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Integrated marine and coastal area management for building resilient communities

STRATEGIC DOCUMENT

Fabio Attorre, Generosa J. Calabrese, Michele De Sanctis, Massimo Zuccaro

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Acronyms and abbreviations

CBD	Convention Biological Diversity
CICES	Common International Classification of Ecosystem Services
CIF	Common Implementation Framework – 2020 EU Biodiversity Strategy
EBM	Ecosystem-Based Management
EEA	European Environmental Agency
EM	Ecosystem Management
ESs	Ecosystem Services
EU	European Union
EUNIS	European Union Nature Information System
IUCN	International Union for Conservation of Nature
MAES	Mapping and Assessment of Ecosystem Services
MEA	Millennium Ecosystem Assessment
UNEP	United Nations Environmental Program

INTRODUCTION

At a time of global environmental change, population growth and economic development, there is an increasing demand for better management practices that integrate needs and priorities of marine and coastal areas, adopting a participatory and ecosystem-based approach. The BLUE LAND project aims to provide a contribution to this issue by setting a management model able to:

1. Provide an agreed framework to ensure the sustainable use of natural resources without compromising natural asset and provision of ESs;
2. Facilitate adaptive processes of land resource management aiming to achieve the sustainable development of the coastal area, identifying links and synergies between the numerous territorial planning tools;
3. Set up mechanism of active participation of a plurality of public actors to the governance of the BLUE LAND in order to prevent and facilitate the resolution of conflicts that may arise from the presence of different interests concerning the territory;
4. Provide tools for periodical detection of social dynamics and economic processes, to monitor the pursuit of the strategies of planning and programming of the coast, at all levels of government and the effective achievement of the objectives set;
5. Provide support to management authorities at a regional and local level, in the planning of strategies and implementation of processes and interventions in line with sustainable development and consistent with the needs of the territory;
6. Promote, support and implement local community consultation and awareness-raising activities in coastal planning and design processes.

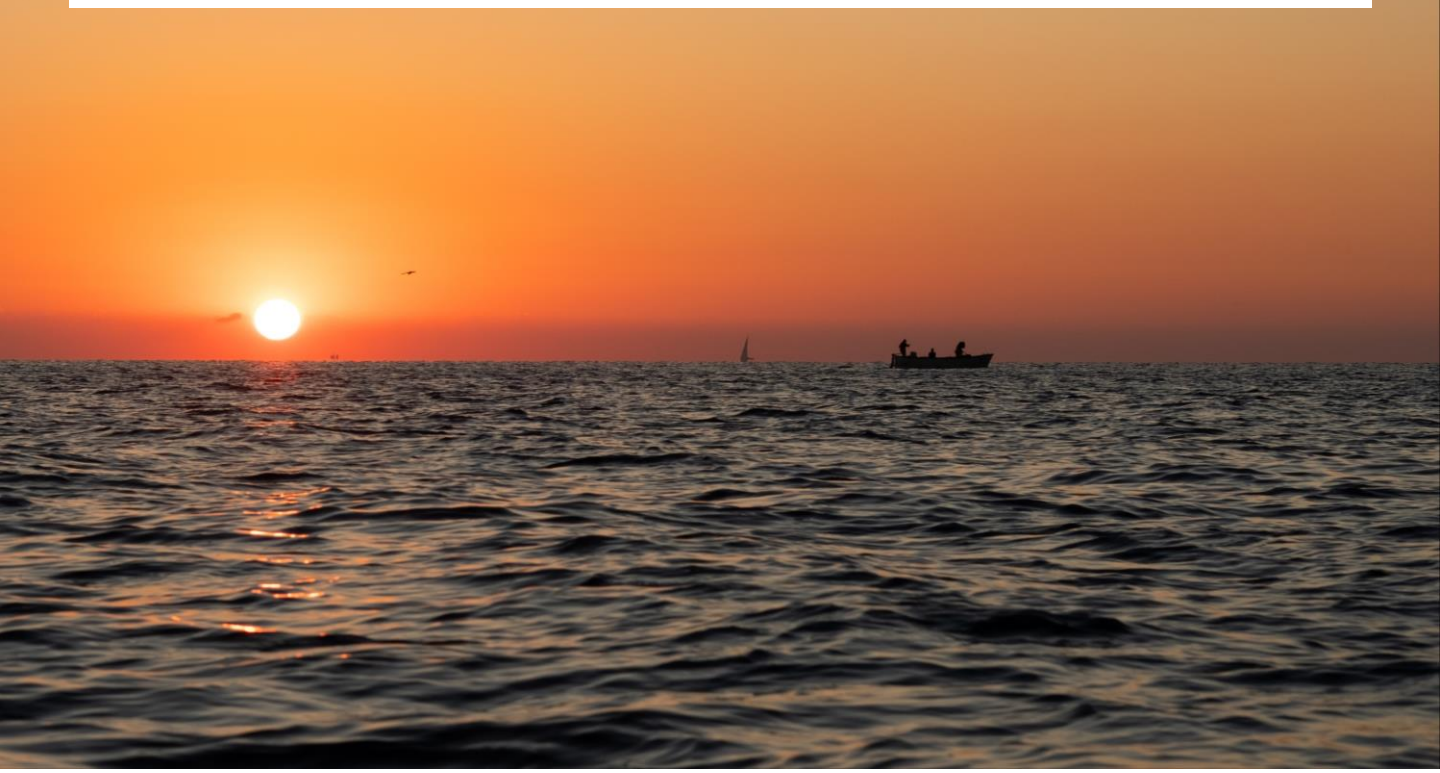
The conceptual framework of the BLUE LAND project is based on the inputs and achievements provided by the Rio Summit of 1992, and follows the trends set by the CBD Marine and Coastal Biodiversity program, aimed at enhancing the implementation of integrated marine and coastal area management, and the Ecosystem based approach as strategy for the integrated management of land and water ecosystems that promotes conservation and sustainable use of natural capital in an equitable way, recognizing humans and their cultural diversity, as an integral component of ecosystems.

The BLUE LAND management model can only be launched by local coastal authorities, either individually or in partnership, by promoting a strong collaboration and participation of local communities in the governance process.

In coherence with the purposes of the BLUE LAND management model and in order to ensure the functional integrity of coastal socio-ecological systems, the BLUE LAND should necessarily make reference to or identify specific parts of land and marine areas.

This strategic document also supports the collaboration among public/private research entities, management authorities and stakeholders, by promoting participatory research activities as well as sharing and disseminating knowledge.

Based on the results, achievements and lessons learnt during the implementation of the project, this strategic document is aimed at providing a step-by-step operational guide for practitioners and decision makers in order to replicate the BLUE LAND model in the Mediterranean basin and world-wide.



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THE CONCEPTUAL FRAMEWORK of the BLUE LAND MODEL

FOLLOWS THE TRENDS SET BY:

INTEGRATED MARINE AND COASTAL MANAGEMENT

A **participatory process** for decision-making to **prevent, control,** or **mitigate** adverse impacts caused by human activities in the marine and coastal environment, and t**o contribute to the restoration** of **degraded coastal areas**

ECOSYSTEM APPROACH

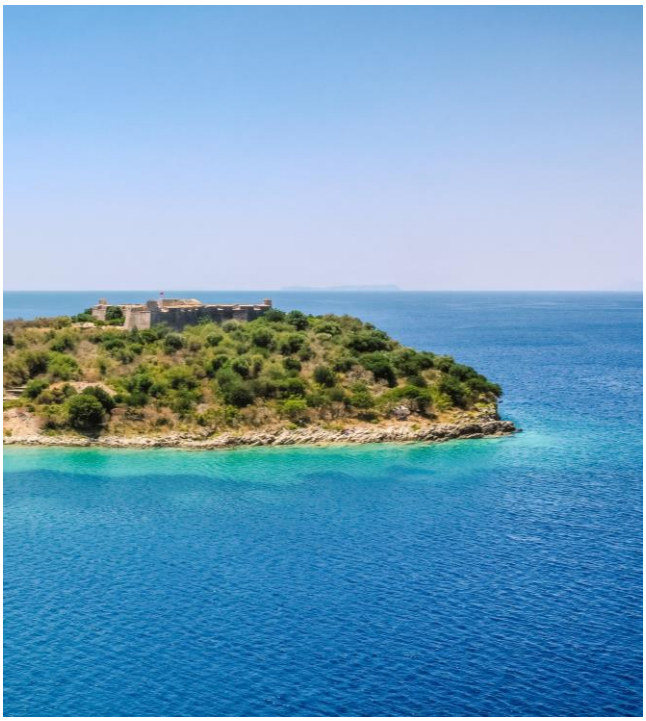
A **methodological approach** inspiring the integrated management of **land, water and living resources and whole natural capital**, that promotes conservation and sustainable use in an equitable way

