

MED4EBM - Mediterranean Forum For Applied Ecosystem-Based Management

Work Packages 3 and 4. Technical Report on activities executed and deliverables produced.

Release 1, Covering Phase 1 of Work Packages 3 and 4 implementation course. December 14th, 2020.

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ABOUT THIS DOCUMENT

The present document reports on technical items related to the activities executed and the deliverables produced in the implementation course of Work Packages 3 and 4 of the *Mediterranean Forum For Applied Ecosystem-Based Management* (MED4EBM) partnership project.

This report is conceived and structured as an evolving document, which will be progressively updated and integrated along the execution course of the various phases for the implementation of the said Work Packages 3 and 4. When each of these phases is completed, a new release of this document is issued which includes the reporting facts on this very phase.

The current release of this document is updated to include the deployment of Phases 2 and 3, which have been executed between October 26th, 2020 and May 27th, 2021. The bulk of this implementation period falls in MED4EBM 3rd Semester of implementation (October 3rd, 2020 to April 2nd, 2021). However, due to the 8-months-long negotiation between the ENI CBC MED Management Authority and the MED4EBM Lead Applicant on administrative issues, MED4EBM actual implementation activities could start only mid-June 2020. The bulk of this delay has indeed been recovered throughout the execution of Phase 1, 2 and 3; as of the date of issuing this report, the delay in the implementation of WP3 and WP4 is reduced to around three months.

The various releases of this report, as well as all the related MED4EBM Deliverables, will be uploaded by MED4EBM Lead Beneficiary in the Library section of MED4EBM website (further details at Section 5).

1 - BACKGROUND

1.1 - The *Mediterranean Forum For Applied Ecosystem-Based Management* (MED4EBM) project

The *Mediterranean Forum For Applied Ecosystem-Based Management* (MED4EBM) initiative is a partnership project funded by the ENI CBC MED Programme 2014-2020, under the Thematic Objective B.4 (Environmental protection, climate change adaptation and mitigation) and Thematic Priority B.4.4 (Incorporate the Ecosystem-Based management approach to ICZM into local development planning). MED4EBM duration is three years and its total budget is 3,310,237.60 Euro; the project partnership spans four countries, as outlined in the table here below.

Role	Acronym	Name of the organisation	Country
BEN	UNDP	United Nations Development Programme, Jordan Country Office	Jordan
PP1	PROGES	PROGES - Planning and Development Consulting	Italy
PP2	AdT	Managing body of "Riserva Naturale del Lago di Tarsia e della Foce del Fiume Crati" - Associazione Amici della Terra Italia.	Italy
PP3	JREDS	Royal Marine Conservation Society of Jordan	Jordan
PP4	INSTM	National Institute of Marine Sciences and Technologies	Tunisia
PP5	TCNR	Tyre Coast Nature Reserve	Lebanon

MED4EBM aims at enhancing capacities of various stakeholders and institutional actors involved in the management of coastal and marine areas, and at establishing a cooperation and coordination platform for them to effectively implement Ecosystem-Based Integrated Coastal Zone Management (EB-ICZM). Governments and other EB-ICZM stakeholders can use this platform to take informed decisions on planning and managing coastal resources and to achieve effective coordination on the ground. In turn, this will help wide-spreading Ecosystem Based Management (EBM) in the Mediterranean consistently with the pursuits of the Barcelona Convention and its ICZM Protocol.

MED4EBM proposes the use of innovative methods and tools to tackle the main issues which currently limit the widespread incorporation of EBM into ICZM processes (EB-ICZM). These are related to the difficulties that the decision-makers and the professional team involved still face because EB-ICZM require:

- (1) intense and continuous efforts to coordinate management actions across a wide array of stakeholders (e.g. governmental agencies; international programs and projects; social and economic associations) and application sectors (e.g. fisheries, tourism, transport, biodiversity conservation);
- (2) intensive work by the team of professionals implementing EB-ICZM, with particular reference to adjusting the available guidelines to the specificities of the relevant ecological and socio-economic systems, as well as in operationalising them for their effective application in area of interest;
- (3) significant amount of data and large databases.

MED4EBM intends breaking the above-mentioned barriers using an innovative land and sea management package which makes EB-ICZM much easier to achieve for the professional team, the stakeholders and the decision-makers involved. This package has been developed by PROGES and is named Integrated Spatial Planning (PROGES-ISP); it consists of a software application and a set of methodological tools, to plan, implement and monitor EBM through a participatory and evidence-based approach.

The said methods allow handling the EB-ICZM multi-stakeholders analytical processes through a straightforward path, providing analytical methods based on deterministic rather than statistical ecological and socio-economic assessments. These methods help the planning team and relevant stakeholders to identify and quantitatively assesses the relationships between ecosystem components, functions, and services, along with the associated human activities, toward the establishment of a multi-stakeholders ICZM scheme. The software package enables the analysis of spatial and tabular datasets and the compilation of data-aware advanced reports via a multi-windows interface which facilitates the browsing of large datasets through an ecosystem-based logical mapping framework.

MED4EBM will contribute to the achievement of ENI CBC MED Expected result 4.4.1¹, by adding to Expected result indicators² 4.4.1.A and 4.4.1.A.

MED4EBM official starting date is October 3rd, 2019 however, as recalled above, actual implementation activities could not start till mid-June 2020, when the pre-financing funds were transferred to all partners.

1.2 - MED4EBM deployment rationale

MED4EBM deployment is organized in six Work Packages (WPs), according to the logic sketched in Fig. 1.1. These WPs are listed here below:

- WP1: Management,
- WP2: Communication,
- WP3: EBM-DSS: establishing effective management protocols and tools,
- WP4: Development of an Ecosystem-Based ICZM governance protocol in each of the Project target areas,
- WP5: Capacity and competence building,
- WP6: Capitalization of results: the Mediterranean Centre for disseminating EBM tools and methods.

¹ 4.4.1: Enhanced capacity of public authorities to plan for, sustainably manage, use and monitor their coastal ecosystems, employing an effective participatory approach involving relevant stakeholders and local communities.

² 4.4.1.A: Newly adopted integrated strategies and tools for sustainable management of coastal areas, etc. that include appropriate reflection of the ecosystem approach and that have been developed through a participatory exercise.

4.4.1B: Number of coastal cities, relevant public authorities and other key stakeholders adopting new ICZM plans/guidelines for the sustainable management and use of coastal areas.

