European Ocean Observing System

BENEFITS OF OCEAN OBSERVATION

Concept Note, May 2021

Task 4.1 of the EOOS implementation plan calls for a Cost-benefit analysis and Business Plan to find the funding to support the development of sustained ocean observing capacity. The systematic data collection and use of quality-assured calibrated and validated data for assessing the marine environmental status and ocean health require significant organisation, commitment and hence economic investments at both national and EC levels. These investments are mostly made by national, local governments or government institutions, or at the EU level, mainly through project funding.

Even though the advantages of a fully functioning and sustainable Ocean Observing System (OOS) are numerous, the necessary investments for making it fully operational and efficient are lagging (POGO, 2018). One possible reason is that the benefits are not clearly articulated, visible, easily measurable or comparable, in contrast to the capital and operational costs for deploying an OOS, which are more readily available. This could lead to flawed business cases, leading to underinvestment in sustained ocean observations. To make an appropriate assessment, a correct cost overview and estimation of the benefits is necessary.

Numerous studies have been undertaken to estimate potential benefits. However, there is no consistent method to evaluate case studies, and the different results may not be comparable. This was highlighted in the DG MARE commissioned report. The OECD had identified in their report 'The Ocean Economy in 2030' more than thirty economic impact studies of ocean observation, which have the following fundamental differences:

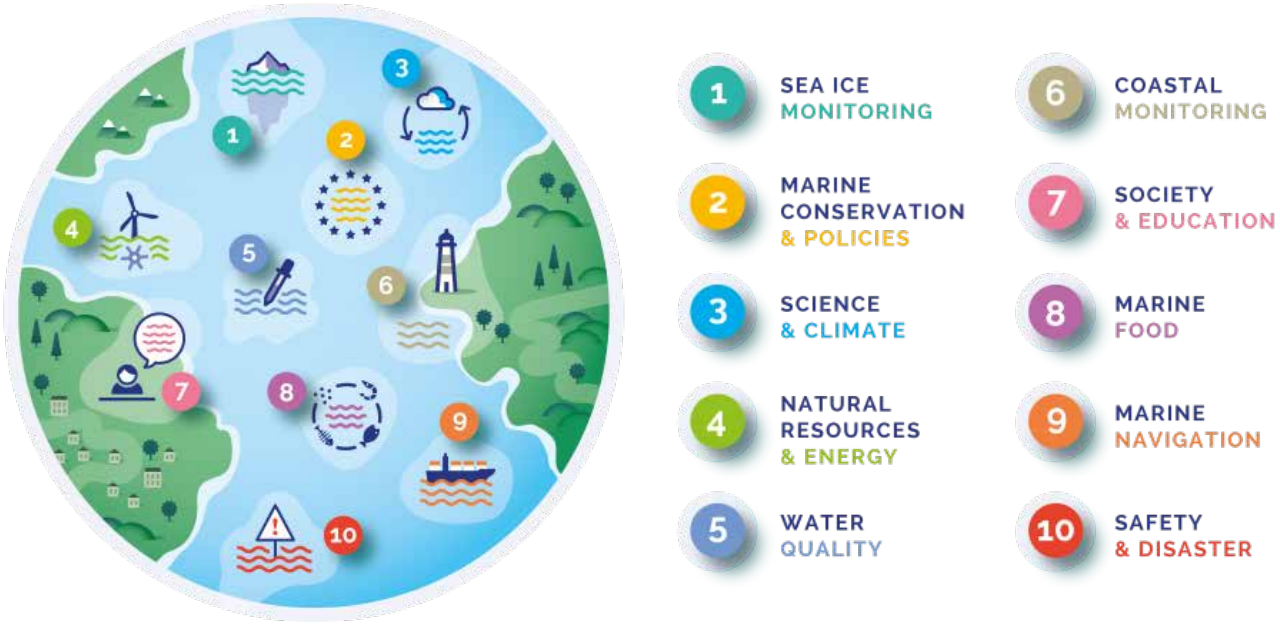
- Objectives are quite diverse: proof of expenditure, investment, find maximum level of expenditure;
- Funders of studies do not have the same status;
- The overall approach to the evaluation is sector-specific vs broader public good, micro vs macro analysis;
- Geographical scope: some evaluations focus on regions, and others look at entire countries;
- There is currently no consensus on the method applied: Cash-flow Net Present Value (NPV), Cost-Benefit Analysis, One-sided analysis (only benefits or only costs);
- The time-scale of return considered in the studies varies, ranging from 5 to 30 years, which significantly impacts the potential net present value extracted from the analyses.

