

FOSTERING PARTNERSHIPS ACROSS THE ADRIATIC SEA

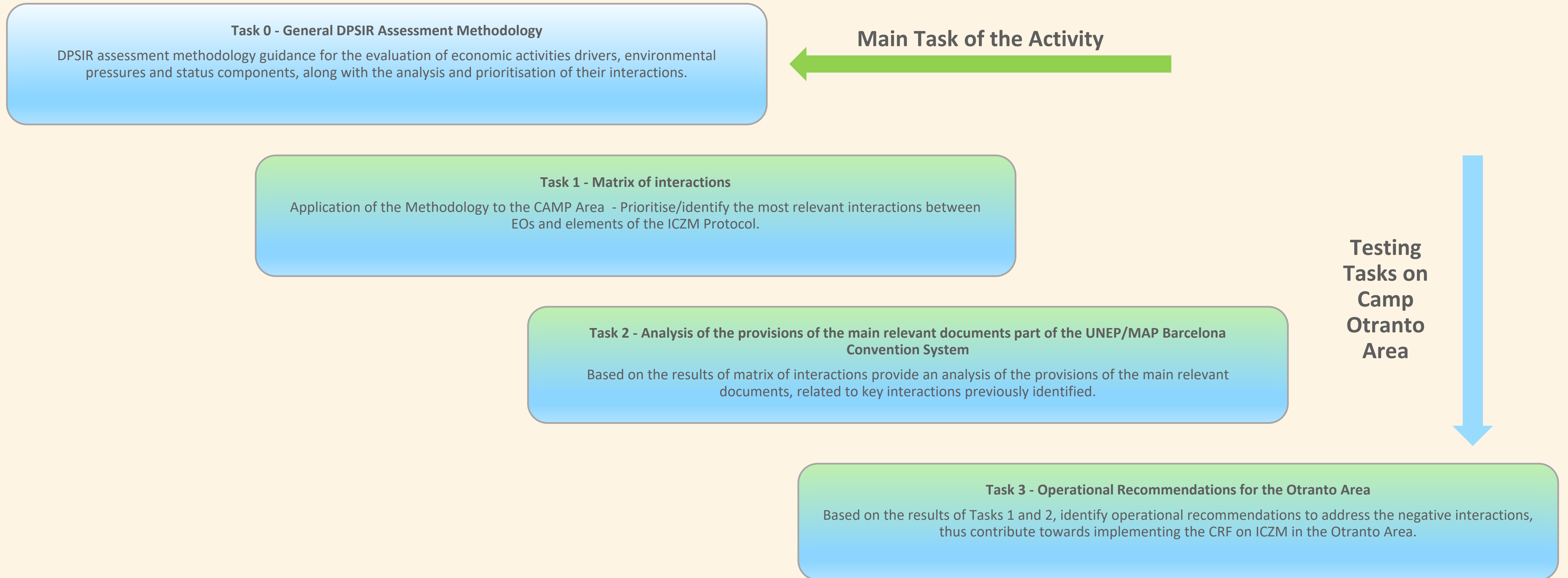
For coastal sustainability in Albania and Italy

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Methodological guidance and process to support the implementation of the ICZM Protocol

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Our Activity and its Tasks



Task 0 and Task 1 – Status of implementation

| Timeline of the Activity | New Timeline |
|--|-----------------|
| Task 0 - General DPSIR Assessment Methodology | |
| Draft methodology | 01/02/2023 |
| Tavolo/Tryeza | 15/02/2023 |
| Finalization of the consolidated version | 30/04/2023 |
| Task 1 - Matrix of interactions CAMP Area application of the Methodology | |
| Draft | 05/06/2023 |
| National consultations | 20 - 30/06/23 |
| Task 2 - Analysis of the provisions of the main relevant documents part of the UNEP/MAP Barcelona Convention System | |
| Draft | 30/07/2023 |
| Consultations | 01 - 10/09/2023 |
| Task 3 - Operational Recommendations for the Otranto Area | |
| Draft | 15/10/2023 |
| First comments from SC | 31/10/2023 |
| Additional Consultations | 15/11/2023 |
| Final | 30/11/2023 |

