



The LifeWatch ERIC Biodiversity
& Ecosystem eScience Conference
PLOVDIV, BULGARIA 7-10 JULY 2026

From marine biodiversity to societal value: an integrated approach in MARBEFES

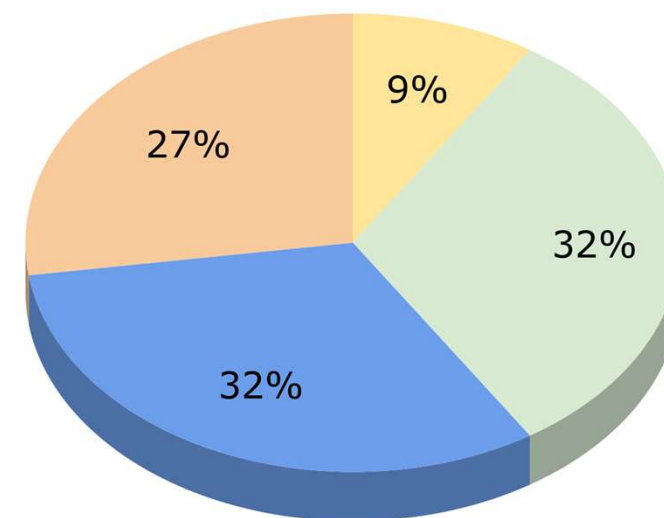
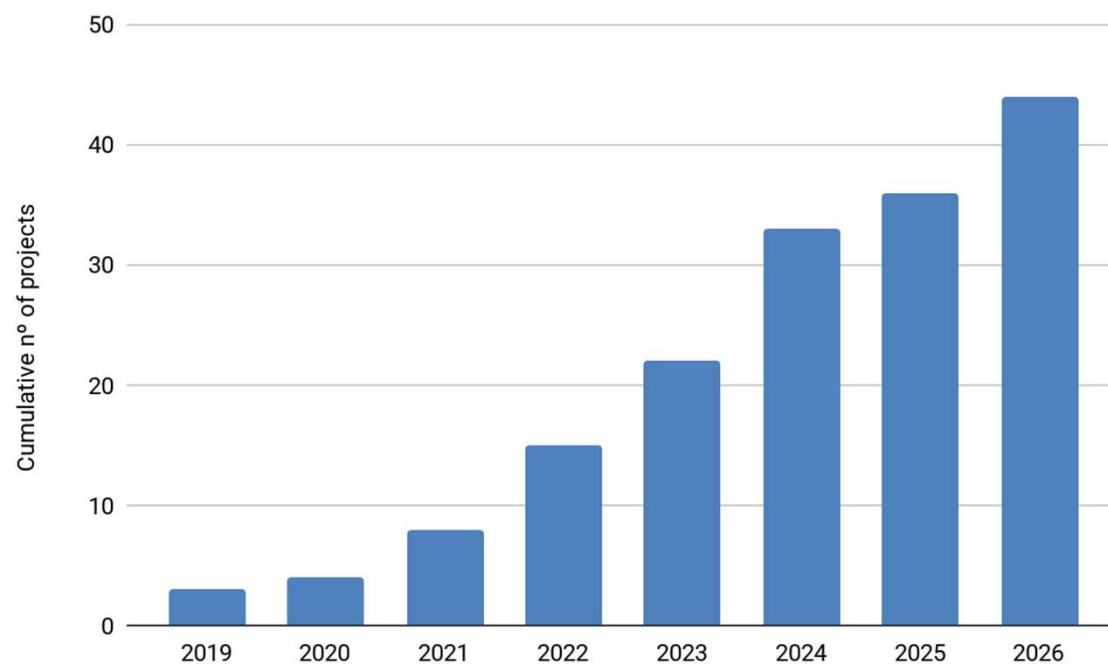
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10 July 2026



European Projects Supported by LWE



- Research Infrastructures
- Scientific Field: Terrestrial
- Scientific Field: Marine
- Technical Alliances



THE SCIENTIFIC CHALLENGE



Biodiversity structure alone is not enough



What's there, how does it work?

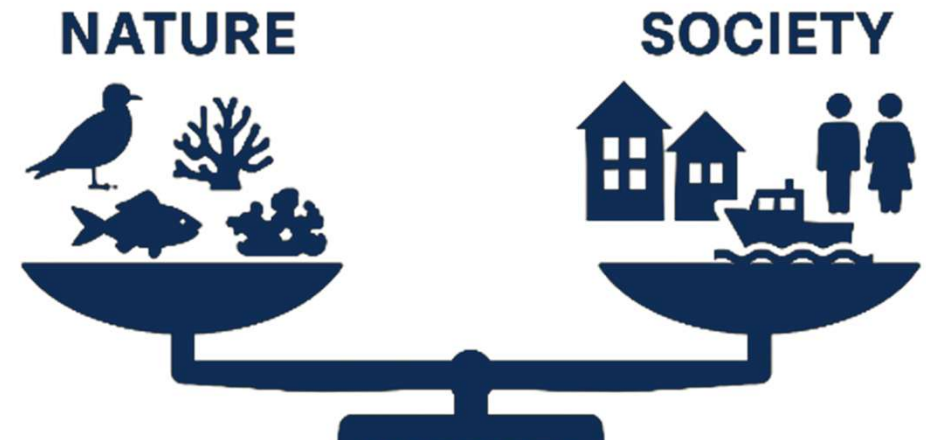
What does it do for us?