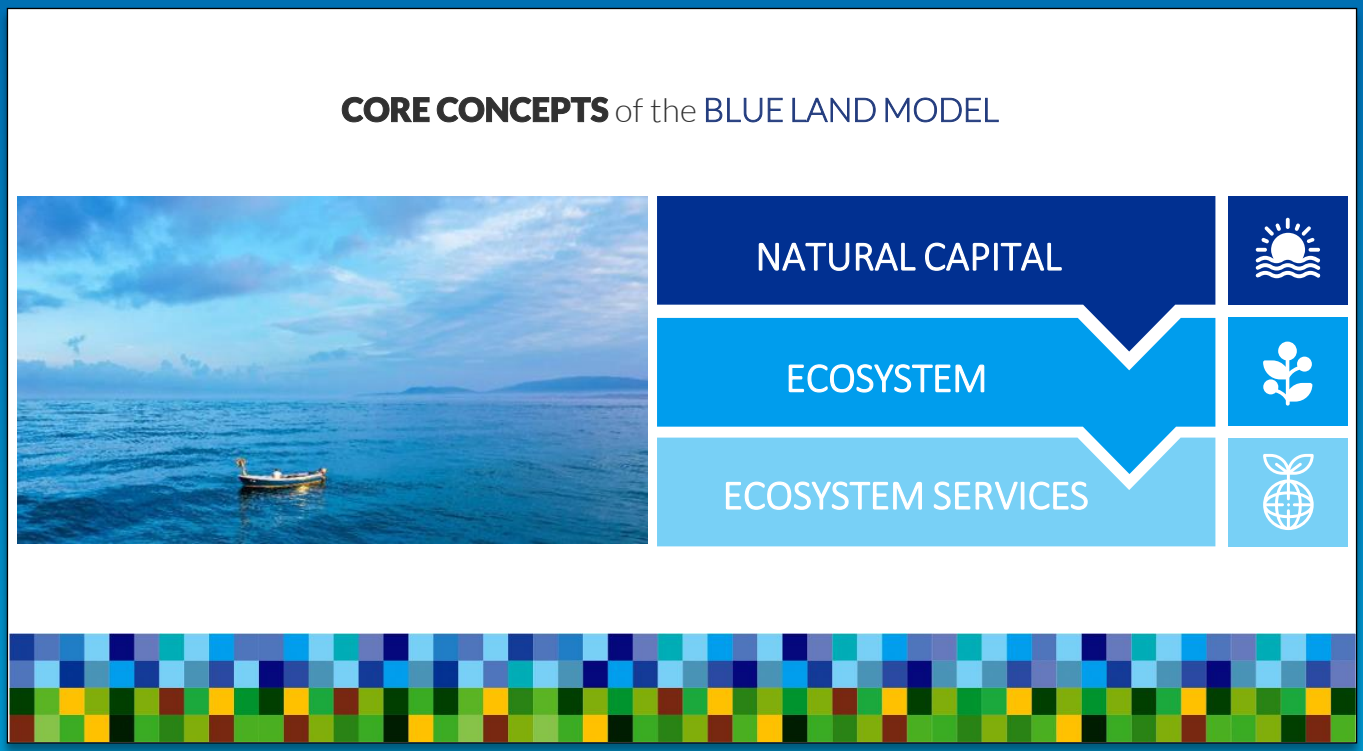
CONCEPTUAL FRAMEWORK of the BLUE LAND MODEL

The conceptual framework of the BLUE LAND model follows the trends set by :

- The Integrated Marine and Coastal Management, advocated to overcome the current limits of sectoral approaches to the conservation, sustainable use and restoration of marine and coastal areas. It is aimed at expanding the existing planning and management approaches (https://www.cbd.int/marine/imcam.shtml) both geographically and methodologically.

- The Ecosystem Approach, reflected in the Ecosystem-based Management as a strategy for the integrated management of land, water and living resources and whole natural capital. It promotes conservation and sustainable use in an equitable way, recognising humans and their cultural diversity as an integral component of ecosystems (https://www.cbd.int/ecosystem/).





CORE CONCEPTS of the BLUE LAND MODEL

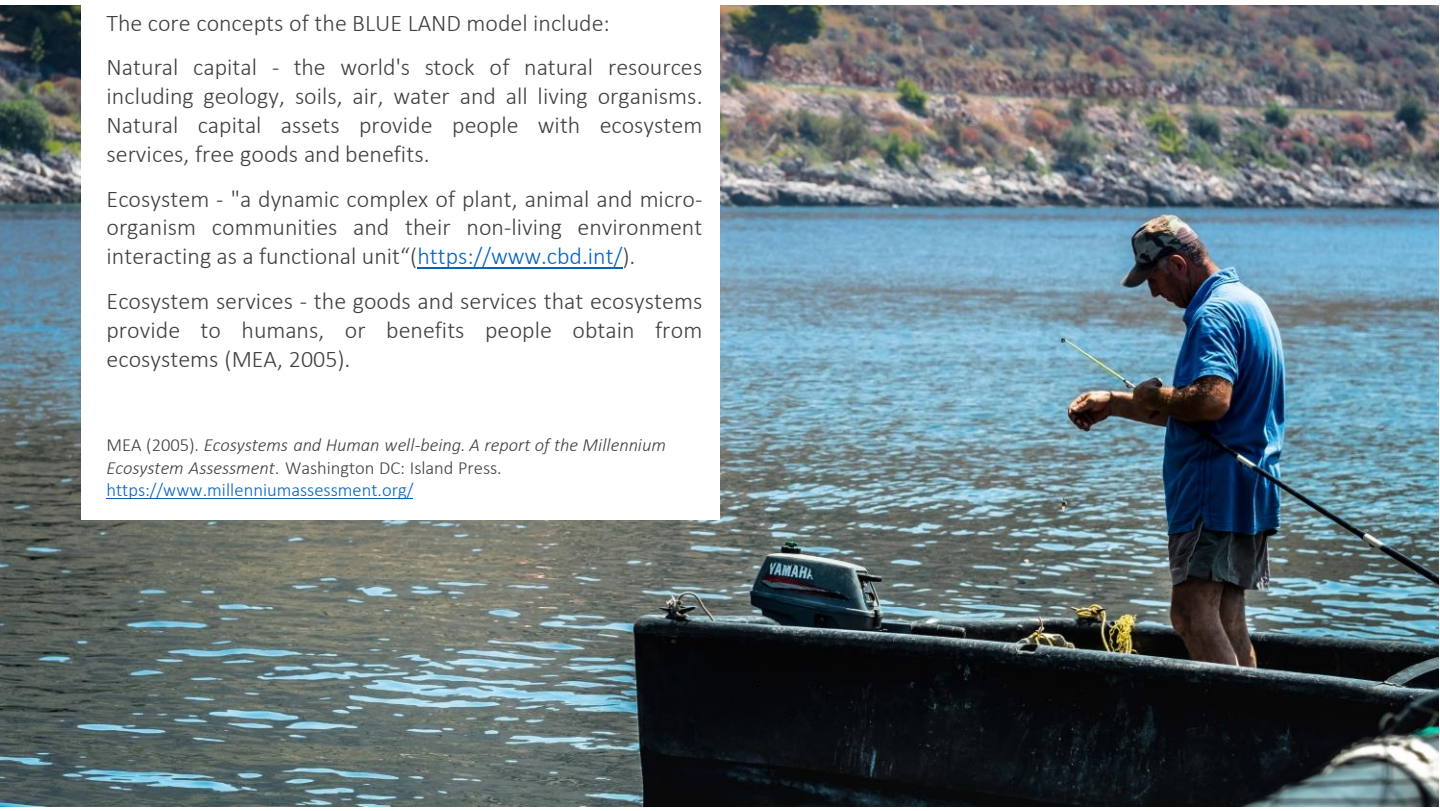
The core concepts of the BLUE LAND model include:

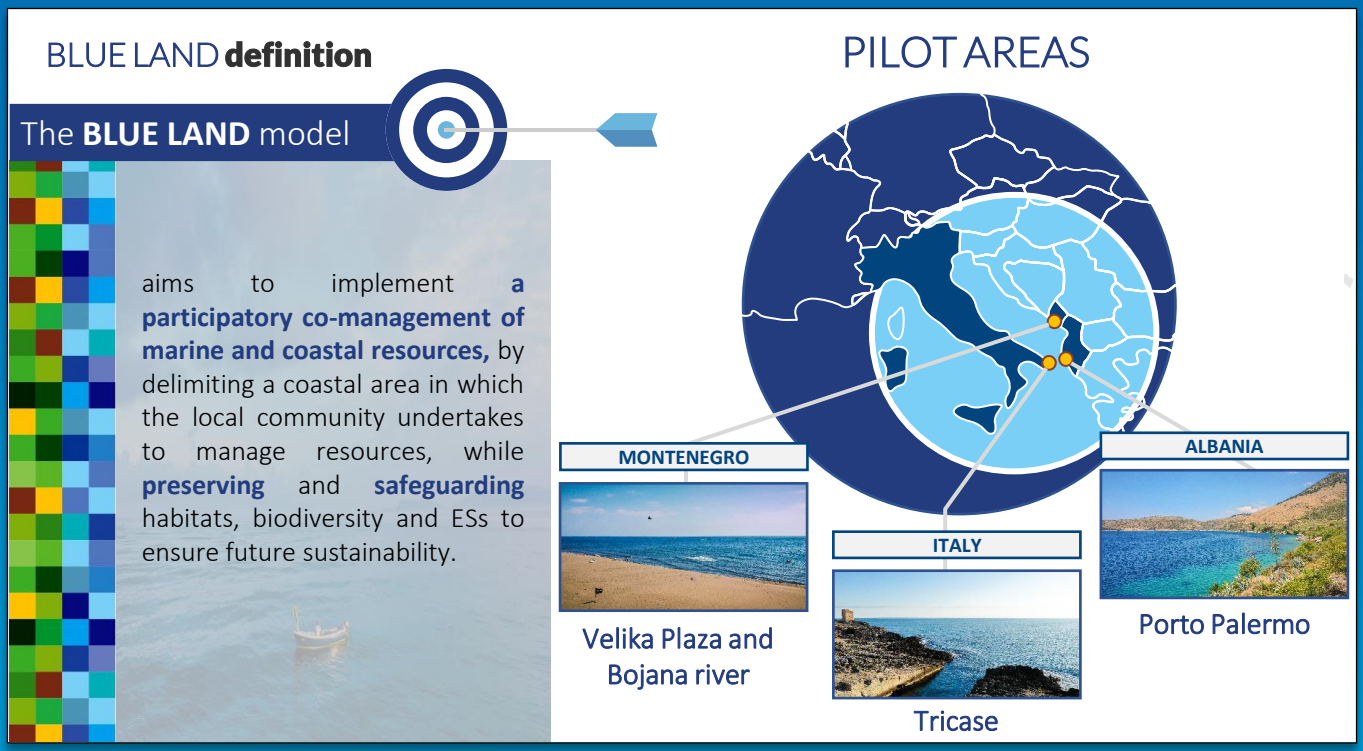
Natural capital - the world's stock of natural resources including geology, soils, air, water and all living organisms. Natural capital assets provide people with ecosystem services, free goods and benefits.

