

Strategic Environmental Goals and Objectives for Seabed Mining



Fig 1 A tube-dwelling anemone or cerianthid.
Credit: NOAA OER



Fig 2 A pancake urchin is one of the most commonly seen echinoids in the deep sea.
Credit: NOAA OER

Why SEGOs?

In order to **manage the marine environment** effectively, the Authority should agree on a uniform set of **environmental goals and objectives** (Box 1). The application of ecosystem-based approaches would invoke general scientific principles that apply to all ecosystems independently of their specific ecological features. These should apply to all the regions, time scales and phases of management (i.e. be strategic). Such goals and objectives are required to guide all aspects of environmental management associated with seabed mining, and will help avoid omission, inconsistency, or insufficient regulation of the marine environment.

Establishing a clear set of **Strategic Environmental Goals and Objectives** (SEGOs) is appropriate to help the ISA fulfill its mandate to “ensure effective protection of the marine environment from **harmful effects**”, under UNCLOS (Art. 145), as well as the obligation for all States to protect and preserve the marine environment (Art. 192). We argue strongly that **overarching SEGOs** that are applicable uniformly to the entire “Area” should emerge as soon as possible, ideally prior to development of regional environmental management plans (REMPs) and contractor-specific environmental management plans (EMPs). Such SEGOs will ensure equitable obligations for protection of the marine environment across regions and contractors.

Definitions (IOC-UNESCO)

BOX 1

Goal: a statement of general direction or intent. Goals are high level statements of the desired outcomes to be achieved.

Objective: a specific statement of desired outcomes that represent the achievement of a goal.

Target: an interim point on the way to an outcome and eventually to a long-term management goal.

Performance Indicator: quantitative or qualitative statements or measured parameters that can be used to measure the effects of specific management actions over time.

Operationalization of Serious Harm

Identification of **Harmful effects, Significant Adverse Change** and **Serious Harm** requires the existence of SEGOs, as these indicate what is necessary to prevent or protect. The ISA Draft Regulations (2018) contains a definition for **Serious Harm** (Box 2), based on the term “significant adverse change”, which is currently only defined in the Exploration Regulations using qualitative terms. FAO provides a definition for **Significant Adverse Impacts** (Box 2), which cause **Significant Adverse Change**, but a commonly accepted definition of serious harm continues to elude us. The operationalization of these terms requires **quantitative** measurements of a series of variables, which need to be defined as **targets** and **thresholds** for ecological **indicators** addressing specific **environmental goals and objectives**.

However, one of the main challenges is defining **numerically** these thresholds for deep-sea ecosystems, where ecological data is often limited.

Definitions

BOX 2

Serious Harm means “any effect from activities in the Area on the Marine Environment, which represents a significant adverse change in the Marine Environment determined according to the rules, regulations and procedures adopted by the Authority, on the basis of internationally recognized standards and practices informed by Best Available Scientific Evidence.” (ISA, 2018, NOT YET OPERATIONALISED)

Significant Adverse Impacts are those that compromise ecosystem integrity (i.e. ecosystem structure or function) in a manner that 1) impairs the ability of affected populations to replace themselves; 2) degrades the long-term natural productivity of habitats; or 3) causes, on more than a temporary basis, significant loss of species richness, habitat or community types. (FAO, 2009).