Therefore, an aligned and standardised methodological approach for estimating the benefits of OOS should be considered. Several studies (see list below) have started to identify the value chains of ocean observing systems. This includes mapping all potential beneficiaries and main players in a value chain (divided into upstream, intermediate and end-users) and identifying their direct, indirect and use and non-use benefits.

Recent value chain identification examples include the 'Current and future value of earth and marine observing to the Asia-Pacific region' developed by the Commonwealth of Australia in 2019 and the 'Copernicus market report – February 2019' produced by Price Waterhouse Coopers for the European Commission. Even though these studies focused on Earth & Marine observations in general, they both used a solid and measurable methodology to estimate effective benefits per user group for different countries. The Australian study also evaluated the benefits of cooperation and capacity building, noting the importance of targeted investments (investments in infrastructure or capacity building) in the Earth and marine observations value chain. The study indicated an increased collaboration on earth and marine observations across the APEC countries could generate an additional $126 billion.

It would be interesting to make a similar study for the EU countries to stimulate investment (either in infrastructure or capacity building) in the European Ocean Observing System (EOOS). Furthermore, the analyses of the added value per industry group could open up the route for some potential future public-private partnerships in the EOOS process. The current methodologies could be strengthened by including

techniques used for economic valuation of marine ecosystem services (see also EMB, 2019) to better account for and compare non-use values. These methodologies should be applicable at a national and regional scales to enable specific cost-benefit analyses for targeted investment in new ocean observing capacity. The National Oceanic and Atmospheric Administration (NOAA) has already attempted to estimate the economic value of 6 NOAA products that are provided based on observation data collected by NOOA vessels. The methodology they used can also serve as an example to set up a cost-benefit analysis. Furthermore, it might be helpful to look into new or different reporting obligations to facilitate the analysis and gathering of data on the benefits to make the benefit studies less strenuous.



The Copernicus Marine Service has identified 10 markets within the Blue Economy where ocean data can be used and provides substantial benefits to users. Source: Copernicus market report – February 2019; by PwC for the European Commission

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Some studies on benefits from Ocean Observing:

- Hauke Kite-Powell, Charles Colgan & Rodney Weiher (2008) Estimating the Economic Benefits of Regional Ocean Observing Systems, Coastal Management, 36:2, 125-145, DOI: 10.1080/08920750701868002.
- Christopher F. Dumas & John C. Whitehead (2008) The Potential Economic Benefits of Coastal Ocean Observing Systems: The Southeast Atlantic Region, Coastal Management, 36:2, 146-164, DOI: 10.1080/08920750701861007.
- UNESCO Task Team for an Integrated Framework for Sustained Ocean Observing, A Framework for Ocean Observing, 2012, IOC/INF-1284 rev., doi: 10.5270/OceanObs09-FOO.
- Economics of Australia's sustained ocean observation system, benefits and rationale for public funding, Report for the Australian Academy of Technological Sciences and Engineering and the Western Australian Global Ocean Observing System Inc., 2006.
- Zdenka Willis, "The Business Case for Improving NOAA's Management and Integration of Ocean and Coastal Data - Integrated Ocean Observing System". NOAA IOOS Program, 2009.
- PriceWaterhouseCoopers, INFOMAR: a marine mapping study. Options appraisal report: final report. Economic and public policy, 2008.
- Kaiser, M.J., Pulsipher, A.G., The potential value of improved ocean observation systems in the Gulf of Mexico, Marine Policy, Vol 28, Issue 6, Nov 2004, P469-489.
- Anna-Sophie Liebender, Claire Jolly & Jan-Stefan Fritz (2016) Report of AtlantOS-OECD Scoping Workshop on the Economic Potential of Data from Ocean Observatories. H2020 AtlantOS.

Next steps:

- Develop a proposal to conduct a full socio-economic valuation of Europe's ocean observing system benefits to society for inclusion in the planning of the Horizon Europe Blue Economy Partnership. The proposal should build on previous work carried out by EuroGOOS and the Copernicus Marine Service as part of the EEA GISC project (2010), considering both in situ and satellite observing systems. This approach should also include conventional cost-benefit analysis and methodologies that account for natural capital accounting. An important consideration of this proposal is the cost estimation of this type of study, which a representative of OECD has provided input.
- Explore the possibility of developing a use case library showing the qualitative benefits of Europe's ocean observing system. This library could be based on the Copernicus Marine Service Use Cases and Use Case Books (https://marine.copernicus.eu/markets/), Copernicus Marine Service blue book and downstream services operated by EuroGOOS members, and the EMODnet Use Cases (https://www.emodnet.eu/en/use-cases), linked with international initiatives such as GEO Blue Planet, Atlantos, and US IOOS use case library approach.