Ecosystem - "a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit"(https://www.cbd.int/).

Ecosystem services - the goods and services that ecosystems provide to humans, or benefits people obtain from ecosystems (MEA, 2005).

MEA (2005). *Ecosystems and Human well-being. A report of the Millennium Ecosystem Assessment*. Washington DC: Island Press. https://www.millenniumassessment.org/



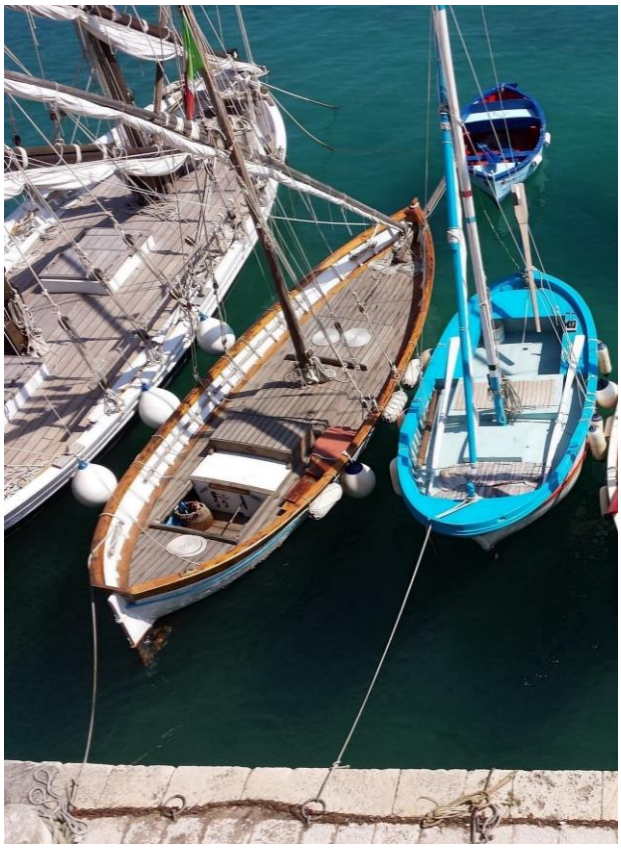


BLUE LAND definition

The BLUE LAND can be a proper model of territorial management and a precursor to the future implementation of a protected area.

Such a management model has the added benefit of broad ownership of the goals within the local community and entails a lighter procedure in the recognition and implementation of management policies.

The BLUE LAND model was implemented in three areas of the Mediterranean Basin and tested for its effectiveness and replicability: Porto Palermo (Albania), Velika Plaza and Bojana river mouth (Montenegro) and Tricase (Italy).

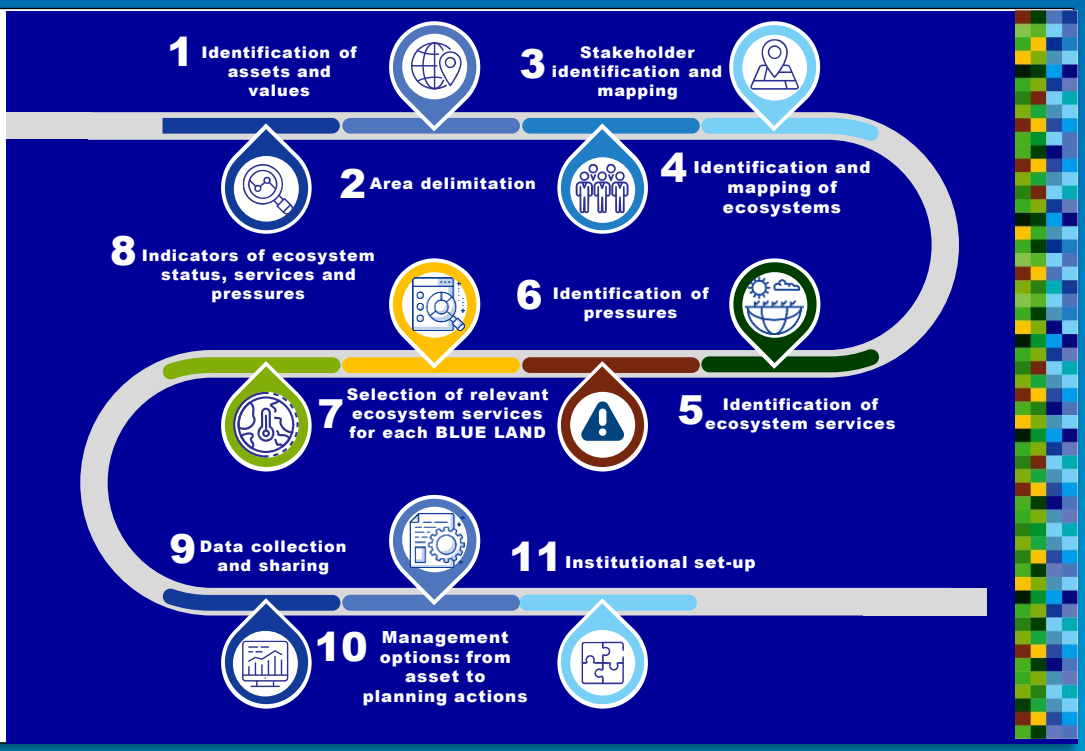


BLUE LAND: 11 STEPS

The **METHODOLOGY** for the development of the **BLUE LAND model**

for the TERRESTRIAL and MARINE ECOSYSTEMS

entails **11 STEPS**

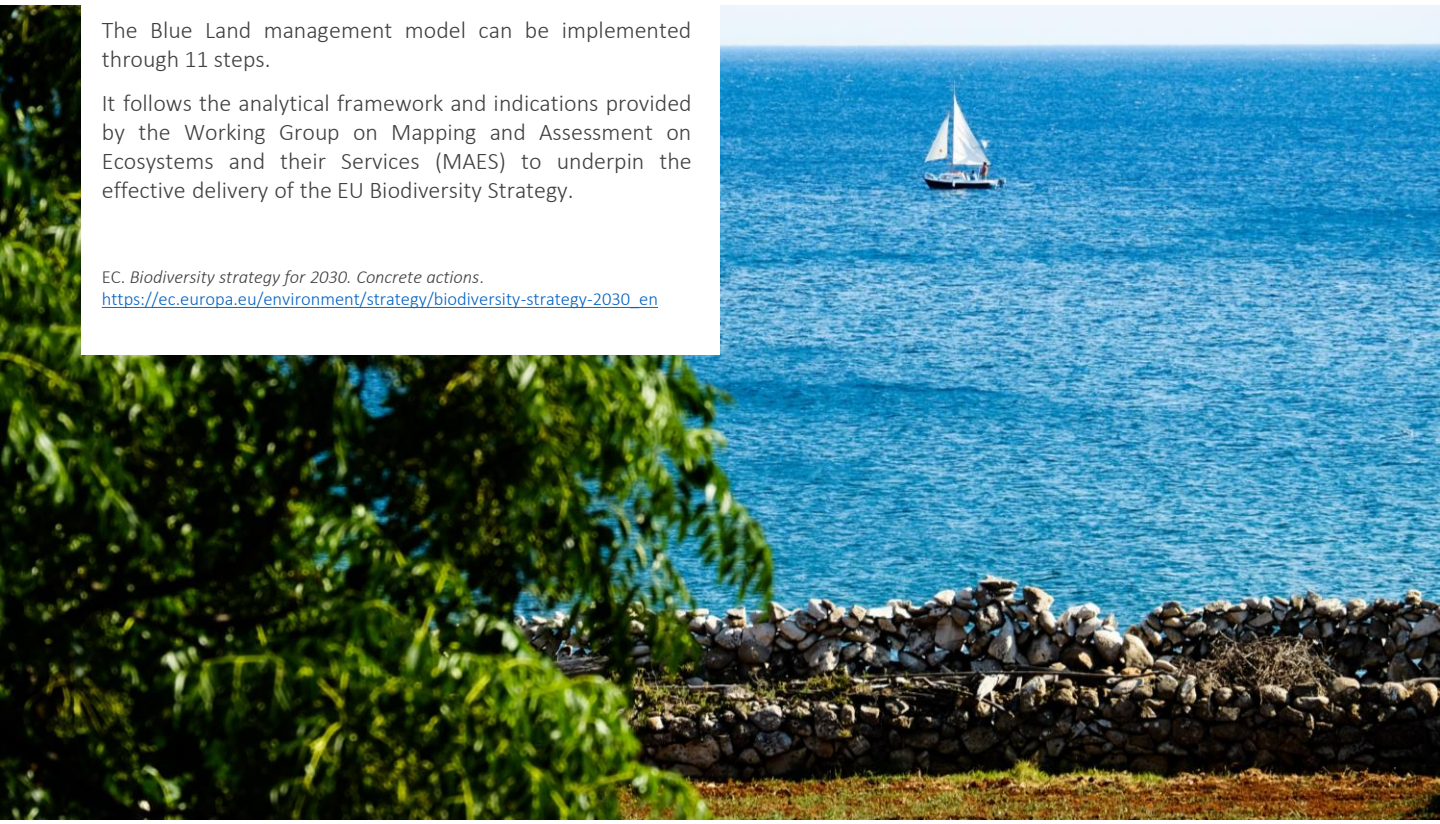


BLUE LAND: 11 STEPS

The Blue Land management model can be implemented through 11 steps.