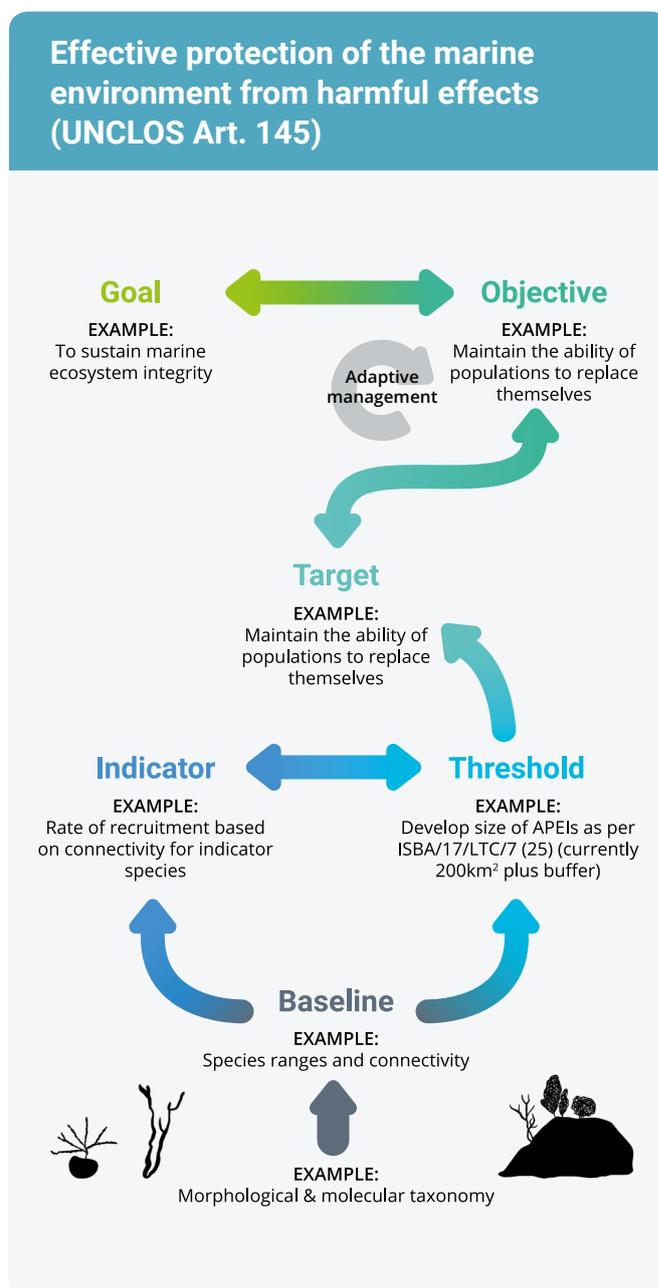
Role of the environmental baseline

The **environmental baseline** is the critical **underpinning** of the effective development of all strategic, regional and local environmental **goals, objectives, targets, thresholds** and **indicators** to measure serious harm. This means that the baseline data must be sufficient to enable implementation of the Authority’s SEGOs. In practice, the establishment of a robust set of SEGOs should follow a hierarchical process, where 1) a set of **goals** is defined; 2) a

number of **objectives** specific to the particular system are selected, based on the goals; 3) then **targets** that are measurable are identified; 4) for which **indicators** and **thresholds** are needed, based on **baseline data**.

Conservation tools to meet EGOs

Selecting the appropriate **management actions** to meet targets and achieve the mandated environmental goals is difficult in the deep-sea realm of complex ecosystems and limited data. An overarching approach for SEGOs and their targets can and should be informed by prior work initiated at the regional scale. Different tools are available for the management of marine systems in general, that can also be applied to seabed mining, including **marine spatial planning, ecosystem-based management, vulnerable marine ecosystems** and **adaptive management**.



Way forward

We recommend that the ISA prioritises dedicated workshops where experts with different backgrounds, spanning from natural sciences to industry and law, work to develop strategic environmental goals and objectives, identify relevant targets, the indicators to be measured and the thresholds to be assessed during and after mining activities. DOSI, DOOS and INDEEP offer an excellent source of knowledge, expertise and a network of institutions that could potentially help facilitate such workshops. We would like to ensure these are all available to the ISA to help develop these proposed overarching and regional environmental management plans, SEGOs and EGOs.

