Accelerating Ocean Science for a Better World: The UN Decade of Ocean Science for Sustainable Development 2021-2030

Motivation:
Better understanding of the whole ocean system—including oceanic processes, ecosystems, and people—is urgently needed to ensure responsible global stewardship of the ocean while meeting the developmental aspirations of society.

CIRCLE OF SUSTAINABILITY
LIVING WITH THE OCEAN

OCEANS AND SEAS

Regulate the climate

Support the functioning and stability of ecosystems through biological diversity

MARINE RESOURCES

Provide oxygen, soil formation, and nutrient and carbon cycle

Form habitats and breeding grounds

Shelter complex marine food chains

O_2

CO_2

INTEGRITY OF ECOSYSTEMS

FRESH WATER

LEISURE/ VACATION

TRANSPORT

FOOD

OXYGEN

O_2

COASTAL PROTECTION

BEAUTY

JOBS

ENERGY

SPIRITUALITY

NATURAL RESOURCES

CO_2 SINKS

CO_2

MAN AND SOCIETY

Sustainable livelihood

Food supply

Combat poverty

Health

Protection from natural disasters

HUMAN WELLBEING

Changing consumption, sustainable use

Waste management, recycling

STOP
Lower CO_2 emissions

Protected areas, control human incursions

THREATS

Climate change

Ocean pollution

Destruction of coastal and marine habitats

Non-sustainable exploitation of marine resources

OCEAN ATLAS
Facts and Figures about Our Relationship with the Ocean

The UN Decade of Ocean Science for Sustainable Development will catalyze, coordinate, and communicate the ocean science we need for the future we want.

To achieve the Sustainable Development Goals, we need an ocean that achieves key social objectives:

- Clean
- Healthy
- Predicted
- Safe
- Sustainably harvested and productive
- Transparent and accessible

Many areas of the world's ocean still represent significant technical, scientific, political, and economic challenges for ocean science.

New paradigms for ocean data collection and sharing are needed to manage the increased volume, complexity, and interdisciplinarity of data.

A comprehensive and sustained ocean observing system open to all.

Three main pillars of activity:

Quantitative, comprehensive, multidisciplinary, objective and authoritative characterization of the ocean state, with identification of knowledge gaps and uncertainties.

Means of efficient exploitation of the knowledge gained, triggering action and good management, through people (youth/gender), resources, capacity, technology, industry, contributing to the 3 elements of sustainable development: environment, (blue) economy, and social justice.

Optimized organizational setting in the UN and Member States to ensure efficient functioning and delivery of ocean science at the global, regional, and national levels.

Overview of SDGs Progress

- There has only been significant progress toward 17% of the SDGs

- 68% does not have sufficient data to assess progress

- **For Goal 14 on Oceans, only 2 of the 9 indicators have data which can be used to measure global progress.**

- Need to scale up support for environmental monitoring and analysis.