It follows the analytical framework and indications provided by the Working Group on Mapping and Assessment on Ecosystems and their Services (MAES) to underpin the effective delivery of the EU Biodiversity Strategy.

EC. *Biodiversity strategy for 2030. Concrete actions.*
https://ec.europa.eu/environment/strategy/biodiversity-strategy-2030_en



1. IDENTIFICATION OF ASSETS AND VALUES

The **MAIN CRITERIA** for the establishment of a **BLUE LAND** include:

- High complexity of ECOSYSTEMS
- High level of BIODIVERSITY
- Natural beauty and high quality of "naturalness" of MARINE-COASTAL ENVIRONMENTS
- Traditional uses of NATURAL LOCAL RESOURCES
- High potential for entertainment and/or EDUCATIONAL PURPOSES
- Provision of COMMUNITY RELEVANT ESs
- Need for integrated development and harmonisation of PLANNING TOOLS AND ACTIONS

1. IDENTIFICATION OF ASSETS AND VALUES

In the first phase of implementation of the BLUE LAND model, the identification of the assets in the area is accomplished by identifying and describing the natural capital, the cultural values and heritage that deserve the establishment of a BLUE LAND.

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2. AREA DELIMITATION

A **BLUE LAND** is established when

COASTAL COMMUNITIES, **STAKEHOLDERS** and **ORGANISATIONS** are committed to **PROTECTING AND RESTORING COASTAL AND MARINE ENVIRONMENTS AND ENHANCING ESs** while pursuing their own shared local sustainable development objectives and paths

The identification of the **BOUNDARIES** of a BLUE LAND is a crucial step and can be based on different **CRITERIA:**

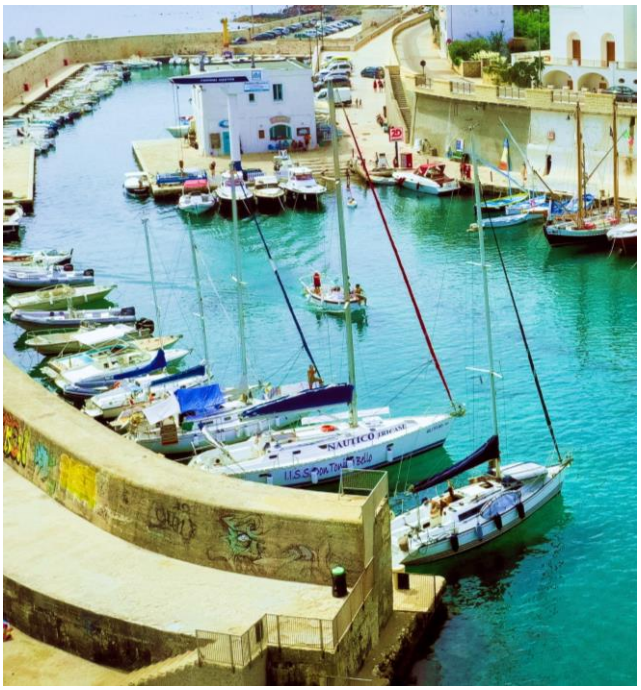
- The need to increase the provision of specific ESs conserving environment
- The occurrence of endangered species and ecosystems
- The inclusion of socio-economic activities or infrastructures having an impact (actual or potential) on the natural capital
- The availability of data

2. AREA DELIMITATION

A BLUE LAND is established when coastal communities, stakeholders and organisations are committed to protecting and restoring coastal and marine environments and enhancing ESs, while pursuing their own shared local sustainable development objectives and paths.

The identification of the boundaries of the area of intervention follows many other considerations. For example, the area should consider the existing administrative and legal framework to respect the prerequisite of legitimacy; the pilot area should preferably have a proper size to respect the prerequisites of relevance and credibility; it should be neither too small in order to prevent the assessment of external threats and pressures, nor too large to allow the correct assessment of ecosystems and their services.

The boundaries can be subject to further modifications based on the results achieved during its implementation and/or as the awareness of neighboring communities increases if they ask to be part of it.



3. STAKEHOLDER Identification and Mapping

STAKEHOLDERS can be identified based on:

- **Dependence on the services provided** by the ecosystems of the BLUE LAND
- **The impact** (actual or potential) of their activities on territorial resources
- **Willingness** to participate
- **Ability** to influence social processes
- **Specific competences** in administrative issues, planning or managing territories or resources, or in developing tailored research activities

Management authorities and agencies | Institutions | Research centers | Universities | Non-governmental organizations | Local associations and the whole private sector

The categories of SHs involved in the process should include **ALL SUSTAINABILITY DIMENSIONS**

3. STAKEHOLDER Identification and Mapping

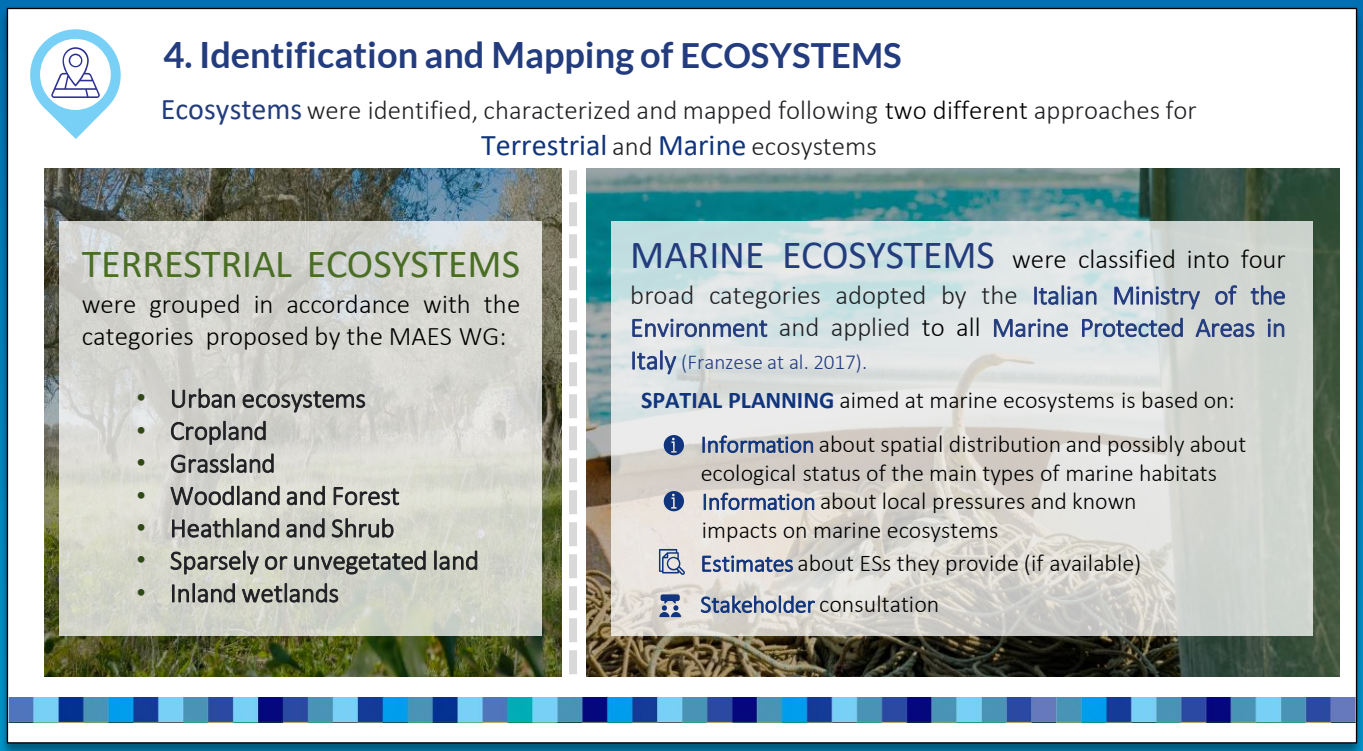
The model proposed for the integrated management of the BLUE LAND is based on a participatory approach at all levels, as suggested by the Convention on Biological Diversity, because if the community who is living "in" and "around" a "protected area" is not prepared to contribute to the implementation of the political measures for biodiversity or ecosystem conservation, regulations, policies and plans will have little chance to achieve their objectives, and participatory approaches will be required. These are institutional tools whereby public and/or stakeholders of different types are brought together to participate more or less directly, and more or less formally, in some stages of the decision-making process.

Stakeholders can be identified following different criteria, but in any case, they will include: i) people who need to take decisions in ecosystem management; ii) people who are affected by decisions (beneficiaries of ESs and ecosystems); iii) people who are particularly knowledgeable about ecosystems and their management.

For each stakeholder, specific additional and detailed data can be recorded to achieve a stakeholder map for each area. The stakeholder map is going to be updated from time to time to ensure the inclusiveness of the process.

In the mapping the stakeholders should represent all sustainability dimensions, as for example management authorities and agencies, organisations and associations committed to environmental and socio-economic issues.

All stakeholders are informed about the overall process and actively engaged in a structured way in specific decisional steps, to ensure their full involvement and maximize their role and contribution to the whole process.



4. Identification and Mapping of ECOSYSTEMS

The process of building a BLUE LAND model includes a step specifically related to ecosystems' identification, characterization and mapping. Two slightly different analytical frameworks were followed for terrestrial and marine ecosystems.