ABOUT DOSI

The Deep-Ocean Stewardship Initiative seeks to integrate science, technology, policy, law and economics to advise on ecosystem-based management of resource use in the deep ocean and strategies to maintain the integrity of deep-ocean ecosystems within and beyond national jurisdiction. Policy brief prepared by DOSI Minerals Working Group members. Authors: *Eva Ramirez-Llodra, Norwegian Institute for water Research, Oslo, Norway. Lisa L. Levin, Scripps Institution of Oceanography, USA. Anna Metaxas, Dalhousie University, Canada. Kristina Gjerde, International Union for Conservation of Nature, USA. Amber Cobby, University of Southampton, UK. Maria Baker, University of Southampton, UK.*

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Fig 3 A deep-sea bamboo coral from the family Isididae.
Credit: NOAA OER



Fig 4 Animal associations on nodules near Johnston Atoll, Pacific at 2600m,
Pacific Ocean'
Credit: NOAA Okeanos Explorer 2017

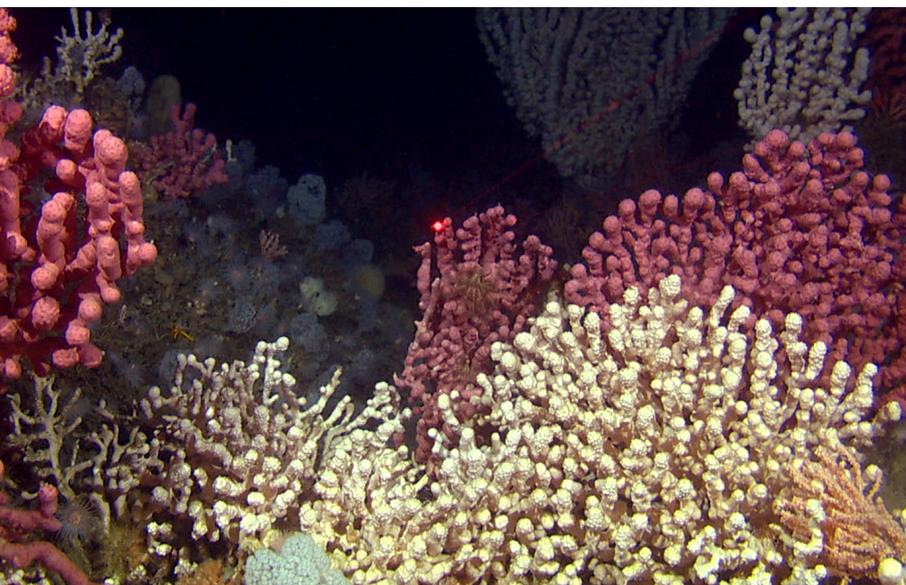


Fig 5 Deep-water coral reefs - Norwegian Margin, Atlantic Ocean;
Credit: MAREANO Project, Institute of Marine Research, Norway

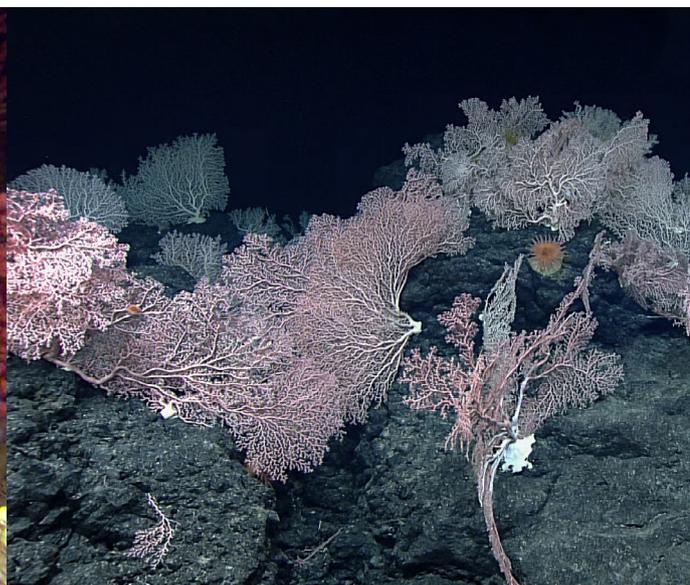


Fig 6 A dense pink coral garden seen in the Musician Seamounts.
Credit: NOAA OER