



United Nations
Educational, Scientific and
Cultural Organization

Organisation
des Nations Unies
pour l'éducation,
la science et la culture

Organización
de las Naciones Unidas
para la Educación,
la Ciencia y la Cultura

Организация
Объединенных Наций по
вопросам образования,
науки и культуры



Intergovernmental
Oceanographic
Commission

Commission
océanographique
intergouvernementale

Comisión
Oceanográfica
Intergubernamental

Межправительственная
океанографическая
комиссия

OCEAN SCIENCE: CHALLENGES AFTER RIO+20

*J. Luis Valdés,
Head Ocean Sciences*

*Intergovernmental Oceanographic
Commission of UNESCO*



IOC

MARES2020

17-20 September, Varna (Bulgaria)

IOC in the UN



UNESCO is the only body of the UN system having the “E” of Education and the “S” of Science

Its Intergovernmental Oceanographic Commission (IOC) is the only body of the UN with a mandate in Ocean Sciences



IOC



IOC works at different levels of action



Outline: “OS Challenges after Rio+20”

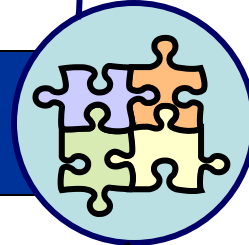
NEW SCIENTIFIC KNOWLEDGE



SCIENCE FOR SUSTAINABILITY



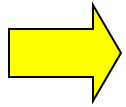
SCIENCE AND INNOVATION



CONCLUDING REMARKS



Outline



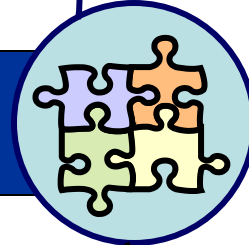
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SCIENCE FOR SUSTAINABILITY



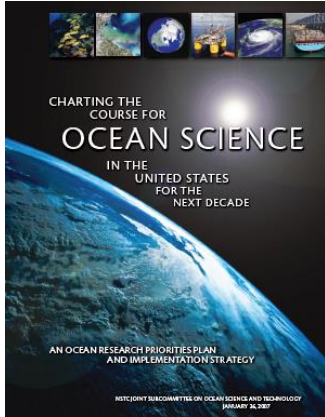
SCIENCE AND INNOVATION



CONCLUDING REMARKS



National

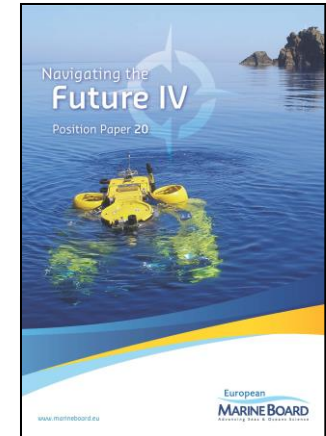


USA

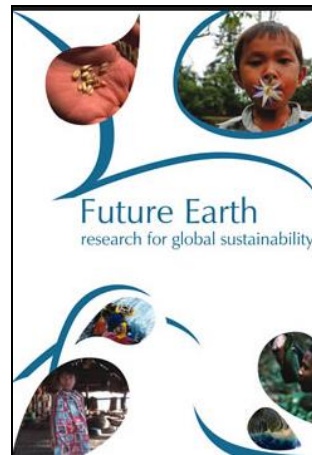


UK

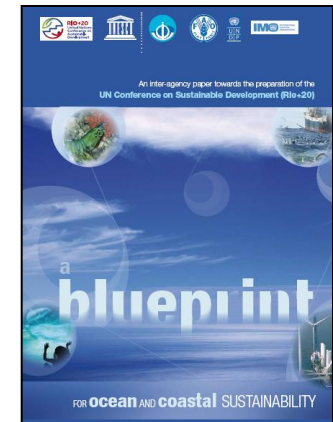
Regional



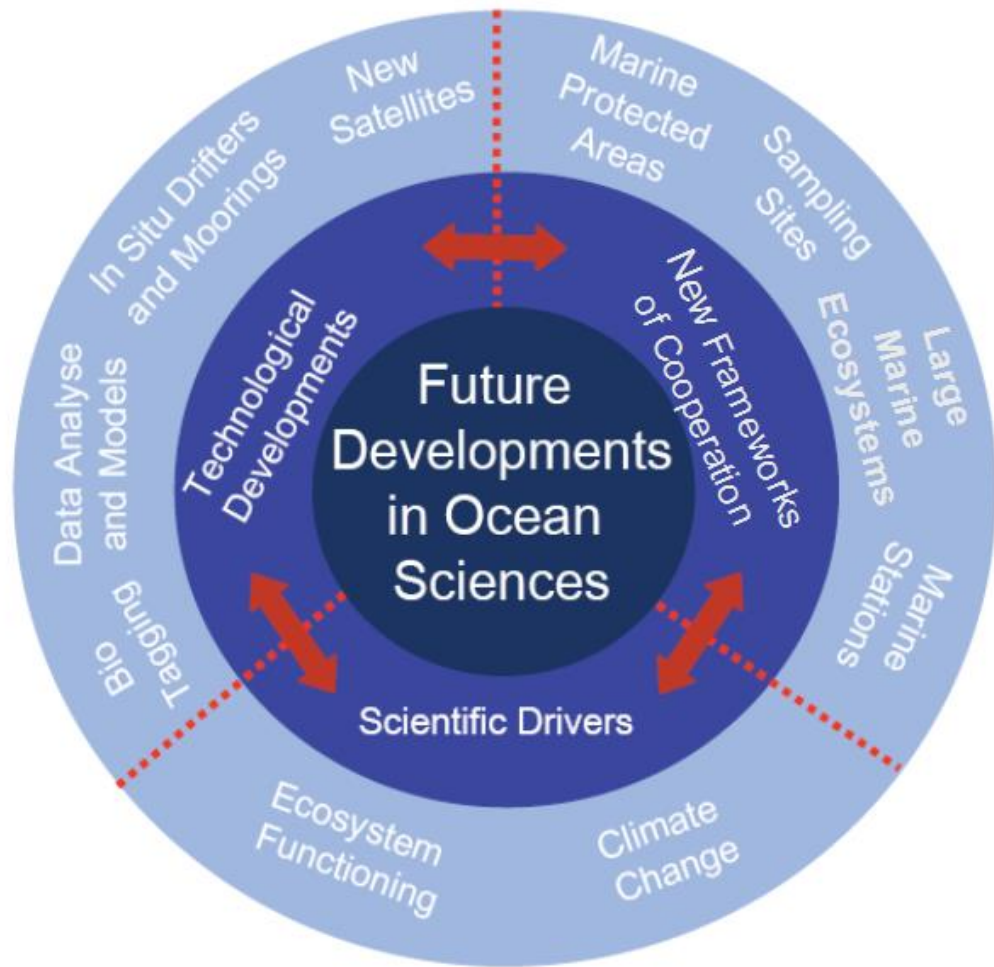
Global (NGO)