For Terrestrial Ecosystems, the analytical framework adopted was the one developed by the Working Group on Mapping and Assessment on Ecosystems and their Services (MAES), set up under the Common Implementation Framework (CIF). The MAES WG identified common typologies of ecosystems for the mapping and a set of given typologies of ESs for accounting. In each BLUE LAND reference is made to such framework and ecosystems are identified based on land use and specific codes. After this broad identification, ecosystems can be better characterised according to the local features, on the basis of relevant technical and scientific literature, by a cross-walk exercise with Corine Land Cover maps (see the document "A cross walk between EUNIS habitat Classification and Corine Land Cover") or using European Union Natural Information System classification of habitats and habitats listed in the Habitat Directive.

In Marine Ecosystems, for the identification of the main habitat macro-types, reference is made to four broad categories adopted by the Italian Ministry of the Environment and applied to all Marine Protected Areas in Italy (Franzese *at al*., 2017). Spatial planning is based on (1) information about spatial distribution and possibly about ecological status of the main types of marine habitats, (2) information about local pressures and known impacts on marine ecosystems, (3) estimates about ESs they provide (if available) and (4) stakeholder consultation. While activity 4 and the largest share of activities 2 and 3 involve only desk studies, activity 1 and possibly part of activities 2 and 3 may need field data collection.

Mapping BLUE LAND ecosystems requires the preliminary collection and organisation of relevant available data and maps. Data are digitised and georeferenced according to the EU INSPIRE directive on the interoperability of spatial information.

Biodiversity. *Correspondence between Corine Land Cover classes and ecosystem types*. https://biodiversity.europa.eu/ecosystems/mapping-and-assessment-of-ecosystems-and-their-services-maes-1/correspondence-between-corine-land-cover-classes-and-ecosystem-types

EC. *The Habitats directive*. https://www.eea.europa.eu/data-and-maps/data/eunis-habitat-classification

EEA. *EUNIS habitat classification*. http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm

Franzese P.P., Buonocore E., Donnarumma L., Russo G.F. (2017). Natural capital accounting in marine protected areas: The case of the Islands of Ventotene and S. Stefano (Central Italy). *Ecological modelling*, 2360: 290-299. https://doi.org/10.1016/j.ecolmodel.2017.07.015

5.a TERRESTRIAL ECOSYSTEM SERVICES

The CICES (2018) classifies ESs into 3 CLASSES of the four categories used in the MEA:

1 PROVISIONING SERVICES

Related to the production of a high variety of food, feed, fibres or other goods, delivered by different managed systems such as crops, livestock, aquaculture.

2 REGULATING SERVICES

They regulate environmental changes and are very much associated with agriculture (e.g., climate regulation, pest/disease control, fluctuation in water provision and temperature).

3 CULTURAL SERVICES

Benefits obtained from ecosystems through spiritual enrichment (religious or heritage or natural values), aesthetic experience and educational opportunities.

5.a TERRESTRIAL ECOSYSTEM SERVICES

Regional and local stakeholders, identified and mapped in step 3, are involved in a social evaluation process whose final aim is to agree and establish ecosystem management practices, by valuing the importance of the Ecosystem Services (ESs) provided by their territory, and ranking them based on their perceived importance.

The social evaluation process assesses the importance and the value of each ES (and of the providing ecosystem or ecosystems) for local people and helps to identify the pressures that may be exerted on the ecosystems.

To achieve a preliminary list of relevant ESs provided by each ecosystem, the whole list of ESs reported by the Common International Classification of Ecosystem Services (CICES) V5.1 (Haines-Young and Potschin, 2018) was considered (https://cices.eu/) and for each Ecosystem mapped in the BLUE LAND (Step 1), a list of potentially provisioned ESs was selected at the beginning of the social evaluation process.

The preliminary list of relevant ESs was achieved by asking the following question to stakeholders: “Does the considered ecosystem provide this ES?”. By performing this exercise for each of the identified Ecosystems, a list of ESs potentially provided by each BLUE LAND was drawn up.

This first result is a concrete step to achieve the mapping of the ESs in the BLUE LAND and a first step towards the involvement of the local communities living in the BLUE LAND in the process of building a participatory integrated model of governance.

5.B MARINE ECOSYSTEM SERVICES

The identification of Marine Ecosystems Services is based on the assessment of **"emergy"** (Comitato Capitale Naturale, 2018).

e stands for "**energy**"

m stands for "**memory**"

Emergy can be measured by applying **trophodynamic models** that convert biomass data (both standing and turnover) into the amount of energy (solar-equivalent joules) that is needed to obtain that biomass

5.B MARINE ECOSYSTEM SERVICES

The identification of the Marine ESs followed a different approach involving a thorough analysis of the way energy flows (and dissipates) through trophic networks, including all the relevant quantitative estimates and a reliable analysis of the structure of the trophic networks through which the energy flows. The task is not trivial, because each relevant process needs to be modelled from the sum of ESs.

Following this conceptual approach, the ES estimates cannot be turned into spatially explicit information to the spatial scale of the marine part of the BLUE LAND areas, which are both open and small relative to the scale of water, organisms and anthropic movement. Therefore, the natural capital associated with benthic habitats rather than ESs was taken into account.

MITE, Comitato per il Capitale Naturale (2018). Secondo rapporto sullo stato del capitale naturale in Italia 2018.
https://www.minambiente.it/sites/default/files/archivio/allegati/sviluppo_sostenibile/II_Rapporto_Stato_CN_2018_3.pdf

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6. Identification of PRESSURES

In the **BLUE LAND** at least **six types of pressure** were identified:

1. Habitat conversion and degradation (land conversion)
2. Introduction of invasive alien species
3. Pollution and nutrient enrichment
4. Over-exploitation
5. Climate change
6. Other pressures

6. Identification of PRESSURES

Properly functioning Ecosystems provide ESs to various extents, according to their status of health.

Ecosystems are more likely to be in a good condition if the pressures on ecosystems are absent (Maes et al., 2018).

The links between pressure and ecosystem condition on one hand, and between ecosystem status, biodiversity and provision of ESs on the other, are an important part of the whole picture, and can be defined and analysed based on relevant technical and scientific literature, expert knowledge and stakeholder consultation.

When assessing an ecosystem condition and ESs, it is important to consider these links in order to be able to describe them using scientific evidence.

Maes J, Teller A, Erhard M, Grizzetti B, Barredo JI, Paracchini ML, Condé S, Somma F, Orgiazzi A, Jones A, Zulian A, Vallecilo S, Petersen JE, Marquardt D, Kovacevic V, Abdul Malak D, Marin AI, Czúcz B, Mauri A, Loffler P, BastrupBirk A, Biala K, Christiansen T, Werner B (2018). *Mapping and Assessment of Ecosystems and their Services: An analytical framework for ecosystem condition.* Luxembourg: Office of the European Union.
https://ec.europa.eu/environment/nature/knowledge/ecosystem_assessment/pdf/5th%20MAES%20report.pdf

7.1 SELECTION of RELEVANT ECOSYSTEM SERVICES for each Blue Land

*"**Social value** is based on people's **perception** and **preferences**. It might not be based on a comprehensive understanding of the ecosystem functioning and cannot replace biophysical assessment of ecosystems and ESs"*

SOCIAL VALUATION helps communities and managing authorities

*to **raise awareness** about the natural capital of the territory*	*to **find** innovative **solutions***	*to **reduce conflicts***	*to increase the **success** of **spatial planning***

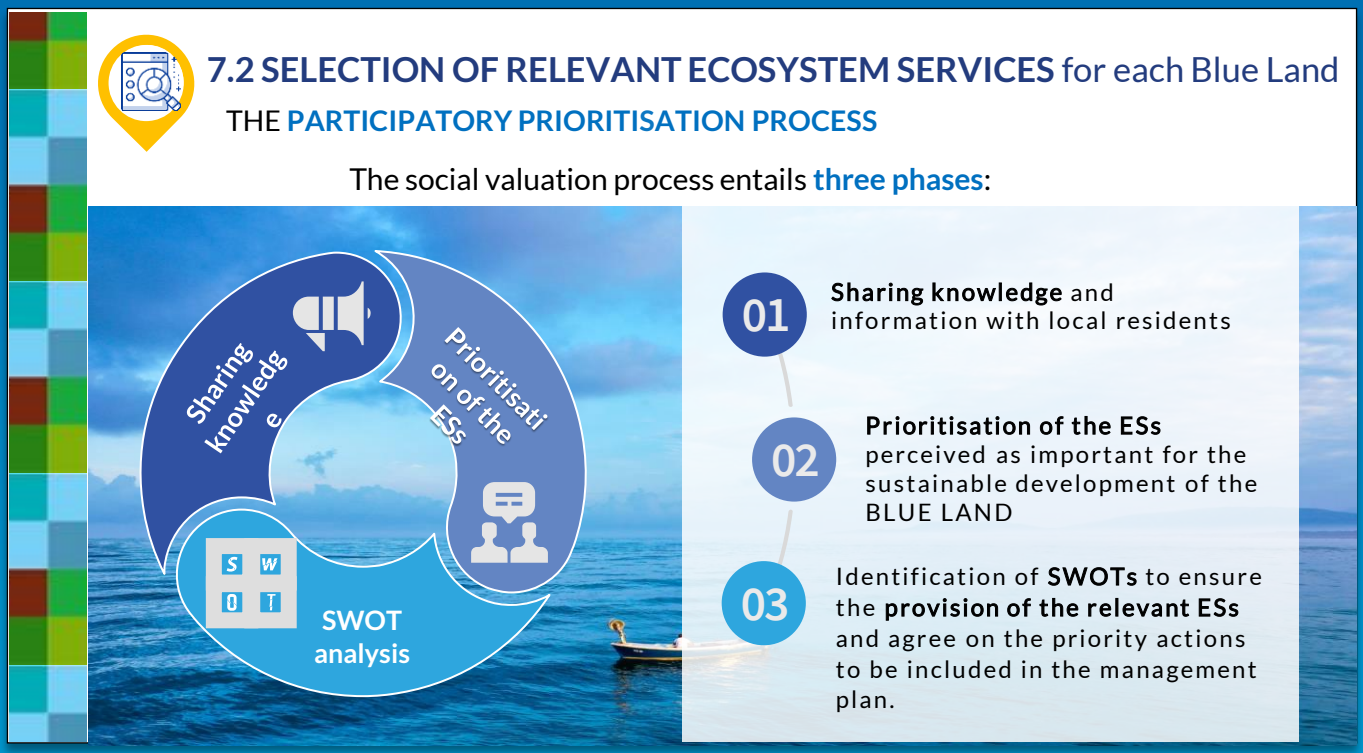
7.1 SELECTION of RELEVANT ECOSYSTEM SERVICES for each Blue Land

For the purpose of selecting and ranking the ESs provided by the BLUE LAND, the direct involvement of local residents is recommended, because they are the direct beneficiaries of the goods and services provided by the ecosystems.

