WCRP Climate Research Forum

Climate research priorities for the next decade

Round table – WCRP, Future Earth and the UN Ocean Decade

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9 Septembre 2021

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Contributions to the GOSR2020

The Global Ocean Science Report 2020 literally a global endeavour:

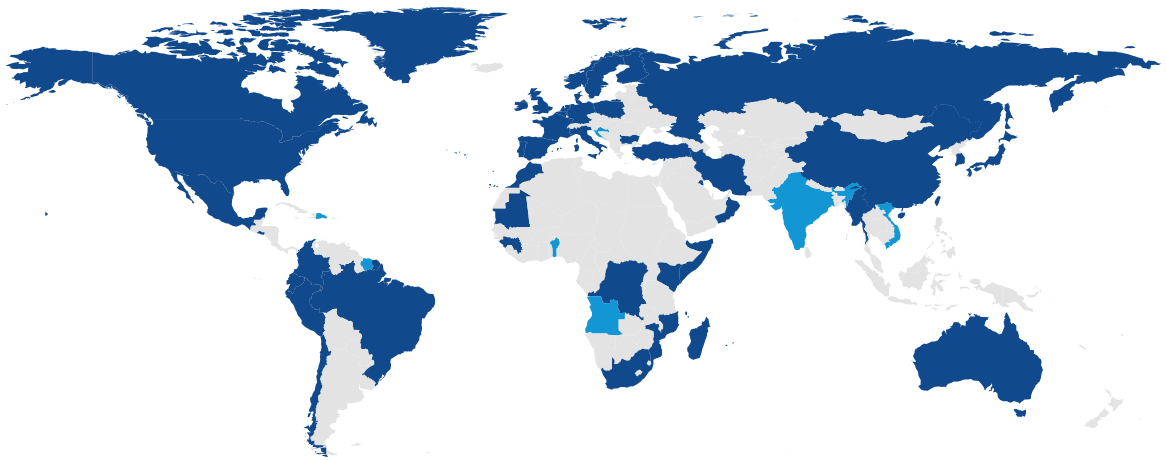

Figure ES.1. Global map indicating the Member States that responded to the GOSR2020 questionnaire (dark blue); countries where data from the GOSR2017 are used in the GOSR2020 assessments are shown in light blue. *Sources*: GOSR2017 and GOSR2020 questionnaires.

45 Member States answered the GOSR2020 questionnaire, and many more are presented in bibliometric, technometric and gender specific analyses.

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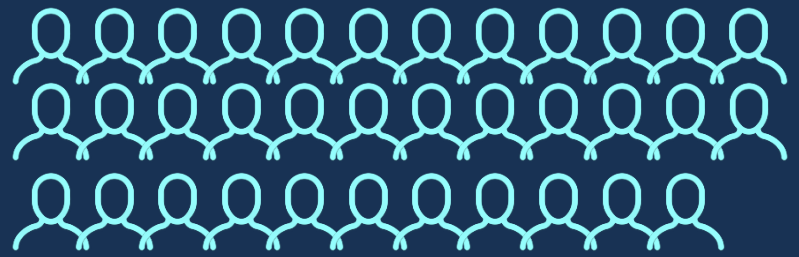
Editorial Board: 12 (5 female, 7 male) members from 12 countries



Authors: 35 authors – experts from all 5 IOC electoral groups

Review: 19 internal and external reviewers, incl. UN, academia, governmental representatives…

Plus many more who made this possible….

GOSR2020 Ocean science human capacity

National numbers of ocean science researchers vary between <1 to >300 employees per million inhabitants – these ratios do not relate directly to GDP.

