



# Innovative Alliances: The Transformative Impact of Science-Industry Partnerships

As the impacts of climate change intensify, the need to delve deeper and understand more about our ocean has never been more important. But exploring this vast expanse, which envelops 70% of our planet, is a colossal task that scientists cannot tackle alone--it must be a collective pursuit and a shared responsibility. It is within this context that innovative alliances between public entities, private sectors, and citizens are becoming increasingly crucial. These partnerships are pivotal, serving as conduits for knowledge, exploration, and innovation, and are essential for advancing our understanding of our blue planet.

In today's interconnected and rapidly evolving world, the collaboration between science and industry is more than a mere convergence of two distinct sectors; it's a necessity, a mutualistic relationship fostering advancements that have the potential to reshape society and address pressing global challenges.

A prime example is the fisheries sector. For decades, fisheries have been playing a key role in collecting scientific data that can support our understanding of marine biodiversity, from documenting changes in local fish populations to trialling innovative bycatch reduction devices. Given the escalating need for extensive oceanic data around climate change, there is an urgent need to expand the scope of activities and develop new partnerships within blue economy sectors.

"There are still huge amounts of untapped potential these sectors can offer in collecting vital data on topics such as plastic pollution and ocean biogeochemistry," says Dr. Véronique Garçon of the [Global Ocean Oxygen Decade \(GOOD\) programme](#).

"These alliances are significant as they have the potential to facilitate global ocean observations and contribute to a more profound and comprehensive understanding of marine ecosystems at a pace much faster than science can do alone."

## Nurturing innovative alliances in Europe

Horizon Europe is the European Union's key funding programme for research and innovation. With a budget of €95.5 billion, the programme facilitates [public-private partnerships](#) with the goal of tackling climate change, helping to achieve the UN's Sustainable Development Goals and boosting the EU's competitiveness and growth.

The EU is also actively promoting international cooperation and infrastructure sharing to advance Arctic observations and protect its ecosystems. The Arctic's extreme and volatile conditions, its remoteness, and its vast size all contribute to the formidable obstacles faced by researchers.

“The Arctic is warming four times faster than the global average. We need observational data with a higher spatial and temporal resolution so we can fully understand the challenges faced by the Arctic environment and for developing sustainable solutions to preserve its ecosystems” Garçon says, “There are only three icebreakers in Europe that can get to the Arctic year-round, so we must make the most of every available avenue to gather more data and conduct long-term observations essential for discerning climate trends.”

Projects such as the EU-funded [Arctic Research Icebreaker Consortium \(ARICE\)](#) aim to provide Europe with better capacities for marine-based research by better coordinating the existing polar fleet, providing transnational access to research icebreakers outside of Europe, and collaborating with the maritime industry in the Ships and Platforms of Opportunity Programme.

By leveraging such partnerships, scientists can gain more regular access to these remote and sensitive regions, allowing for systematic study and long-term observation of marine life and oceanic conditions.

## Accessing remote regions through new partnerships

The ARICE-Ponant partnership arose from a desire to improve access to the Arctic, avoid duplicating efforts, and ensure scientists have access to different vessels. This alliance fosters a beneficial partnership where Ponant provides the infrastructure, and ARICE ensures the quality of the science undertaken. One such project is the GOOD-IMDOS project.

Following the success of their inaugural expedition in 2022 onboard the advanced icebreaker *Le Commandant Charcot*, the GOOD-IMDOS project is part of a long-term observation programme aiming to enhance our knowledge of ocean oxygen levels, plankton ecosystems, and microplastic contamination in the Arctic. Over five years (2022–2026), the project will offer invaluable insights into the UN Decade of Ocean Science for Sustainable Development (2021–2030), the GOOD programme, and the Integrated Marine Debris Observing System (IMDOS) of the Global Ocean Observing System (GOOS).