The "social valuation" process entails the participation of local communities in valuing the importance of the ESs provided by a community-based area and has a high educational value for the whole community, as it helps to raise awareness about its natural capital.

Such participatory and structured prioritisation process was used to involve the communities living in the BLUE LAND and all stakeholders in identifying ESs considered as relevant.

The social evaluation process made it possible to identify the specific negative drivers of change threatening ecosystems and the provision of ESs, rising stakeholders' awareness also on existing PRESSURES, mostly human-induced processes that alter the condition of ecosystems.



7.2 SELECTION OF RELEVANT ECOSYSTEM SERVICES for each Blue Land

The whole social valuation process entails three phases:

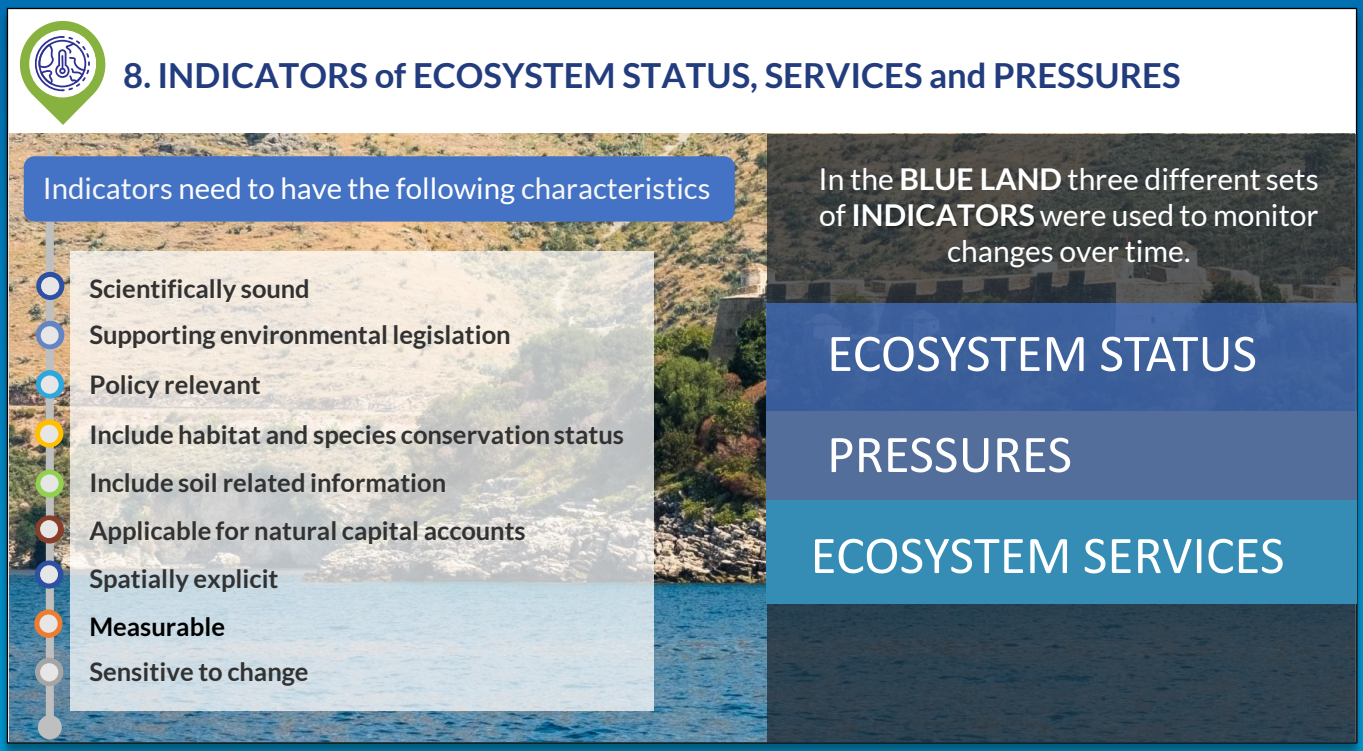
1. Sharing knowledge and information with local residents (especially those who are already involved at different levels in land planning (Steps 5 and 6).

2. Prioritisation of the ESs that are perceived as important for the sustainable development of the BLUE LAND (Step 6). This phase starts after the IDENTIFICATION of ECOSYSTEM SERVICES has been achieved, and consists in analysing and ranking the ESs from the list coming from Step 5; once the list of preliminary ESs for each ecosystem is obtained, people decide whether a specific ESs is relevant or not.

3. Identification of key strengths, weaknesses, opportunities and threats for the provision of the relevant ESs (SWOT Analysis) and the agreed priority actions to be included in the management plan. This phase of the social valuation process (Step 10) deals with the identification of solutions and prioritised actions by the BLUE LAND community and stakeholders.

The entire process can be enlarged to a wider audience at any time of its implementation in order to achieve a better involvement of the whole community living in each BLUE LAND.

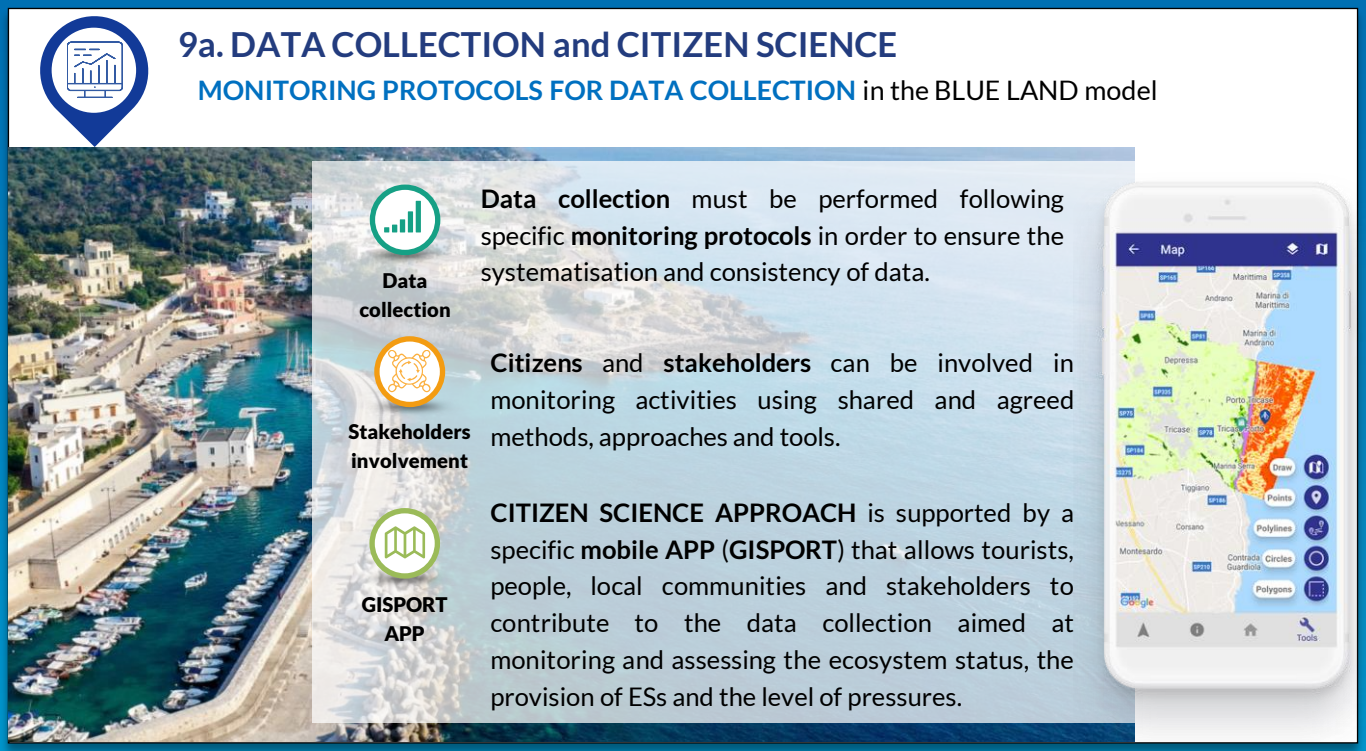
The participation of the local communities in the process of valuing the importance of the ESs provided by a territory has a high educational value for the whole community; however, it should be kept into account that “social value is based on people’s perception and preferences”; therefore, it might not be based on a comprehensive understanding of the ecosystem functioning and cannot replace biophysical assessment of ecosystems and ESs.