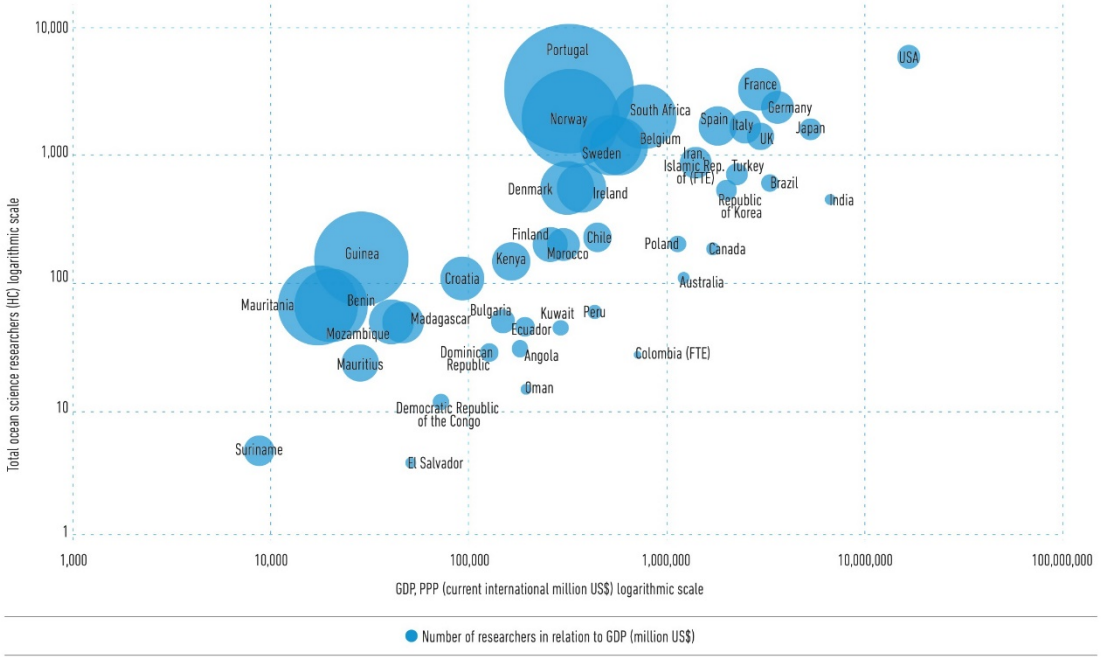


Figure ES.3. Number of national ocean science researchers (HC) in relation to the GDP purchasing power parity (PPP) (current million US$) extracted for each country and year. The size of the bubble is proportional to the ratio of researchers vs GDP for each country.
Sources: Data based on the GOSR2017 and GOSR2020 questionnaires (researchers) and the Global Economic Monitor (GDP, current million US$, seasonal adjustment), available at the World Bank Databank.