WP1 (Management) ensures the coordinated and smooth management of all other MED4EBM WPs. The strategic decision-making and overall project supervision are granted through the MED4EBM Steering Committee (SC), where each Partner is represented. A Project Management Unit (PMU) is also established by the Lead Applicant for guiding and supervising the execution of the project, as well as to handle the official communication with the Managing Authority of the ENI CBC MED Programme. Partners take part in different Work Groups (WG) for the execution of MED4EBM WPs; composition of these WGs varies according to the specific role of Partners in each WP.

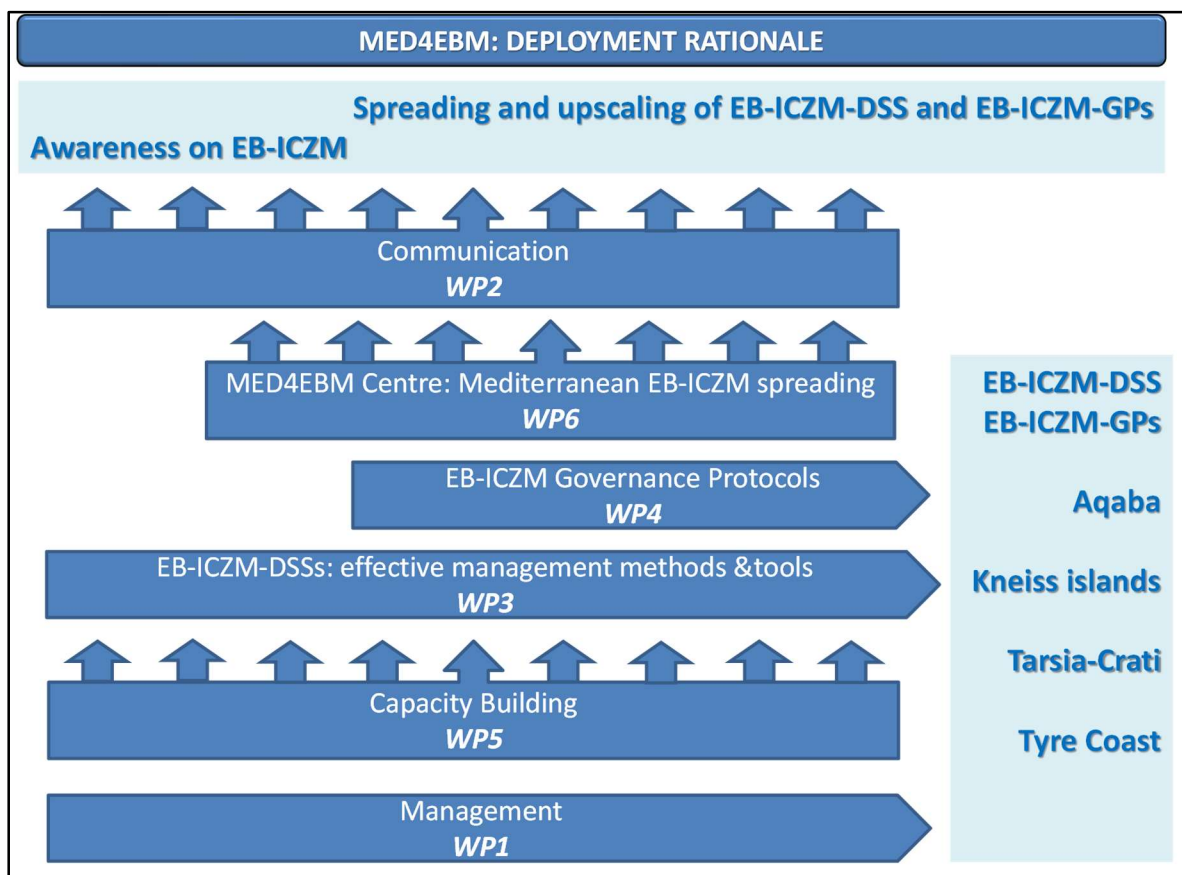


Fig. 1.1 - MED4EBM deployment rationale

MED4EBM core technical activities and outputs are integrated in WP3 and WP4, which aims at establishing EB-ICZM schemes in four target areas across ENI CBC MED Programme Area. These MED4EBM target areas are coastal and marine zones around four of the following protected areas:

- Golfo di Corigliano, Riserva Naturale del Lago di Tarsia e della Foce del Fiume Crati (Italy);
- Gulf of Aqaba (Jordan);
- Kneiss Islands Nature Reserve (Tunisia);
- Tyre Coast Nature Reserve (Lebanon).

The above-listed target areas have been selected also because they share ecological similarities: 3 are humid areas, of which 2 Ramsar sites; 2 are characterised by the presence of freshwater estuaries that outflow to the sea creating fresh/marine water interface; all are bird migration hotspots; 2 are important sea turtles nesting sites. Furthermore, these areas face similar problems to be addressed: large agricultural areas; touristic and other infrastructure development; fisheries.

More specifically, WP3 aims at establishing one Ecosystem-based ICZM Decision Support Systems (EB-ICZM-DSS) in each of the project's target areas by using the PROGES-ISP package mentioned in Section 1.1. To this

end, the PROGES-ISP methodological protocol will be applied which consists of five easy-to-apply sequential steps to handle the complex multi-stakeholder analytical processes that characterize EB-ICZM applications. This protocol adopts simple deterministic ecological assessments, as opposite to the complex statistical and/or algorithmic approaches currently used in ecosystem-based management applications. It identifies and quantitatively assesses the relationships between ecosystem components functions and services, as well as the associated human activities to establish a multi-stakeholders EB-ICZM scheme. The application of this protocol is associated with the use of the PROGES-ISP software for the analysis of spatial and tabular datasets, as well as for the compilation of data-aware advanced reports via a multi-windows interface.

The EB-ICZM-DSS resulting from WP3 will be used in WP4 to perform a systemic, indicator-based, and participatory analysis to develop an EB-ICZM Governance Protocol (EB-ICZM-GP) for each of the MED4EBM target areas. Using the EB-ICZM-DSS will ensure that: (1) each human activity is managed in the context of ALL the ways it interacts with marine and coastal ecosystems, and (2) multiple activities are being managed for a common outcome. The backbone of each the EB-ICZM-GPs will be jointly drafted by local actors and stakeholders, being their active engagement in the planning and management process the key to the success of EB-ICZM applications. This joint drafting will be executed by applying a specific methodology, which identifies in a systematic manner all the significant cause-effect relationships between the different components of the local socio-ecological ICZM dynamics. These cause-effect relationships are then objectively assessed using the EB-ICZM-DSS of WP3 for establishing the EB-ICZM-GPs to implement flexible management schemes and improve their responsiveness to monitoring results, so as to actually achieve adaptive and effective EB-ICZM.