Number of indicators

Positive
Little Change
Negative
No Data

17%
6%
9%
68%
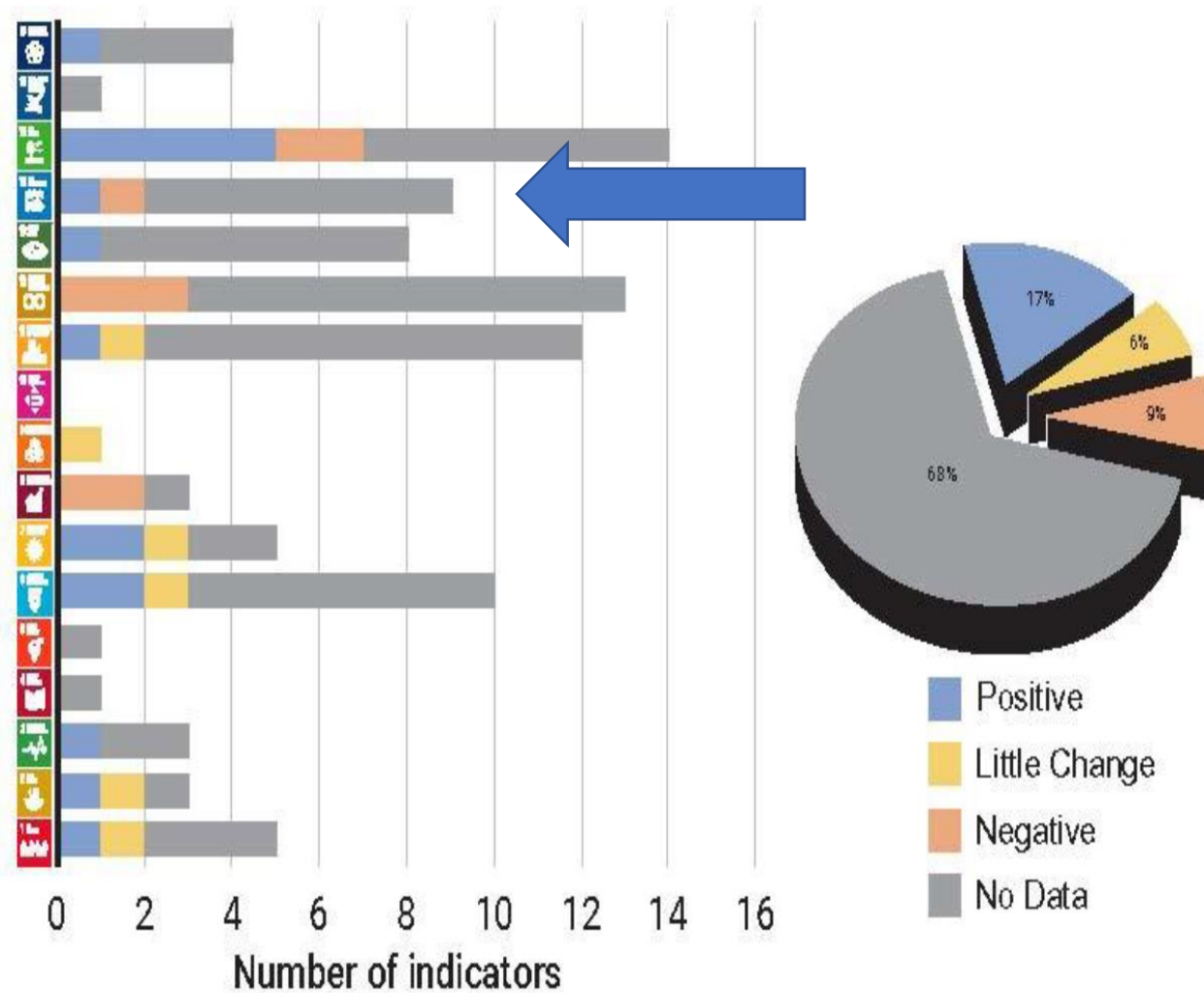
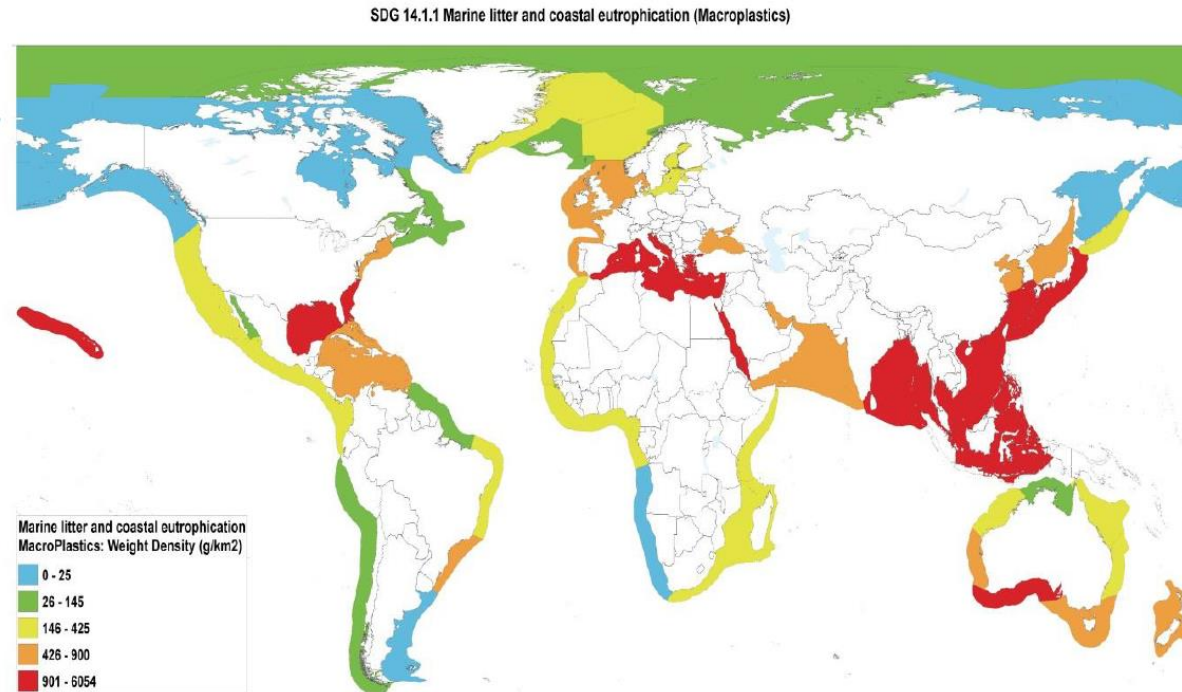# Marine pollution (SDG 14.1.1)

Plastic distribution

⬤ No data available

The accumulation of marine litter in the world's oceans over the past decades has risen.

