

4TH GEO

BLUE PLANET SYMPOSIUM

4-6 July 2018 – Toulouse, France



Economic Drivers and Pressures on the Ocean Environment...

Innovation as a game-changer

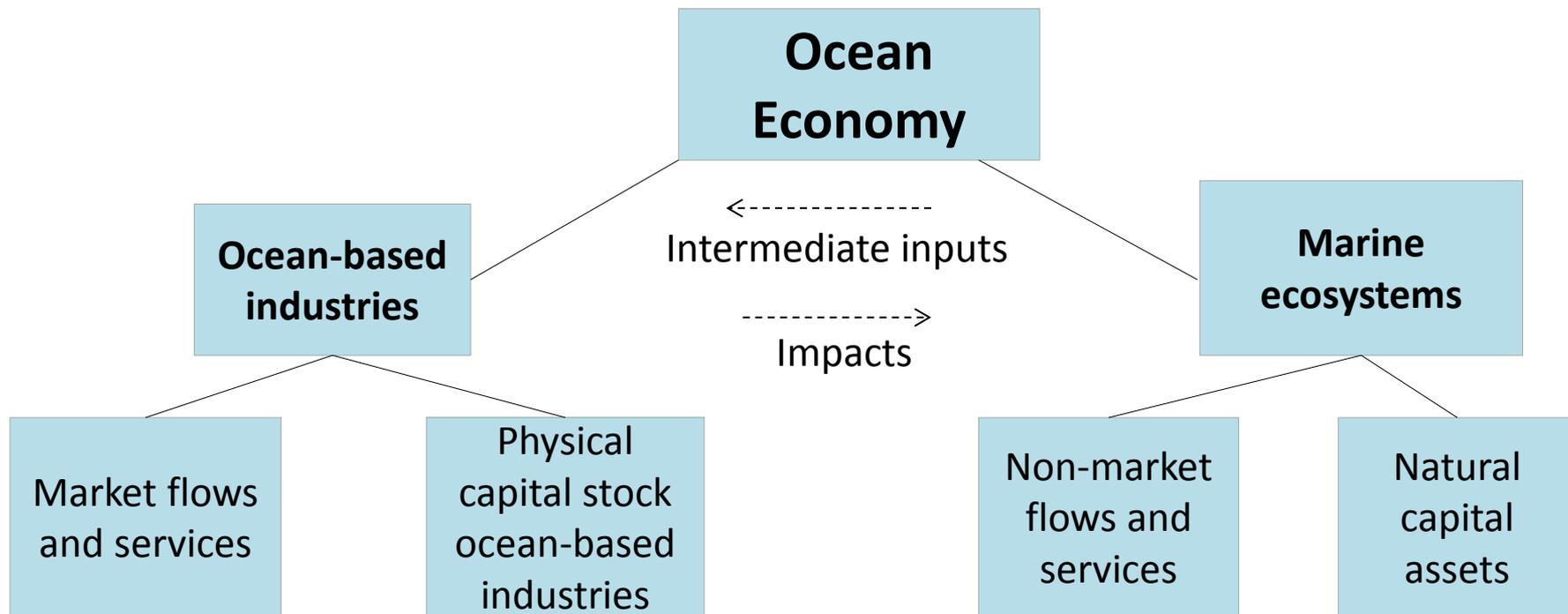
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Today's Ocean Economy: An Interactive, Interdependent System