Outputs of WP3 and WP4 will add to the following ENI CBC MED Output indicators³: 4.4.1.1.a, 4.4.1.1.b, 4.4.1.1.c, 4.4.1.2.e, 4.4.1.3.f, 4.4.1.5.h.

The deployment of WP5 (Capacity and competence building) will support the execution and enhance the effectiveness of WP3 and WP4 by providing ad hoc training packages, mentoring/coaching programs and tools/equipment supplies targeting all relevant EB-ICZM actors and stakeholders of the four MED4EBM focused areas (including MED4EBM Partners).

Technical achievements from WP3, WP4 and WP5 are capitalised in the framework of WP6 through the establishment, in the premises of the Riserva naturale del Lago di Tarsia e della Foce del fiume Crati (managed by AdT), of a permanent Mediterranean Centre for disseminating EBM tools and methods.

The said Centre will work as a permanent Forum, where regional EBM and ICZM actors will be provided with periodic opportunities for exchanging their experiences in applying and updating EBM and ICZM methods and tools. It will act as a knowledge-sharing platform on EBM tools and methods, benefitting local administrators and stakeholders involved in coastal planning and management, being also a training hub on the innovative EB-ICZM tools and methods promoted by MED4EBM. WP5 will also be a parallel contribution to launch the Forum, designing and executing specific activities to involve other Mediterranean EBM and ICZM actors to learn and practice the tools and methods promoted by the MED4EBM.

A fundamental contribution toward the success of MED4EBM, as well as the effectiveness and sustainability of its outcomes, is given through the execution of WP2 (Communication). WP2 will build upon the outcomes of all other WPs to sensitize institutions, stakeholders, citizens, tourists, and increasing their awareness

³ 4.4.1.1.a: Number of replicable or transferable actions to improve or restore the targeted ecosystem.
4.4.1.1.b: Number of participating organisations that cooperate for improved local governance in coastal zones.
4.4.1.1.c: Number of organisations and their staff participating in workshops/training.
4.4.1.1.e: Number of systemic tools available to strengthen planning, monitoring and management of coastal areas.
4.4.1.1.f: Number of communication and awareness-raising events.
4.4.1.1.h: Number of studies, based on data collection activities, studying interlinkages between human activities and the environment.

around values associated with ecosystems, thus bringing a lot in terms of biodiversity conservation and sustainable development. More specifically WP2 serves a double purpose:

1. To ensure adequate project's visibility and build up awareness among various relevant audiences about the principles and practices of EB-ICZM, as well as to disseminate the innovative approaches, methods and tools promoted by MED4EBM;
2. To raise awareness and increase the sense of ownership of local stakeholders and communities about ecosystem, natural, cultural, aesthetic and spiritual values of their respective areas, and the ensuing need to manage those areas in an integrated and inclusive way.

As for partnership roles, UNDP acts as Lead Applicant to guarantee that MED4EBM WPs are effectively and timely deployed. PROGES will provide the expertise on the methods to incorporate EBM into ICZM and provide the PROGES-IS software for establishing the EB-ICZM-DSS (WP3 and WP4). AdT, JREDS, TCNR and INSTM will organize, lead and implement all the activities for the tailor-making of all MED4EBM WPs in their respective target areas, including the liaisons for the active involvement of relevant stakeholders, the definition of context-specific indicators and the related data collection. AdT will also establish the Mediterranean Centre for disseminating EBM tools and methods.

1.3 - MED4EBM Work Packages 3 and 4: methods, phases, activities, and outputs

For the deployment of WP3 and WP4 an EB-ICZM Technical Team has been established by AdT, PROGES (WPs Leader) and UNDP. This team includes an EBM Methodological Coordinator (PROGES) and two EBM Experts (UNDP and AdT). The EB-ICZM Technical Team works in close coordination and collaboration with EB-ICZM Local Units established by AdT, INSTM, JREDS and TCNR for implementing WP3 and WP4 in the four MED4EBM target areas.

The deployment of WP3 and WP4 is organized in six operational phases, as listed here below:

Phase 1. Inception activities: Partner's base training, thematic scoping, and stakeholder analysis.

Phase 2. *Ecosystem Context Analysis*: recognizing connections within and across ecological and human systems spanning over the focused area.

Phase 3. *Ecosystem Context Analysis*: development of indexes and indicators for the quantitative assessment of EB-ICZM social, economic, and ecological dynamics.

Phase 4. Data gathering and construction of tabular and GIS databases.

Phase 5. *System Cause-Effect-Analysis*: assessment of ecological risks and socio-economic stresses and identification of management interventions.

Phase 6. Mainstreaming EB-ICZM measures into local development plans.

The above listed six phases implement activities and deliver output of WP3 and WP4 as scheduled in the table here below.

Table 1.1 - Synopsis of WP3-WP4 Implementation Phases and corresponding Outputs and Activities	
MED4EBM Outputs	WP3-WP4 Implementation Phases and MED4EBM Activities
Output 3.1 (Structural models of the ecological and socio-economic dynamics of the four Project's target areas).	Phases 1 and 2: Activity 3.1.1 (Qualitative modelling of the socio-ecological ICZM dynamics).
	Phase 3: Activity 3.1.2 (Quantitative modelling of the socio-ecological ICZM dynamics).
Output 3.2 (Ecosystem-based ICZM Decision Support Systems are established in the Project's target areas).	Phase 4: Activity 3.2.1 (Data collection and development of tabular and GIS databases) and Activity 3.2.2 (Development of a tailor-made EB-ICZM-DSS software tool for each of the Project's target areas).

Output 4.1 (An integrated set of Ecosystem-Based ICZM measures is developed in each Project's target areas).	Phase 5: Activity 4.1.1 (Drafting of integrated sets of Ecosystem-Based ICZM measures).
Output 4.2 (An Ecosystem-Based ICZM governance protocol is established in each Project's target areas).	Phase 6: Activity 4.2.1 (Mainstreaming the Ecosystem-Based ICZM measures in the programs and projects agenda of local actors).