What's it 'worth'?

How do we measure that?

What happens if?

What/who does that affect and how?



Fragmentation, and more..

**Fragmented
Knowledge**

Scale Mismatch

**Interdisciplinary
Gap**

Policy Translation

Replication Deficit

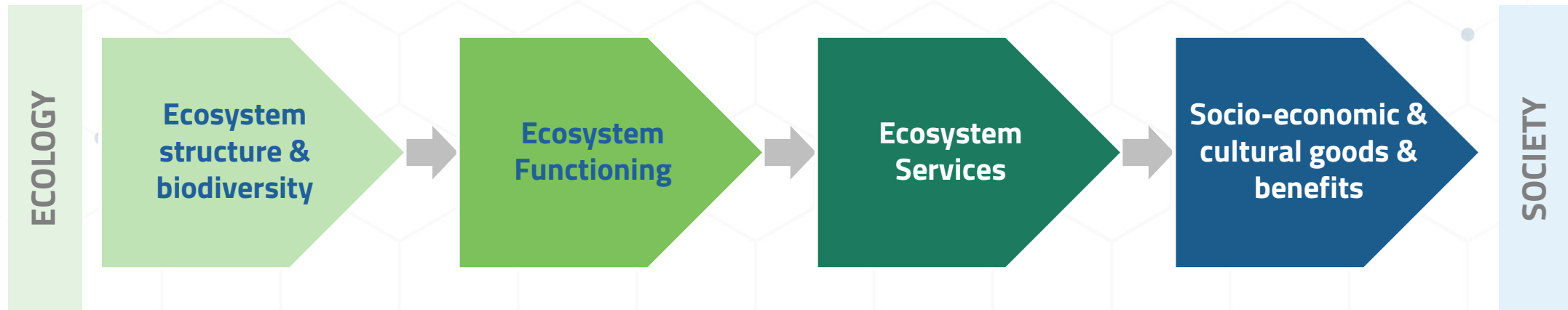
**Valuation
Complexity**



THE MARBEFES APPROACH



An Integrated Scientific Framework





MARine Biodiversity and Ecosystem Functioning leading to Ecosystem Services

Horizon Europe + UKRI

15 Meur
4.5 years
22 partners
15 countries



MARBEFES project has received funding from the European Union's Horizon Europe research and innovation programme under Grant Agreement no 101060937



ECONOMIC

9

SOCIETAL /CULTURAL

CROSS-CUTTING

3

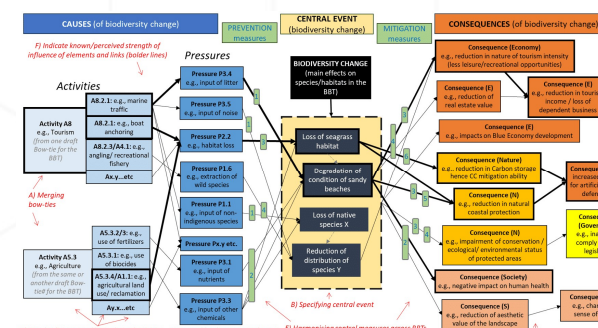
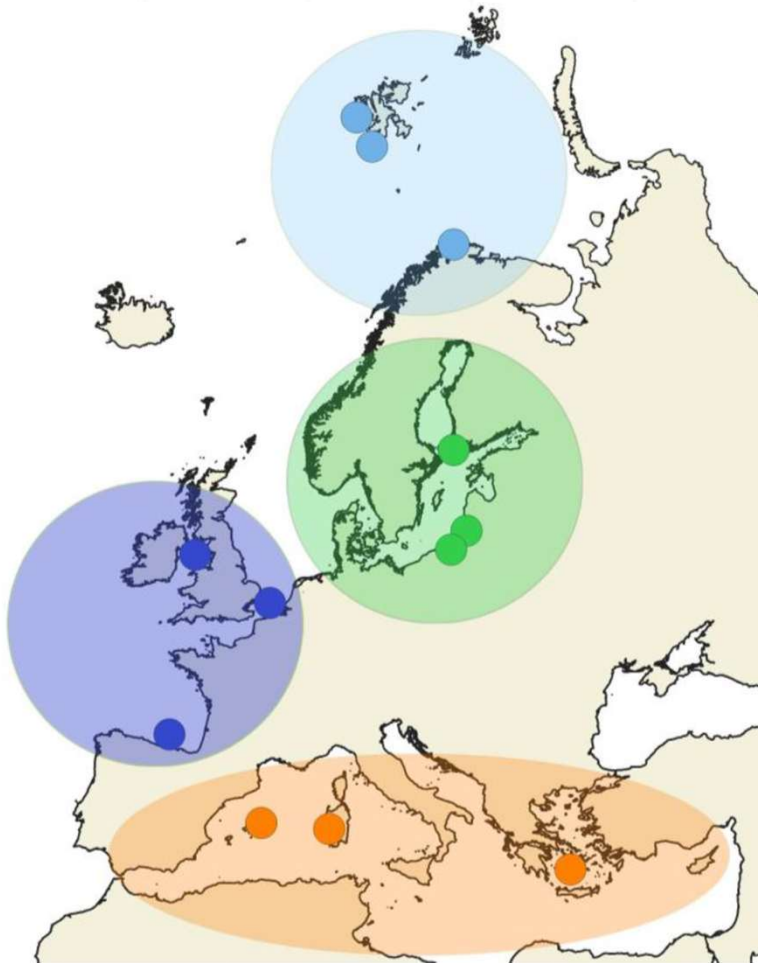