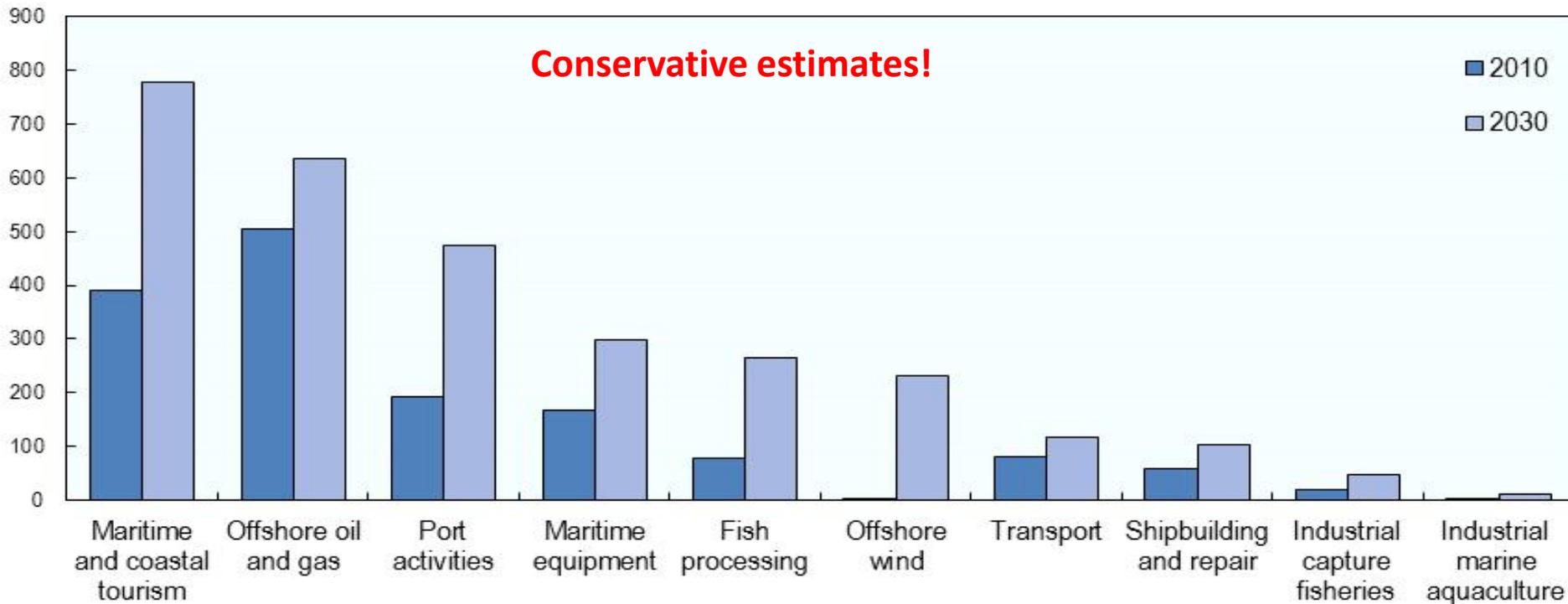
Source: OECD (2016), *The Ocean Economy in 2030*, OECD Publishing.

Vibrant ocean-based industries

Established ocean-based industries	Emerging ocean-based industries
Industrial capture fisheries	Industrial marine aquaculture
Industrial seafood processing	Deep- and ultra-deep water oil and gas
Shipping	Offshore wind energy
Port activities	Ocean renewable energy
Shipbuilding	Marine and seabed mining
Offshore oil and gas (shallow water)	Maritime safety and surveillance
Marine manufacturing and construction	Marine biotechnology
Maritime and coastal tourism	High-tech marine products and services
Marine business services	Others
Marine R&D and education	
Dredging	

Ocean-based industries' value-added to double (from USD 1.5 to 3 trillion) by 2030