Technical and methodological references for the execution of WP3 and WP4 are illustrated in detail in the document titled *Technical and methodological references and operational framework for the execution of WP3 and WP4* (Deliverable 3.1.1); this document also provides all planning elements to schedule the execution of WP3 and WP4 activities in the four MED4EBM target areas.

2 - REPORT ON THE IMPLEMENTATION OF WP3 AND WP4

2.1 - Phase 1. Inception activities: Partner's base training, thematic scoping, and stakeholder analysis

2.1.1 - Objective

The main goals for Phase 1 have been:

- Introduction and base training of Partners on the MED4EBM EB-ICZM methods and tools;
- Definition of the spatial and thematic scopes of the four EB-ICZM application cases to be implemented by MED4EBM, as well as related actors and stakeholders.

2.1.2 - Tasks executed

Overview

The execution of WP3 and WP4 has been -and is being- affected by significant operational constraints related to the need to recover the 8-months delay in the starting of MED4EBM implementation activities and to adapt to the new operational framework determined by the Covid-19 pandemic.

In relation to the recovery of the initial delay, Partners have been forced to work simultaneously on both their administrative/operational mobilisation, for executing which three months had been allocated in the MED4EBM Application Form, as well as on designing and executing WP3 and WP4 technical tasks. Also, operational schedule has been squeezed in the attempt to recover the said delay.

With respect to the Covid-19 pandemic, in-presence meetings and workshops have been replaced with remotely coordinated work and Webinars (using Microsoft Teams platform). This has multiplied the level of effort needed to execute the various tasks, because of the need to: split workshops in series of shorter working/training sessions involving smaller groups of participants; avoid too long sessions for coping with the shorter attention span typical of remote working sessions and webinars; prepare differently and simulate working/training sessions in advance to enhance their effectiveness.

All tasks of Phase 1 have been successfully executed and related goals effectively achieved. All Partners have learned enough on MED4EBM methods and tools to move forward in the implementation of WP3 and WP4, and avail spatial/thematic scoping and an actors/stakeholders map to adequately plan for the execution of next Phases. Local Units for handling EB-ICZM application cases in the four MED4EBM target areas have been established by the Partners, and the EB-ICZM Technical Team is expected to be completed soon.

Report drafting on methods, tasks, and outcomes of Phase 1 has been performed in the second half of November 2020.

Task 1 - Technical & methodological framework for WP3 & WP4.

The first Task in the execution of Phase 1 has been the drafting of a comprehensive document to illustrate technical and methodological references and a work-plan for the execution of WP3 and WP4. This document (Deliverable 3.1.1) has been prepared by PROGES (June 15th to August 4th, 2020) and has then been shared with and illustrated to all partners during the second MED4EBM steering committee (July 16th and August 5th, 2020).

Task 2 - Base training on EB-ICZM-DSS.

All partners have been trained by PROGES on the principles, objectives, and methodologies of Ecosystem Based Management in coastal and marine areas as well as on the methods and tools applied by MED4EBM to promote EB-ICZM in the Mediterranean by establishing the EB-ICZM-DSSs and developing the EB-ICZM-GPs mentioned in Section 1.1 and 1.2.

An applied on-the-job training exercise has been conducted (August 28th to November 6th, 2020) through a series of webinars sessions and homework exercises by trainers which has covered all the five phases for implementing WP3 and WP4 illustrated in Section 1.3. More specially, the trainees have executed applied training exercises to implement all EB-ICZM-DSS analytical methods (Deliverable 3.1.1, Section 2.2.2) using the EB-ICZM-DSS software tools (Deliverable 3.1.1, Section 2.2.3) focusing their own areas and using their own datasets. The training has been attended by 30 professionals from the four partners, as well as by 5 representatives of local stakeholders and other 2 staff of ENI CBC MED synergic projects. Attendance sheets and screenshots from this training are available in Deliverable 3.1.7.

Task 3 - Thematic Scoping and Key-Stakeholders Mapping

Task 3 has been executed in parallel with Task 2, between September 8th and 30th 2020, and has focused the drafting of a *Thematic Scoping and Key-Stakeholders Mapping Report* for each of the four MED4EBM target areas (Deliverables 3.1.5, 3.1.6, 3.1.7 and 3.1.8). Toward better informing the development of these *Reports*, two ICZM profiles have also been prepared for Keniss Islands (Deliverable 3.1.5: *Kneiss Islands: Environmental characteristics and perspectives to Integrated Coastal Zone Management program*) and Aqaba (Deliverable 3.1.4: *Full information on Aqaba Coastal Zone*) by INSTM and JREDS respectively.

Task 4 - PROGES-ISP applications & training

During Task 4 (October 22nd to November 12th, 2020) Partners have been trained for using the PROGES-ISP software; applied-training exercises have led to the establishment of basic EB-ICZM-DSSs by AdT, INSTM, JREDS, and TCNR (Deliverables 3.2.1, 3.2.2, 3.2.3 and 3.2.4).

2.1.3 - Deliverables produced

Deliverables are numbered with reference to the MED4EBM expected Output they pertain to; for example, Deliverables 3.1.1 and 3.1.2 are respectively the first and the second deliverable which contribute to assembling of Output 3.1.

Deliverable 3.1.1

A detailed document illustrating technical and methodological references and providing an overall work-plan for the execution of WP3 and WP4.

Deliverable 3.1.2

A progress and technical report to define a consistent framework for integrating key goals, tasks executed, outputs achieved, and deliverables produced in the first Phase of WP3 and WP4 execution.

Deliverable 3.1.3 and 3.1.4

Two ICZM profiles toward better informing analytical activities of Phase 1 for Keniss Islands (3.1.3: *Kneiss Islands: Environmental characteristics and perspectives to Integrated Coastal Zone Management program*) and Aqaba (3.1.4: *Full information on Aqaba Coastal Zone*) prepared by INSTM and JREDS respectively.

Deliverables 3.1.5, 3.1.6, 3.1.7 and 3.1.8

Four *Thematic Scoping and Key-Stakeholders Mapping Reports*, one for each of the MED4EBM target areas. These have been prepared in the execution of Task 3 by AdT, INSTM, JREDS, and TCNR using a specific format prepared and technical instructions provided by PROGES. They consist of synoptic text tables which, for each of the MED4EBM target areas, defines the following essential elements to plan and implement EB-ICZM applications:

- main components of key coastal and marine biophysical systems,
- plant Species of interest,
- animal Species of interest,
- coastal infrastructures,
- economic activities,
- available data.