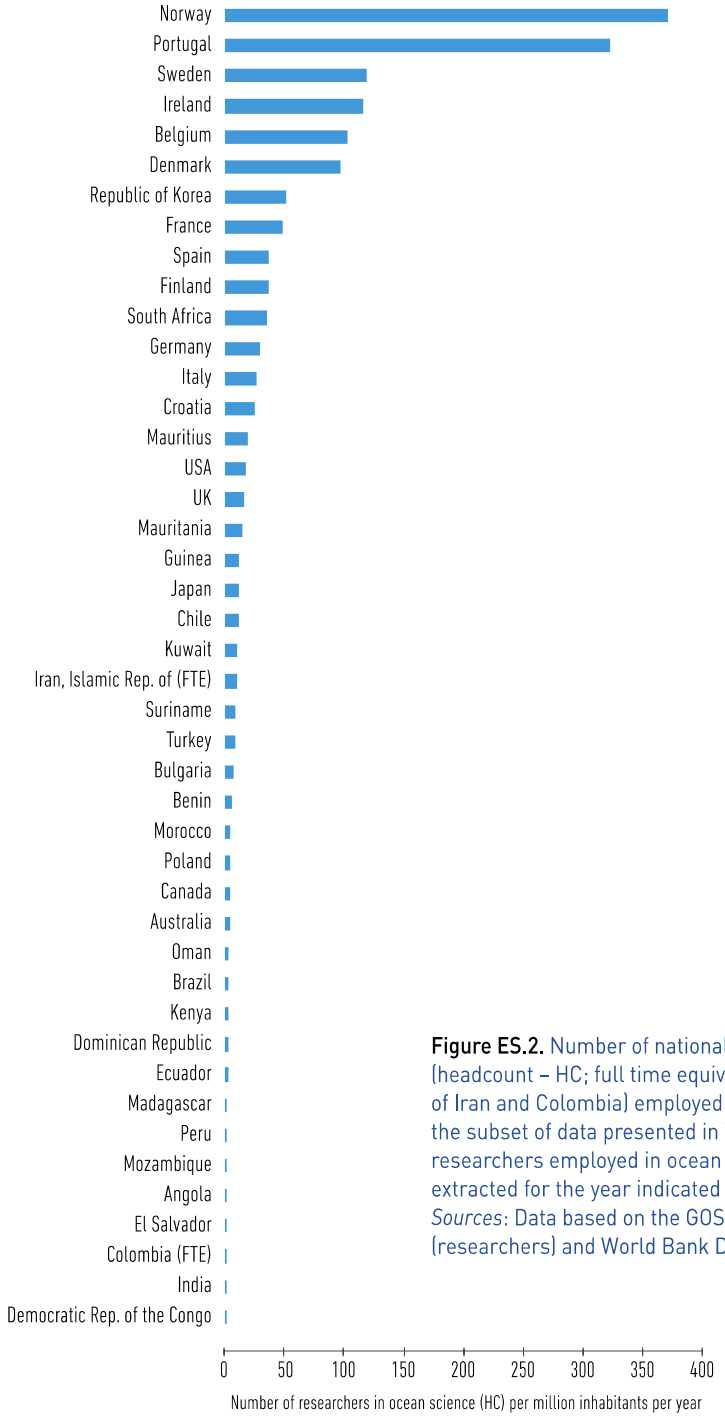


Figure ES.2. Number of national ocean science researchers (headcount – HC; full time equivalent – FTE, for the Islamic Republic of Iran and Colombia) employed per million inhabitants. Based on the subset of data presented in Table 4.1. (see GOSR2020 Chapter 4), researchers employed in ocean science per million inhabitants were extracted for the year indicated for each country.
Sources: Data based on the GOSR2017 and GOSR2020 questionnaires (researchers) and World Bank DataBank (inhabitants).

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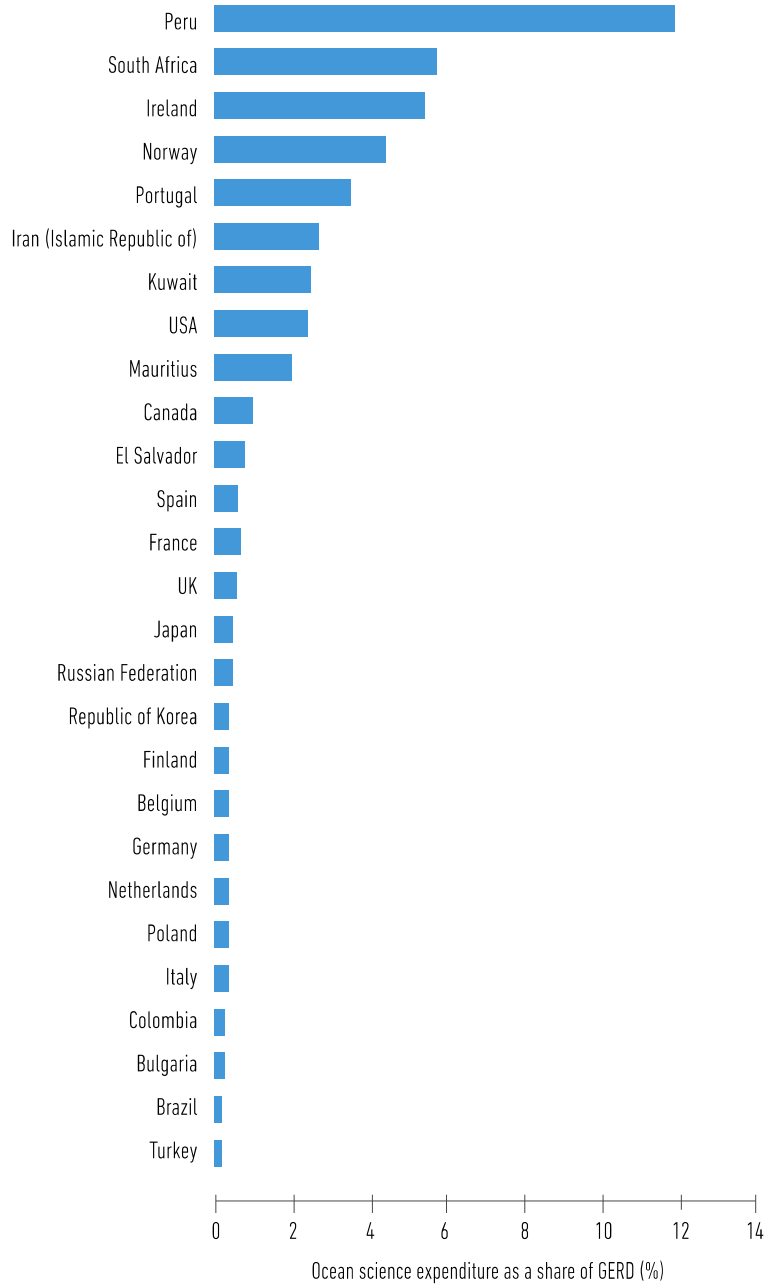
GOSR2020 Investments

There are large differences in countries' investment in ocean research.

