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Fostering interdisciplinarity to marine science insights from Ocean Sciences Institute

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Definition

Interdisciplinarity is a mode of research that **integrates** information, data, techniques, tools, perspectives, concepts, and/or theories from **two or more disciplines** to advance fundamental **understanding** or to **solve problems** whose solutions are beyond the scope of a single discipline or field of research practice (Giddens, 1991).

Interdisciplinary research projects require **prior reflection**: How are we positioned from a conceptual and practical point of view? What are our strengths and weaknesses? Our expectations, motivations, and constraints?

Environmental challenges in the marine environment, such as pollution, habitat degradation, overexploitation, natural hazard and impacts of climate change, are intrinsically complex and involve interacting natural and human factors. Therefore, interdisciplinarity is necessary to address these challenges, as it allows for a more comprehensive **understanding** of the **interactions** between **human societies** and **marine ecosystems**.

The **intrinsic complexity** of interdisciplinarity requires **enhanced methodological rigor** and a dual requirement (disciplinary and interdisciplinary). Interdisciplinary research may also struggle to fit within the traditional **valuation** system of scientific research. As a result, such an approach may be time-consuming and **challenging** to manage, leading marine scientists to consider social sciences and humanities (SSH) as subsidiary rather than a core dimension of research projects.

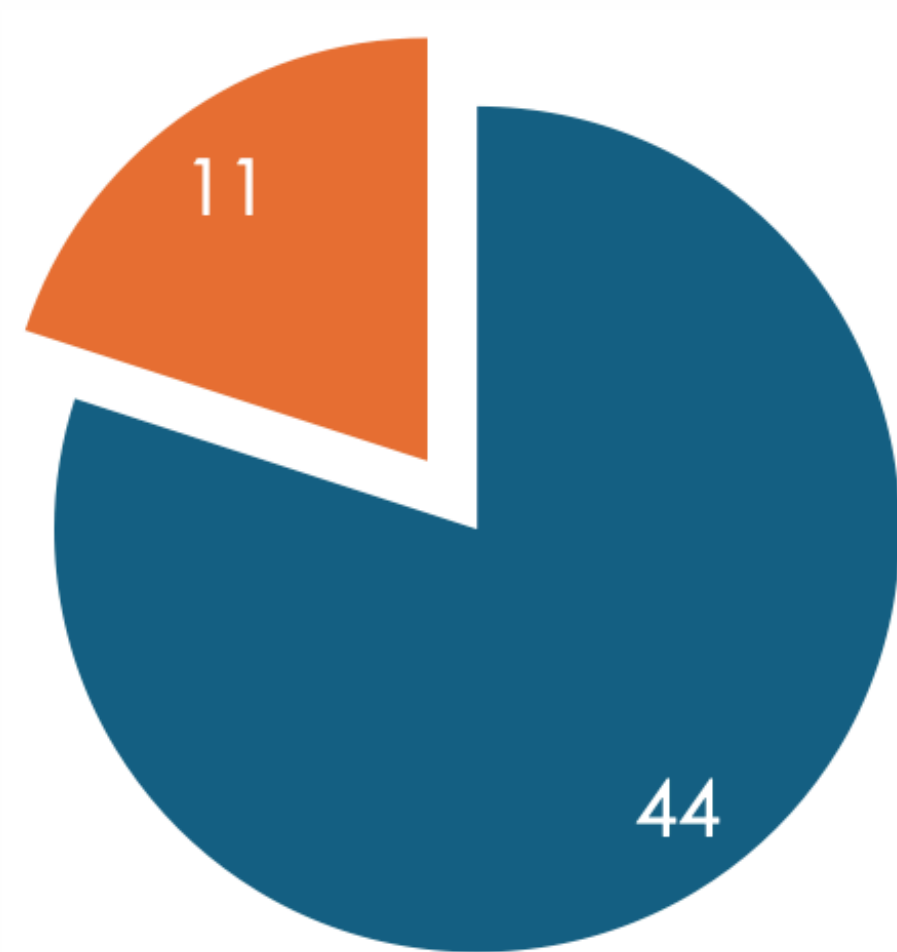
In recent decades, Institutions and Universities worldwide have been increasingly committed to embedding interdisciplinarity in marine sciences. The **OCEAN Institute** has financed since 2021 various research programs that successfully integrated interdisciplinarity. However, we observe that this approach materializes mainly within the natural sciences themselves, and that the **SSH are still underrepresented**. This is mainly due to a lack of submitted project including or led by SSH.

By sharing our “learn by doing” experience, we encourage institutions and scientists to adopt a reflexive approach to their practices, embracing collaboration, open communication, and flexible methodologies.