This is currently the map of microplastic concentrations that we use:

- It is 5 years old

- We do not have a time series

- We only have a single figure for very large stretches of coastline

- This is not enough for using data and science to inform policy

SDG 14.1.1 Marine litter and coastal eutrophication (Macroplastics)

Marine litter and coastal eutrophication
MacroPlastics: Weight Density (g/km2)
- 0 - 25
- 26 - 145
- 146 - 425
- 426 - 900
- 901 - 6054

Coastal eutrophication (SDG 14.1.1)

Nutrient ratio

⬤ No data available

Coastal eutrophication is caused by an excess of minerals and nutrients in water, particularly nitrogen, which is the most common limiting nutrient in marine waters.

- We are working to complete a mapping of national contributions to the Index of Coastal Eutrophication Potential (based on land activities) and a global analysis of Chlorophyl-A deviations.

TWAP

Nutrient ratio (2030)
- Very low
- Low
- Medium
- High
- Very high
- No data
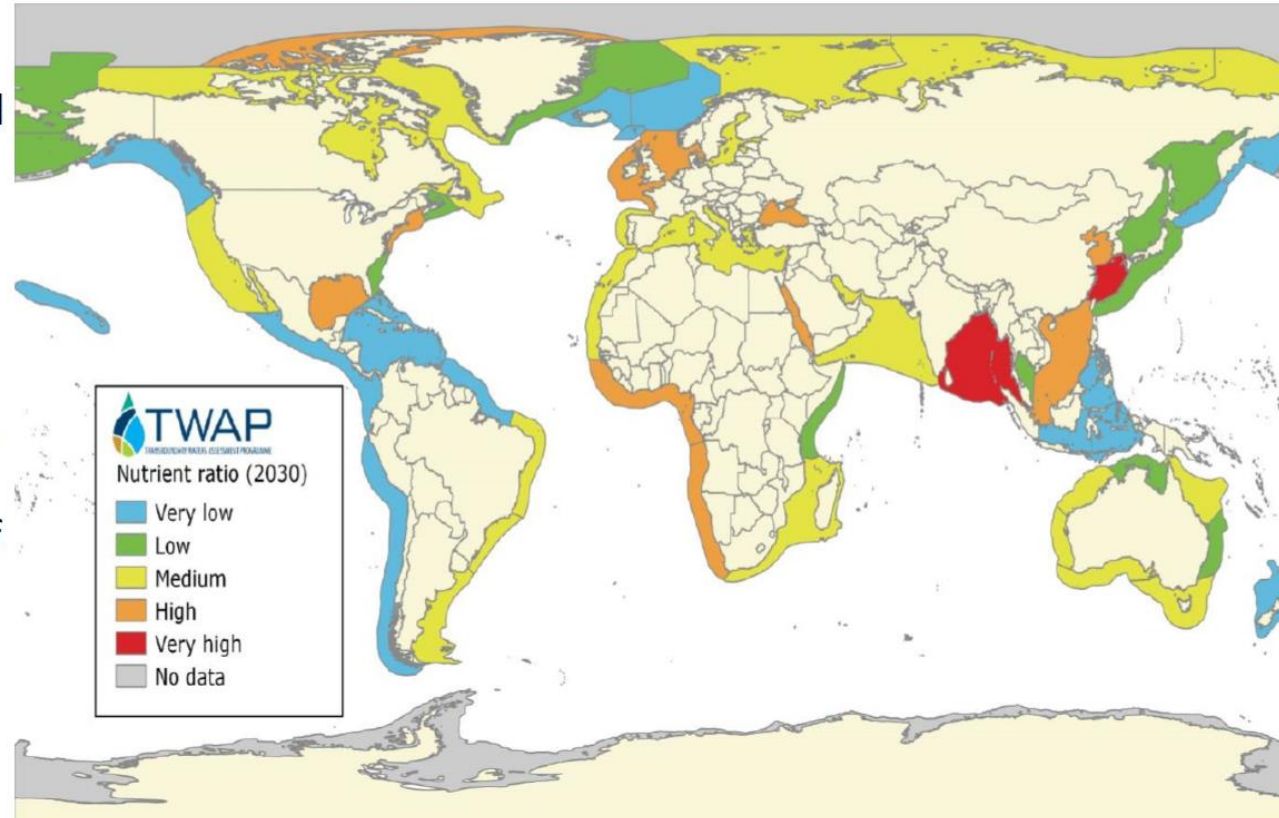
# Management of marine areas (SDG 14.2.1) and Protected Areas

Official MPA Map

⬤ No data available

Managing and conserving marine areas is essential for achieving the SDGs.