On average, only 1.7% of national research budgets are allocated for ocean science, with percentages ranging from around 0.03% to 11.8%. This is a small proportion compared to the modestly estimated US$1.5 trillion contribution of the ocean to the global economy in 2010.



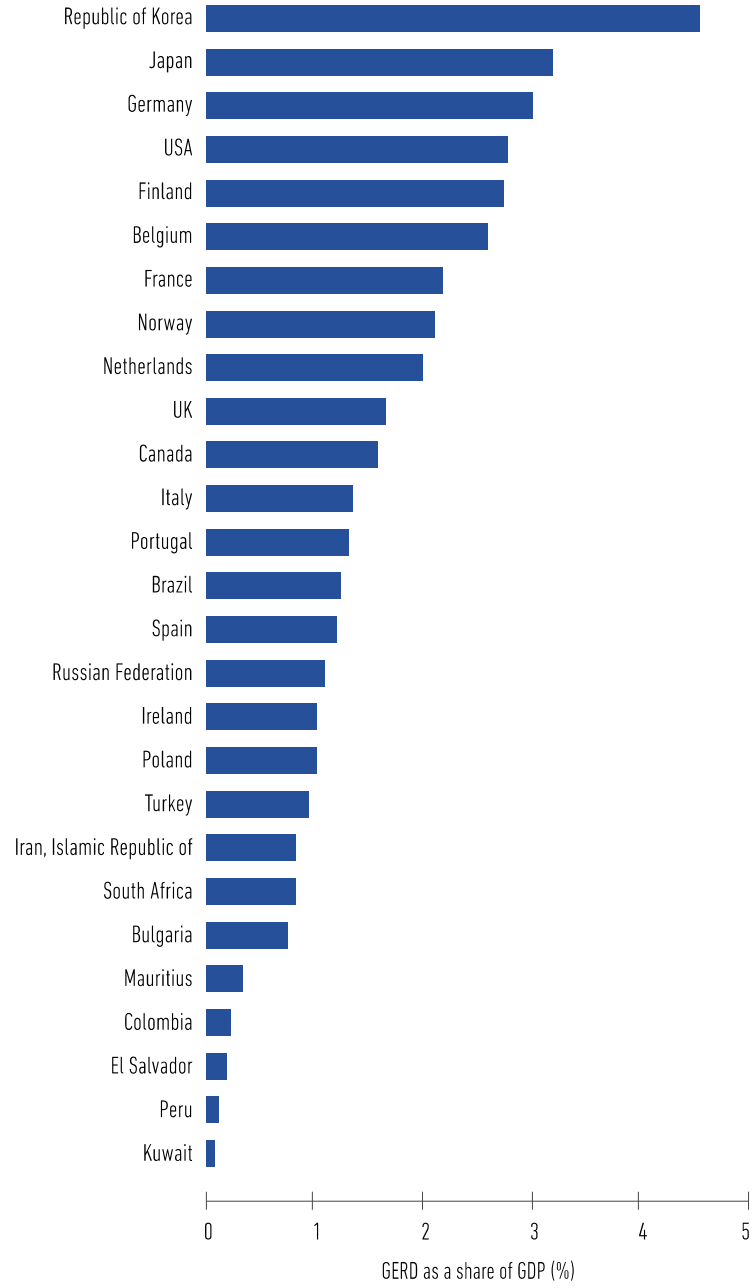


Figure ES.19. Estimates of ocean science funding as a share of GERD and GERD as a share of GDP in 2017.
Sources: Data adapted from GOSR2020 questionnaire and UNESCO Institute for Statistics database. Note that ocean science funding is not identified as such in GERD data and can be found in natural sciences and other categories.