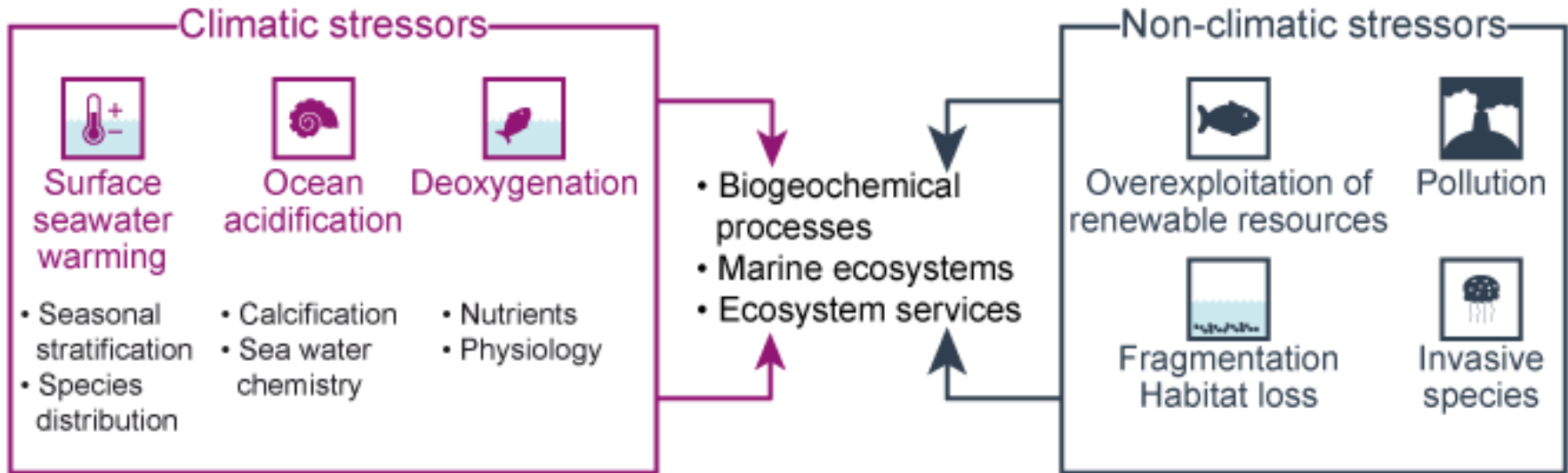
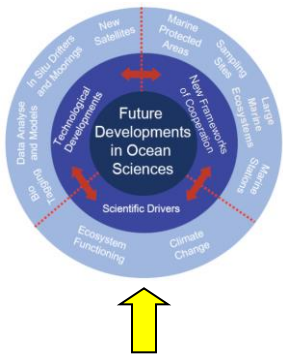
Global (UN)



Nested diagram of possible future developments in Ocean Sciences



Multiple stressors



Possible effects of combining different stressors:

Amplification

Compensation

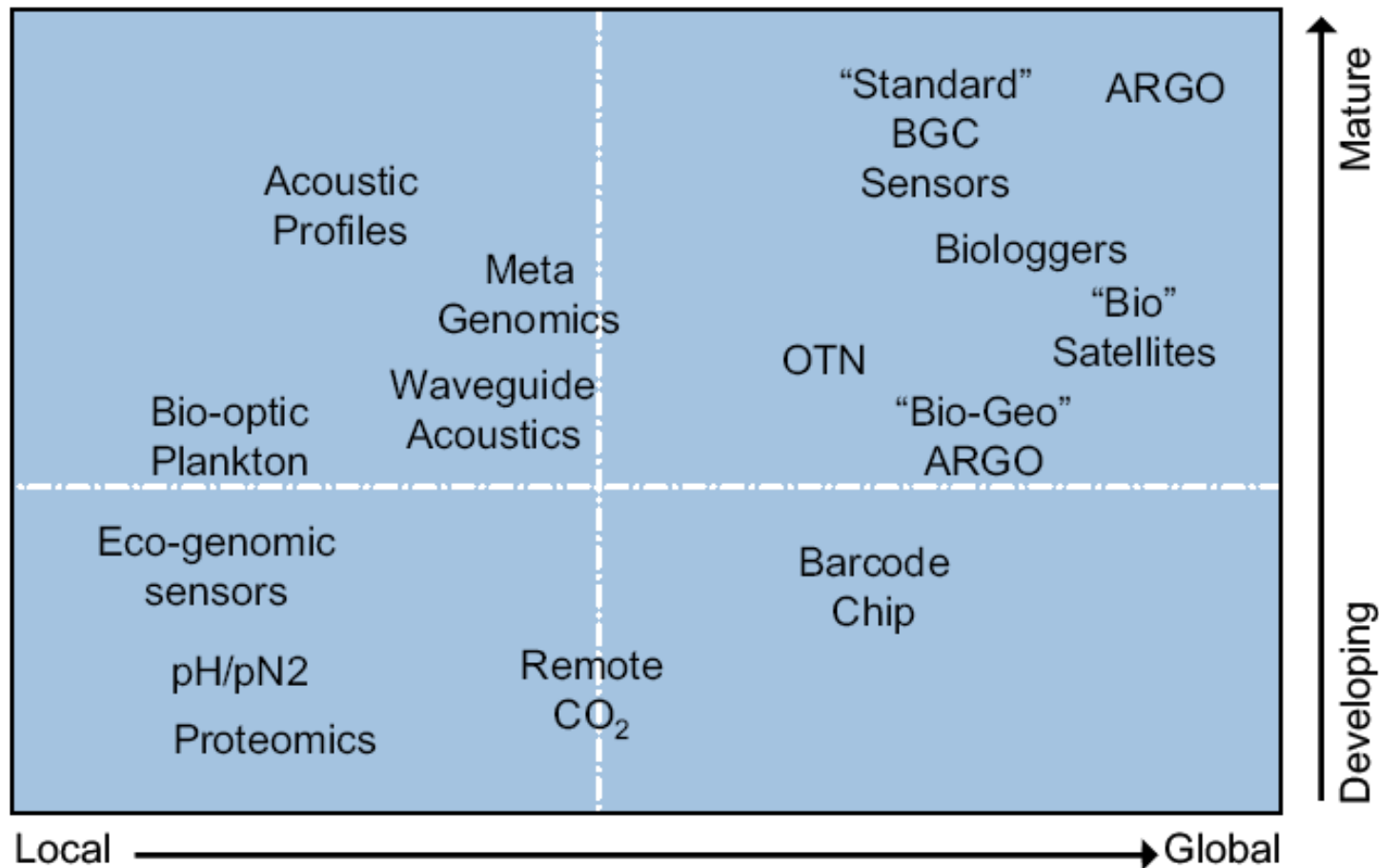
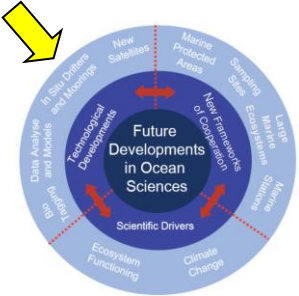
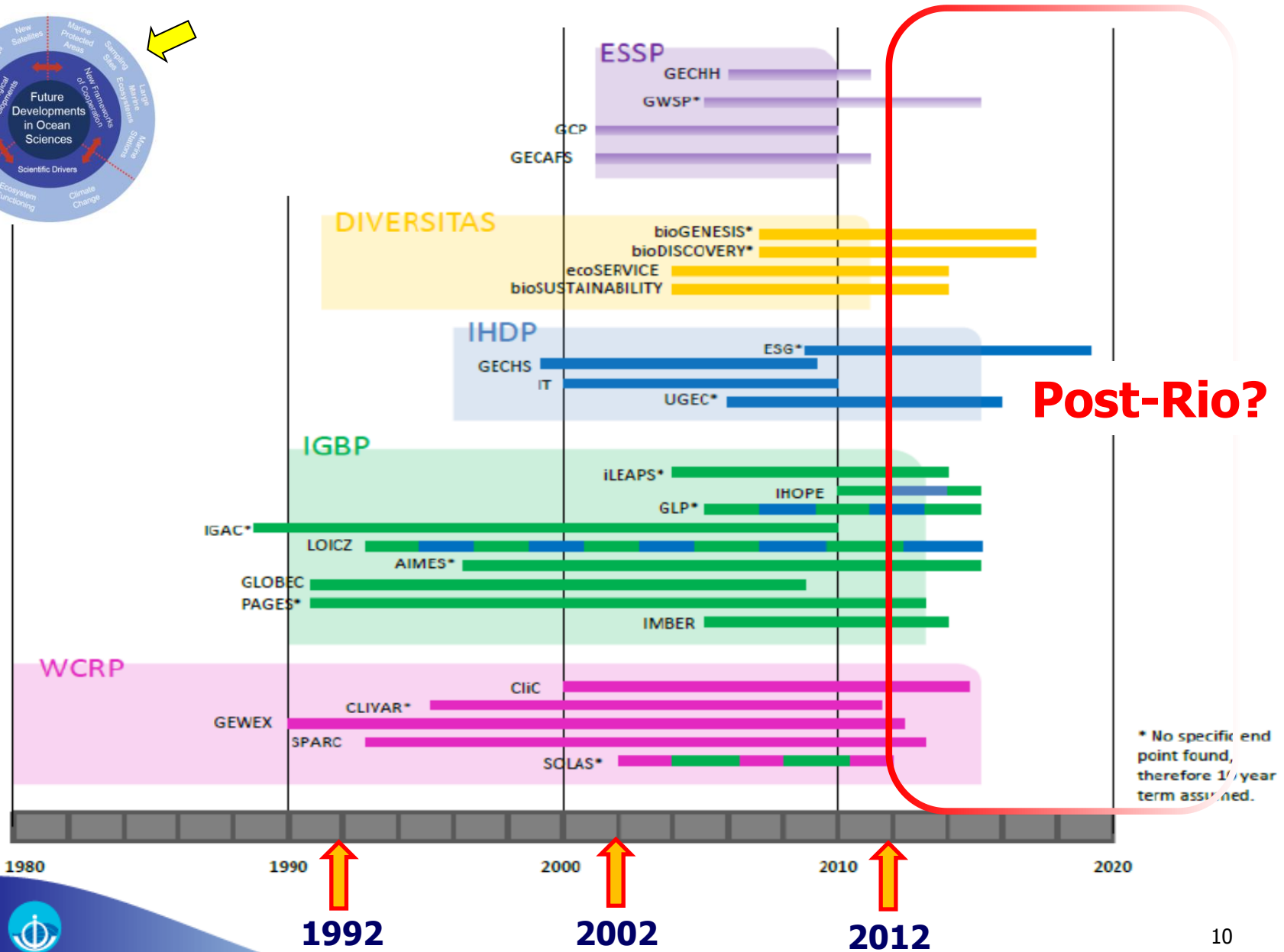
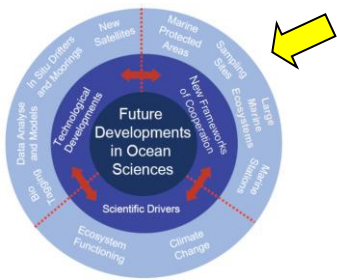
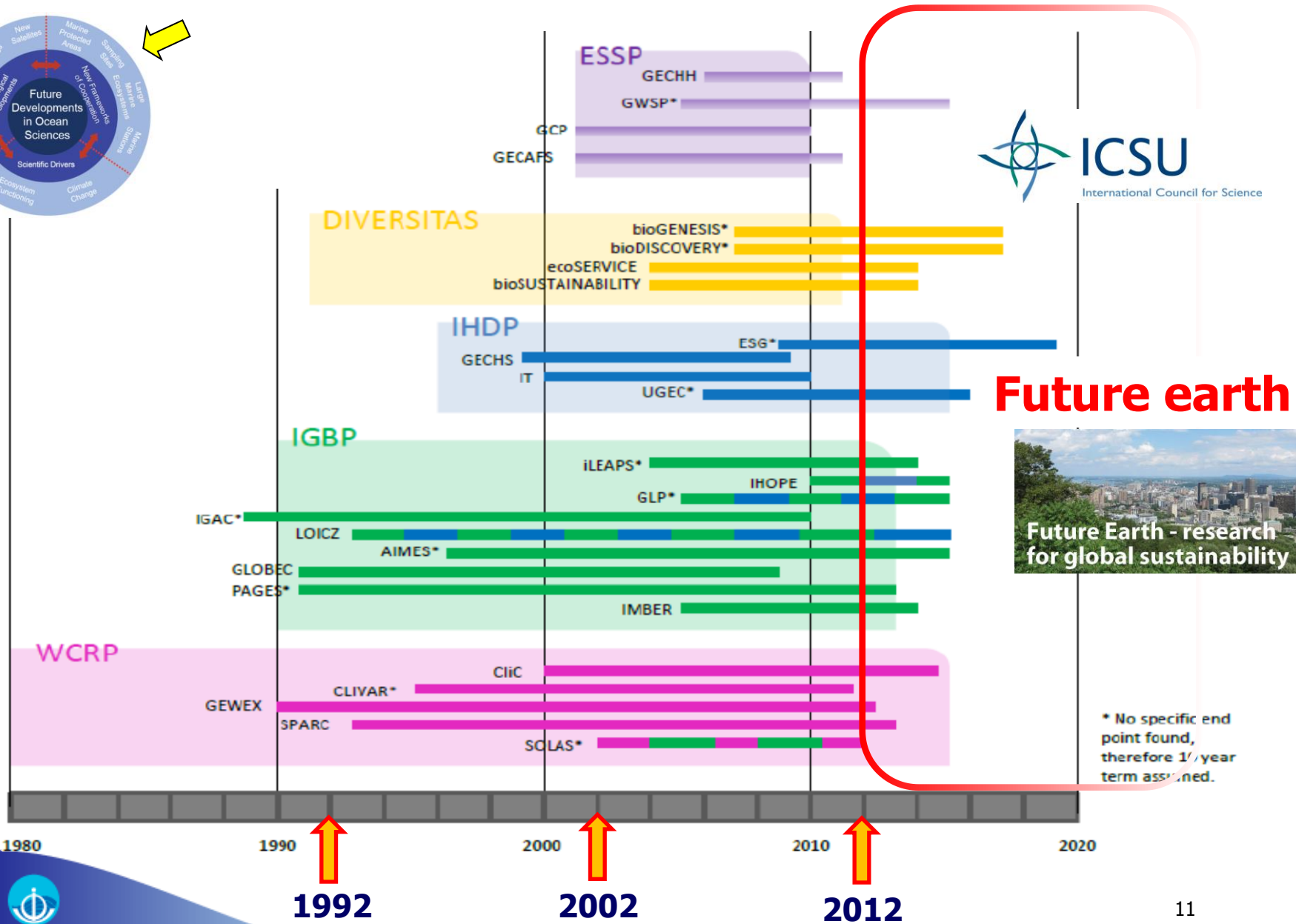
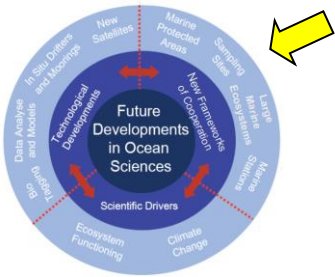