As of the close of 2018, marine protected areas cover 7.4% of the global ocean at almost 27 million km².

Data on marine areas managed using ecosystem based approaches is weak, but we are working with the Regional Seas to obtain information on Intercoastal Zone Management and Marine Spatial Planning.

Marine and Coastal Protected Areas

■ Marine and Coastal Protected Areas
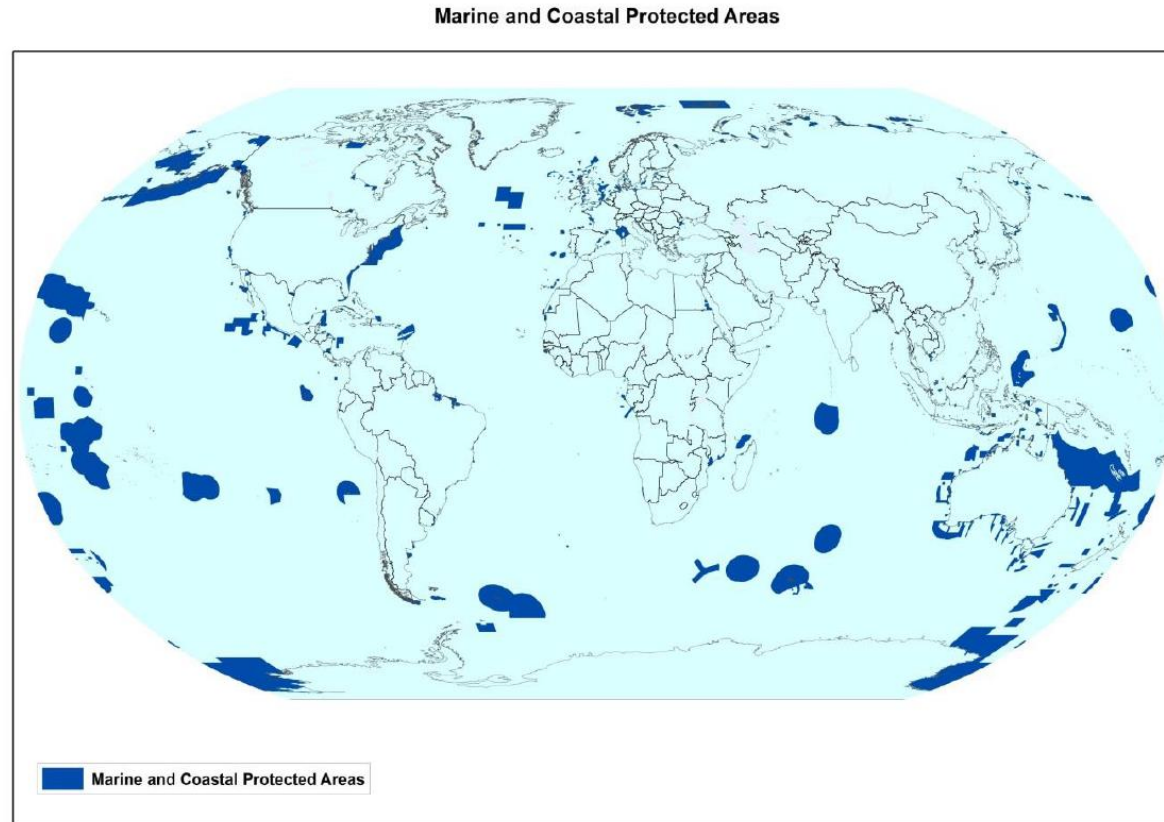
How can IHO contribute to?

Complete our image of the global seabed topography!

Motivate and assist experts and amateurs to gather and contribute marine data to projects like Seabed 2030!

Acquire existing professional data sets from science and industry.

Promote our Crowd Source Bathymetry Campaign

- to fill the stocks of IHO´s Data Centre for Digital Bathymetry;
- to provide these data under open data policy rules.

Assist a leap in survey technology through autonomy, remote sensing and smart data processing.

How can IHO contribute to?

Standardization of marine data sets across domains!

Setup a framework for compatible data product specifications for all sorts of ocean data:

- based on ISO and OGC Geospatial Data Standards;

- operable under open source GIS systems;

- applicable to potentially all marine based geoinformation;

- supports mesh up of data sets and smart interpretation;

- enables deep learning and artificial intelligence;

- facilitates better nowcast, modelling and forecast.

The digital atlas of the oceans evolves into the digital aquarium!

IHO
International Hydrographic Organization