

UN Decade of
Ocean Science for
Sustainable
Development

SAFE OCEANS THEME

STRATEGIC SCIENCE PLAN 2024 - 2030

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RECOMMENDED CITATION

Dawson, J., Holloway J., Holloway, N. (2024). UN Decade of Ocean Science for Sustainable Development: Safe Ocean Theme Strategic Science Plan (2024-2030). Report prepared for Fisheries and Oceans Canada. Ottawa. University of Ottawa. <https://doi.org/10.20381/ruor-30622>

NOTICES

This report reflects the views of the authors and not necessarily those of Fisheries and Oceans Canada. Intellectual Property of project results remain with the authors.

ACKNOWLEDGEMENTS

Funding for this project was provided by Fisheries and Oceans Canada. Support was provided by the Decade of Ocean Science for Sustainable Development Safe Oceans Theme in Canada.

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INTRODUCTION

The United Nations (UN) General Assembly declared 2021-2030 the “Decade of Ocean Science for Sustainable Development” as a framework for creating and strengthening connections among communities that are working to study, conserve, and sustainably use the ocean and its resources. The UN “Ocean Decade” aims to focus global scientific capacity to generate and share knowledge that directly contributes to meeting the goals of the 2030 Agenda for Sustainable Development and other relevant global legal and policy frameworks. Within the Ocean Decade initiative, seven Outcomes and ten Key Challenges (see <https://oceandecade.org/challenges/>) were identified. To support Canada’s efforts towards achieving the outcomes and in facing the key challenge areas, the Government of Canada’s Department of Fisheries and Oceans (DFO) established a group of ‘Champions’ linked to each Outcome.

Outcome 5 (Champion - Dr. Jackie Dawson) is 'A Safe Ocean - where life and livelihoods are protected from ocean-related hazards'. Dr. Dawson has established a small working group of Canadian scholars and a larger advisory group of academics, experts, stakeholders, and rights holders to support Canada's Ocean Decade activities under this theme. The working group aims to unite Decade partners in collective action (at global, regional, national, and local levels - with an enhanced focus on national and local) in specifically (directly or indirectly) advancing four of the ten Key Challenge Areas, including to understand and beat marine pollution, to protect and restore ecosystems and biodiversity, to develop a sustainable and equitable ocean economy, and to increase community resilience to ocean challenges.

OBJECTIVES

The purpose of this document is to outline a strategic science plan to establish a clear vision and prioritize the implementation of the research priorities related to the Ocean Decade Safe Oceans theme. This report can then be used to develop specific targets to evaluate our achievements throughout the Safe Oceans Decade and at the end of the Decade and can be used to propose 'next steps' moving forward.



METHODS

Research priorities and vision statements were developed using a three-phased iterative approach involving a workshop and two surveys of experts and rights holders relating to the Ocean Decade Safe Oceans outcome in Canada. These experts and rights holders were contacted to identify desirable outcomes for Canada for the Ocean Decade Safe Oceans theme, as well as establish and evaluate knowledge gaps and research priorities to attain these outcomes. Detailed information on the¹ methods can be found in .



1. Holloway J., Dawson, J., Holloway, N., Frank, L. (2024). UN Decade of Ocean Science for Sustainable Development: "A Safe Ocean" Benchmarking Report. Report prepared for Fisheries and Oceans Canada. Ottawa. University of Ottawa.