GOSR2020 Research profiles

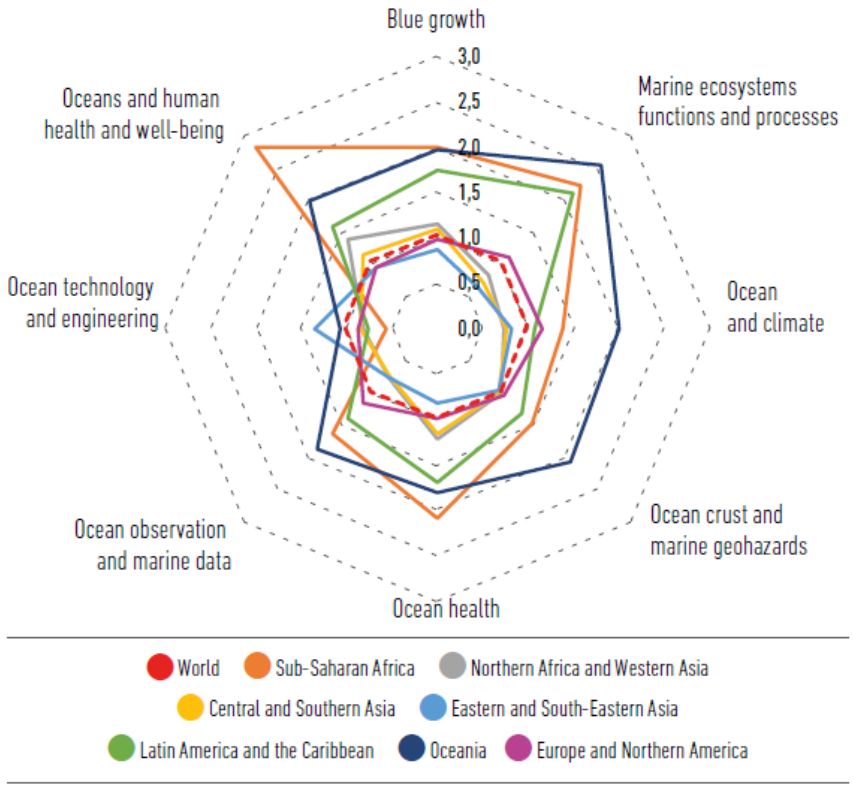


Figure 5.18. Strengths by SDG regions in different ocean science categories. Radial plots show the Specialization Index (SI) compared to the world (dashed red line) for the period 2000–2017.
Source: Authors, Based on the bibliometric analysis of Scopus (Elsevier) data 2000–2017 by Science-Metrix/Relx Canada.

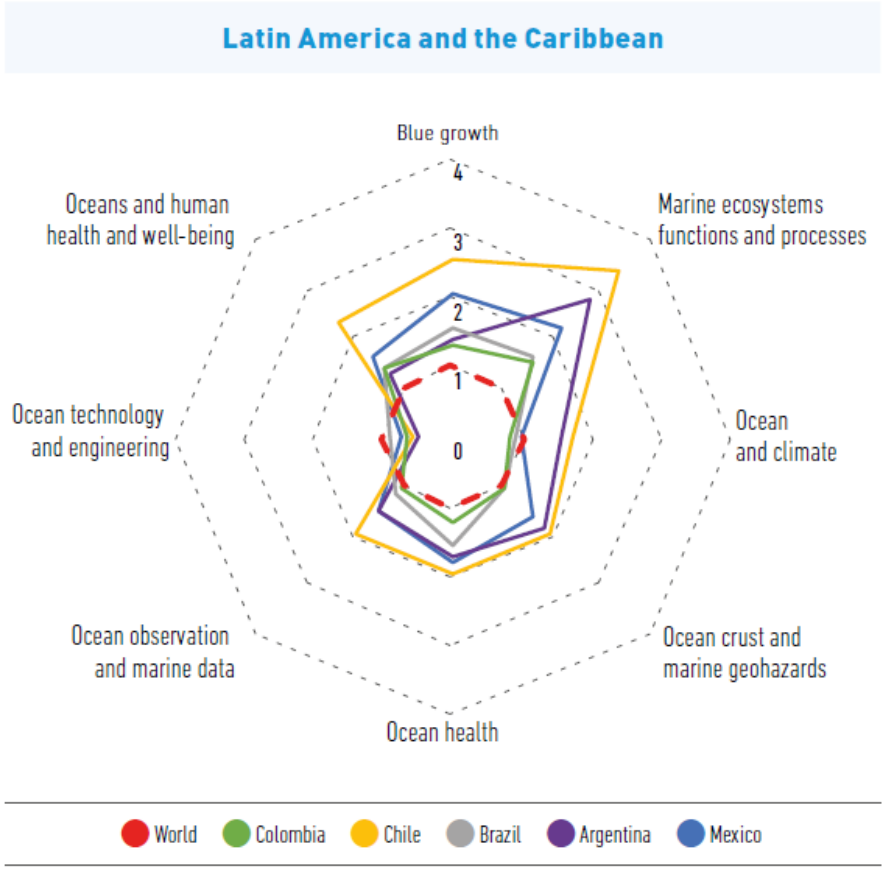


Figure 5.19. Strengths in different ocean science categories by SDG region. Radial plots show the Specialization Index (SI) compared to the world (dashed red line) for the period 2000–2017.
Source: Authors, based on the bibliometric analysis of Scopus (Elsevier) data 2000–2017 by Science-Metrix/Relx Canada.