Bridging the gap between marine science, humanities and social sciences

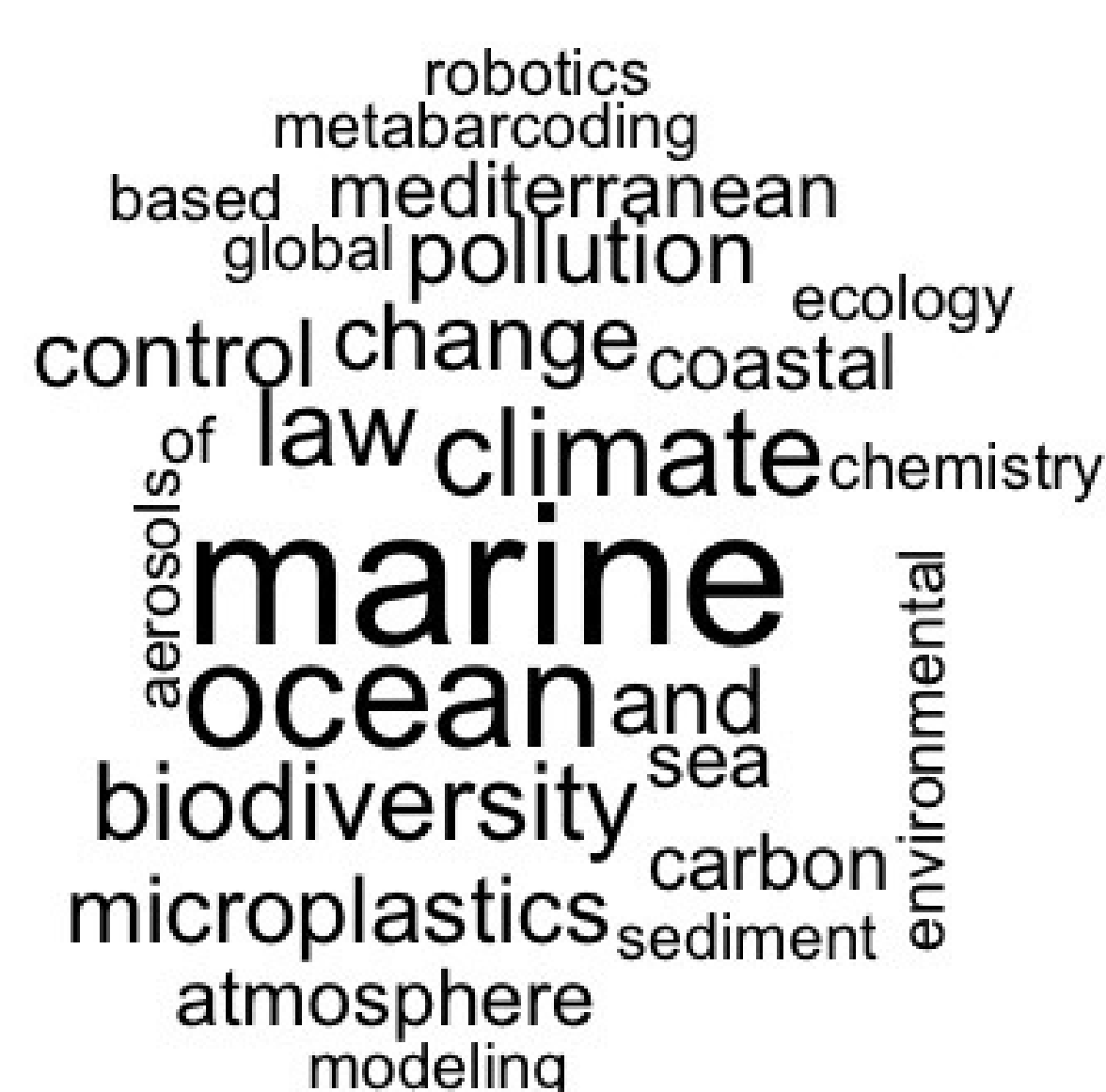
Number of projects funded by the OCEAN Institute by fields

Humanities and Social Sciences (3 labs)