Key management issues and relevant actors and stakeholders are also associated to each of the above listed elements in the same text tables.

Deliverable 3.1.9

Attendance sheets and screenshots from training webinars are available in Deliverable 3.1.9.

Deliverables 3.2.1, 3.2.2, 3.2.3 and 3.2.4

Four software applications established by AdT, INSTM, JREDS, and TCNR using the PROGES-ISP software shell, which constitute the embryonic stage of the four EB-ICZM-DSSs which represent MED4EBM Output 3.2. These applications will be progressively developed/enhanced all-through the implementation of WP3 and WP4 by integrating into it all the produced deliverables as they will be ready (e.g. EB-ICZM reference models; indicators and related datasets; EB-ICZM management measures). At this initial stage, the said applications integrate the above-mentioned *Thematic Scoping and Key-Stakeholders Mapping Reports* and some contextualised sample of the *System Boxes-and-Arrows diagrams* constituting the backbone of the EB-ICZM reference models (as described in Deliverable 3.1.1, Section 2.2.2).

2.2 - Phases 2 and 3. *Ecosystem Context Analysis*: recognizing connections within and across ecological and human systems spanning over the focused area and development of EB-ICZM management indicators.

2.2.1 - Objective

For each of the four MED4EBM target areas, the *Ecosystem Context Analysis* has executed which focused the establishment of a Multi-stakeholders Working Group and the development of a structural model of the ecosystem components and services, the associated human activities, as well as the interactions between

them. The said model recognizes the key connections within and across the ecological and the human systems spanning over the focused area to provide a manageable framework for understanding how ecosystems, biodiversity, and human activities inter-operate in EB-ICZM applications. The model is based on deterministic rather than statistical or algorithmic ecological assessments and leads to the identification of the ecosystem components, functions, and services, along with associated human activities. These elements are represented in the model through boxes and arrows organised in a consistent diagram describing the natural and human systems which underlie EB-ICZM scenarios by identifying their structural components (the) and their interactions (the arrows). These systems are essentially constituted by the biotic and abiotic components of the natural ecosystem, the services that ecosystems provide to sustain life, and the uses that human society makes of these services. The EB-ICZM structural model is then completed by developing sets of indexes and indicators for the quantitative assessment and integrated management of relevant EB-ICZM social, economic, and ecological dynamics.

2.2.2 - Tasks executed

Overview

Same as for the Phase 1, the execution of Phase 2 of WP3 and WP4 has been affected by operational constraints for recovering the 8-months MED4EBM initial starting delay and for adapting to the Covid-19 pandemic restrictions.

Due to the restrictions for travel and in-presence meeting determined by the Covid-19 pandemic, six out of the eight multi-stakeholders workshops for executing the *Ecosystem Context Analysis* have been planned and executed through series of webinars and remote working meetings, using Microsoft Teams and Zoom platforms. Each of the webinars/meetings lasted max four hours. The two workshops for the Kneiss Islands could instead be organised in-presence by the MED4EBM Tunisian Partner (INSTM), with the EBM technical Team participating through video-conferencing tools.

The scheduling of these workshops, webinars and meetings has been quite tight and crowded to continue recovering the project initial starting delay. Between February 23rd and May 27th, 2021, 6 in-presence workshop sessions and 24 webinar/meetings have been organised and executed by the EBM technical Team, while each of the EB-ICZM Local Units and Multi-stakeholders Working Groups has attended, on average, one out of four the said webinar/meetings. This crowded schedule of activities has put a considerable workload pressure on the EBM Technical Team, allowing them little time for planning and post-production of workshop outcomes between the various webinars and meetings. This circumstance, combined with the time already recovered from the initial starting delay, suggest planning the following working phases with somehow less focus on the recovery of the said delay.

All Tasks of Phases 2 and 3 have been successfully executed and related goals effectively achieved, though from the data gathering of Task 5 it was expected to gather more ready-for-use datasets (e.g. shapefiles, Ms Excel datasets; structured databases). The *Ecosystem Context Analysis* have been completed for all the four MED4EBM target areas. To this end, four Multi-stakeholders Working Groups have been established by the AdT, INSTM, JREDS, and TCNR EB-ICZM Local Units involving altogether 164 stakeholders representing 98 civil society groups, scientific organizations, and administrative institutions. These Groups have demonstrated a satisfactory level of commitment and working capacity, delivering high-quality structural models for the four MED4EBM EB-ICZM applications.

Communication material have been developed and related spreading activities executed by all partners alongside the execution of Phases 2 and 3.

Report drafting on methods, tasks, and outcomes of Phases 2 and 3 has been performed partly aside the execution of the various activities, and partly as the activities deployment evolved in the third week of June 2021.

Task 5 - Gathering of available primary data.

To enhance the process for recovering the MED4EBM initial starting delay, some activities pertaining to Phase 4 for the gathering of data for the EB-ICZM-DSSs established in the four MED4EBM target areas have been anticipated and integrated in the deployment of Phases 2 and 3. Data harvesting forms have been specifically developed by the EBM Expert (E. Scepi, AdT) to guide and support this process. These Forms have been sent to and discussed with the Partners' EB-ICZM Local Units in December 2020. The EBM Technical Team has then actively engaged the said Partners' EB-ICZM Local Units to support them in moving forward with their data gathering activities. This process has resulted in the construction of a repository of potential sources of secondary data for each of the four MED4EBM target areas. This repositories contain material of a wide array of typologies, mainly maps (shapefile and jpeg format), scientific publications and technical reports (pdf format), and basic datasets (Ms Excel).

Task 6 - Entering gathered primary data into PROGES-ISP applications.

Except for some basic datasets in Ms Excel format, all the secondary data sources gathered till now are in pdf or other text-document formats; some of the said basic datasets in Excel could be inserted in the related PROGES-ISP applications. Other potential sources are currently being scrutinised to verify their usefulness in the framework of Phase 4.

Task 7 - Presentation and illustration of PROGES-ISP applications to relevant stakeholders.

The four MED4EBM EB-ICZM-DSSs established by AdT, INSTM, JREDS, and TCNR using the PROGES-ISP software have been illustrated to the local Multi-stakeholders Working Groups during the execution of the three workshops for the *Ecosystem Context Analysis*. More effective illustration and on-the-job training on these EB-ICZM-DSSs will be performed as soon as Covid-19 travel restrictions and limits for in-presence working meetings will be lifted.