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GOSR2020 Ocean data

Ocean data tend to be recognized as a common good; however, open access to ocean data is still far from being the norm

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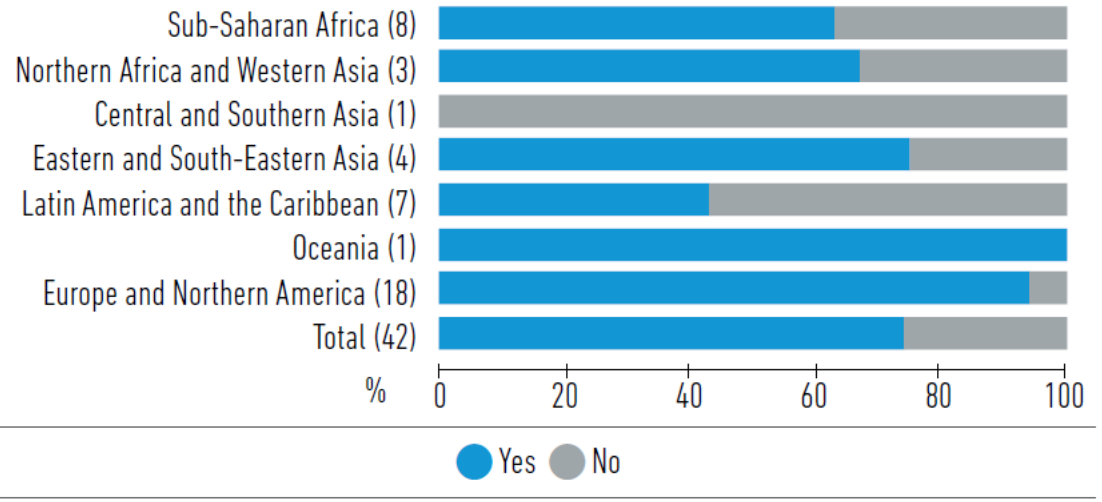

Figure ES.16. Percentage of countries' data centre(s) contributing data and information to international systems such as ICS World Data System, GDACs, WMO Global Telecommunication System (GTS) and others (42 submissions).
Source: GOSR2020 questionnaire.

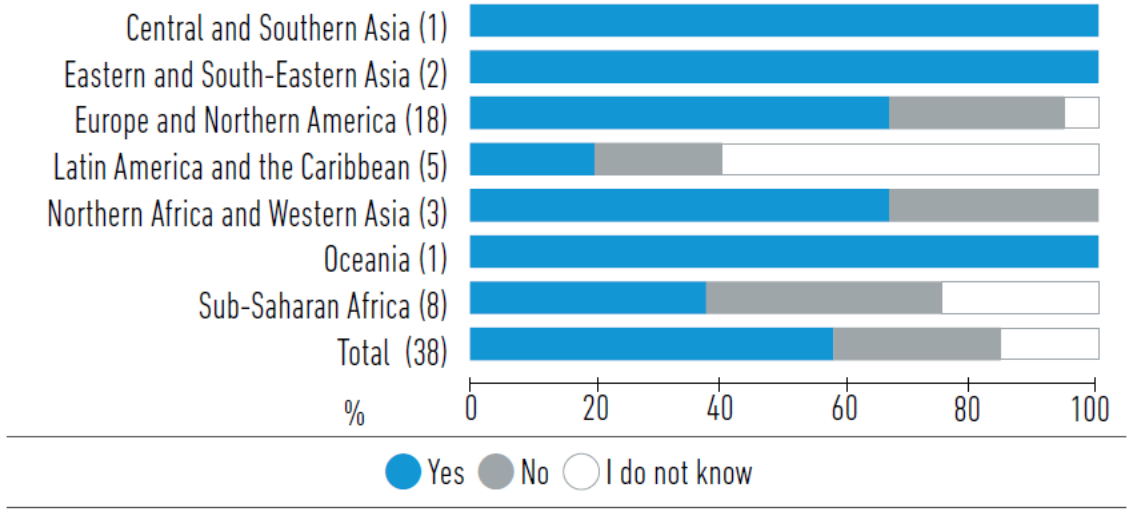

Figure ES.17. Compliance of national data centre(s) with the FAIR data management criteria (percentages based on 38 submissions).
Source: GOSR2020 questionnaire.