Figure 2. New technologies for observing global ocean biology. Adapted from Gunn (2009)

Core projects started since release of AGENDA 21



Core projects started since release of AGENDA 21



Outline

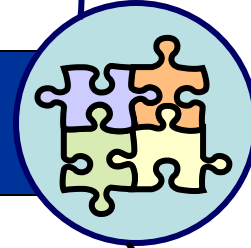
NEW SCIENTIFIC KNOWLEDGE



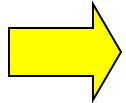
SCIENCE FOR SUSTAINABILITY



SCIENCE AND INNOVATION



CONCLUDING REMARKS



From Rio 1992 to Rio+20

1992

- UN Conference on Environment and Development (UNCED)

2002

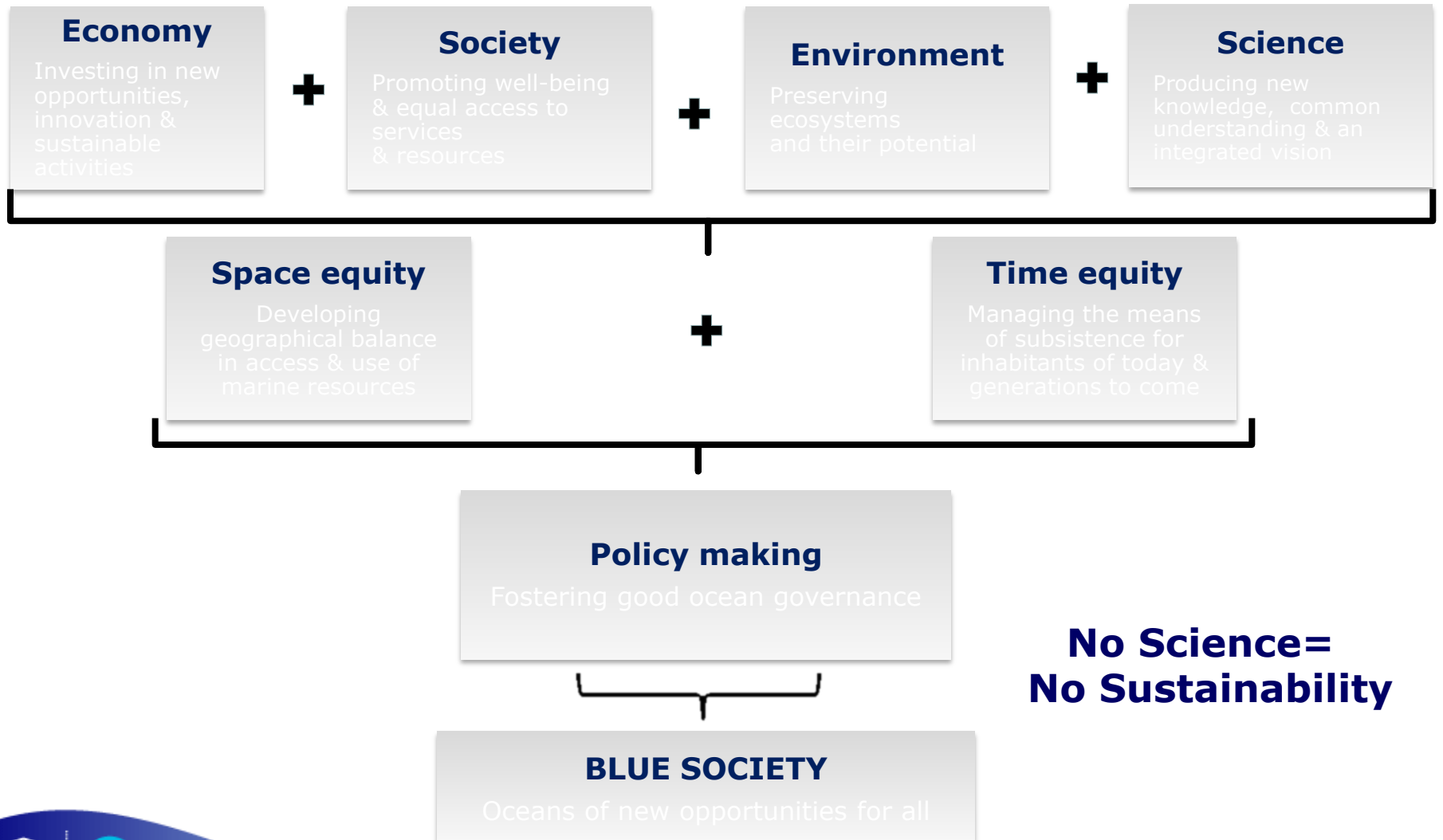
- World Summit on Sustainable Development (WSSD)

2012

- UN Conference on Sustainable Development (UNCSD)

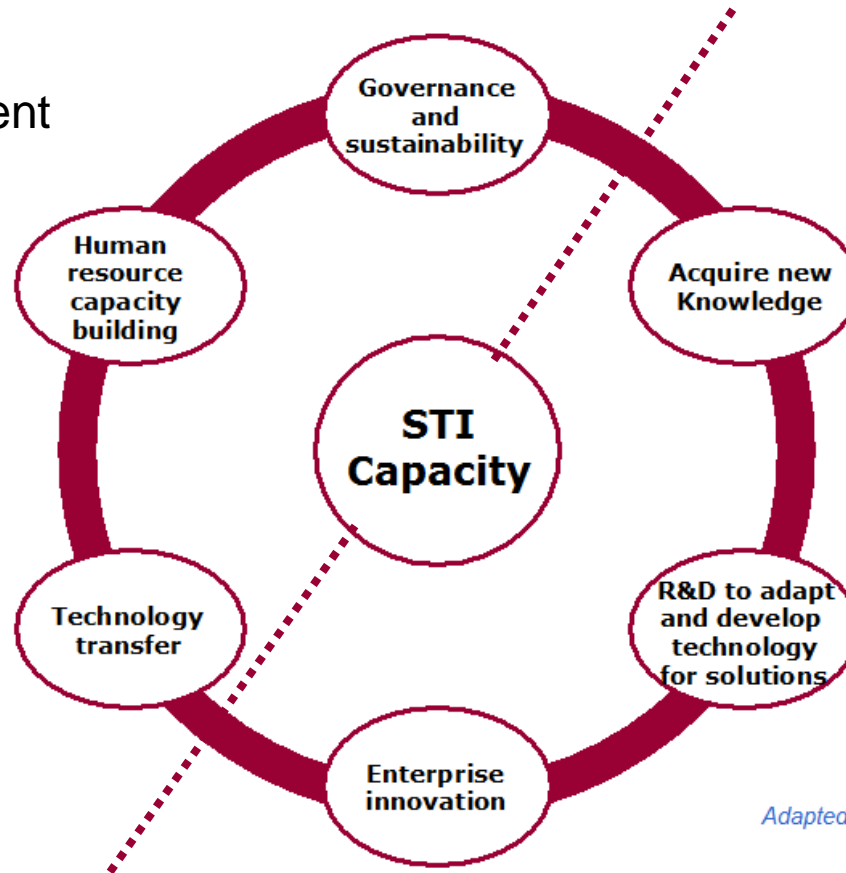


SCIENCE FOR SUSTAINABILITY



Science for sustainability is based on the STI capacity chain

Capacity Development
and Governance



Scientific Research
and Innovation by
the Academy and
Private sector

Adapted from World Bank (2010)