VISION

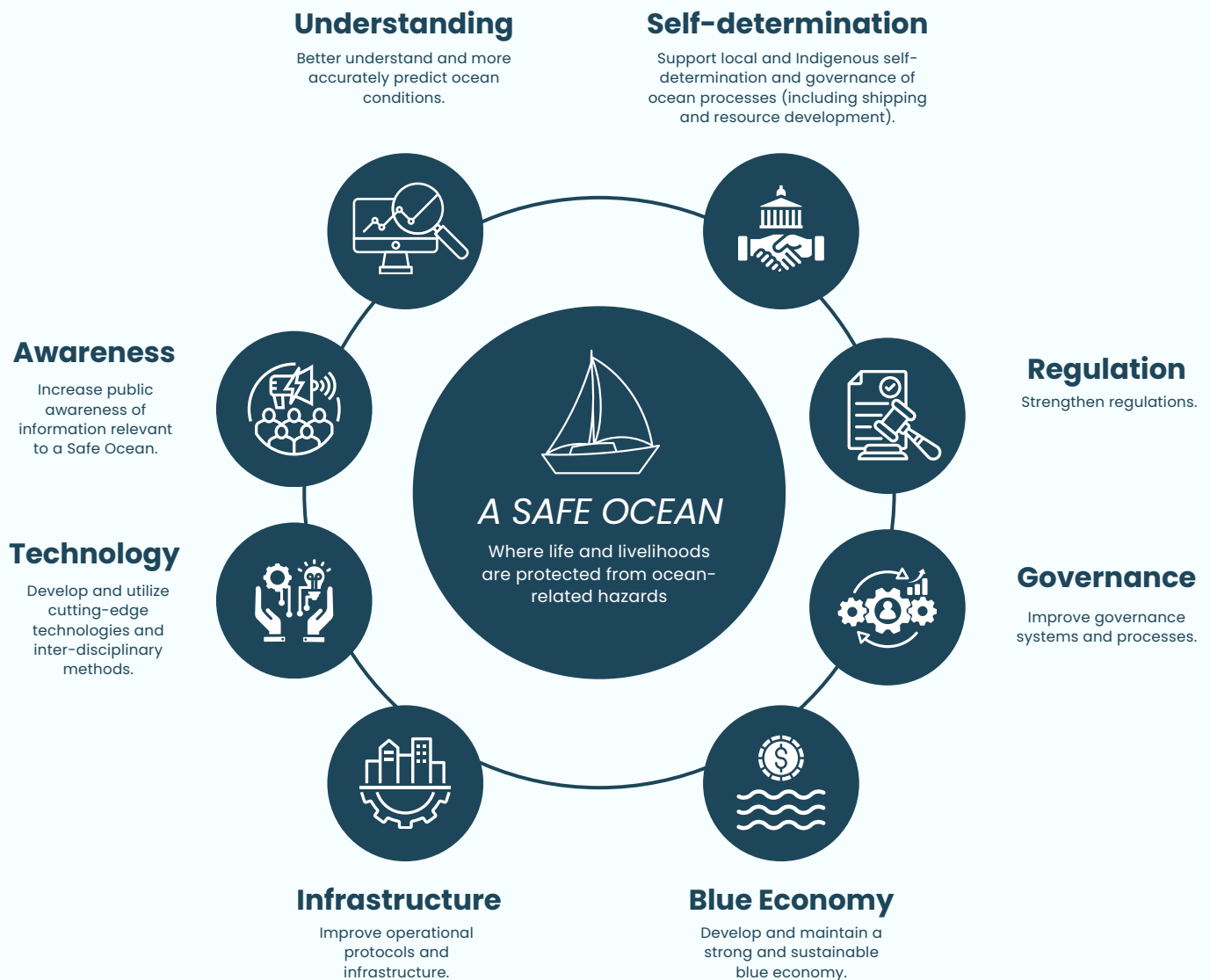


Figure 1: Vision for a safe ocean in Canada by the end of the Ocean Decade.

The full list of vision statements which contributed to these overarching themes for a vision (Figure 1), can be found in Table 1. Achieving this vision, which was established by a community of Safe Ocean experts and rightsholders in Canada, will ensure the Government of Canada contributes meaningfully to international goals outlined by the UN related to the Safe Ocean theme and relevant challenges (also established for the Ocean Decade).

Table 1: Ocean Decade Safe Ocean vision statements and themes for Canada.

<p>An ocean which is well understood and predictable</p>	<ul style="list-style-type: none"> • Increased and improved modelling and forecasting of the ocean environment to support safe navigation, science, and other needs (VS-6) • Improved ecosystem and environmental monitoring (VS-14)
<p>Indigenous and local governance and self-determination</p>	<ul style="list-style-type: none"> • Increased use of Indigenous and local knowledge and governance and management that considered Indigenous self-determination (VS-3)
<p>Strengthened regulations</p>	<ul style="list-style-type: none"> • 30% of ocean area protected from human use by 2030 and associated increases in regulations and monitoring within these areas (VS-1) • Increased regulations and enforcement for national security and sovereignty (VS-8)
<p>Improved governance system and processes</p>	<ul style="list-style-type: none"> • More effective management of existing resources and efficient program planning (VS-10) • Increased and improved inter-jurisdictional and -national cooperation/communication to support safe ocean operations (VS-17)
<p>Strong and sustainable blue economy</p>	<ul style="list-style-type: none"> • More sustainable ocean- and resource-use (VS-7) • Increased sustainable economic opportunities and support for local livelihoods for coastal communities (VS-9) • Business case for private sector investments in marine economy (VS-12) • Decreased environmental impacts resulting from shipping (VS-16)
<p>Improved operational protocols and infrastructure</p>	<ul style="list-style-type: none"> • Increased investment and research in maritime disaster response, marine safety, and search and rescue (VS-4) • Increased and improved infrastructure (VS-11)
<p>Develop and utilize cutting-edge technologies and inter-disciplinary methods</p>	<ul style="list-style-type: none"> • Increased use of and easier access to modern digital charting for safe and efficient navigation (VS-2) • Holistic and inter-disciplinary approach to research (VS-13) • Increased investments in and technological innovations for remote sensing of ocean environments (VS-15)
<p>Public awareness of information relevant to a Safe Ocean</p>	<ul style="list-style-type: none"> • Increased education and outreach about safe ocean and sustainable human use (VS-5)