Figure 1 is a network diagram illustrating the trophic structure of the marine food web. The vertical axis represents the Trophic Level, ranging from 1 to 4.5. The horizontal axis represents the functional groups. The diagram shows a complex network of interactions between various functional groups, including Detritus, Basal species, Zooplankton, Benthos, Fish, Mammal, and Service. The network is highly interconnected, with many lines representing feeding relationships between different groups and individuals within groups.

Validated at 11 BBTs (Broad Belt Transects)



Robustness and Transferability

Out-scaling

Broader geographies

- Martinique
- Black Sea



FROM RESEARCH TO RESEARCH INFRASTRUCTURE



MARBEFES Toolbox

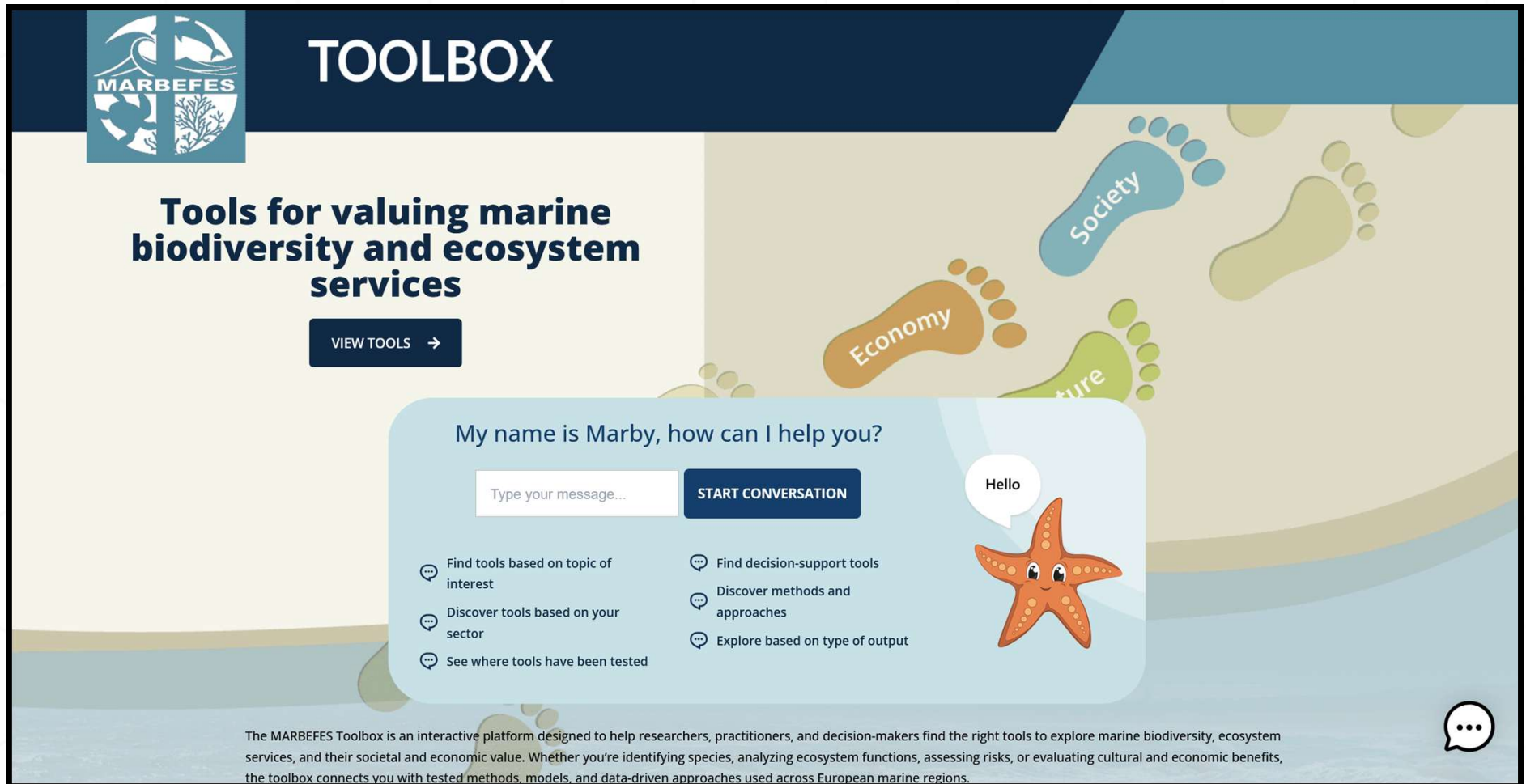
- An integrated platform to discover, compare and reuse validated marine tolos/ methods
- Developed and hosted by LWE
- LWE provides the infrastructure that ensures these tolos remain FAIR, interoperable and reusable long after the project has finished.