Task 8 - First Workshop: participatory development of Thematic Scoping Reports (*System Matrices*) with key stakeholders.

Planning and organisation of the first set of workshops for executing the *Ecosystem Context Analysis* in the four MED4EBM target areas has been carried out in January 2021. Programs and agendas for the workshop have been prepared and the multi-stakeholders working groups for each of the said areas have been prepared jointly by the EBM Technical Team and the Partners' EB-ICZM Local Units. These workshops have then been executed between February 23rd and March 23rd, 2021. The full set of reports for these workshops is available as Deliverable 3.1.13.

Task 9 - Second Workshop: participatory development of *System box-and-arrows Diagrams* with key stakeholders.

The Thematic Scoping Reports for the four MED4EBM target areas (Deliverables 3.1.5 to 3.1.8) resulting from the first set of workshops (Task 8) have been analysed, reviewed, and finalised; these reports have then served as the basis for designing and organising the second set of workshops focusing the preparation of the *System box-and-arrows Diagrams* for the MED4EBM target areas (Deliverables 3.1.9 to 3.1.12).

For each of the MED4EBM target areas, planning and organisation for the second workshop has been executed by the EBM Technical team jointly with the concerned Partners soon after the completion of the first workshop. All these workshops have been executed between March 16th and April 22nd, 2021. As for TCNR, considering that Lebanon is crossing a political and economic crisis, it was not easy to find formula being both effective and respectful of Lebanese stakeholders' difficulties and stress. The EBM experts met the TCNR partner the 12th of March to reorganise the meetings and were able to discuss with some of the local stakeholders the 19th of March and to confirm the final plenary the 23rd of March. The Italian partners asked to have more time between the two meetings of the second workshop, so it was decided to perform the first of these meetings in March and the second after Easter (April 22nd). At the end of March, the EBM expert drafted the agenda for the third workshop of Tunisia, that was carried out at the beginning of April.

Task 10 - Preparation of communication and technical material/reports, including for scientific events.

All throughout the execution of Phase 2, communication material has been developed and disseminated by Partners to spread approaches, concepts and outcomes of the Ecosystem Context Analysis executed by MED4EBM in its four target areas. These include a set of visual reports to provide a concise and visually impacting snapshot of the execution and the achievements in performing the *Ecosystem Context Analysis* in the four MED4EBM target areas. This material, together with more details on these and other communication activities outcomes is available in the reporting for WP2.

Task 11 - Drafting guidelines for developing sets of indexes and indicators (specific to items of the System box-and-arrows Diagram).

Aiming to assemble the first lists of indicators to be proposed, analysed/discussed and entered in the ISP software during the third stakeholders' workshop (Task 14), research and analyses on relevant references have been executed by the EBM Expert (F. Pella, UNDP). This activity was carried out for each of the four MED4EBM target areas. The Partners' EB-ICZM Local Units have then been asked to send material (websites, articles, reports, etc.) of indicators applied and used in the country and/or in their target area to the EBM Technical Team. The findings of the EBM Technical Team analysis of this material have then been conveyed to the said Local Units to guide their work with the local Multi-stakeholders Working Groups in preparing sound technical basis for executing the indicators development workshop (research and selection of the list of indicators in literature and references in their possess, memories and experiences, to identify the most effective indicators).

An internal working document was drafted by the EBM Expert (F. Pella, UNDP) to provide a handy introduction and few structured examples to the Partners' EB-ICZM Local Units and the local Multi-stakeholders Working Groups, to enhance the effectiveness in the execution of workshops meetings.

Task 12 - Drafting of initial sets of indexes and indicators (proposals by Partners to relevant stakeholders).

Building upon the outcome of Task 11, Partners' EB-ICZM Local Units has progressively circulated references and proposal for indicators tailor made to each of the MED4EBM the target areas.

Task 13 - Review of the initial sets of indexes and indicators (Task 12) with relevant stakeholders (by-sector revisions and proposals for possible integrations).

The material sent by Partners' EB-ICZM Local Units as per Task 12 was scrutinised by the EBM Technical Team to prioritise relevant indicators, focusing more on those already used in the various MED4EBM target areas and/or countries. This work has been targeted at: i) preparation of an archive of references for each country and ii) selection of a list of the indicators to be presented and discussed during the workshop's meetings, as well as in *ad hoc* meetings with thematic sub-groups of stakeholders.

Task 14 - Third workshop: development of the sets of indexes and indicators with key stakeholders.

Building upon outcomes of Tasks 11 to 13, four workshops have been for developing lists of indexes and indicators for the quantitative assessment of EB-ICZM social, economic, and ecological dynamics. These workshops have been executed between April 6th and May 27th, 2021 under the guidance of the EBM Technical Team and involving Partners' EB-ICZM Local Units and the local Multi-stakeholders Working Groups.

Task 15 - Preparation of communication and technical material/reports, including for scientific events.

Communication material have been developed and related spreading activities executed by all partners alongside the execution of Phases 2 and 3.

2.2.3 - Deliverables produced

Deliverables are numbered with reference to the MED4EBM expected Output they pertain to; for example, Deliverables 3.1.1 and 3.1.2 are respectively the first and the second deliverable which contribute to assembling of Output 3.1.

Deliverables 3.1.5, 3.1.6, 3.1.7 and 3.1.8 (final revisions)

Preliminary versions of Deliverables 3.1.5, 3.1.6, 3.1.7 and 3.1.8 had been developed by PP2, PP3, PP4 and PP5 during the training executed during Phase 1 (Tasks 2 and 3) by PP1 on principles, objectives, and methodologies of MED4EBM EB-ICZM tools. These Deliverables have been rebuilt and further developed by the Multi-stakeholders Working Groups during the first set of workshops to perform the *Ecosystem Context Analysis* in the four MED4EBM target areas (Task 8). They consist of synoptic text tables which defines the essential elements to plan and implement the four MED4EBM EB-ICZM applications.

Deliverables 3.1.10, 3.1.11, 3.1.12 and 3.1.13

Four *System box-and-arrows Diagrams*, one for each of the MED4EBM target areas. These have been developed for each of the MED4EBM target areas by the Multi-stakeholders Working Groups during the second set of workshops to perform the *Ecosystem Context Analysis* (Task 9).