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Next Global Ocean Science Report 2025

MORE INFORMATION

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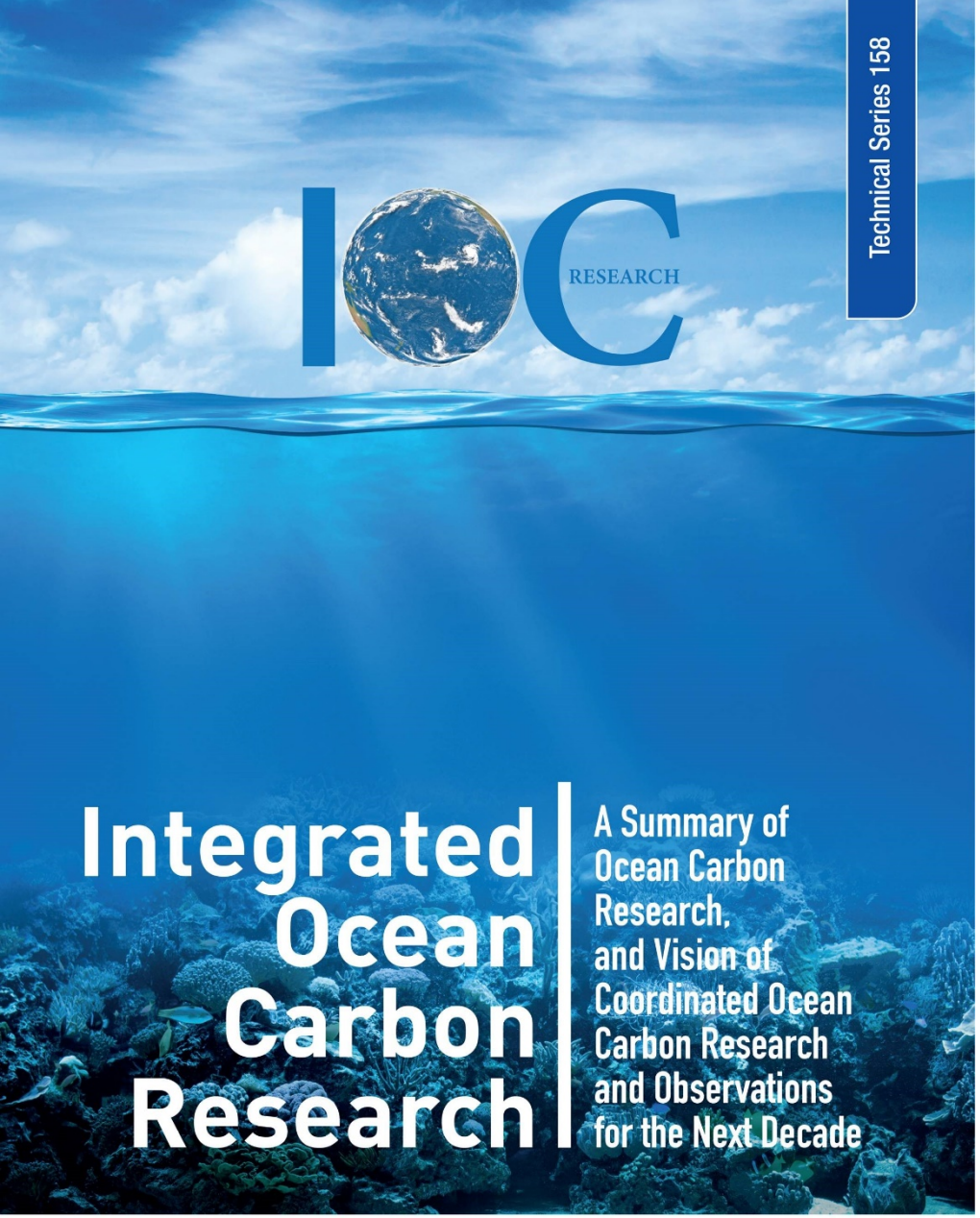

