

Observations in Ocean Science Value Chain

Dr Vladimir Ryabinin Executive Secretary, IOC of UNESCO Assistant Director General, UNESCO

Conference on IOCARIBE-GOOS Bogota, 8 May 2023



Ocean in UN Frameworks: GOOS as Governmental OOS

















16 PEACE AND JUSTICE





5 GENDER EQUALITY



6 CLEAN WATER AND SANITATION











Convention on **Biological Diversity**

Post-2020 Agenda

Ocean-Climate Dialogue







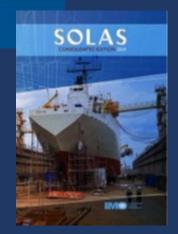


Sendai Framework for Disaster Risk Reduction

+ ILBI on Plastic Pollution 2024

2015 - 2030



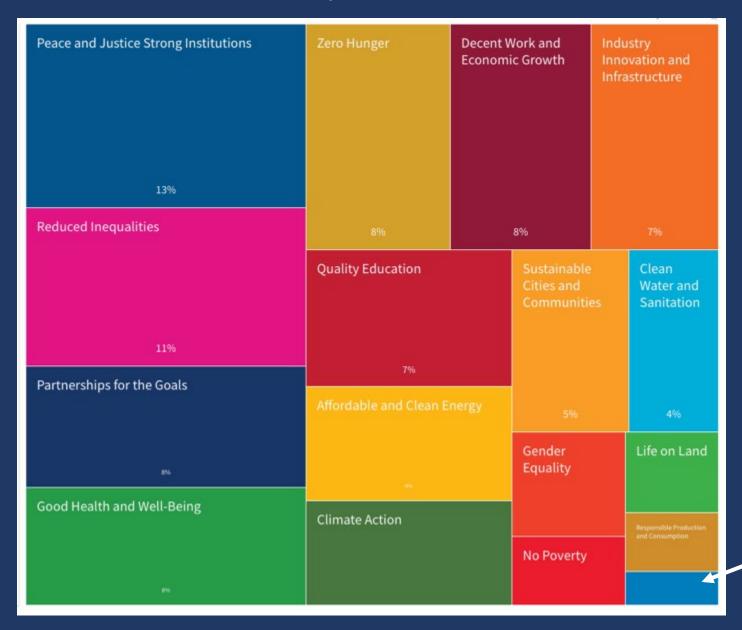








Expenditures on SDGs (by OECD)



Slow Progress
in SDG 14 hampers
implementation
of most of the 2030
Agenda targets





(Ocean) Economy – basic numbers (annual, magnitudes)

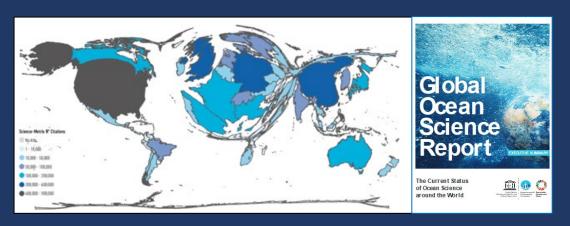
GDP of the World
Ocean Economy - now
Global Investment in R/D (GERD)
Ocean research
Space exploration
Arms race
Ocean observations under GOOS

 \cong 100 Trillion US\$ \cong 2-3 Trillion US\$ (\cong 1.7% of GDP) \cong 30-40 Billion US\$ (\cong 1.7 of GERD) \cong \cong 100 Billion US\$ > \cong \cong 2 Trillion US\$ \cong 1 Billion US\$ \cong 200 K US\$

Disasters - cost of prevention vs cost of restoration: 1 vs 8-10

+ Major inequalities in capacity:

IOC budget for GOOS





Commitment to sustainably manage 100% of EEZ by 2025



5 key sectors for transformation:

- Food (x6)
- 2. Energy (x 40)
- 3. Low carbon transport & ports
- 4. Ocean restoration & protection
- 5. Tourism

- 20% of Carbon emissions gap
- GDP equivalent of 15 T\$ by 2050

5 "enablers":

- 1. Stopping land-based pollution
- 2. Innovative lower-risk finance
- 3. Upgrading ocean accounting
- 4. Data + guidance (= science)
- 5. Ocean planning

"Sustainable Ocean Planning"