Discoverability

Accessibility

Interoperability

AI-Assisted



MARBEFES

TOOLBOX

Tools for valuing marine biodiversity and ecosystem services

[VIEW TOOLS →](#)

My name is Marby, how can I help you?

Type your message... [START CONVERSATION](#)

- Find tools based on topic of interest
- Discover tools based on your sector
- See where tools have been tested
- Find decision-support tools
- Discover methods and approaches
- Explore based on type of output

Hello

The MARBEFES Toolbox is an interactive platform designed to help researchers, practitioners, and decision-makers find the right tools to explore marine biodiversity, ecosystem services, and their societal and economic value. Whether you're identifying species, analyzing ecosystem functions, assessing risks, or evaluating cultural and economic benefits, the toolbox connects you with tested methods, models, and data-driven approaches used across European marine regions.



Platform Architecture

Content Layer

Tool Cards with standardised metadata

Discovery Layer

Filter+ keyword search + AI assistant
+ cross-toolbox links to other toolboxes

Infrastructure Layer

WordPress/Elementor CMS; LWE cloud hosting ;
Responsive design (desktop, tablet, mobile)

4 User Types

Researchers

Practitioners

Policy Advisors

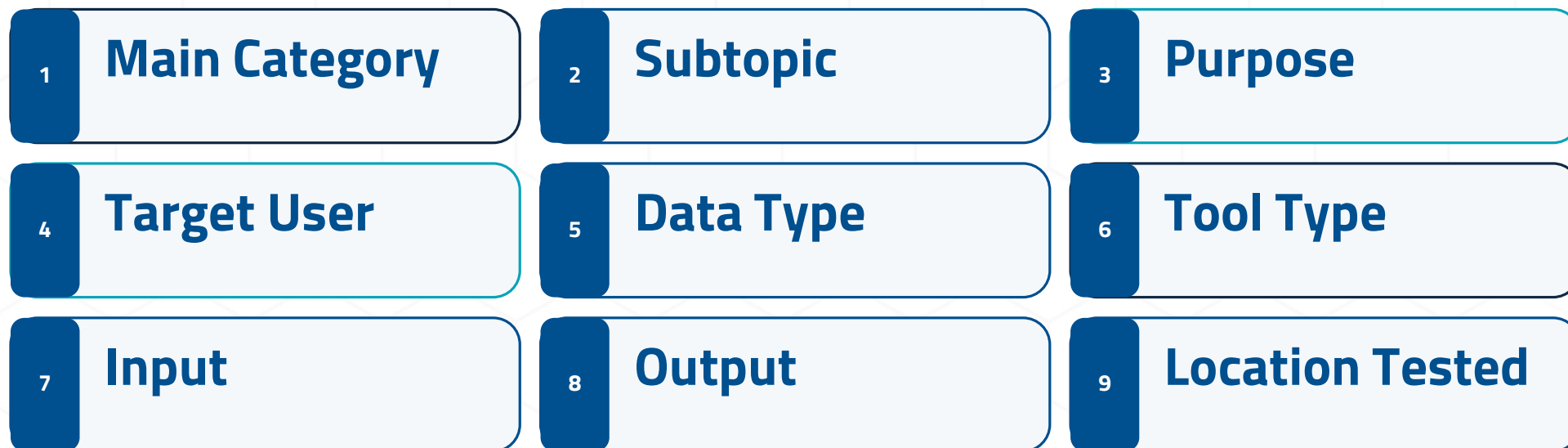
Citizens



Discovery Layer

The 9-Dimension Filter and Search System

Enables precise, multi-criteria tool discovery



Discovery Layer

Filter tool with one category selected

Main Category +

Subtopic +

Purpose +

Target User +

Data Type +

Tool Type +

Input +

Output +

Location Tested +

Ecological

Economical

Societal

Clear Filters

Sort By

Main Category +

Subtopic +

Purpose +

Target User +

Data Type +

Tool Type +

Input +

Output +

Location Tested +

Clear Filters

Sort By

Search

99 – Societal – HGOG

75 – Economic – Stated preference method

72 – Economic – Benefit-value transfer

71 – Economic – Hedonic pricing

60 – Cultural – Participatory research – interviews, focus groups, and arts-based workshops

54-Ecological-Eutropy

52-Ecological-Molecular – metabarcoding eDNA

53-Ecological-Molecular – telomeres

50_MicroCT

<https://marbefes.lifewatch.eu>



Marby: The AI agent for the Toolbox

It guides users to the right tools through natural language, no expertise required.

USER

I need to assess the ecological value of seagrass beds in my study area.

MARBY

Try Tool 13 (EVA) and Tool 12 (MHF). EVA is a composite biodiversity index tested across all 11 BBTs; MHF quantifies habitat ecological value. Shall I provide more details?