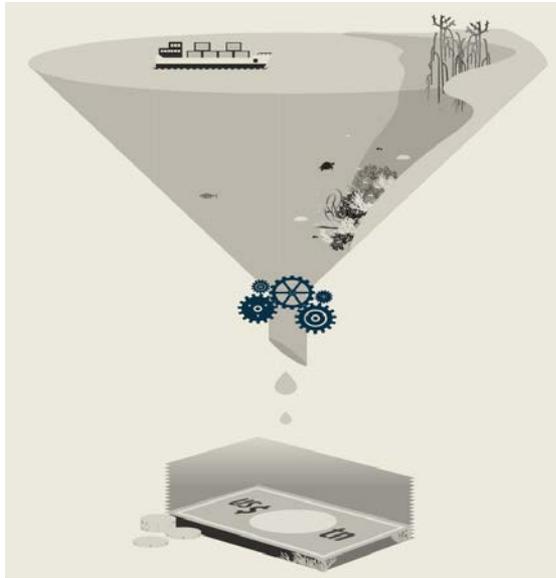
USD billion



Projections of selected sectoral growth rates 2010-2030

Sector	Compound annual growth rate in GVA
Maritime and coastal tourism	3.5%
Ports	4.6%
Marine aquaculture	5.7%
Fish processing	6.3%
Offshore wind	24.5%
<i>Average ocean economy</i>	3.45 %

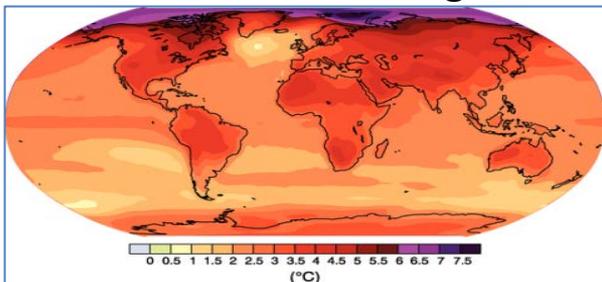
A growing ocean economy relies on a healthy marine ecosystem...



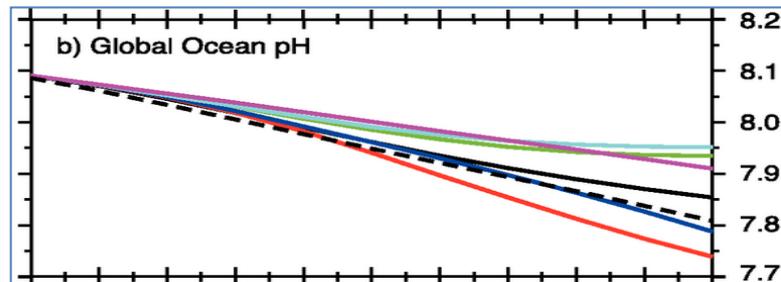
... which is already under pressure on various fronts

“Business-as-usual growth of economic activities in the ocean is not an option for the future”