Initial structure of the Activity: Task 1 - milestones

***First development** of operative DPSIR approach (CRF guidance based) and testing on CAMP Area (Aug. – Dec. 2022)*

- Elaboration of the assessment methodology ✓
- Development of the assessment tool ✓
- Elaboration of the assessment questionnaire ✓
- Data collection for Italy and Albania ✓
- Data analysis ✓
- Application and testing of the methodology ✓
- Elaboration of the final report for Task 1 ✓

***Integration of the Activity outputs** – introduction of Task 0 and second run of Task 1 (June 2023)*

- Deepening of the operative DPSIR approach and development of a general standalone DPSIR analysis methodology ✓
- On the basis of the assessment tool, development of the EIAT «Environmental Interaction assessment tool» ✓
- Data update for Italy and Albania
- Data analysis
- Application and testing of the methodology
- Elaboration of the final report for Task 1

Main goals and outputs

First goal:

First development of operative DPSIR approach (CRF guidance based) and testing on CAMP Area (Aug. – Dec. 2022)

- Elaboration of the assessment methodology ✓
- Development of the assessment tool ✓
- Elaboration of the assessment questionnaire ✓
- Data collection for Italy and Albania ✓
- Data analysis ✓
- Application and testing of the methodology ✓
- Elaboration of the final report for Task 1 ✓

Task 0 - First output:

- Development of the general standalone DPSIR analysis methodology, applicable on any area including the EIAT «Environmental Interaction assessment tool» ✓