“While dedicated research vessels will always possess more sophisticated technology, the facilities onboard *Charcot* are truly remarkable for a cruise ship, designed with scientific exploration in mind,” said Tim Boxhammer, the lead scientist onboard and a marine biogeochemist at GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany. “We are using the same precise methods for sampling and analysing seawater as we would on a specialised research vessel. The ship is equipped with a CTD (Conductivity, Temperature, Depth) profiler, enhanced by an additional oxygen sensor, helping us capture measurements of oxygen concentration from the sea surface to the deep ocean, providing much-needed insights into the effects of climate change on the ocean’s uptake capacity of oxygen.”



*Icebreaker le Commandant Charcot. Arctic GOOD-IMDOS science campaign in June 2023. Photo credit: Xavier Boymond.*

## Promoting citizen science

The presence of scientists on these expeditions serves multiple purposes and brings manifold benefits. It not only facilitates pivotal research but also acts as a medium for environmental education, inspiring passengers to appreciate and understand the delicate balance of marine ecosystems. Boxhammer views these partnerships as important channels for research and education, emphasising, “We’ve seen first-hand how our interaction with passengers can foster a deeper appreciation for marine science and help them understand the urgency of climate action.”

David Beaune, an ecologist and one of the nine naturalists aboard the *Charcot*, elucidates the multifaceted roles they play, ranging from educators and guides to guardians of the pristine environments they explore. “We are lecturers, but also in the field, we are the naturalist guides, who will explain on the ground what our guests see, what lies behind the names of animals, plants, and their ecology,” he says. “I take this mission to heart, and I am committed to raising people’s awareness, not just to amaze them, but to make them realise that they are an integral part of this world and can affect it for better or worse.”

These interactions connect the scientific community with the public, encouraging a sense of responsibility and stewardship for the ocean. The participation of citizens in scientific research also enriches the conversation around marine conservation policy. It helps create a more informed and aware society, which is essential for the sustainable management of ocean resources.

## The Future of Oceanographic Exploration

“Of course, there are legitimate concerns that exist, such as the potential preference of governments for cruise-based research over investing in dedicated research vessels, impacting the long-term sustainability of research funding,” says Garçon.

“But overlooking these opportunities won’t aid in fostering relationships or advancing global solutions. It only highlights the necessity of open conversations and close collaboration between public entities, private sectors, and governments so we can navigate any challenges and make the most of the opportunities presented by these alliances.”

Partnerships between science and industry are paving the way for a new era of oceanographic exploration and understanding. The convergence of diverse sectors, from luxury cruise lines to fisheries, is unlocking unprecedented opportunities for research and data collection in the most remote and uncharted territories of our ocean. These collaborations are not just reshaping the way we conduct marine research but are also fostering a deeper connection and appreciation for our marine ecosystems among the wider public.

“At the end of the day, the exploration and conservation of our ocean should be a shared responsibility, and it is through unity, innovation, and a shared passion for the marine world that we can hope to preserve its beauty and diversity for generations to come,” Garçon concludes. “Every alliance forged, every piece of data collected, and every mind inspired is a step closer to unravelling the mysteries of our ocean and safeguarding their richness and vitality.”



*Science team with passengers on board the Icebreaker le Commandant Charcot. Arctic GOOD-IMDOS science campaign in June 2023. Photo credit: Xavier Boymond.*

The article was written by Kira Coley, an independent scientific journalist, illustrated with photos by photographer Xavier Boymond as part of a communication campaign to showcase Europe’s commitment to and the importance of Arctic ocean observing and monitoring. Coordinated by the EU4OceanObs team at Mercator Ocean International with funding from the European Union, we would like to thank everyone who participated in the campaign, and agreed to be interviewed, photographed, and advise the project along the way – all experts and researchers from the Global Ocean Oxygen Network (GO2NE), the Global Ocean Oxygen Decade (GOOD) initiative, GEOMAR, AWI, the Ponant Science team, the community of IOC UNESCO, the European Commission, H2020 ECOTIP project, G7 FSOI, among many others.

<https://www.eu4oceanobs.eu/oceanobserving-awareness/arctic-observing/>