8. INDICATORS of ECOSYSTEM STATUS, SERVICES and PRESSURES

Indicators were selected according to the following criteria established by the MAES WG:

REQUIREMENTS	DESCRIPTION
Scientifically sound	Indicators should be based on the best available knowledge while giving a good representation of the ecosystem characteristics addressed
Supporting environmental legislation	Indicators should support the implementation of environmental legislation in the EU
Policy relevant	Indicators should be policy relevant: they have multiple policy uses and can support a policy narrative which links pressures, ecosystem condition, ESs and policy objectives.
Include habitat and species conservation status	The conservation status of habitats and species (and in particular the parameters "area" and "structure and function") reported under Art.17 of the EU Habitats Directive should constitute a major indicator for assessing ecosystem condition.
Include soil related information	Terrestrial ecosystems are not in good condition if their soils are not in good condition. Specific indicators which assess the condition of soils should therefore be included.
Applicable for natural capital accounts	The indicator framework should support the development and testing of ecosystem extent and condition accounts.
Spatially explicit	Ecosystem condition is not equal across space. Different spatial gradients of pressures and differences in the response of ecosystems to pressures result in spatial variance of ecosystem condition which needs to be acknowledged in the indicator selection.
Measurable	Indicators should be measurable relative to a baseline year (e.g. 2019)
Sensitive to change	Indicators should be able to detect change over time.



9a. DATA COLLECTION and CITIZEN SCIENCE

Monitoring protocols are to be defined to collect data and calculate the three sets of indicators ensuring the **systematisation** and consistency of data.

Each protocol should provide:

1. the description of field or laboratory methods that explains what should be done;
2. a rationale for the monitoring (why data are collected), including evidence that the proposed monitoring has worthwhile, **feasible and achievable objectives**, considering the constraints of time, money, and personnel available.

Whenever possible, citizens and stakeholders must be involved in monitoring activities, using shared and agreed methods, approaches and tools. This will help collect more data needed for the ecosystem assessment as well as proactively increase awareness among people of the BLUE LAND process, environmental issues and sustainable development concerns.

Citizen Science provides suitable tools for the involvement of citizens in scientific investigations focused on the assessment of the impact of pressures on ecosystems' status, and their services (https://ecsa.citizen-science.net/).

This involvement entails the active participation of communities and stakeholders in carrying out collection of useful data for monitoring and planning; scientists are supposed to support the process by providing guidance on data acquisition and validation of collected data, enabling institutions to plan and implement shared solutions to the specific territorial issues.

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9b. DATA SHARING – WEBGIS

Ecosystem and ES maps, target species occurrences, administrative boundaries, infrastructures are available through the **WEB-GIS tool,** thus allowing the general public to have access to the **Marine-coastal spatial geodatabase and the information** collected by BLUE LAND.

Ecosystem and ESs maps

Administrative boundaries

Target species occurrences

Infrastructures

Areas of interest:

Albania
(Porto Palermo)

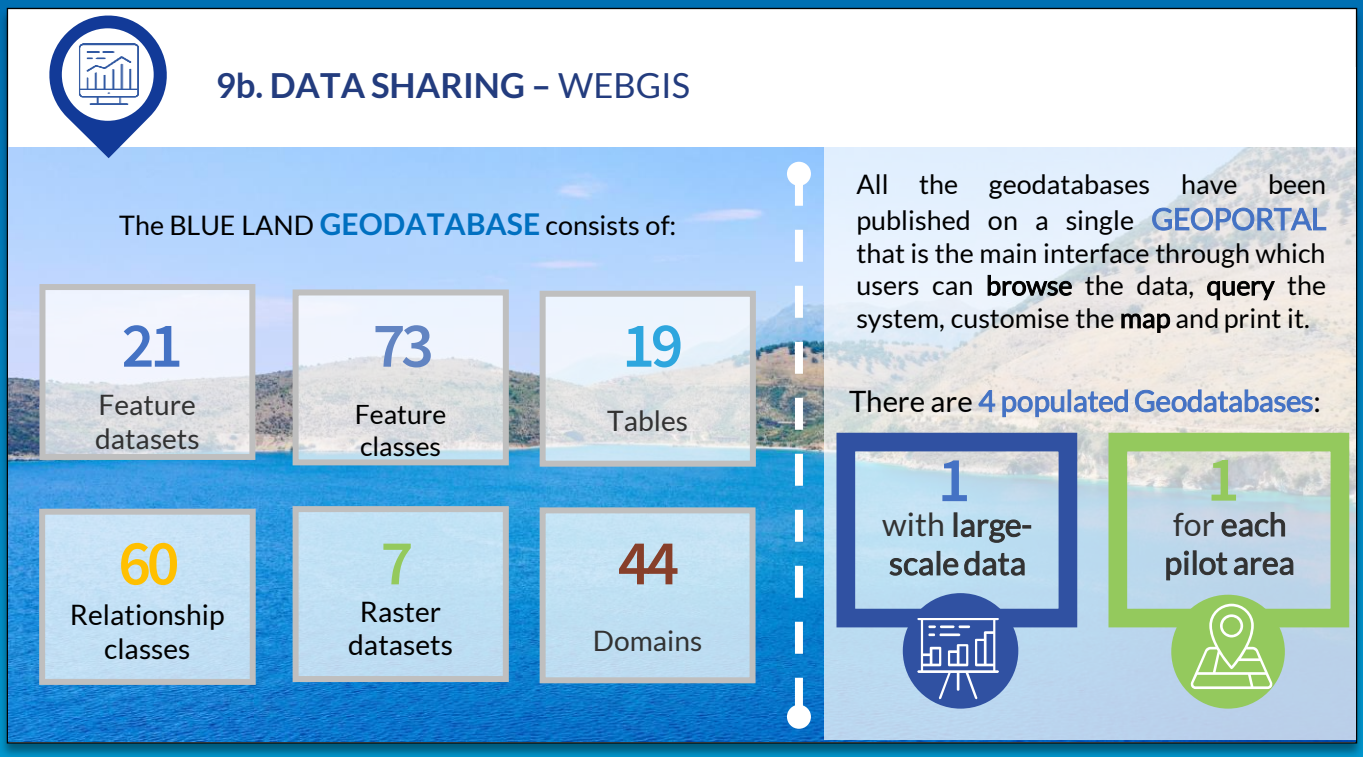
Montenegro
(Velika Plaža and Bojana river)

Southern Puglia
(Tricase)

9b. DATA SHARING – WEBGIS

The WebGIS implemented by BLUE LAND covers the areas of interest containing data collected in past years and made available by partners, data collected by the project and spatial datasets available at:

- European Environmental Agency (EEA)
- Shuttle Radar Topography Mission (SRTM)
- DIVA-GIS
- Marine Regions
- ISMAR
- SIT Puglia
- CoCoNet project
- EMODNnet project



9b. DATA SHARING – WEBGIS

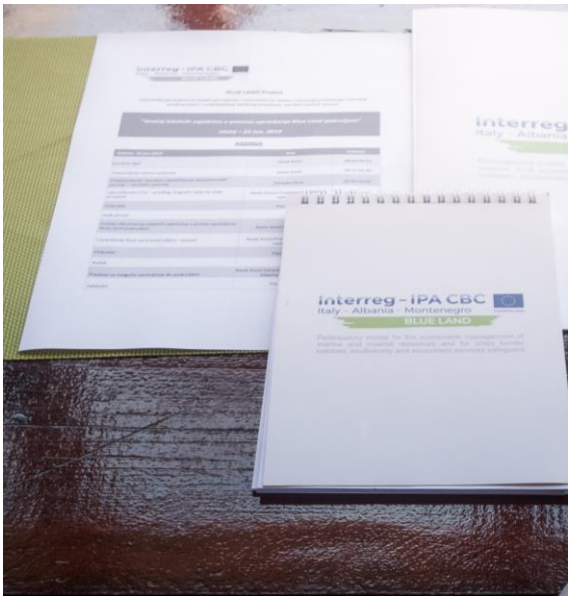
The BLUE LAND Geodatabase consists of 4 populated Geodatabases, with large-scale data and local data for each pilot area.