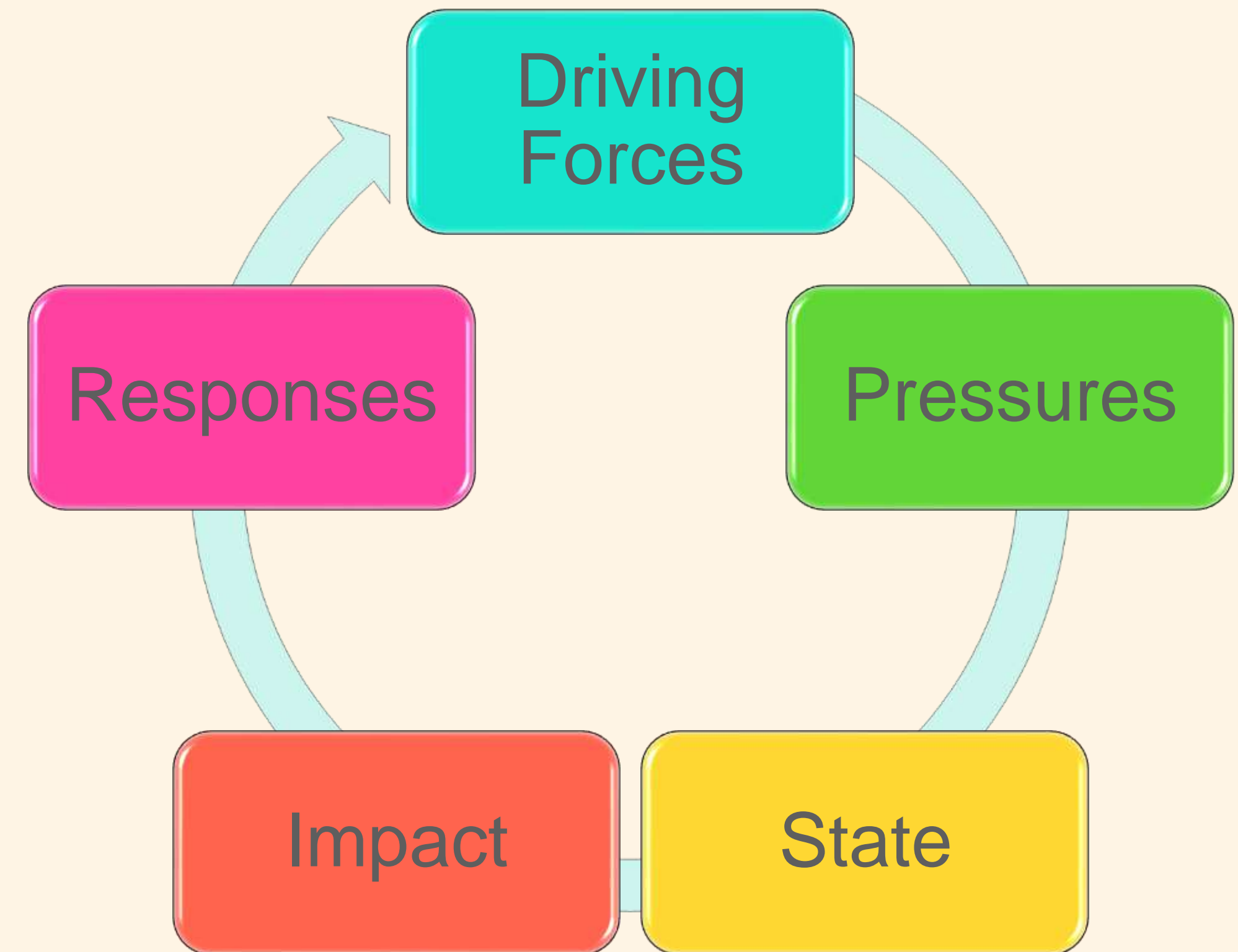
General DPSIR Methodology Analysis

The methodology was developed in the ambit of the Integrated Coastal Zone Management (ICZM), on the basis of the principle described on the Common Regional Framework (CRF) methodology guidance for Integrated Coastal Zone Management.

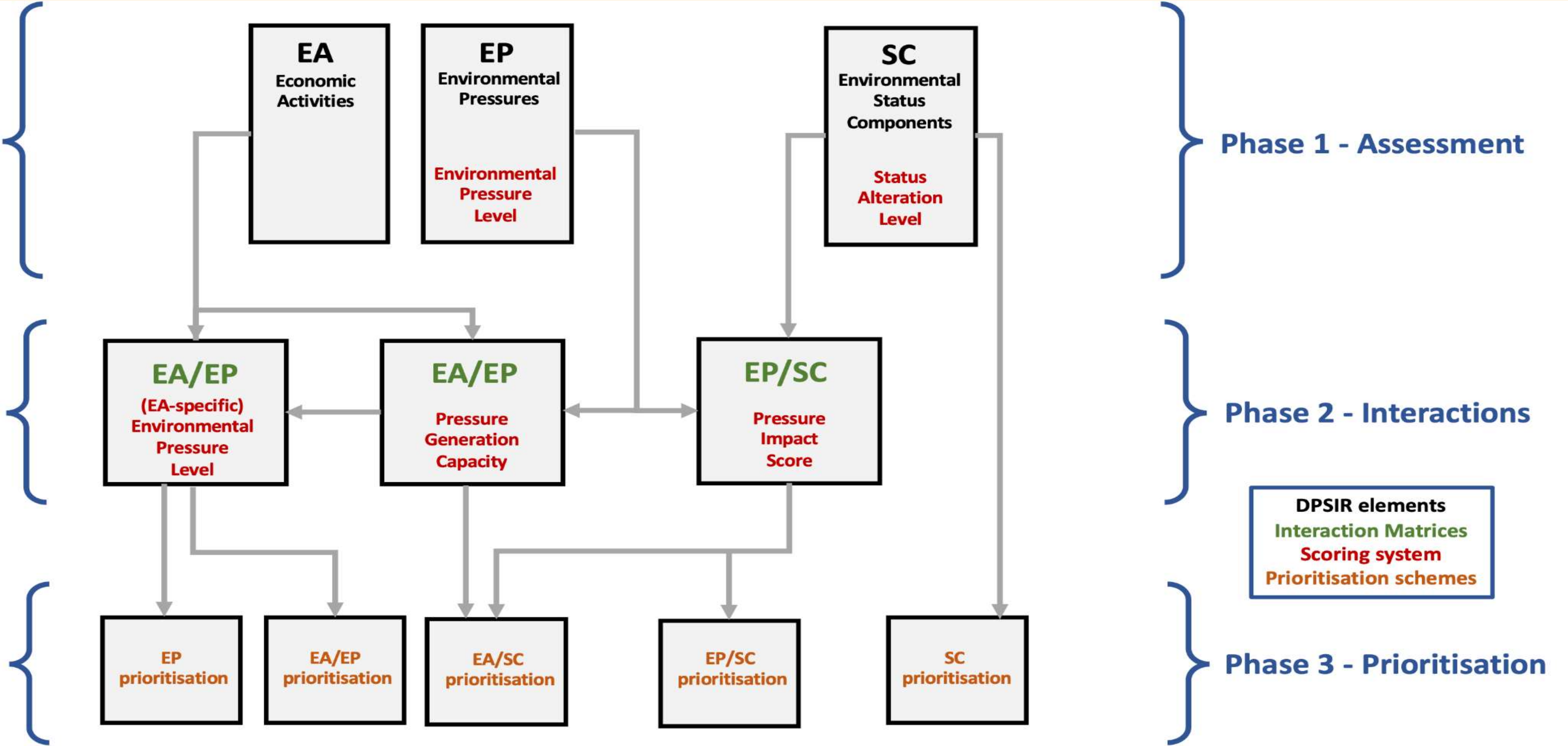
The causal framework underlying the proposed Methodological Approach is represented by the DPSIR chain **Driving Forces, Pressures, State, Impact, Responses**