IOC

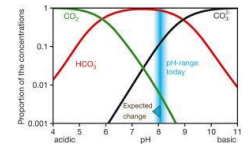
Rio+20 Follow up Document The Future we want

Substantial section on oceans with 20 paragraphs addressing:

Investigate **climate change, sea level rise & coastal erosion.**



Call for **ocean acidification** initiatives



Call for support in international cooperation for **coral reefs**



Call to scientific community to provide data to achieve massive **reduction of marine debris.**

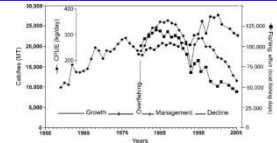


Commitment to implement measures on **invasive species**



Substantial section on oceans with 20 paragraphs addressing:

Call for **sustainable fisheries**



Commitment to protect, restore **health, productivity, resilience** of the ocean; to maintain the **biodiversity**, to enable **sustainable use**

Need for **international cooperation** in marine research & transfer of technology according to IOC guidelines.



Call for full implementation of the **World Ocean Assessment**



Called for support for **SIDS**; implementation of **Barbados Programme of action & Mauritius strategy**

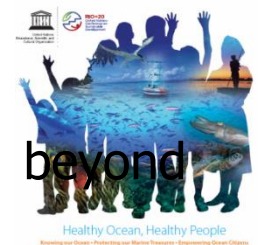
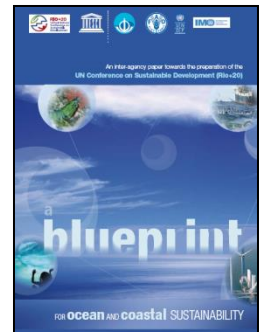
BPOA



Decision on a set of global Sustainable Development Goals (SDGs)

Rio+20 launched an intergovernmental process to develop a set of SDGs, building upon the Millennium Development Goals, following these principles:

- Contribute to the full implementation of the outcomes of all summits in the economic, social and environmental fields
- Focus on priority areas in the Rio Outcome document.
- Address in a balanced way all 3 SD dimensions
- Integrated into the United Nations development agenda 2015.

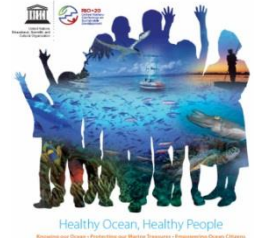
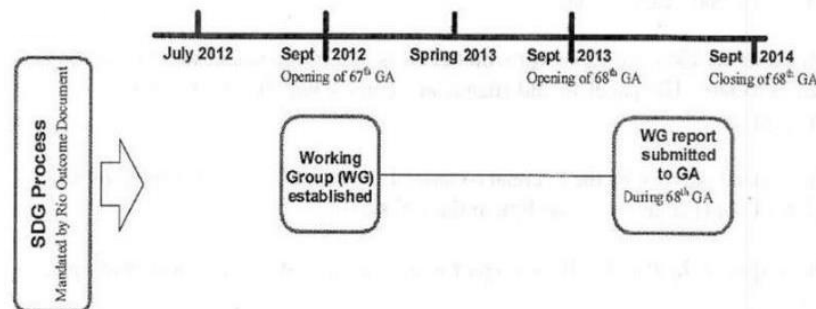


Rio+20 Follow up Sustainable Development Goals

Decision on a set of global Sustainable Development Goals (SDGs)

Open Working Group (OWG) on SDGs

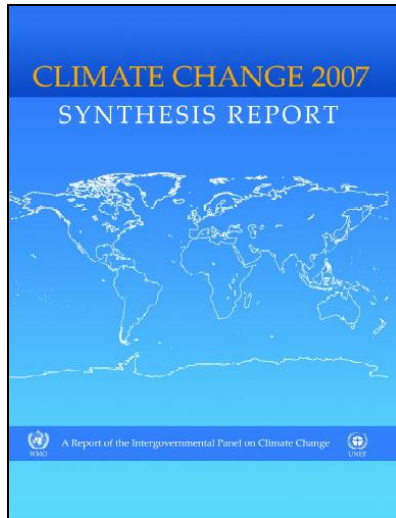
- Tasked by UNGA to develop a proposal for a set of SDGs
- Working group composed on 30 representatives nominated by Member States, UN agencies as observers;
- Will submit a report to the 68th UNGA with a SDG proposal for review and consideration



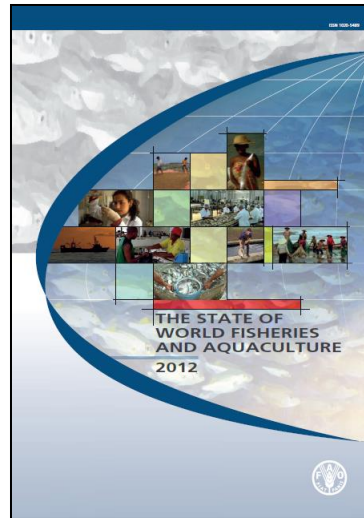
Open WG to discuss Oceans in February

2014

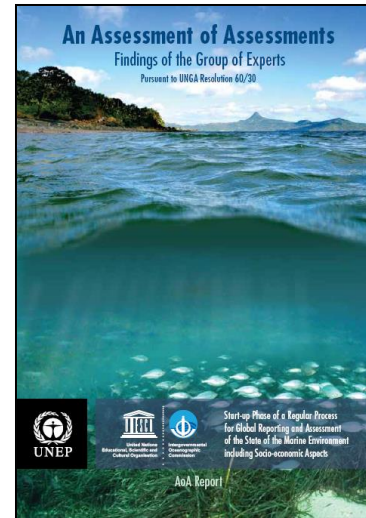
Science-policy interfaces (reporting processes)