Hello



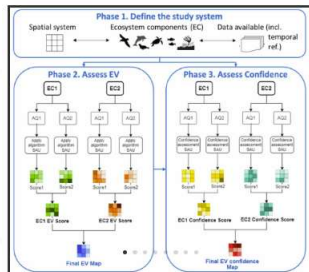
Natural Language

Context-Aware

Multi-Tool

Explanatory

BEEs 2026 Content Layer



Tools details	Technical details
Developer information	Citation
Category: Ecological	Contact
Subcategory: Ecological Value Assessment – Composite biodiversity valuation	
Tool type: Multimeric composite index (grid-based)	
Input data:	
Species and habitat distribution (from monitoring, models, expert judgement)	
Output:	
• Spatial maps of ecological value per grid cell	
• Composite indices of biodiversity value (accounting for structure and function)	
Target users:	
Researchers and technical advisors of marine managers and policymakers	
Location tested:	
Applied across all BBTs in MARBEFS (North & South Svalbard, Archipelago Sea, Curonian Lagoon, Gulf of Gdansk, Belgian Coast, Irish Sea, Southern Gulf of Biscay, Balearic Islands, Sardinia, Gulf of Heraklion)	
Level of uncertainty	
This tool implements the methodology outlined in the EVA guidance. The accuracy and reliability of the results depend primarily on the data selected by the user and the choices made during data preparation (e.g., aggregation, mapping, and selection of ecological features relevant to the study area). While the EVA methodology includes a confidence assessment to help account for some uncertainty, it remains the user's responsibility to ensure that appropriate data and ecological evidence are used to support the assessment	

Download Tool Manual (WIP)

EVA excel sheet

Ecological Value Assessment (EVA)

Multimeric Index

The Ecological Value Assessment (EVA) method to assess the ecological value of the qualities of the marine ecosystem qualities and their spatial distribution in an area. Starting from the original marine biological valuation approach (Drouot et al., 2007), the EVA method has been further developed and tested in MARBEFS for wider applicability and flexibility. The method adopts an eco-centric perspective, whereby the ecological value (EV) is defined as the inherent (non-monetary) value of the qualities of an ecosystem, regardless of its anthropogenic use or social interests. EVA provides a harmonised, transparent, and flexible approach to combine multiple ecological metrics into a single, spatially explicit index of ecological value. Its purpose is to support decision-making in conservation, marine spatial planning, and ecosystem-based management by quantifying where biodiversity holds the highest ecological significance.

Aspects such as biodiversity, rarity and functions performed by multiple ecosystem components (EC) contribute to determine the ecological value of an area. EVA is essentially a multimeric index, where multiple metrics (AQs) are measured to account for these different values. The method is applied within a grid-based spatial framework, whereby each grid cell within an area is assigned scores derived from monitoring data or data-derived evidence of the distribution of the ecosystem components, although the methodology has sufficient flexibility to allow the use of expert-based proxies where data are scarce or not available. The scores are aggregated into a composite index (EV), which can be visualised as ecological value maps, which can be used to identify hotspots of biodiversity importance and priority areas for management.

A key phase of the EVA method is the confidence assessment. This accounts for the multiple sources of uncertainty associated with the evidence used (e.g., whether data or expert judgement, whether quantitative or qualitative data, data consistency/coverage) and the assessment itself (e.g., number of AQ metrics measured). The output is a confidence map that is to be read alongside the EV map in order to inform on the confidence associated with the EVA results.

Limitations include dependency on available data and the challenge of weighting indicators across different ecological contexts. The EVA method is currently designed based on biodiversity as the community and ecosystem levels (e.g., ecosystem components defined as groups of species or habitat types) as this is the most common type of evidence available for the assessment (e.g. from ecological monitoring programmes). However, the method has the potential of being applied considering variable levels of biological organisation, e.g., accounting for the diversity of genes, biological traits (closely associated with functions) and habitat function metrics. This would require only minor adjustments (revision of the features of interest for the assessment) while the overall structure of the approach would remain the same.

EVA represents a robust, science-based tool to bring biodiversity value into policy and planning in line with the EU Biodiversity Strategy 2030.

The EVA tools

The implementation of EVA is divided into three phases (for details see guidance document):

- Phase 1 – Preparatory work, where (a) the spatial system for the study area is defined (area boundaries and spatial grid), (b) the relevant data are identified and selected for the study area (ecosystem components, type of data, spatial and temporal consistency) and pre-processed for integration into the selected spatial system (this requires: mapping, aggregation, possible modelling etc.), (c) the key features of interest in the dataset (e.g., nationally rare species, biogenic habitats) are identified for the assessment.
- Phase 2 – Ecological value calculation, where (a) the spatialised (gridded) data for the different ecosystem components are analysed to calculate key metrics (AQs) and aggregate them into ecological value scores (EV) for each individual ecosystem component and across ecosystem components, (b) the results are mapped into the spatial system for the study area.
- Phase 3 – Information about the data used and the assessment undertaken is used (a) to calculate a confidence score associated with the EV results and (b) to map it in the spatial system for the study area.