The Methodology is intended as a **supporting tool aiding the formulation of expert judgement**. It is based on:

- *a flexible and modular DPSIR toolset for the evaluation and synthesis of environmental information,*
- *ability to support the identification of possible main causal links and interactions among Economic Drivers, Environmental Pressures and Status elements, even in the case of fragmented and non-homogeneous information and available data, providing a solid base onto which operational responses can be derived and contextualised.*
- *ability to be applied to different target areas with variable degree of synthesis and growing level of geographical detail and/or magnification.*



General DPSIR Methodology Architecture



General DPSIR Methodology - Analysis Workflow Overview

Phase 1 - Assessment. In the assessment phase, the Expert(s) will proceed with the collection and analysis of all available information and data functional for the identification and analysis of the main Economic Activities (EAs) drivers, Environmental Pressures (EPs) and altered Status Components (SCs). These elements are framed using a quali-quantitative scoring system in the corresponding tables listed below:

- **Economic Activities Table (EA Table)**, which provides an overview of the EAs present in the area.
- **Environmental Pressure Table (EP Table)**, providing an overview of the environmental Pressures affecting the area.
- **Status Components Table (SC Table)**, describing the level of alteration of the Environmental Status Components (SC) with respect to good environmental status (GES) for the area under assessment.

Phase 2 - Interactions. In the interaction analysis phase, the Expert(s) will deal with the study and evaluation of potential interactions and causal links existing between the elements identified in Phase 1. The Interactions are examined in the following analysis steps.

- **Economic Activities/Environmental Pressures Analysis (EA/EP Analysis)**, to evaluate the correlation existing between the Environmental Pressures present in the area and the underlying Economic Activities which generate them.
- **Environmental Pressures/Status Components Analysis (EP/SC Analysis)**, examining the impact of the Environmental Pressures in terms of their correlation with the detected altered Status Components.

Phase 3 - Prioritisation. During the Prioritisation Phase, the Experts(s) will deal with the synthesis and prioritisation of the interactions analysed in the previous steps. By tracing back the EA→EP→SC flow of interactions, effects of EAs - and their combination in terms of pressures and their impact on the Status components - can be synthesised, classified and prioritised in terms of their environmental relevance. This will allow to provide context to Operational Recommendation and Responses. Within Phase 3, the Expert(s) will also perform an analysis of any transboundary effects of EPs which might be present.

General DPSIR Methodology Analysis

Phase 1 - Assessment.

Phase 1 - Assessment. In the assessment phase, the Expert(s) will proceed with the collection and analysis of all available information and data functional for the identification and analysis of the main Economic Activities (EAs) drivers, Environmental Pressures (EPs) and altered Status Components (SCs). These elements are framed using a quali-quantitative scoring system in the corresponding tables listed below:

- **Economic Activities Table (EA Table)**, which provides an overview of the EAs present in the area.
- **Environmental Pressure Table (EP Table)**, providing an overview of the environmental Pressures affecting the area.
- **Status Components Table (SC Table)**, describing the level of alteration of the Environmental Status Components (SC) with respect to good environmental status (GES) for the area under assessment.

