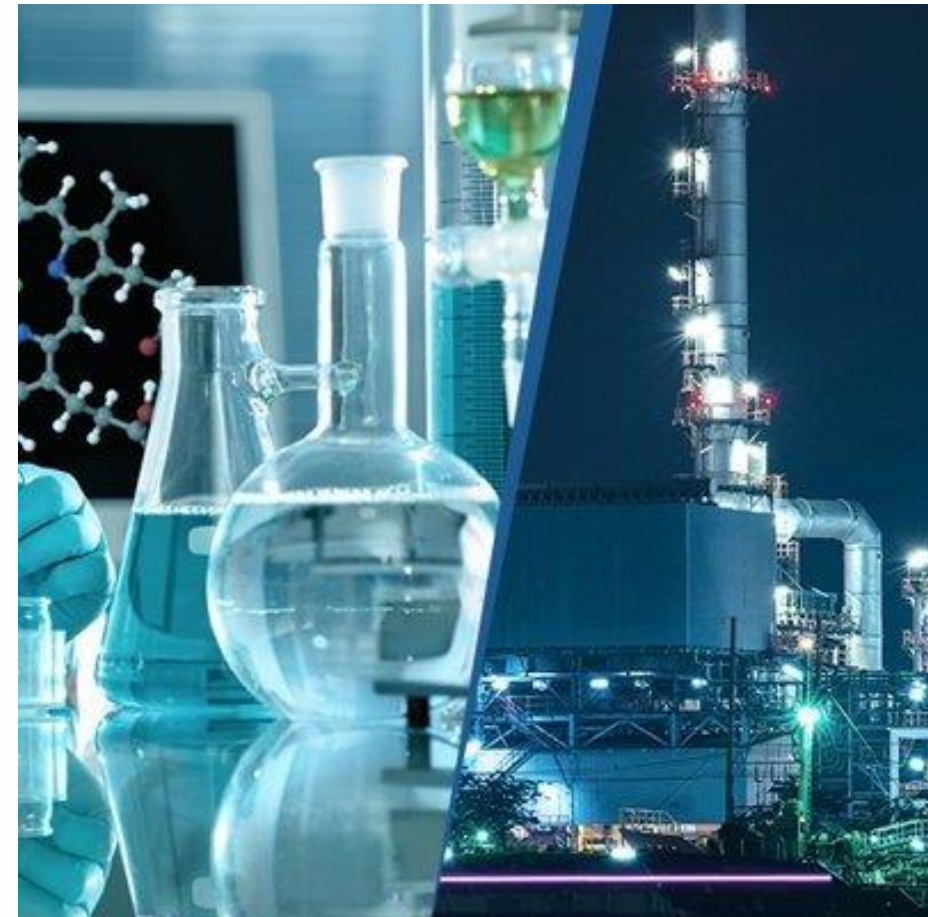
**21** research  
**project partners**

# Connecting Regional Ocean Hubs



# Clean Ocean Advanced Biofuels Project

- **Canada's First Renewable Diesel** – introduction of a low sulphur, lower carbon intensity biofuel across the marine ecosystem, using agricultural and forestry by-products
- **Lipid production for Human Health** – Mara produces EPA/DHA with improved nutritional value for human health products, bi-product lipids being supplied to Forge – Lipid to Hydrogen refining process.
- Chemical equivalent to diesel,  $\text{CO}_{2\text{eq}}$  reductions ~80% on refining. Glycerin bi-product an input back to Mara. 3,500 L for field tests.
- **\$65M project led by** – Valent Low Carbon Technologies, Forge Hydrocarbons, Mara Renewables, Horizon Maritime, Clearwater, Katal, Marimetrics and SDTC funding.



# Project ORCA

- **Transitional Green Fuel** – providing a green fuel for vessels providing significantly reduced emissions with no retrofitting required.
- **Fuel composition** comprising a mixture of hydrocarbon fuel and a proprietary ‘drop-in’ biochemical water emulsion. Treated water is used as a delivery system for combustion species in the form of nano-bubbles and reactive species. Scaling to 150,000 L blended at ~ 1:10
- **Preliminary Testing** – has demonstrated stronger results than expected in the reduction of GHGs (CO<sub>2</sub> / NO<sub>x</sub>) and particulates. Targeting 70% reduction with equal fuel efficiency.
- **\$4.25M project led by** - Katal Energy together with partners Deep Sense (Dalhousie), Valent low carbon technologies, University of Calgary, SAIT, Horizon Maritime, Spearhead, and Mitacs.



*Horizon Maritime also working with Graphite Innovation & Technology on hull coatings to reduce biofouling and drag leading to further reduction in GHG.*

# Split PM Hybrid Propulsion Motor Project

- **Advanced Permanent Magnet Motor Technology** – creates a system that reduces not only maintenance and fuel costs but also GHG emissions.
- **Solution for Existing Vessels** – a financially viable retrofit option designed to make the hybridization of existing vessels possible.
- 75 kW & 150 kW designs for small vessels.
- **\$1.8M project led by** – Duxion Motors, Atlantic Advanced Power Technology, and Aspen & Kemp



# Field Validation of Energy Storage System Project

- **Energy-Dense Battery Storage** – system called the “Blue Whale” aims to make the electrification of larger vessels such as ferries, viable. Multi MW.
- Containerized configuration under development to minimize downtime and reduce need for fast charging infrastructure.
- **Worldwide Interest to Electrify Vessels** – opportunity to boost Canadian exports as leader
- **\$9.9M projects led by** – Corvus Energy together with partners Seaspan Ferries, VARD, BC Ferries, UBC, and BC Hydro