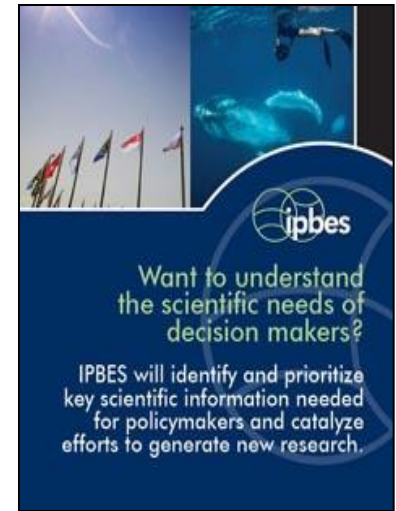
AR IPCC



SOFIA

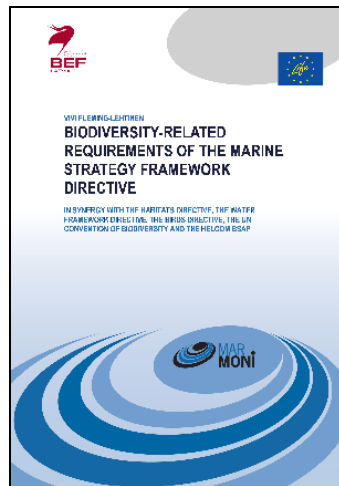


WOA



IPBES

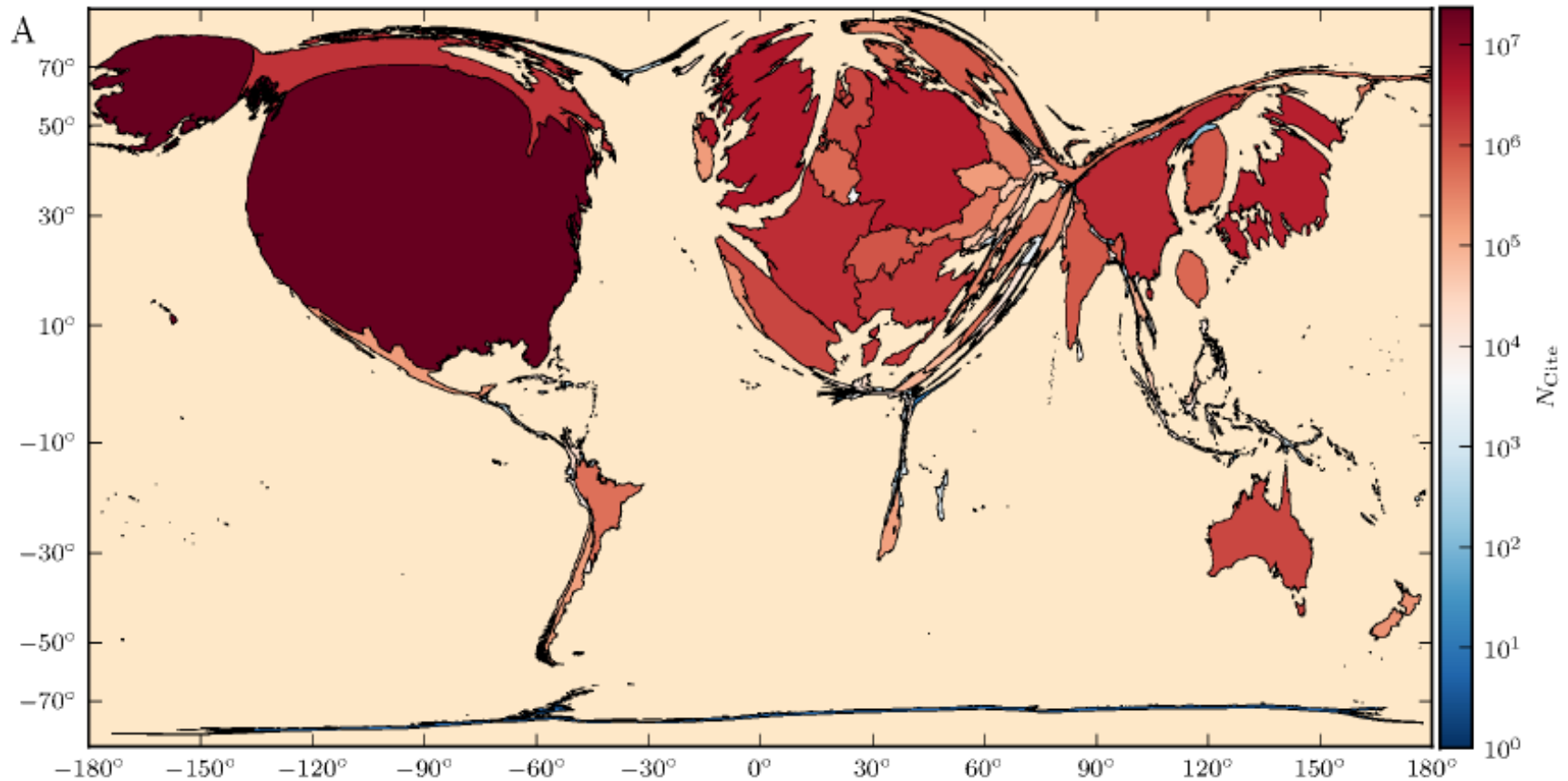
MSFD



The field of knowledge is the common property of all mankind, and any discoveries we can make in it will be for the benefit . . . of every other nation, as well as our own.

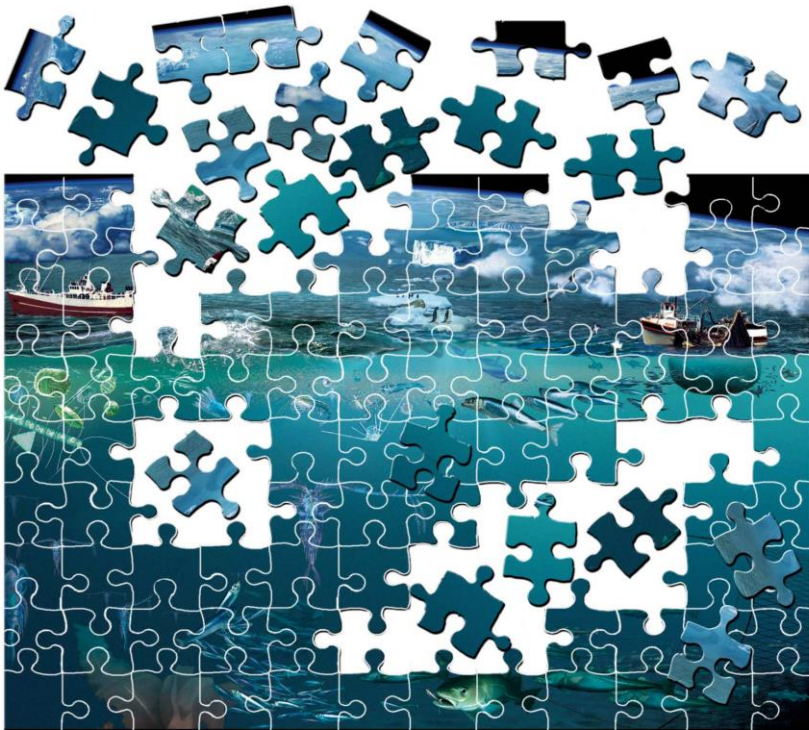
Thomas Jefferson (1807)

Capacity building – transfer of technology



Citation map of the world where the area of each country is scaled and deformed according to the number of citations received, which is also indicated by the color of each country

Problems we face - barriers to break down



- Conflicting priorities and policies,
- Lack of monitoring and coordinated reporting
- Capacity gaps between developed and developing countries
- Limited educational, training and technical capacity and financial resources
- Ineffective enforcement of obligations

➔ Much related to perception that full implementation requires trade offs among pillars of sustainability