RESEARCH PRIORITIES

This strategic science plan is composed of nine research priorities (Table 2). These priorities were the highest ranked research priorities according to², but only research priorities which were achievable within the Ocean Decade (2021-2030) were included (n=9).

The research priorities covered three themes:

- ◆ Understanding social and environmental risks and their spatial/temporal distribution;
- ◆ Monitoring and evaluating shipping impacts and environmental hazards; and
- ◆ Evaluating and developing adaptation and impact mitigation measures.

2. Holloway J., Dawson, J., Holloway, N., Frank, L. (2024). UN Decade of Ocean Science for Sustainable Development: "A Safe Ocean" Benchmarking Report. Report prepared for Fisheries and Oceans Canada. Ottawa. University of Ottawa.

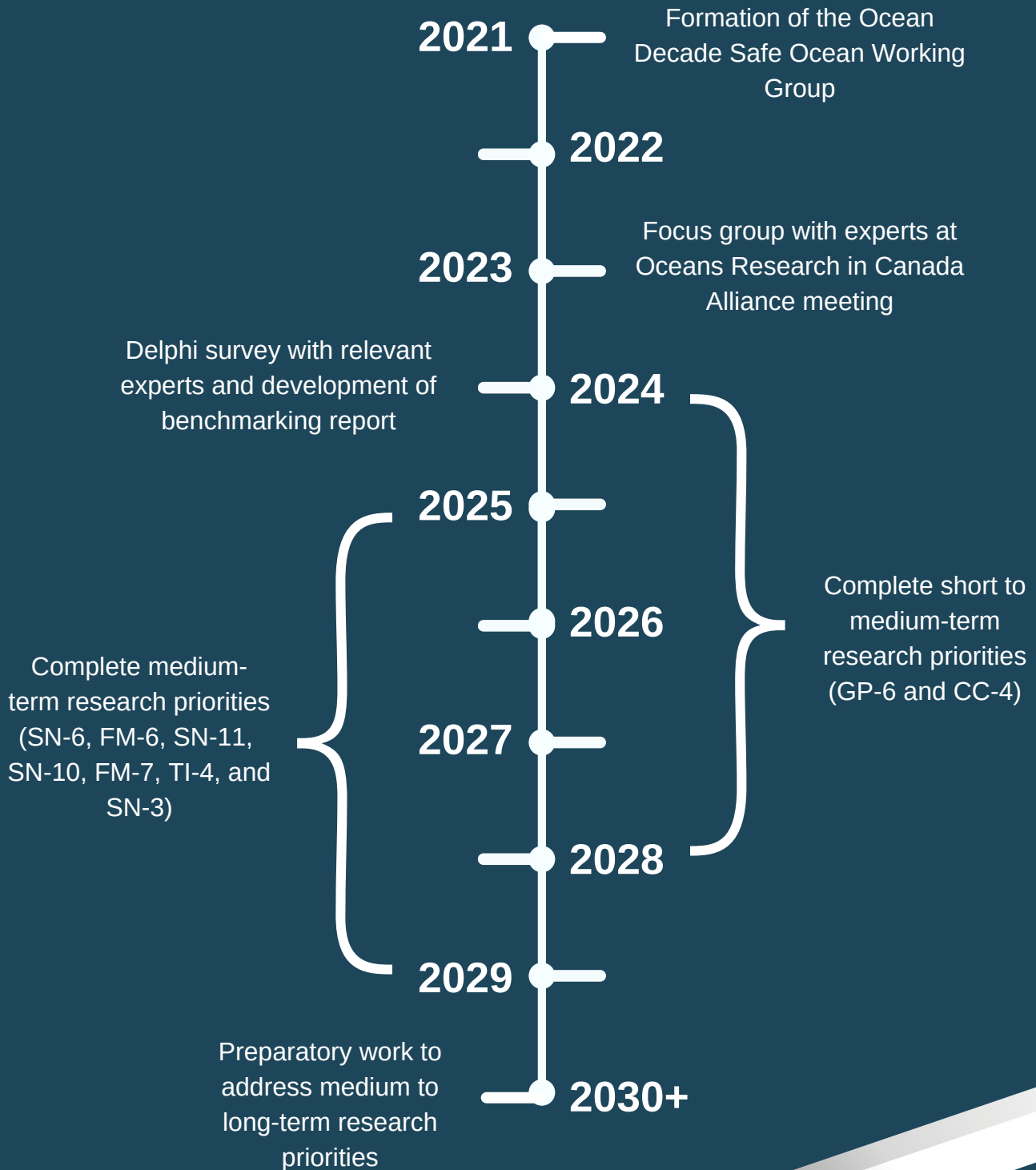


Table 2: Highest-ranked research priorities achievable within the Ocean Decade timeframe and the corresponding themes.

<p>Understanding social and environmental risks and their spatial/temporal distribution</p>	<ul style="list-style-type: none"> • Conduct a comprehensive risk assessment for changing shipping activities across Canada (enabling national, regional, and sub-regional level evaluations) (SN-6) • Produce a comprehensive set of flood inundation and flood risk maps related to storm surge and sea level rise for all coastal areas across Canada (national, regional, and localized) (FM-6)
<p>Monitoring and evaluating shipping impacts and environmental hazards</p>	<ul style="list-style-type: none"> • Monitor and model the release of ship-based contaminants, emissions, and pollutants in Canadian ocean regions (SN-11) • Evaluate the environmental, economic, social, and cultural implications of increased shipping in Arctic waters (SN-10) • Examine the potential impacts of marine hazards on Indigenous and coastal communities including those dependent on marine resources for their livelihoods and well-being (FM-7)
<p>Evaluating and developing adaptation and impact mitigation measures</p>	<ul style="list-style-type: none"> • Evaluate readiness for responding to major ocean-based pollution events from anthropogenic sources that stem from within and also outside of Canada (GP-6) • Evaluate the level of climate readiness and what climate change adaptations are needed to ensure safe and sustainable coastal community infrastructure (CC-4) • Identify and monitor significant marine areas (ecological, biological, and cultural) and consider voluntary shipping measures in these areas, such as speed reductions, no anchor areas, and others (SN-3) • Evaluate the potential for and risks of 'green fuel' technologies (i.e., hydrogen, wind, solar) (TI-4)