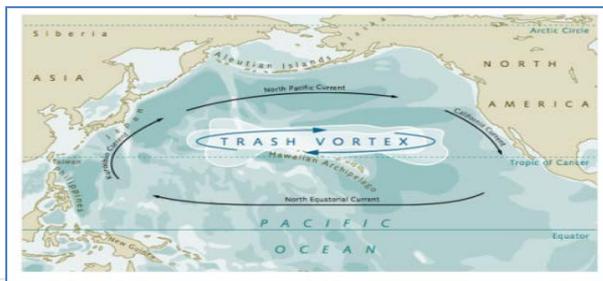
Global warming



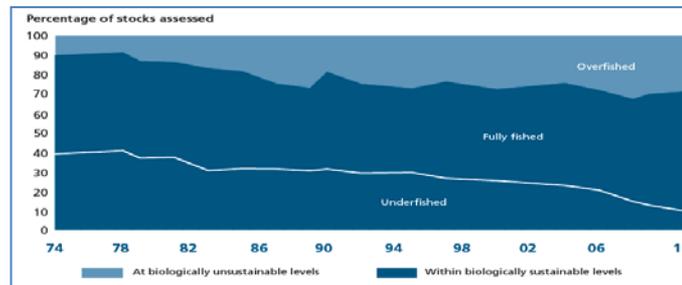
Acidification



Pollution



Overfishing



Drivers for science, technology and innovation in tomorrow's ocean economy

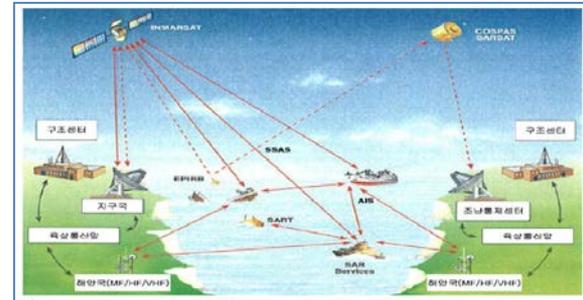
- **Improving knowledge of the ocean** environment, bio-diversity and marine ecosystems (*e.g. new sensors, sea-floor mapping, satellites*)
- **Responding to climate change and sustainability challenges** (*e.g. biotechnology, traceability, green technologies*)
- **Enhancing competitiveness** via efficiency gains/cost-saving (*e.g. autonomous ships*)
- **Expanding technological frontiers** (*e.g. complex subsea engineering*)

Disruptive innovations that fundamentally shift knowledge acquisition and industry practices...

Tomorrow's intelligent ship



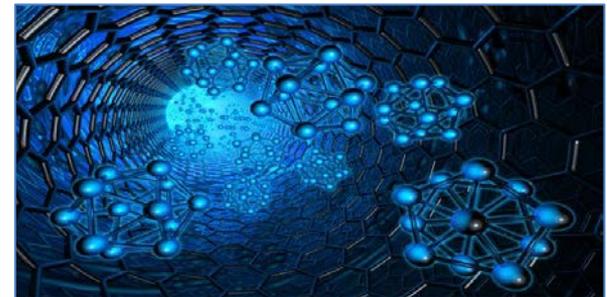
E-navigation



Subsea robotics

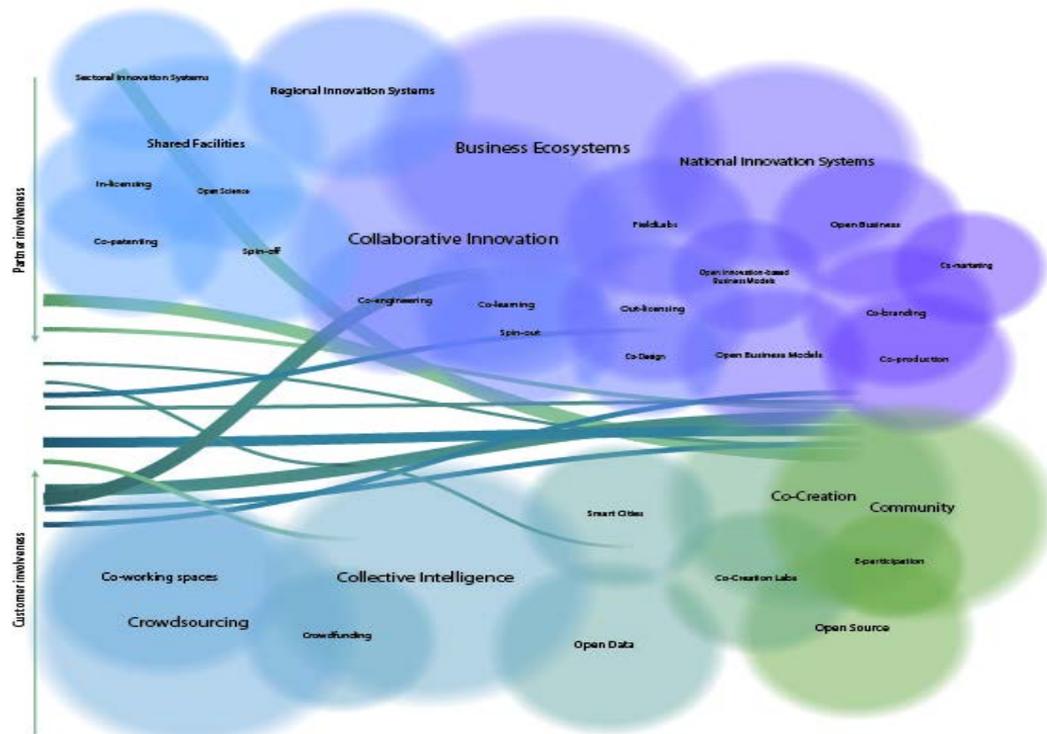


Bio- & nanotechnology



... to emerging and new patterns of collaboration in ocean R&D and innovation...

