The Ocean Health Index Orientation

Contents

1 Ocean Health Index+ Independent Assessments

Welcome to the Ocean Health Index (OHI) Portal orientation. Here, you will learn how to use the portal and how to access the tools and information available to you to facilitate the development of your Ocean Health Index independent assessment (OHI+).

1.1 What is the Ocean Health Index?

> The Ocean Health Index (OHI) is the first assessment framework that provides a common platform for scientifically combining and comparing all key elements from all dimensions of the ocean (ecological, social, economic, and physical) to measure how sustainably people are using ocean and coastal resources.
>
> In the OHI framework **a healthy ocean is one that sustainably delivers a range of benefits to people now and in the future.**

Marine management today requires establishing comprehensive management objectives that maximize the ocean-derived benefits delivered to people while at the same time keeping oceans healthy. This requires a dynamic cycle of understanding current conditions, developing and enacting strategic management, and understanding how conditions have changed in response. OHI was developed to support this growing need by providing a framework that quantifies overall how well ocean-derived benefits are delivered to people now and in the future. The Index provides a common platform to measure how sustainably people are using the ocean. The Index offers various metrics to allow decision-makers to determine the appropriate balance of priorities among multiple uses to ensure that oceans can continue to sustainably deliver a range of benefits and services to people now and in the future. By allowing for a comprehensive and integrated view of marine systems as a way to understand the trade-offs and synergies among various goals, the Index represents a significant advance over conventional single-sector approaches to assessing sustainability as communicated through other kinds of index efforts.

The framework is structured around ten clearly defined **goals** coupled with the **likely future state**, which is affected by the social and ecological **pressures** and **resilience** that influence ocean health. The Index was developed as a framework to assess coastal oceans in a formulaic manner, and was designed to be customizable given different scales, data availabilities, and cultural priorities. In this way, it can be tailored to fit any spatial context to meet both ecological and political needs. Scores are calculated using input from key stakeholders, as well as the best available science and local information (data and indicators) at the scale of

the assessment. Scores reflect how well coastal regions optimize their potential ocean benefits and services in a sustainable way relative to a reference point or policy target, on a scale of 0 to 100. A score of 100 means that the evaluated system achieved its defined target for that goal and is sustainably delivering all of the specified benefits and is likely to continue doing so in the near future. A score of 0 means that data were available, but that the region assessed either did not achieve any of the available benefits or that the benefits it did obtain were gained in an unsustainable manner.

As a composite index, OHI integrates the results across disciplines and sectors and expresses them through broadly-held public goals:

- **Food Provision** from sustainably harvested or cultured fish stocks
- **Artisanal Fishing Opportunities** for local communities to engage in sustainable practices
- **Natural Products** that are sustainably extracted from the ocean
- **Carbon Storage** in coastal habitats
- **Coastal Protection** from inundation and erosion
- **Sense of Place** from culturally valued iconic species, habitats, and landscapes
- **Livelihoods and Economies** from coastal and ocean-dependent communities
- **Tourism and Recreation** opportunities
- **Clean Waters** and beaches for aesthetic and health values
- **Biodiversity** of species and habitats

1.2 How can the Ocean Health Index be used for decision-making?

The Index is a tailorable approach that can meet the needs and priorities of stakeholders to help inform decision-making on the sustainable use of ocean and coastal resources. Recognizing that most decisions are made at national and subnational scales, our team developed the Ocean Health Index+ (OHI+) independent assessment framework, which is intendend to empower stakeholders to conduct assessments autonomously at any spatial scale desired. The OHI+ framework is repeatable, transparent, quantitative, and goal-driven, and the inputs to the OHI+ assessments use the same overarching framework as OHI global, while utilizing data, indicators, reference points, and preferences and priorities specific to the local context. Repeated assessments are valuable because they can be used to tack and monitor the progress of ocean health through time. Even a first effort of OHI+ is valuable because it establishes a baseline against which to monitor change. Such a flexible framework allows OHI+ assessments to adapt to local conditions while still being useful for management. Researchers from around the world have changed the goals models and data in their assessments in an ever-evolving process that characterizes the Index.

The OHI supports the growing need for marine management to establish comprehensive objectives that maximize the ocean-derived benefits delivered to people while at the same time keeping oceans healthy. As a management tool, the Index can inform decision-making by helping stakeholders identify geographic and thematic priorities for management, which increases the cost-effectiveness of actions taken. At the same time, it addresses the desire for policymakers to increase environmental performance in the face of budget constraints for natural resource conservation, and galvanizes efforts towards ecosystem-based management.

