Mathias Jonas

Secretary-General IHO Monaco 21st of April 2020

**Review of the zero draft of Implementation Plan for the UN Decade of Ocean Science for Sustainable Development**

Dear Vladimir and Julian,

Instead of laboriously filling my observations into the surveymonkey template, I have accumulated my general comment and some specific suggestions for rewording on several articles below.

Hope this helps.

Mathias

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The document delivers high level of abstraction and I do not see severe deficiencies within their framework of considerations. However, bathymetry is underrepresented (only indirectly covered by "physical") and the aspect of standardization and interoperability could be addressed more prominently. Here comes my list of comments which I would welcome to be forwarded by Norway or other channels if you see value in it.

What is underestimated in the whole composition however, is the role of innovation in technology. Advances in measurement technology, underwater communication and autonomous carriers, smart processing of remote sensing (Satellite data), all sorts of ocean engineering could boost the efficiency and output of ocean science within this decade.

There is a circle: applied sciences could help to progress on technical improvements on all these means to conduct ocean science more efficient and the results of the use of this smart technology  in turn assist improvement in insights how the oceans functions.

If it comes to IHO´s genuine contribution I would like to state that our S-100 framework approach would address this circle once ocean scientists would take efforts to apply the this concept to model to their data.

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*Page 8:*

*Resulting outputs and benefits:*

The envisaged outputs of this objective include a global data, information and knowledge platform for sharing ocean knowledge across diverse ocean actors from generators or knowledge, to end-users.

For me, the understanding what constitutes data and information is not completely clear. In my interpretation “information” is the abstract existence of facts about an entity, whereas “data” is the coded (digestible) information. It seems that the scientists have a different paradigm

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***2.2:*** Innovate and improve services using ocean knowledge; improve partnerships between information generators and end-users.

The more detailed explanation under 2.3 (page 15) explains it better but here it gives the impression there is a straight line from information generators to end-users. I propose:

***2.2:*** Innovate and improve services using ocean knowledge; improve partnerships between data gatherers, information brokers and end-users.

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As part of this objective, enhancement of existing observing systems would be envisaged resulting in a fully integrated global ocean observing system that captures bathymetric, essential physical, chemical, biological, and ecological ocean properties, from global to local coastal scales.

Why? Bathymetry is essentially physical information but may not be regarded as such

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Increased fit-for-purpose and interoperable ocean information products (including forecasts, indicators, and coastal warnings) could be generated.

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*Strategic Orientations*

***3.1:*** Map all components of the world ocean (for example, bathymetric, physical, geological, biogeochemical, biological and socio-ecological) including human activities across time scales.

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This objective is expected to build on current efforts to map the world ocean and produce a digital global ocean atlas including seabed topography, parameters of the physical, biological, chemical, and geological environments, as well as ecosystems, underwater cultural heritage, boundaries, and resources.

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A further central output of this objective is expected to be improved modelling and prediction capabilities to deliver relevant and timely societal services. Improved models and related prediction capacities will also impact positively on weather services in support of marine transportation, tourism, energy operations, cabling and communication, fisheries, aquaculture and recreation.

Page 13:

*Resulting outputs and benefits:*

New services and information to support ecosystem-based management, ocean related hazard mitigation, as well as the management of the expansion of sector-based activities (e.g. energy operations, fisheries, aquaculture, tourism, and shipping) are expected to be delivered under this objective.

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To achieve this, the Decade will require an openly accessible, usable, and responsive digital management framework. This includes digital resources to support a holistic understanding of marine social-ecological systems and includes historical data, contemporary data (including real-time data streams), and modelled data to help predict future ocean conditions. The design and development of the system must overcome existing barriers - including data incompatibilities and fragmentation, siloing of data, lack of data sharing, and hidden or underexploited datasets.

This requires that software developers have access to easily reusable, harmonised and standardized data sources and that the provenance of the data is easily and accurately traceable.