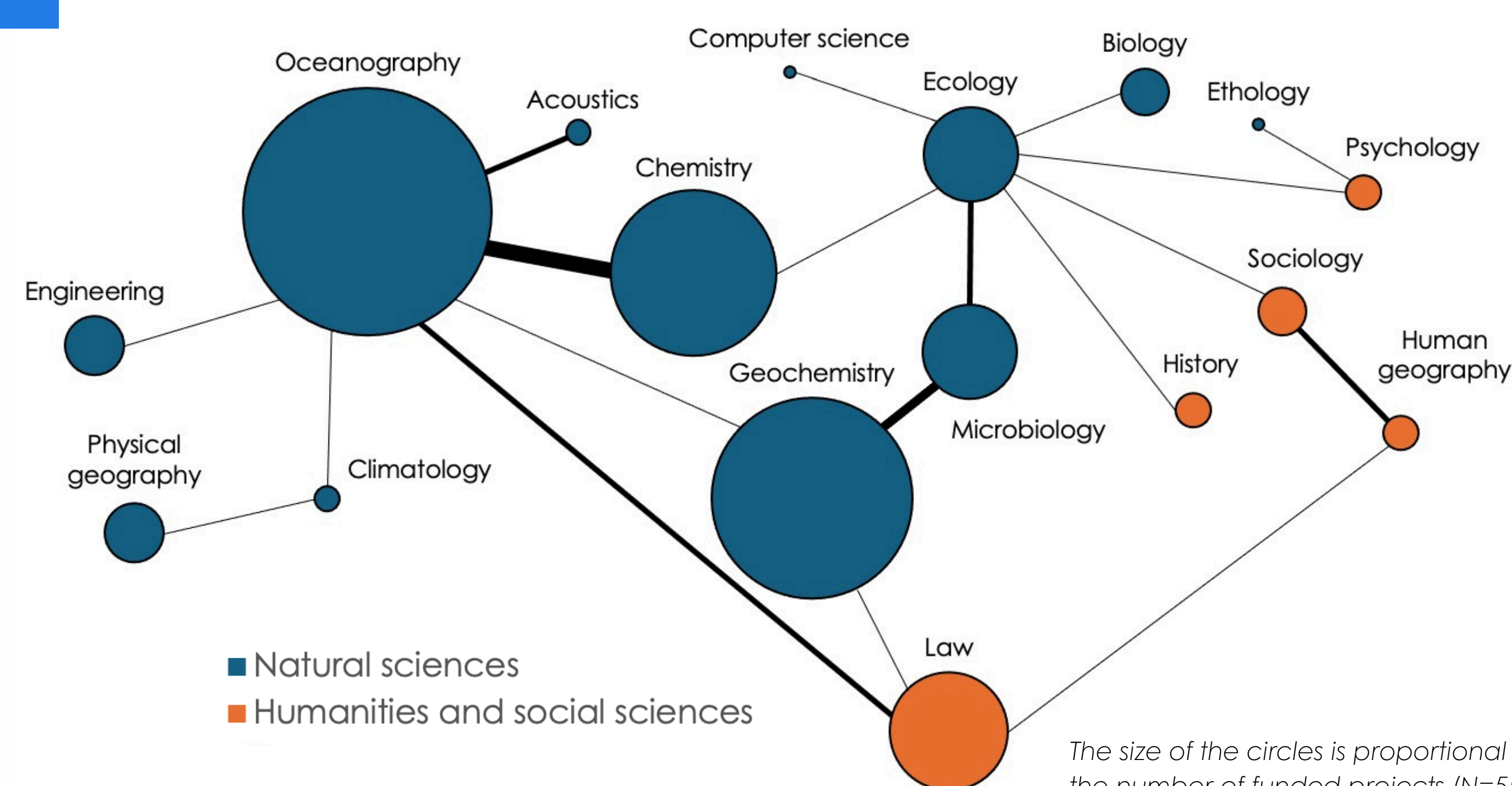


(2021-2025)

Main keywords of funded projects areas



Interactions between fields within interdisciplinary projects funded by the OCEAN Institute



The size of the circles is proportional to the number of funded projects (N=55). The links represent the mobilization of fields within a project. Their thickness depends on the number of projects involving these fields.

- Natural sciences are predominantly represented in projects.
- Interdisciplinary projects mainly involve endogenous collaborations within the natural sciences.
- Main studied topics focus on climate change, biodiversity and pollution
- Ecology and law are the most cross-disciplinary fields.

A self-assessment grid

to improve the consideration of interdisciplinarity in a research project



0 - QUESTIONING AND APPROPRIATION PHASE
Current situation, preliminary reflection

1 - DEVELOPMENT PHASE
Quality and ambition of the interdisciplinary research project and the team [relevance]

SCAN ME

2 - IMPLEMENTATION PHASE
Implementation methods and work plan aimed at facilitating coproduction [coherence, efficiency]

3 - VALORIZATION PHASE
Expected scientific results [effectiveness, impact]



From interdisciplinary research to Ocean governance

Sustainable ocean governance requires close collaboration among diverse stakeholders—including governments, scientists, industries, and citizens—to balance environmental, social, and economic goals. While interdisciplinary research offers **transformative solutions** aligned with the **UN Decade of the Ocean**, its impact is limited without effective integration into **policy frameworks**.

Bridging the gap between science and policy remains challenging due to differing priorities, communication barriers, and misaligned timelines. Indeed, a true **integrated transdisciplinary governance** would embed scientific concepts like nature-based solutions and ecosystem-based approaches into legal and political action, supported by insights from social sciences.

Strengthening the **science-policy interface** is crucial, particularly through collaborative platforms and stakeholder engagement. Furthermore, improving **scientific monitoring** is essential to assess and enforce policies regarding Marine Protected Areas and Marine Spatial Planning. Standardized, accessible **data** and cross-sector collaboration are key to ensuring that EU ocean policies deliver measurable sustainability outcomes.