Multiple tools are provided to help the user implementing EVA in full or in part:

The EVA-Excel tool

The EVA-Excel tool implements the EV calculations as per Phase 2(a) above in an Excel environment. The preparatory work (Phase 1), final mapping of the results (Phase 2(b)) and confidence assessment (Phase 3) are not implemented by this tool.

Input required: • gridded dataset (table) on qualitative (presence/absence) or quantitative evidence (e.g., species abundance, habitat extent), separately for each of the ecosystem components to be assessed; • user's selection of the features of interest in the dataset.

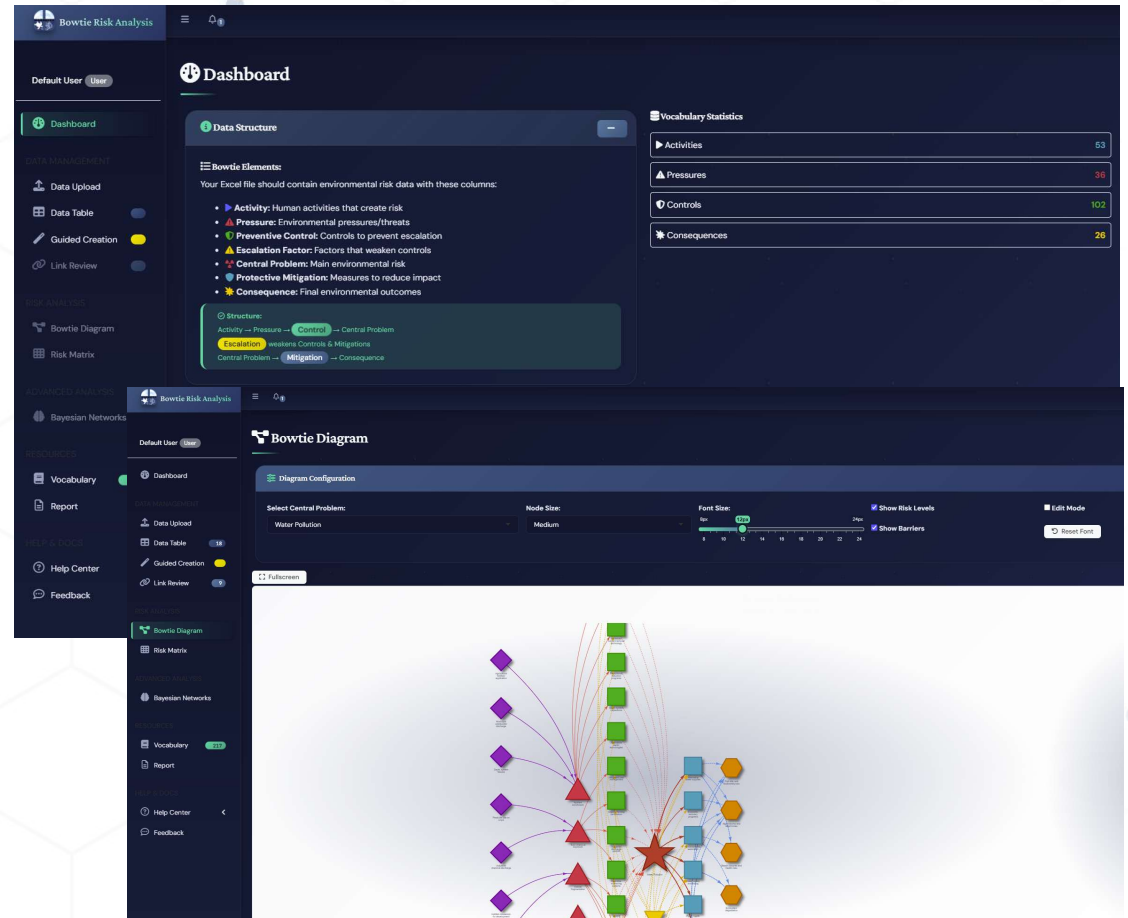
Output: • gridded datasets (table) of resulting AQs and EV for each ecosystem component assessed, and total EV across ecosystem components.

Skills required for the tool implementation: • Ecological knowledge and understanding of the ecosystem components in the study area; • Knowledge and understanding of the ecological data available for consideration; selection and pre-processing; • Basic knowledge of Excel. (Note that additional skills, e.g. GIS Mapping, may be required to prepare the input data and map the outputs of the tool).

Tool instructions: Instructions for the use of the tool are given in the sheet **README** in the EVA-Excel tool.