Outline

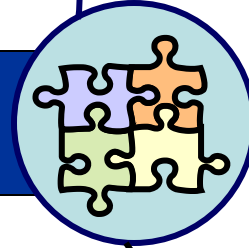
NEW SCIENTIFIC KNOWLEDGE



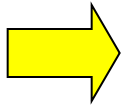
SCIENCE FOR SUSTAINABILITY

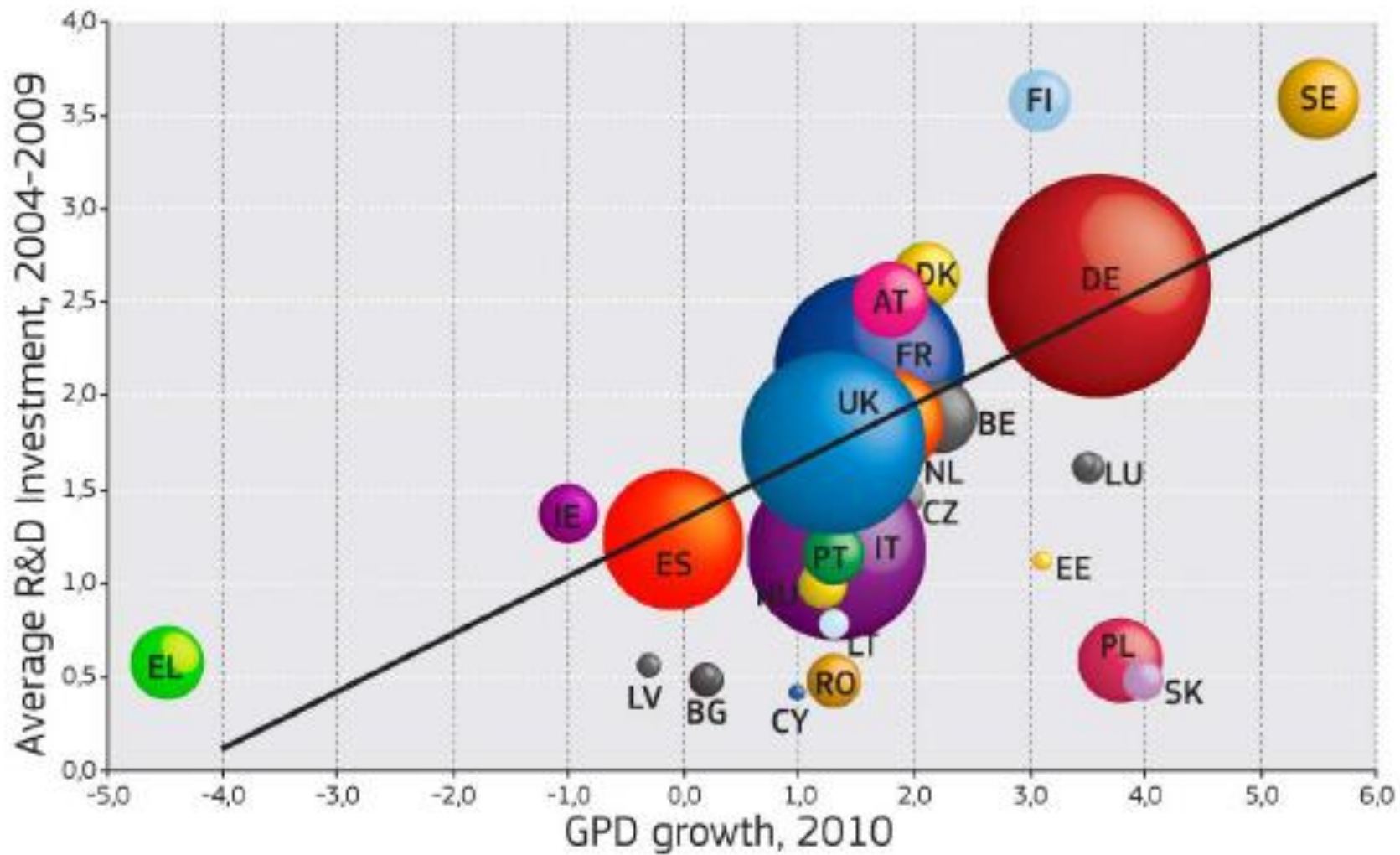


SCIENCE AND INNOVATION

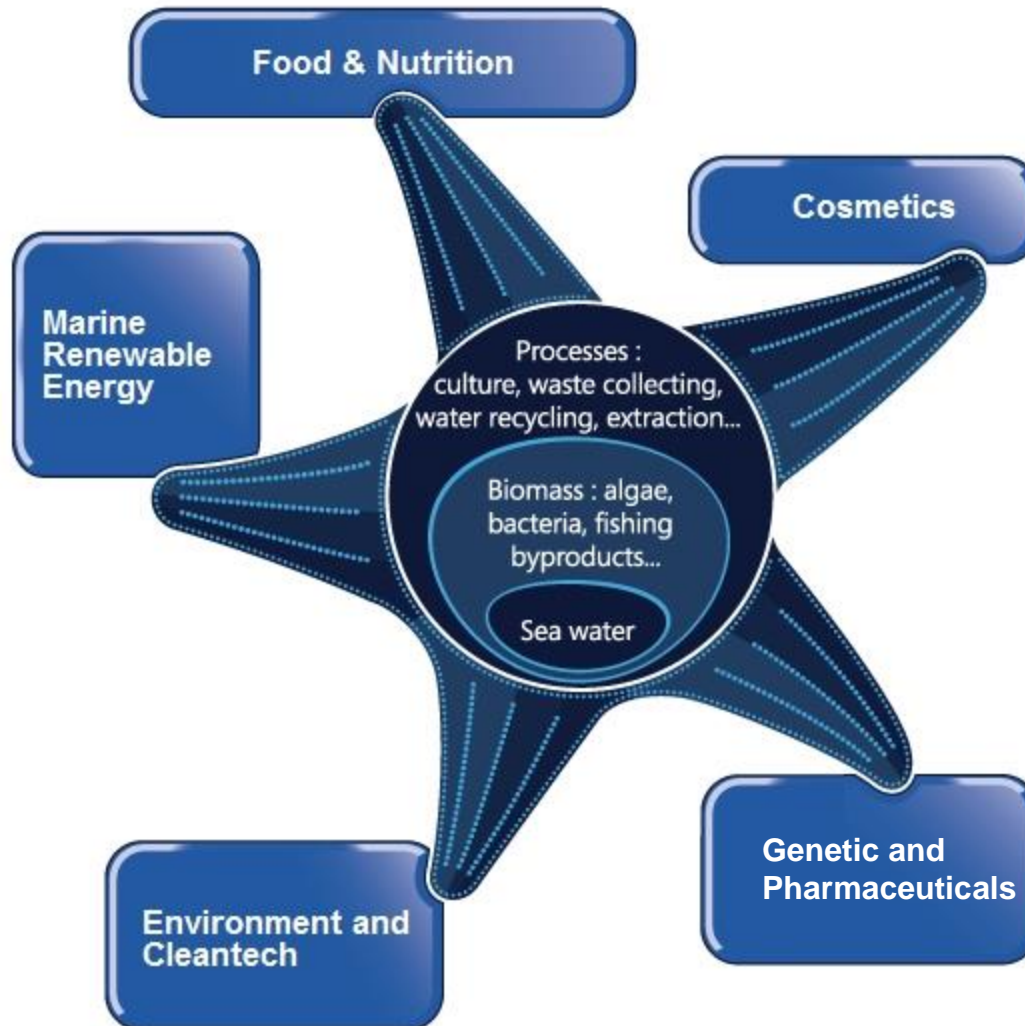


CONCLUDING REMARKS





Private sector Business



New research, business & opportunities: Examples

Environ & Cleantech

Scientists are searching for biochemical pathways that enable some bacteria to degrade hydrocarbons and therefore mitigate the impact of severe environmental perturbations due to oil spills and ship wrecks.

