



WIO Symphony

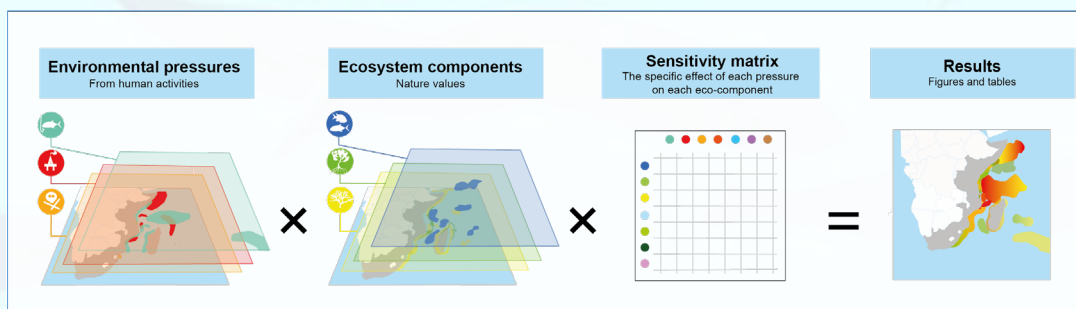
– a tool for ecosystem-based marine spatial planning

WIO Symphony is a web tool that supports marine spatial planning in the Western Indian Ocean. We develop the tool together – the Nairobi Convention, its ten member states and a Swedish team.

What is WIO Symphony?

The WIO Symphony web tool supports your marine spatial planning by assessing environmental impact from human activities. WIO Symphony lets you visualize data, test scenarios, and compare different ways of using the ocean:

- Show data
- Create maps
- Calculate cumulative impact on environment
- Compare options



WIO Symphony is a web tool that supports marine spatial planning by assessing environmental impact from human activities. With WIO Symphony, you can create scenarios of different ways of using the ocean space, to compare expected environmental outcomes. The method combines pressures, ecosystems and sensitivity into cumulative environmental impact. The illustration is for demonstration purposes and does not reflect actual results.

WIO Symphony provides a useful tool for management and marine spatial planning that supports an ecosystem-based approach. A similar tool called Symphony Sweden was developed and used for the Baltic Sea. The WIO Symphony project is a sister-project to that, a collaboration between the Nairobi Convention, its ten member states in East Africa and a team of Swedish institutions lead by the Swedish Agency for Marine and Water Management.

The aim of the WIO Symphony collaboration is to co-develop and implement a practical assessment tool for marine spatial planning in the Western Indian Ocean region. By incorporating information and knowledge from national, regional and international experts, the WIO Symphony tool enables estimations of how pressures from human activities in the ocean affect nature values in each location in the Western Indian Ocean.

How does WIO Symphony work?

WIO Symphony estimates the cumulative effect of pressures from humans on marine ecosystems. This is achieved by mapping human-induced disturbances and their spatial overlap with sensitive marine habitats and species.

WIO Symphony quantitatively combines ecosystems and environmental pressures, so that the cumulative environmental impact from different stressors can be objectively compared. The results are presented as heat maps, which makes it easy to identify areas of high and low cumulative impact, and as tables and diagrams where details are shown for any given area. The method is transparent and easily interpretable. It builds upon three steps:

1. The identification of **nature values** or ecosystem components, such as coral reefs and fish assemblages
2. The development of distribution maps of different **pressures** from human activities, such as fishing, shipping, and various sources of pollution
3. The compilation of a **sensitivity matrix** where each ecosystem component is assigned a sensitivity value based on its vulnerability to certain pressures. Uncertainties are highlighted.

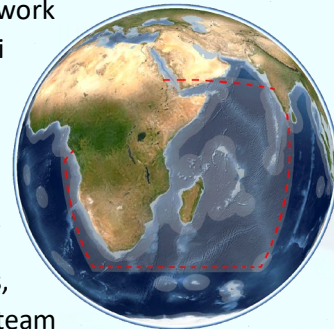
WIO Symphony is based on the scientific method demonstrated by the open access papers Halpern *et al.* 2015, www.nature.com/articles/ncomms8615 and Hammar *et al.* 2020, www.sciencedirect.com/science/article/pii/S0048969720325419.

Why WIO Symphony?

The more we know about disturbances threatening our marine ecosystems, the more actions we can take to mitigate or avoid them. When a proposal for a marine spatial plan is developed, a concrete method to determine the cumulative environmental impact on the ocean is needed. With that knowledge, we can avoid high cumulative impacts in sensitive areas and compare different planning alternatives. We develop the WIO Symphony tool to address these needs. You can use the analyses conducted by WIO Symphony when comparing different marine spatial planning alternatives and when communicating with stakeholders as well as in the evaluation of marine spatial plans.

Who is involved?

WIO Symphony is a collaboration project that relies upon the work of many partners. The ten member states of the Nairobi Convention in East Africa: Somalia, Kenya, Tanzania, Mozambique, South Africa, Comoros, Madagascar, Seychelles, Mauritius and Réunion, France. Each state has a representative in the technical working group. They ensure that the WIO Symphony tool is tailored to meet the specific user needs. Additional experts from universities, institutions, and governments are consulted along the way. The Swedish team is led by SwAM, and relies upon expertise from the Geological Survey of Sweden (SGU), the Swedish University of Agricultural Sciences (SLU), and the University of Gothenburg (GU). The Nairobi Convention Secretariat ensures regional representation and relevant links to policy. The completed tool will be hosted in the region and available to practitioners there.



Visit WIO Symphony project at
www.havochvatten.se/wio-symphony