1.3 Why conduct an OHI+ assessment?

The reasons for conducting an assessment vary from context to context. Perhaps you want to better understand ocean and coastal health in your region, or you are actively engaging in ecosystem-based management, or you are facilitating a multi-stakeholder collaborative planning and target setting process. Regardless of your reasons, you can use this portal so at the end of your assessment, you will have established a baseline estimation of the status of ocean health in your study area, and use that information to determine how well you are meeting, exceeding, goal targets in certain indicators.

Assessments provide opportunity put in place a multi-stakeholder collaborative process. In our experiences engaging with various countries around the world, the most effective assessments are those where the process of conducting the assessment was just as valuable (if not more) than the final results. This is because the assessment process serves as a forum to engage stakeholders from multiple backgrounds (scientific, civil society, government, private sector, NGOs, etc.) to discuss local preferences and priorities, understand the interactions between various activities, and collaboratively establish management targets.

On the technical side, the process is also valuable because it allows the users to synthesize collections of data, scientific findings, and management efforts. An important theme throughout this process it to find metrics that are meaningful your area. > TIP: Before you engage with the tools in Phase Three, you should engage with Phases One and Two.

1.4 Target Audience

Developing an assessment requires skillsets from various backgrounds (we discuss this with more detail in Phase 2). This portal is intended for different audiences with different backgrounds. ** Phases 1, 2, and 4 ** are intended for project managers and scientific analysts alike, while **Phase 3** is very technical and is aimed at a scientific audience. Due to this multidisciplinary nature, it is important that you assemble a team that can work well in a collaboratively setting. ***

2 Glossary

Given the complexity and hierarchical nature of the Index, we have defined a number of terms with precise meanings to help with communication and clarity. Terms are listed in hierarchical order from broad to specific; terms not listed here are presumed to carry their expected and typical meaning.

Data Layer

Actual data used as input. Layers used for calculation of goal dimensions can be either direct from the original source (raw), transformed and/or combined (derived).

Dimension

A dimension is an aspect of a goal that contributes to its current status or likelihood of being able to sustainably deliver that goal in the future. The four dimensions used are status, trend, pressures and resilience. We compute each dimension based on various components and data layers that are common across regions. Each dimension has a single unitless score per goal per region that ranges in value from 0-1.

Functional Relationship

This type of target is derived from a known relationship (an equation) between the ocean indicator and a natural or human pressure. If an empirical or theoretical functional relationship is available, it can be used to determine a reference point for the amount of a benefit that can be expected from the system. This process is simplified because functional relationships are often associated with thresholds and reflection points.

Geometric Mean

A geometric mean is a type of average calculated by taking the square root a set of products. It is used to aggregate the scores for pollution pressures, for example, to ensure that each category of pollution is accounted for in the calculation.

Goal

One of ten public goals that are widely recognized for their important benefits for supporting human well-being and sustainable ocean ecosystems. We compute scores for each goal using four dimensions. Each goal has a single unitless score per region representing the current status and its likely future trajectory.

Health

A healthy ocean sustainably delivers a range of benefits to people now and in the future. There has been some debate over the precise definition of the term 'health', but here a healthy ocean is used to mean the ideal state of an OHI assessments.

Long Format

The 'long format' describes a type of row and column structure for data layer files. Long format means that every row is an observation, and every column is a variable. The OHI+ Toolbox expects all data layers files to be in long format.

Mariculture

Ocean-farmed seafood, as distinct from other forms of aquaculture.

Pressures

Anthropogenic stressors that negatively affect the ability of a goal to be delivered to people. Pressures can affect either ecological or social (i.e., human) systems. See section 2C of the Supplementary Online Material for details. Resilience: Social, institutional, and ecological factors that positively affect the ability of a goal to be delivered to people. See section 2D of the Supplementary Online Material for details.

Region

Region is a general term to connote the reporting scale for an Index score and can be global, a group of neighboring nations or territories, or region- specific.

Status

The current value of a goal or sub-goal relative to its reference point. Trend: The recent change in the value of the Status. See section 2B of the Supplementary Online Material for full details.

Study Area

The study area is the entire geographical boundary included in the assessment.

Sub-goal

Several goals have sub-goals for which data on all four dimensions exist, allowing calculation of a complete sub-goal score. In most cases the goal score is simply the arithmetic average of these sub-goal scores, but the score for the food provision goal is the yield-weighted average of the two sub-goal scores.