Ocean Carbon

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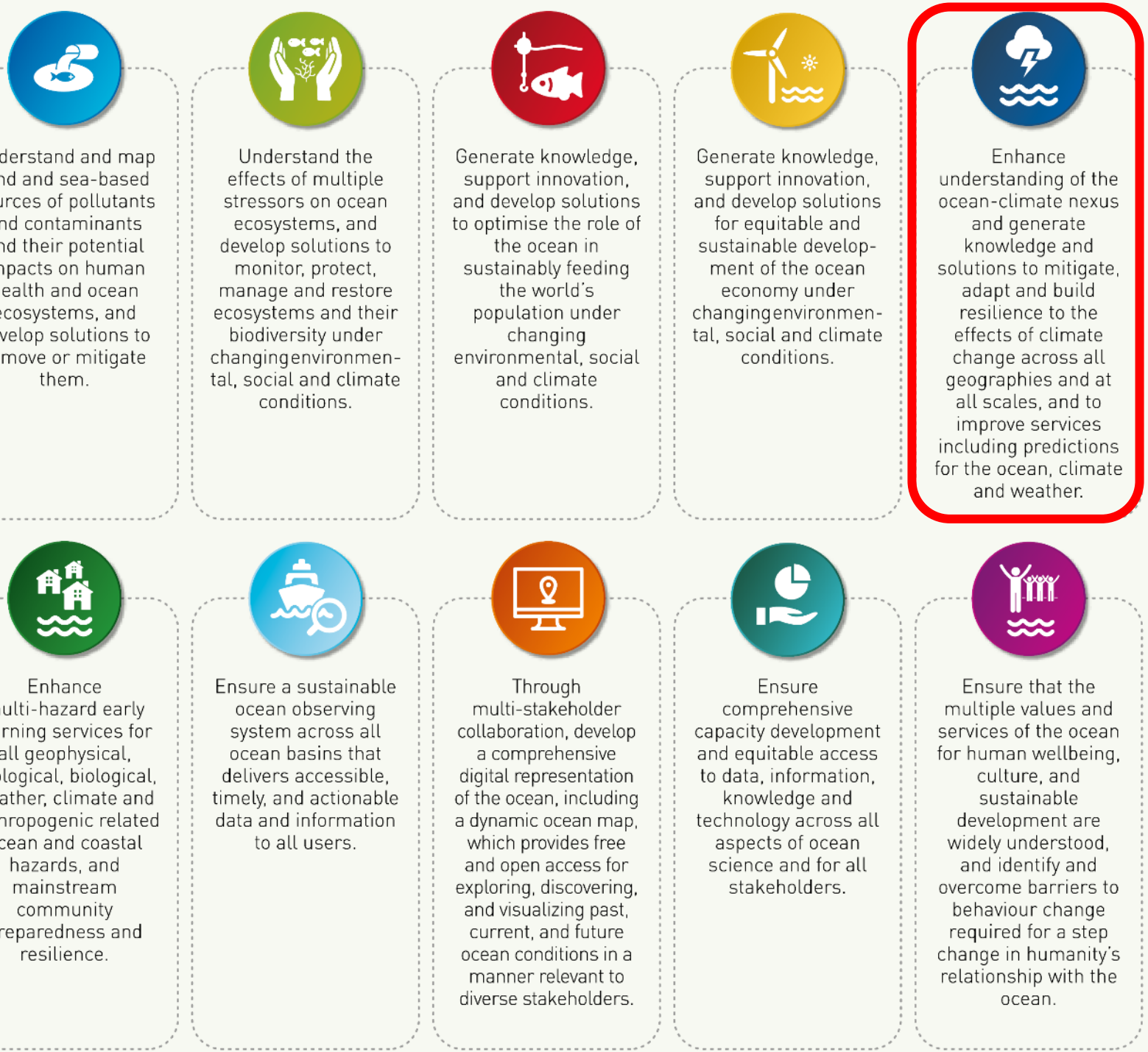
- Since the industrial revolution, the ocean has evolved into a major sink for carbon generated by human activities. Without oceanic and terrestrial sinks, atmospheric CO_2 levels would be close to 600 ppm (parts per million), well above the level compatible with a global warming target limited to 2°C.
- In the context of climate change, however, it is still unclear to scientists if the ocean will continue to help mitigate the effects of global warming, or its capacity to absorb carbon from the atmosphere will be altered as a consequence of the numerous human-induced ocean changes.
- 4 main research questions:
  - Will the ocean uptake of anthropogenic CO_2 continue as primarily an abiotic process?
  - What is the (changing) role of biology in the ocean carbon cycle?
  - What are the exchanges of carbon between the land-ocean-ice continuum and how re they evolving over time?
  - How are humans altering the ocean carbon cycle and resulting feedbacks?

Ocean Decade
Challenges

OCEAN DECADE CHALLENGES

The most immediate and pressing needs of the Decade, Challenges may evolve throughout the Decade and New Challenges will be added. Each Challenge contributes to one or more Decade outcomes,



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THANK YOU

For further information, please contact me at: s.arico@unesco.org