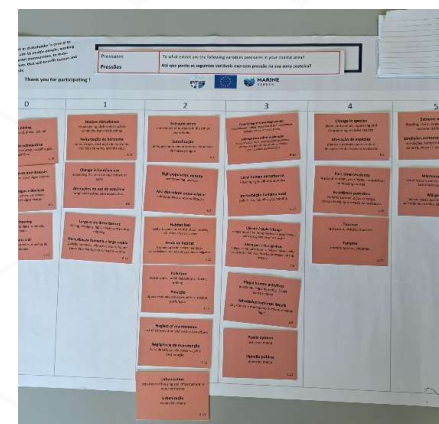
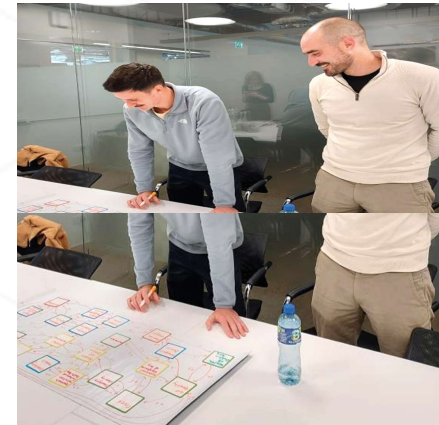
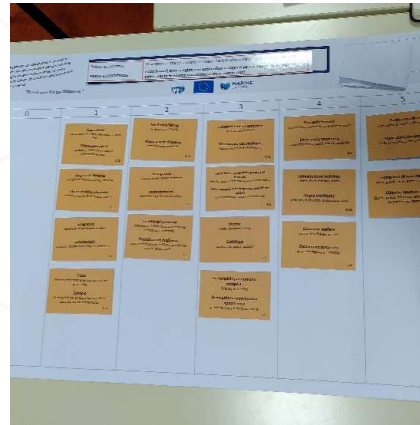
The EVA-R tool

Input required: • georeferenced dataset (table including latitude and longitude) on qualitative (presence/absence) or quantitative evidence (e.g., species abundance, habitat extent), separately for each of the ecosystem components to be assessed; • user's selection of the features of interest in the dataset; • The region of interest outline (geo-file) and optionally the geo-spatial grid. If no grid is provided, a grid will be created by the script.



Co-creation with potential users

>300 stakeholders engaged





Ecological Tools: 12 Methods for Marine Biodiversity

Ecological
Interaction
Networks

Multi-scale
Trait-based
Approach

Metric of
Habitat
Function (MHF)

Ecological Value
Assessment (EVA)

Micro-CT

ZooScan

Molecular
Metabarcoding
eDNA

TeloStress

EUTROPY

Trait-based
Ecological
Vulnerability

EcoSEM

PlanWise4Blue



Economic Tools:

9 Methods for Ecosystem Service Valuation

EVTool

Hedonic Pricing

**Benefit-Value
Transfer**

CAN

B4M / BEACH Tool

Stated Preference

Travel Cost Method

Monetary NCA

Physical NCA

Societal and Cultural Tools: 3 Tools Capturing Human Dimensions

Participatory Research - Online Surveys

Public attitudes towards marine ecosystems, ecosystem services, and conservation priorities.

Structured Surveys - Stakeholder Perception

Perceptions of marine ecosystem condition, value, and governance preferences.

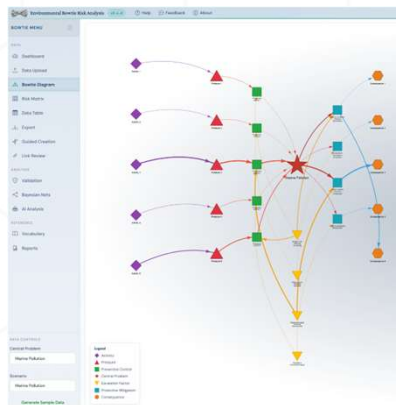
Participatory Research - Qualitative Methods

Cultural and spiritual values of marine environments.

3 Cross-Cutting Tools: Causes & Consequences, Scenarios and Governance

Bow-Tie Analysis

Causes and **consequences** of
Biodiversity change



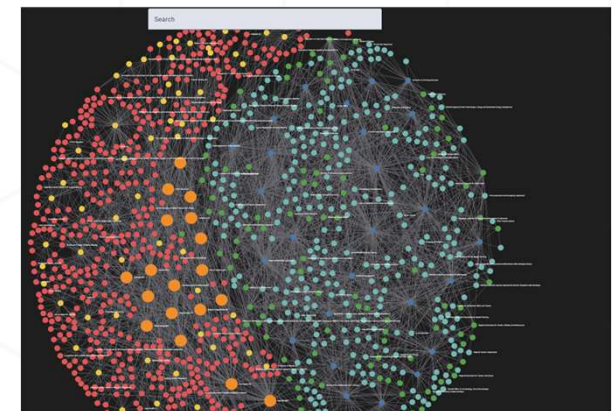
Scenario Downscaling

Translates global climate and
policy **scenarios to local /**
regional-level projections for
management planning.