There is also promising research on how to produce new synthetic adhesives to work under water using biopolymers from marine organisms.

Marine Ren. Energy

Harnessing renewable energy from the sea could one day enable the world to end its reliance on fossil fuels.

One of the advantages of tidal, wave and wind power is the predictability. If an energy buyer wants a specific amount of power in five years' time, tidal movements, waves and winds can be forecast accurately enough to provide for a precise future requirement.

The fact that the industry is at such an early stage in its development and not yet fully competitive (wave power is now at the stage wind power was 20 years ago) means that investors have an opportunity to buy into a fledgling industry that is set to grow quickly over the coming years.

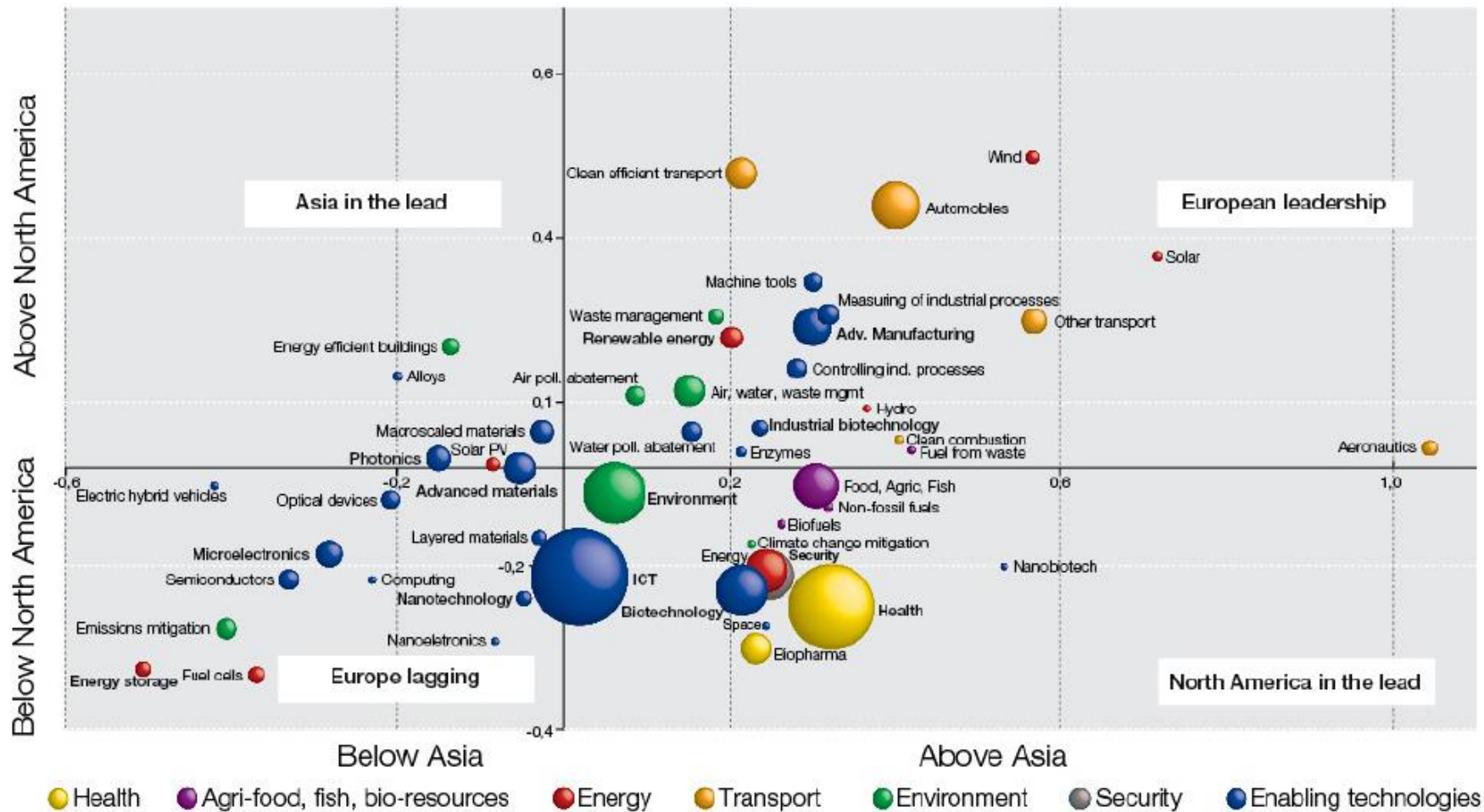
Genetic and Pharma

Functional genome analysis for the production of fine chemicals.

Dormant potentials of marine habitats for biotransformations can be deciphered and brought into market by the focused application of proteomics-based biotechnology.

The technology will develop to synthesise new biocatalysts from aquatic systems and the application-oriented process development.





Source: DG Research and Innovation



Horizon 2020

Outline

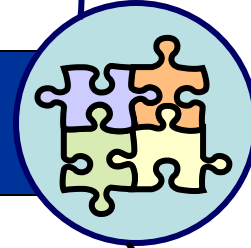
NEW SCIENTIFIC KNOWLEDGE



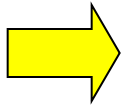
SCIENCE FOR SUSTAINABILITY



SCIENCE AND INNOVATION



CONCLUDING REMARKS



Concluding Remarks

In future, **oceans will be continuously subject to natural and to human pressures for change**. Known hazards and uncertainties include the impacts of climate change: sea level rises, risks of coastal flooding, acidification; and others such as the increases in plastic and other marine litter, tsunami, vulnerable ecosystem impacts in the Arctic, and overfishing.

Global warming is a fact confirmed by scientific evidence and it will be, it is being, the central environmental concern of our times. **More and new research has to be done** to fully understand and evaluate the impacts of climate change in the oceans and to internationally cooperate to monitor the effects of CC and Ocean acidification.

Societies are demanding from policymakers proactive positions towards respecting the **sustainable use and management of natural resources** and mitigate the impacts of global warming. In the next 10 years, social pressure will encourage policymakers to reach agreements regarding limits on carbon emissions and set up **planetary boundaries** for other anthropogenic impacts.

Sustainable development will depend on our ability to manage future ocean changes. Effective planning demands both reliable and systematic information on the ocean environment, and on intergovernmental mechanisms to formulate and to apply management decisions. For this, good scientific research and reliable forecasts are essential.



Concluding Remarks

Increase institutional capacity and funding for scientific research and monitoring and ensure adequate coverage of sampling sites. Obtain **data with a better spatial and temporal resolution** is a crucial and necessary step to take the pulse of the oceans at a planetary scale and then keep them under permanent review.

Ocean issues are global and affect all Nations. Many developing nations still lack the scientific and management technologies and knowledge to effectively manage their marine areas, as defined by the UN Convention on the Law of the Sea. **Capacity building** to ensure that all coastal states can plan and contribute to sustaining a viable ocean, including advice on how to apply to external funding agencies, **remains a key priority**.

Sustainable seas need long-term intergovernmental management based on reliable information and good science. Working with our governmental and non-governmental partners, the Intergovernmental Oceanographic Commission of UNESCO will continue to provide the information needed so that oceans can continue to offer economical, safe and sustainable services to society.



...Protect our Oceans...together



iThank you!

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