As illustrated in detail in Deliverable 3.1.1, these *Diagrams* describe the dynamics (arrows) between the biotic and abiotic components (boxes) of the natural ecosystem, the services that ecosystems provide to sustain life (boxes), and the uses that human society makes of these services (boxes). They serve as snapshot and a practical tool to handle, through the EB-ICZM-DSSs software application (Deliverables 3.2.1 to 3.2.4), the common understanding and management view that the Multi-stakeholders Working Groups have reached of how environmental, social, and economic considerations fit together in the four MED4EBM EB-ICZM applications. Through these *Diagrams*, relevant stakeholders and actors avail a common outlook and a coherent vocabulary to improve the communication among scientific communities, management agencies and the public involved in the said EB-ICZM applications.

Deliverable 3.1.14

The full set of reports for all the workshops executed to perform the *Ecosystem Context Analysis* are available as Deliverable 3.1.14. These reports and their annexes include: workshops introductions, agendas, sessions

attendance sheets, and screenshots; outcomes of the workshop are Deliverables 3.1.5 to 3.1.8 and 3.1.10 to 3.1.13, which are also integrated in the four software applications of Deliverables 3.2.1 to 3.2.4.

Deliverables 3.1.15, 3.1.16, 3.1.17 and 3.1.18

The list of indicators resulting from the execution of Tasks 11 to 14 are available Deliverables 3.1.15, 3.1.16, 3.1.17 and 3.1.18. These indicators are functional to the quantitative assessment of the EB-ICZM social, economic, and ecological dynamics identified by the Partners' EB-ICZM Local Units and the local Multi-stakeholders Working Groups in the execution of Phase 2. Since the actual effectiveness of these kind of indicators is highly influenced by the data available to quantify and monitor them over the time, these lists of indicators will be progressively reviewed and possibly amended/integrated according to possibly arising needs as the data gathering process of Phase 4 evolves.

Deliverables 3.2.1, 3.2.2, 3.2.3 and 3.2.4

Four software applications established by AdT, INSTM, JREDS, and TCNR using the PROGES-ISP software shell, which constitute a significant advance from those at the embryonic stage resulting from Phase 1 (Task 4) as they now include the *System box-and-arrows Diagrams* (Deliverables 3.1.10 to 3.1.13) and the lists of management indicators as well (Deliverables 3.1.15 to 3.1.18).

3 - ACHIEVEMENTS FOR MED4EBM OUTPUTS OF WP3 AND WP4

The deliverables produced throughout the execution of Phase 1 contribute to the achievement of MED4EBM Outputs as illustrated in table 2.1 here below.

Table 2.1 - Synopsis of how produced deliverables build-up MED4EBM Outputs	
MED4EBM Outputs	Component Deliverables
Output 3.1 - Structural models of the ecological and socio-economic dynamics of the four Project's target areas. <i>Output achieved in full (Phases 2 and 3).</i>	Deliverable 3.1.2 defines a consistent framework for integrating key goals, tasks executed, outputs achieved, and deliverables produced in the first Phase of WP3 and WP4 execution. By linking to Deliverable 3.1.1, this report also illustrates detail the technical and methodological references for all Outputs of WP3 and WP4.
	Deliverables 3.1.5 to 3.1.8 are the <i>System Matrices</i> which constitute the first element of the structural models resulting from the <i>Ecosystem Context Analysis</i> , defined as Output 3.1 in the MED4EBM Application Form. Deliverables 3.1.3 and 3.1.4 also provide additional background information for deliverables 3.1.6 and 3.1.7.
	Deliverables 3.1.10 to 3.1.13 are the second element which builds-up of the structural models defined as Output 3.1 in the MED4EBM Application Form.
	Deliverables 3.1.15 to 3.1.18 are the third and final component of the structural models defined as Output 3.1 in the MED4EBM Application Form.
Output 3.2 - Ecosystem-based ICZM Decision Support Systems are established in the Project's target areas. <i>Output to be achieved in full during Phase 4.</i>	The four PROGES-ISP software applications referred to as deliverables 3.2.1, 3.2.2, 3.2.3 and 3.2.4 constitute the advanced-stage of development of the four EB-ICZM-DSSs of Output 3.2. Output 3.2 will be achieved in full when these software applications will be populated with the data resulting from Phase 4, as well as from specific activities and tasks of WP5 (on-the-job training and capacity building for the EB-ICZM Local Units and Multi-stakeholders Working Groups)

4 - STATE OF PLAY AND WAY FORWARD

Thanks to the Tasks executed and the Deliverables produced as illustrated in sections 2.1 and 2.3, MED4EBM has recovered most of the initial starting delay. All Partners have been actively contributing to the execution of all Tasks, ensuring also adequate effectiveness to the related achievements.

As the execution of Phases 2 and 3 was evolving, the EBM Technical Team and the Partners' EB-ICZM Local Units have also joined up efforts to progressively develop a common Task-Plan for the effective deployment of the next phases for the deployment of WP3 and WP4. This said Task-Plan is outlined here below.

Phase 1 - Inception activities: Partner's base training, thematic scoping, and stakeholder analysis

1. Drafting of technical and methodological references and operational framework for the execution of WP3 and WP4.
2. Base training on EB-ICZM-DSS (drafting of scoping report).
3. Drafting of the Thematic Scoping and Key-Stakeholders Mapping Report.
4. Establishment of ISP applications and training on the PROGES-ISP software.

Phase 2 - Ecosystem Context Analysis: recognizing connections within and across ecological and human systems spanning over the focused area

5. Gathering of available primary data.
6. Entering gathered primary data into ISP application.
7. Presentation and illustration of ISP application to relevant stakeholders.
8. First Workshop: participatory development of System Matrices with key stakeholders.
9. Second Workshop: participatory development of System box-and-arrows Diagram with key stakeholders.
10. Preparation of communication and technical material/reports, including for scientific events.

Phase 3 - Ecosystem Context Analysis: development of indexes and indicators for the quantitative assessment of EB-ICZM social, economic, and ecological dynamics

11. Drafting guidelines for developing sets of indexes and indicators (specific to items of the System box-and-arrows Diagram).
12. Drafting of initial sets of indexes and indicators (proposals by Partners to relevant stakeholders).
13. Review of the initial sets of indexes and indicators (Task 12) with relevant stakeholders (by-sector revisions and proposals for possible integrations).
14. Third workshop: development of the sets of indexes and indicators with key stakeholders.
15. Preparation of communication and technical material/reports, including for scientific events.