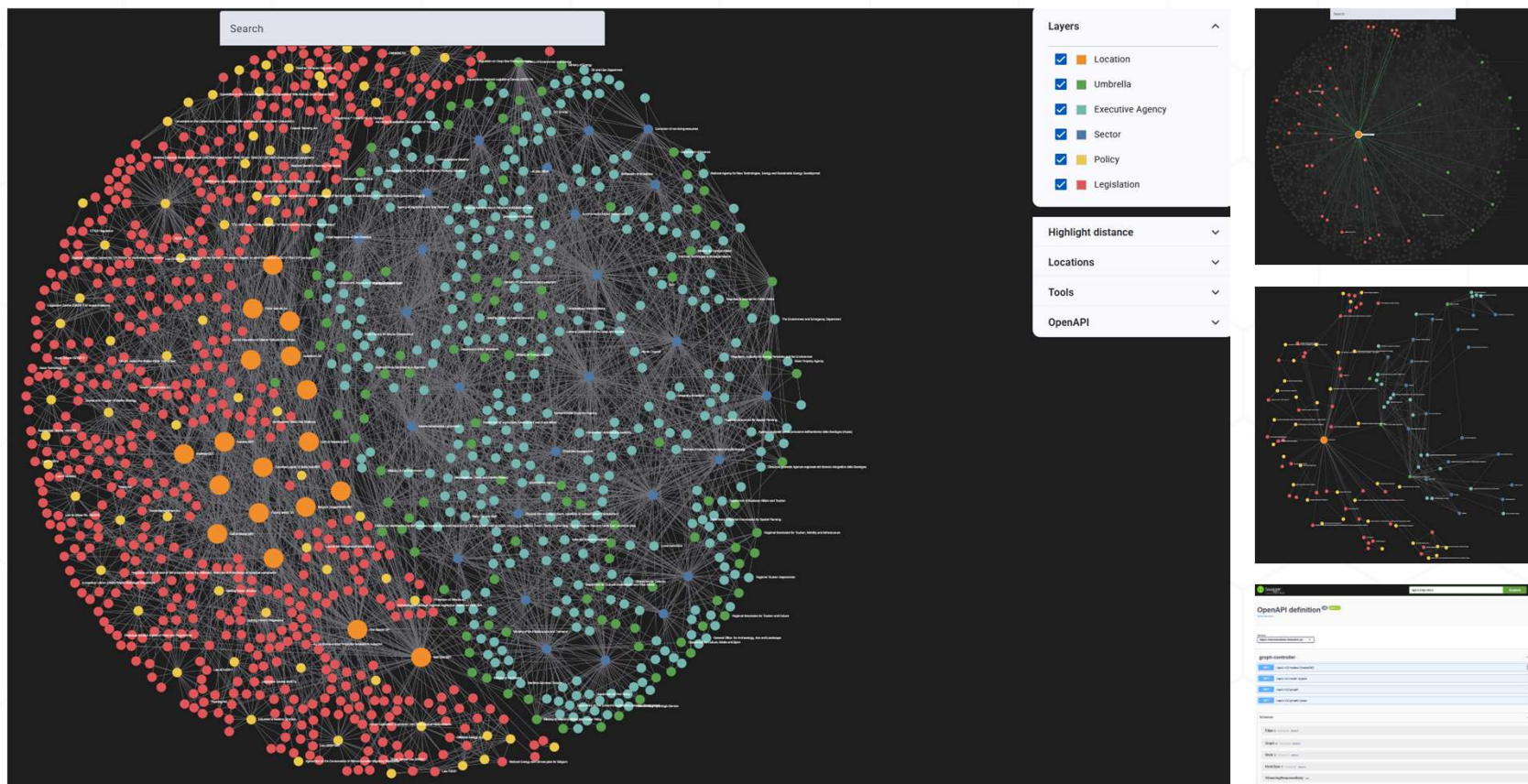


HGOG

A knowledge graph of EU marine
and **biodiversity legislation,**
organisations, and **governance**
frameworks.



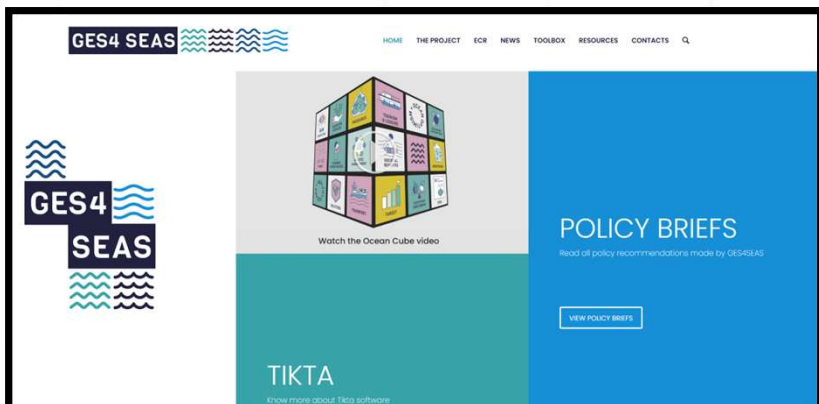
HGOG: An SKG tool



<https://marinesabres.lifewatch.eu>



Integration with other Toolboxes



ECSA 61 Bridging the gap between science and policy in estuarine and coastal marine biodiversity: the way forward

24–27 August 2026 | Square, Brussels, Belgium

16:30–18:30 Monday, 24 August, 2026, The Arc



Special Session - Toolboxes and Decision Support Systems for marine and estuarine management needs, uses and misuses

To avoid duplication and promote interoperability



Training Opportunities!

Apply!

MARBEFES school, Lecce, Italy

October 2026





CONCLUSIONS



MARBEFES integrates science.

The Toolbox connects tools/methods.

LWE connects the future.

That is how research becomes long-term impact.

Research projects generate knowledge.

Research infrastructures make that knowledge reusable.



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THANK YOU!

Questions?

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