TIMELINE





CONCLUSION

Considering the Ocean Decade Safe Ocean vision and associated research priorities identified by relevant experts and rights holders, the next steps will involve the operationalization of this vision and these priorities. This Strategic Science Plan will support the Government of Canada's Ocean Decade Safe Oceans Working Group to establish realistic and achievable targets and indicators for each vision statement and research priority. This will subsequently allow for the Government of Canada to align its funding opportunities to reach the established targets, and for the Ocean Decade Safe Ocean Working Group to establish a detailed plan to continually evaluate progress related to achieving these targets throughout and after the Ocean Decade (2021-2030).

For the larger Safe Ocean community of knowledge and operations in Canada, this Plan will provide Canadian academic, NGO and private sector organizations and institutions with the requisite information to align their research efforts and funding priorities to address identified knowledge gaps and research priorities, which could also present a financial incentive (e.g., contracts, developing and privatizing new methods and technologies) for private sector organizations to address these priorities. This presents opportunities for new and continued public/private/non-governmental sector collaborations.

Something of consideration for organizations and institutions of all sectors is to begin thinking about research priorities beyond the Ocean Decade (2021-2030). Three research priorities (see FM-9, CC-1 and SN-4 in Table 10 in) were also highly ranked, but were omitted from this report as the expected timeframe needed to achieve them were the medium (2-7 years) to long-term (8 years or longer), placing them outside of the scope of the Ocean Decade. This said, due to their importance, these three priorities should still be addressed in the longer term, and preparatory work to address these priorities (and identify new ones) should occur during and/or after the Ocean Decade.

3. Holloway J., Dawson, J., Holloway, N., Frank, L. (2024). UN Decade of Ocean Science for Sustainable Development: "A Safe Ocean" Benchmarking Report. Report prepared for Fisheries and Oceans Canada. Ottawa. University of Ottawa.