Ongoing original OECD survey of innovation networks in the ocean economy



Source: OpenInnovation.eu, 2017

... and the importance of valuing ocean observations

Direct economic benefits:

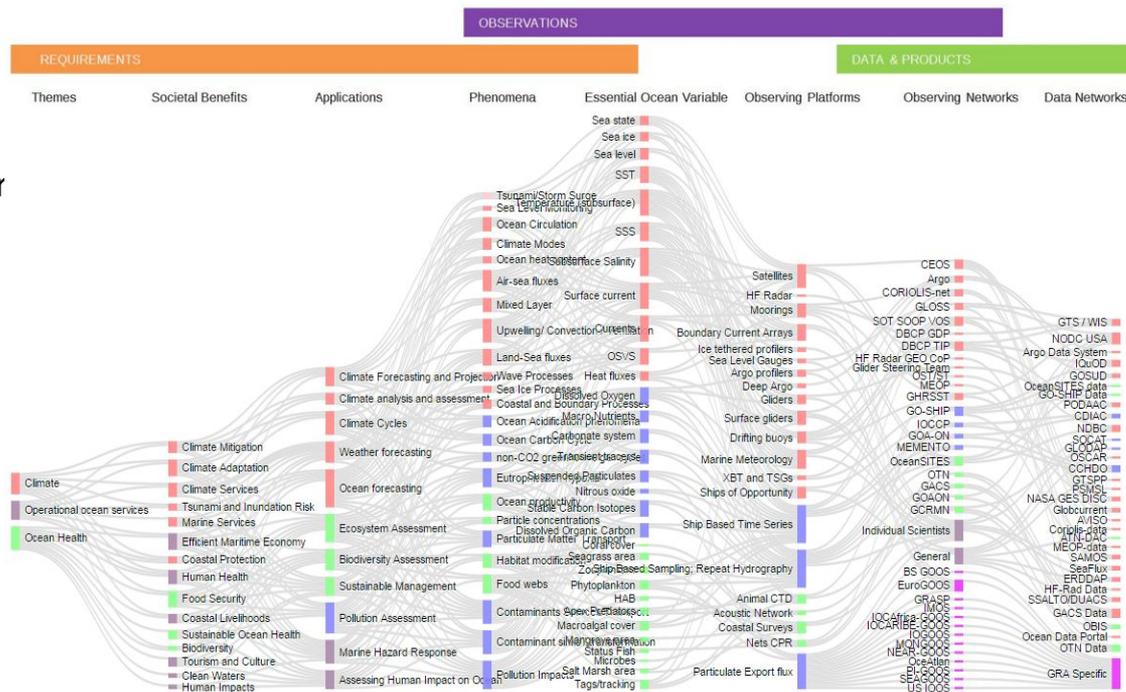
- generated through products or services developed using ocean observations (e.g. commercial revenues from selling products or services).

Indirect economic benefits:

- accrued through the wider economic activity enabled by products or services
- follow gains in efficiency or productivity

Social benefits:

- received by society in general in ways that are often difficult to identify and quantify



Source: GOOS (2018).

Concluding Remarks

- Innovation will hold one of the keys to the economic success of the Ocean Economy and in reducing ocean health issues.
- Governmental role in fostering science, research and innovation for a more sustainable Ocean Economy will remain essential.
- OECD forthcoming publication ***Rethinking Innovation for a Sustainable Ocean Economy*** in early 2019 (with findings presented at an international conference hosted by Portugal, November 30th 2018)