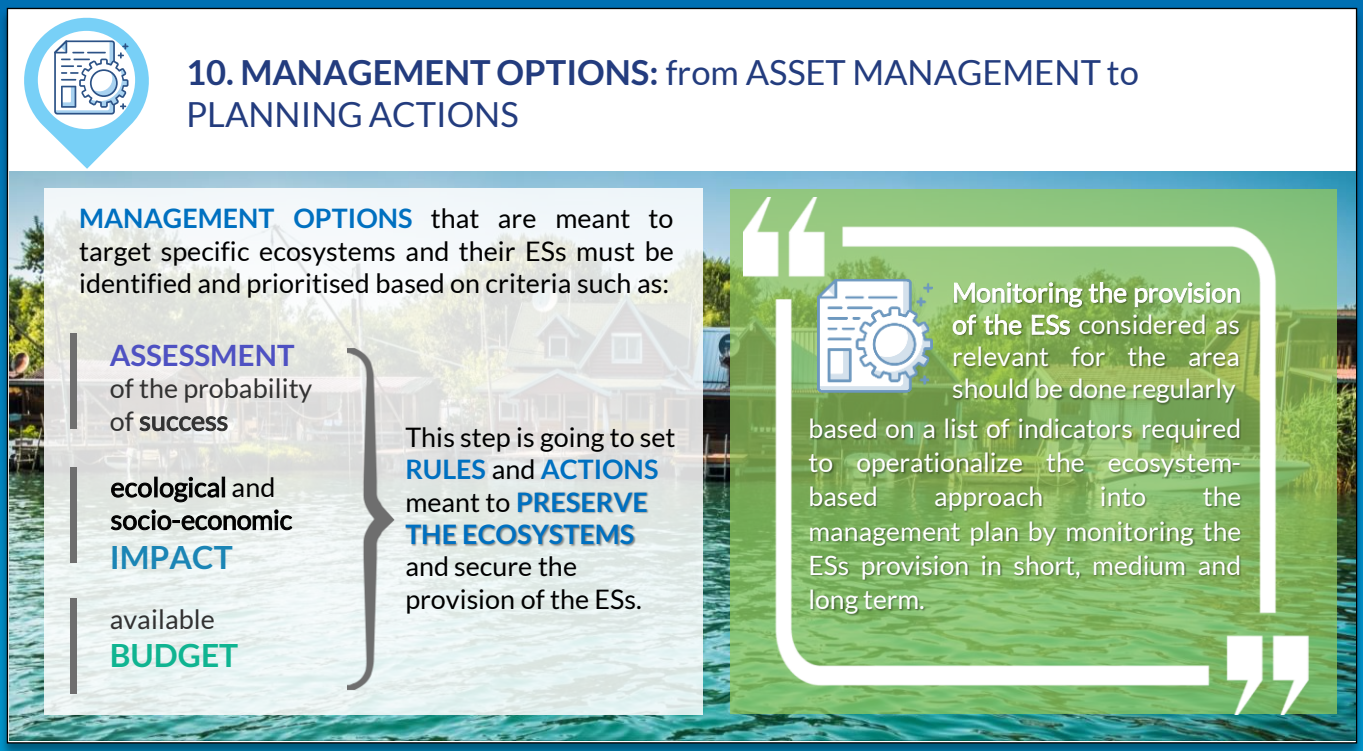
All the geodatabases have been integrated into a database for Oracle spatial data and published through a web application that makes them available via the web. The 4 web platforms with HTML5 technology were published via ArcGIS Server (®ESRI) on a single Geoportal.

Data can be freely accessed via browser; the user can browse the data, query the system, customise the map and print it. A detailed description of the functions is provided in the geoportal manual and can be accessed via the following links:

Grande V., Foglini F. (2020). *Blue Land. Geoportal user manual. Version 1*. Valenzano: CIHEAM Bari. Interreg - IPA CBC Italy Albania Montenegro. https://box.everest.psnc.pl/f/60f64486f99e4b69ac07/

Grande V., Foglini F. (2020). *Blue Land Geoportal*. https://www.youtube.com/watch?v=K-UKPz1oaWA&t=28s





10. MANAGEMENT OPTIONS: from ASSET MANAGEMENT to PLANNING ACTIONS

Throughout the social valuation process, local communities identify strengths, weaknesses, opportunities, and threats related to the provision of each prioritised ES through a dynamic SWOT analysis.

This makes it possible to provide a proper contextualization and choose appropriate actions and measures to be included in the management plan aimed to define management options, targeting specific ecosystems and their ESs and preventing possible negative side effects.

This step is at the basis of the final phase of implementation: the management plan sets rules and actions to preserve the ecosystems and secure the provision of the ESs that the local community identified as relevant for the specific sustainable development of the area.

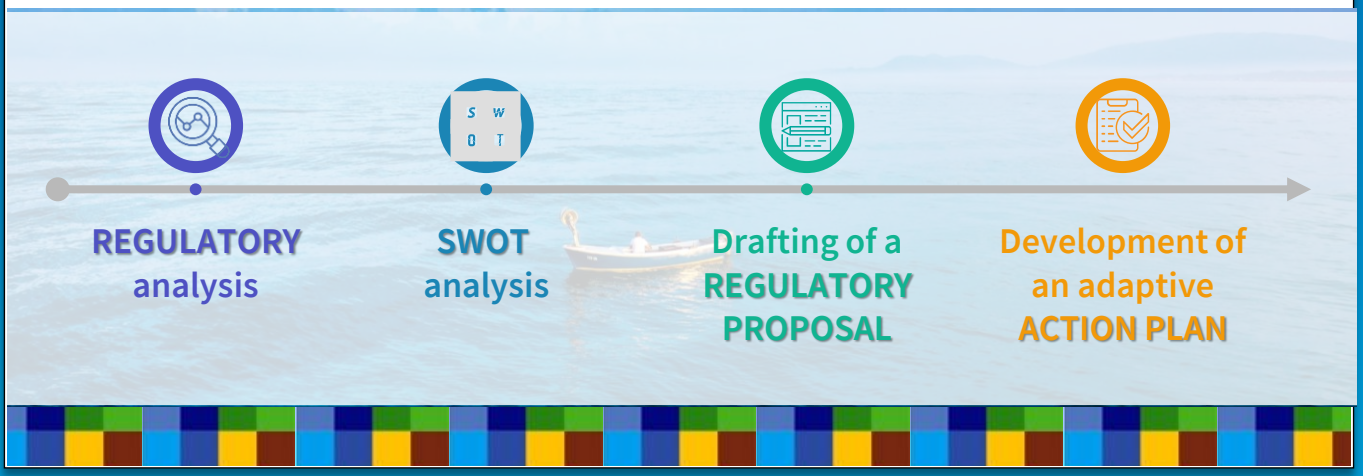
In order to assess the efficacy of the management plan, monitoring the provision of the ESs considered as relevant for the area should be done regularly based on a list of indicators required to operationalize the ecosystem-based approach into the management plan, by monitoring the ESs provision in short, medium and long term.

Further measures can be agreed upon by the community, following an adaptive management scheme, in case some measures and actions appear ineffective in the long run.

A significant repository of case studies on nature-based solutions replicable in the BLUE LAND can be found in the OPPLA repository (https://oppla.eu/).

11. INSTITUTIONAL SET UP and CHANGES

The design of an appropriate **institutional set up for BLUE LAND areas** should use a **hierarchical approach** involving the implementation of **four steps**:



11. INSTITUTIONAL SET UP and CHANGES

The design of an appropriate institutional set up for BLUE LAND areas should necessarily use a hierarchical approach to identify and describe 1) coastal governance tools at all local government scales; 2) the interactions between all these instruments of governance on the same scale and between different scales; 3) the most effective administrative tools and procedures to meet the requests of stakeholders in the BLUE LAND areas.

This approach involves the implementation of four steps:

1. A regulatory analysis, with a scalar approach, of all existing governance tools in the BLUE LAND area under study;
2. A swot analysis on the achieved results with the aim of highlighting the regulatory strengths and, at the same time, the existing critical issues. This aims to set a more effective governance tool to overcome the existing regulatory gaps and take advantage of the present strengths and territorial assets;
3. The drafting of a regulatory proposal to define the general and specific objectives of the BLUE LAND tool, the criteria for its implementation and spatial identification, and for the administrative boundaries of actions;
4. The development of an adaptive action plan of the BLUE LAND with the aim of identifying the operational tools useful for achieving the objectives of the BLUE LAND. The plan entails a monitoring plan to evaluate the performance of the BLUE LAND in terms of sustainability and protection and enhancement of biodiversity and ESs.

CONCLUSIONS

BLUE LAND demonstrated the **feasibility** and usefulness of the introduction of the **Ecosystem Service concept** into the **participatory management** and planning of the **marine and coastal areas** of the Mediterranean Basin.

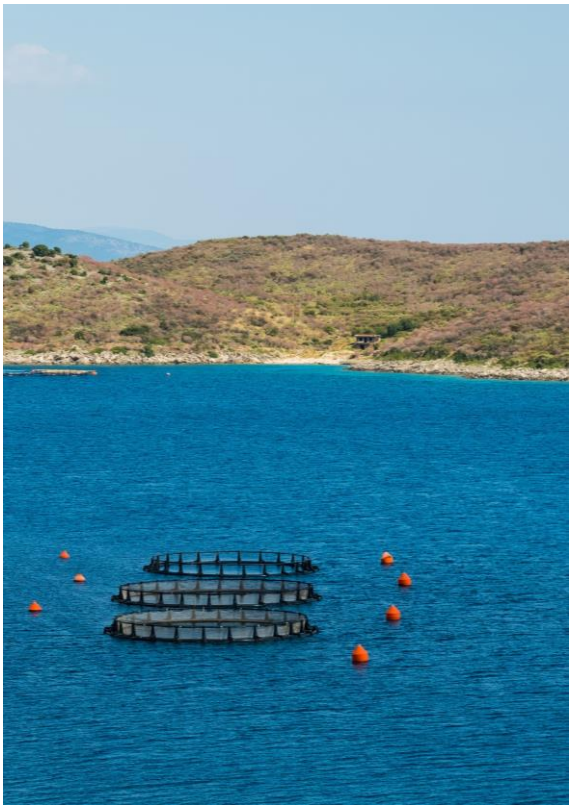
Lessons learnt and **results**:

- The **BLUE LAND model** based on a **step-by-step approach** is useful to facilitate its **replicability** all along the coast of the Mediterranean basin and beyond.
- The **Ecosystem Service approach** proved to raise and **increase the awareness** of the local community about the importance of the conservation and sustainable use of **biodiversity** and **natural resources** as well as the **cultural values** of the BLUE LAND.
- Establishing a **long-term monitoring system** to evaluate the **provision of ecosystem services** is still difficult to do due to lack of resources.
- **Citizen Science** can significantly contribute to the **collection of data** for elaborating better management options.

CONCLUSIONS

BLUE LAND demonstrated the feasibility and usefulness of the introduction of the Ecosystem Service concept into the participatory management and planning of the marine and coastal areas of the Mediterranean Basin.

The process of social evaluation and the strategies adopted for the stakeholder involvement in the development of the management BLUE LAND model of governance led local communities to perceive nature conservation as an opportunity and a way to foster local economy and traditional activities rather than an obstacle.



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