One clearly missed "enabler": Climate change mitigation/adaptation

Key Ocean Management Domains



Coastal zone management and adaptation



Marine Spatial Planning/ Sustainable ocean economy



BBNJ, Marine **Protected** Areas, LMEs



Management of fisheries and aquaculture



Adaptation to and mitigation of climate change, **NDCs**



Development of national R&D strategies & ocean policies



Real-time oceanographic, weather/climate services



Regional and national capacity development



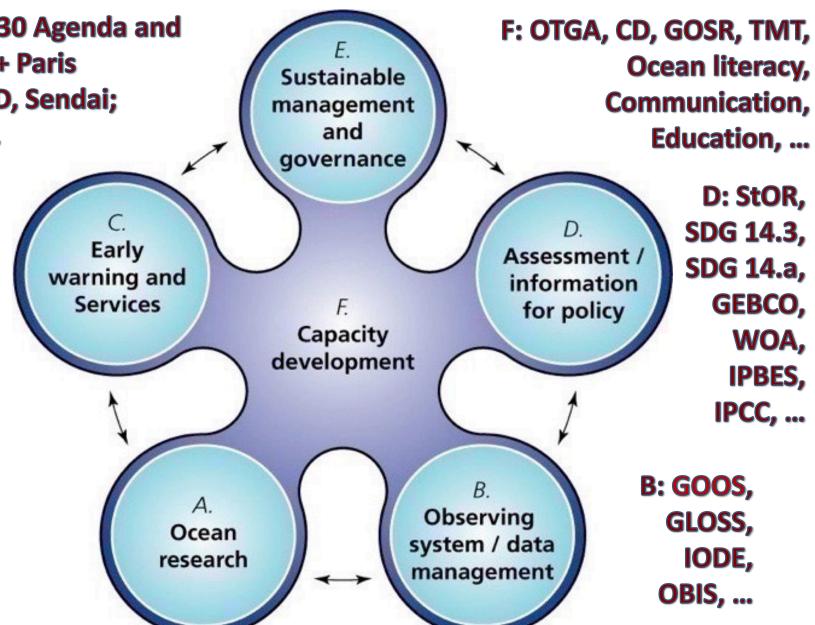
Early warning systems

IOC Portfolio

E: contributions to 2030 Agenda and SDG 14, UN, UNFCCC + Paris Agreement, BBNJ, CBD, Sendai; Coastal zones, LME, ...

C: Tsunami,
HABs, Ocean
Prediction
and Services,
WMO/IOC JCB, ...

A: IIOE-2, GOAON, GO₂NE, Time Series, TrendsPO, Stressors, Carbon, GESAMP, WCRP, ...





The science we need for the ocean we want

- Clean
- Healthy and resilient
- Productive
- Predicted
- Safe
- Accessible
- Inspiring and engaging

OCEAN DECADE CHALLENGES



Pollutants



Ecosystems



Food from the Ocean



Ocean economy



Ocean-climate nexus



Ocean-related risks



Ocean observing system



Ocean digital representation



Capacity development



Behaviour change

ENDORSED OCEAN DECADE ACTIONS



45 PROGRAMMES

214 PROJECTS

69 CONTRIBUTIONS

420 ACTIVITIES



DECADE ACTIONS LED BY PARTNERS FROM

COUNTRIES



MEMBERS

14 COUNTRIES

8 WOMEN

• WOMEN

7 MEN

3 MEETINGS



7

REGIONAL TASKFORCES AND PROGRAMMES

Я

DECADE IMPLEMENTING PARTNERS



34

NATIONAL DECADE COMMITTEES

9

DECADE
COLLABORATIVE CENTRES/
COORDINATION OFFICES

ENGAGEMENT AND OUTREACH



1 MILLION REACH 10 PATRONS AND
16 INSTITUTIONAL
MEMBERS OF THE
OCEAN DECADE
ALLIANCE

OVER 20
MEMBERS
OF THE
FOUNDATIONS
DIALOGUE

5 INFORMAL WORKING GROUPS

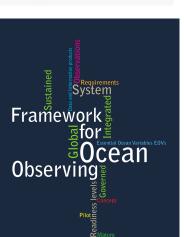


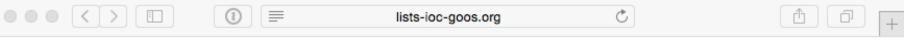
6,000

MEMBERS ON THE
OCEAN DECADE NETWORK









Framework for Ocean Observing **OBSERVATIONS**

REQUIREMENTS Themes Societal Benefit Scientific Issue Observing Essential Ocean Variable / Application element Essential Ocean Variables

Essential Ocean Variables

ecosystems

physics, BGC, biology, ecosystems

MATURE PILOT CONCEPT

MATURE Surface current SST current Sea level HF radar -SSS surface drifters temperature hopical moored arrays ST virtual constellation salinity carabhy constellation Nitrous oxide = Santellite missions ransient tracers Ser and TSGs Sea state Be Bauges = Heat transport oxygen profiling floats Sea level monitoring Sea ice Decadal predictability pG02 == olunteer Observing Ships Climate services Upwelling systems carbonate system Mitigation of climate change eat hydrography Non-CO2 greenhou Macro Nutrients Adaptation to climate change Ocean addification Ocean colour Tsunami-risk mitigation Gliders (subsurface) Real-time Services state satellite missions Efficient maritime economy Changes in ocean carbon contytoplankton Carbon storage Carbon-13 Inundation early warning noored time series Suspended particulates Human health Sea ice satellite missions Dissolved Organic Matter sea ice drifters -Coastal protection Zooplankton Ships of Opportunity Ocean productivity / biomassTags/tracking Ocean health Food security Chlorophyll = Ship-based timeseries Tourism/cultural-Ocean dead zones o Matter Export Clean waters Ocean color radiometry constellation Seagrass area Water quality Coastal livelihoods Salt-marsh area Ecosystem services zooplankton surveys Biodiversity Large marine vertebrates Harmful Algal Blooms multiple elements Human impact Mangrove area Mangrove surveys -

Biodiversity and habitats

Coral cover

Coral reef surveys

Key developments and opportunities

- Climate (UNFCCC and its Paris Agreement -> more ocean)
- Kunming-Montreal Global Biodiversity Framework, "30 by 30"
- BBNJ -> "High Seas Treaty", IOC in the final text
- Work on SDG 14
- Massively increasing needs for/of sustainable ocean economy
- Sustainable Ocean Planning
- Ocean Decade moving forward
- UN Ocean Conference (Lisbon, 2022) recognized IOC and Decade in its Political Declaration in an unprecedented way
- UNOC 2025, Nice, France towards UN ocean work integration?