Phase 4 - Data gathering and construction of tabular and GIS databases

16. Scrutiny of potential secondary data-sources in the four MED4EBM target areas included in the repositories constructed in Task 5.
17. Development of logical frameworks and tools to support and guide data gathering (tailor-made to the specificity of each MED4EBM target areas).
18. Data gathering/collection/generation.
19. Review of raw datasets resulting from Task 18.
20. Construction of tabular and GIS databases and linking them to the PROGES-ISP EB-ICZM-DSS applications.
21. Preparation of communication and technical material/reports, including for scientific events.

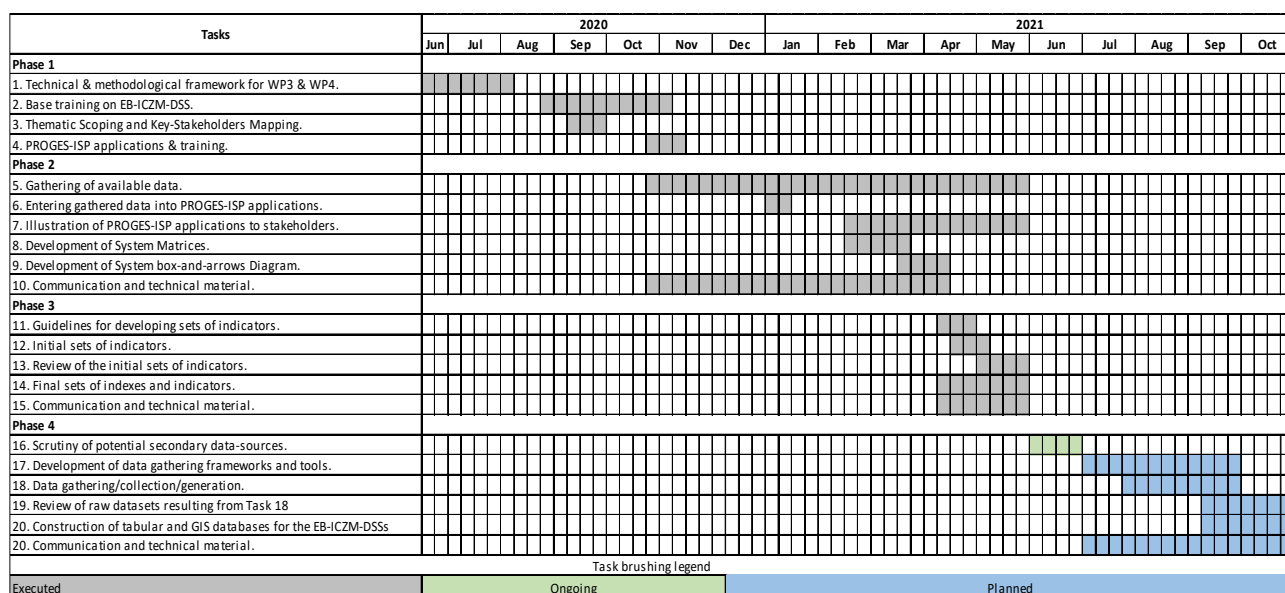


Fig. 4.1 - Deployment schedule for Phases 1, 2, 3 and 4

5 - MAP TO MED4EBM WEBSITE LIBRARY

The various releases of this report, as well as all the related Reference Documents and Deliverables, will be uploaded by the MED4EBM Lead Applicant in the Library section of MED4EBM website (www.enicbmed.eu/projects/med4ebm). The map to identify these uploads is provided in the following table.

Item	Library section	Download-link in the library section
Deliverable 3.1.1.	Outputs.	3.1.1 Technical and methodological references and operational framework for the execution of WP3 and WP4.
Deliverable 3.1.2.	Outputs.	3.1.2 Work Packages 3 and 4. Technical Report on activities executed and deliverables produced. Phase 1 (this report).
Deliverable 3.1.3.	Outputs.	3.1.3 Full information on Aqaba Coastal Zone.
Deliverable 3.1.4.	Outputs.	3.1.4 Kneiss Islands: Environmental characteristics and perspectives to Integrated Coastal Zone Management program.
Deliverable 3.1.5.	Outputs.	3.1.5 EB-ICZM-DSS for Golfo di Corigliano. Thematic Scoping and Key-Stakeholders Mapping Reports.
Deliverable 3.1.6.	Outputs.	3.1.6 EB-ICZM-DSS for the Gulf of Aqaba. Thematic Scoping and Key-Stakeholders Mapping Reports.
Deliverable 3.1.7.	Outputs.	3.1.7 EB-ICZM-DSS for Kneiss Islands. Thematic Scoping and Key-Stakeholders Mapping Reports.
Deliverable 3.1.8.	Outputs.	3.1.8 EB-ICZM-DSS for Tyre Coast Nature Reserve. Thematic Scoping and Key-Stakeholders Mapping Reports.
Deliverable 3.1.9.	Documents.	3.1.9 On-line Training: Technical and methodological references and operational framework for the execution of WP3 and WP4. Attendance sheets and screenshots.
Deliverable 3.1.10	Outputs.	3.1.10 EB-ICZM-DSS for Golfo di Corigliano. System boxes-and-arrows diagram.
Deliverable 3.1.11	Outputs.	3.1.11 EB-ICZM-DSS for Gulf of Aqaba. System boxes-and-arrows diagram.

Deliverable 3.1.12	Outputs.	3.1.12 EB-ICZM-DSS for Kneiss Islands. System boxes-and-arrows diagram.
Deliverable 3.1.13	Outputs.	3.1.13 EB-ICZM-DSS for Tyre Coast Nature Reserve. System boxes-and-arrows diagram.
Deliverable 3.1.14	Documents.	3.1.14. MED4EBM <i>Ecosystem Context Analysis</i> . Reports on workshops executed.
Deliverable 3.1.15	Outputs.	3.1.15 EB-ICZM-DSS for Golfo di Corigliano. List of indicators.
Deliverable 3.1.16	Outputs.	3.1.16 EB-ICZM-DSS for Gulf of Aqaba. List of indicators.
Deliverable 3.1.17	Outputs.	3.1.17 EB-ICZM-DSS for Kneiss Islands. List of indicators.
Deliverable 3.1.18	Outputs.	3.1.18 EB-ICZM-DSS for Tyre Coast Nature Reserve. List of indicators.
Deliverables 3.2.1, 3.2.2, 3.2.3 and 3.2.4.	Outputs.	3.2.1, 3.2.2, 3.2.3, 3.2.4. Technical illustration of EB-ICZM-DSS applications. Phases 1-2-3.