General DPSIR Methodology Analysis Phase 1 – Assessment - EAs

| ECONOMIC ACTIVITES CLASSIFICATION | | | | |
|--|--|---|--|-------|
| TYPE | ECONOMIC ACTIVITIES FROM MSFD ANNEX III | CORRESPONDING CRF-ICZM CLASSIFICATION | UNIFIED CLASSIFICATION | CODE |
| Physical restructuring of rivers, coastline or seabed (water management) | Land claim | Urban sprawl Agricultural uses | Land take for urban industrial and agricultural uses | A1.1 |
| | Canalisation and other watercourse modifications | Infrastructures: ports, coastal defence and others | Infrastructure related to coastal/watercourse morphology alteration (dams, canalisation, trenching, ports) | A1.2 |
| | Coastal defence and flood protection | Infrastructures: ports, coastal defence and others | Infrastructure for coastal resilience/defence and flood protection | A1.3 |
| | Offshore structures (other than for oil/gas/renewables) | - | Offshore structures (other than for oil/gas/renewables) | A1.4 |
| | Restructuring of seabed morphology, including dredging and depositing of materials | Maritime activities: sand / mineral mining - Utilization of natural resources: mining. Infrastructures: ports, coastal defence and others. | Utilization of natural resources: dredging and depositing (coastal and maritime areas) | A1.5 |
| Extraction of non-living resources | Extraction of minerals (rock, metal ores, gravel, sand, shell) | Maritime activities: sand / mineral mining - Utilization of natural resources: mining | Utilization of natural resources: extraction/mining of sand, gravel, rocks, minerals | A2.1 |
| | Extraction of oil and gas, including infrastructure | Energy infrastructures | Utilization of natural resources: extraction of oil and gas and relative infrastructures | A2.2 |
| | Extraction of salt | Util. of natural resources: desalination plants | Utilization of natural resources: desalination plants | A2.3 |
| | Extraction of water | Util. of natural resources | Utilization of natural resources: water extraction | A2.4 |
| Production of energy | Renewable energy generation (wind, wave and tidal power), including infrastructure | Energy infrastructures | Energy infrastructures: renewables | A3.1 |
| | Non-renewable energy generation | Energy infrastructures | Energy infrastructures: non-renewables | A3.2 |
| | Transmission of electricity and communications (cables) | Maritime activities: cables and pipelines | Energy transmission (including cables and pipelines) | A3.3 |
| Extraction of living resources | Fish and shellfish harvesting (professional, recreational) | Fishing | Fish and shellfish harvesting | A4.1 |
| | Fish and shellfish processing | Fishing | Fish and shellfish processing | A4.2 |
| | Marine plant harvesting | - | Marine plant harvesting | A4.3 |
| | Hunting and collecting for other purposes | Bird hunting | Hunting, collecting and predator control (including birds) | A4.4 |
| Cultivation of living resources | Aquaculture – marine, including infrastructure | Aquaculture | Marine aquaculture | A5.1 |
| | Aquaculture – freshwater | Aquaculture | Freshwater aquaculture | A5.2 |
| | Agriculture | Agriculture | Agriculture | A5.3 |
| | Forestry | - | Forestry (silviculture) | A5.4 |
| Transport | Transport infrastructure and ports | Infrastructures: ports, coastal defence and others | Transport infrastructures (including ports) | A6.1 |
| | Transport – shipping | Maritime activities: shipping | Transport – shipping | A6.2 |
| | Transport – air | - | Transport – air | A6.3 |
| | Transport – land | - | Transport – land | A6.4 |
| Urban and industrial uses | Urban uses | - | Urban uses | A7.1 |
| | Industrial uses | Industry | Industry and industrial uses | A7.2 |
| | Waste treatment and disposal | Infrastructures: ports, coastal defence and others | Waste treatment and disposal infrastructure | A7.3 |
| Tourism and leisure | Tourism and leisure infrastructure | Tourism, sporting, recreational activities | Tourism, sporting, recreational (infrastructure) | A8.1 |
| | Tourism and leisure activities | Tourism, sporting, recreational activities | Tourism, sporting, recreational (activities) | A8.2 |
| Security/defence | Military operations (subject to Article 2(2)) | Infrastructures: ports, coastal defence and others | Military operations and infrastructures | A9.1 |
| Education and research | Research, survey and educational activities | - | Research, survey and educational activities | A10.1 |

General DPSIR Methodology Analysis Phase 1 – Assessment - EAs

| EA TABLE | | | | |
|--|--|-------|-----|-----------|
| TYPE | ECONOMIC ACTIVITY | CODE | RLP | DATA GAPS |
| Physical restructuring of rivers, coastline or seabed (water management) | Land take for urban industrial and agricultural uses | A1.1 | | |
| | Infrastructure related to coastal/watercourse morphology alteration (dams, canalisation, trenching, ports) | A1.2 | | |
| | Infrastructure for coastal resilience/defence and flood protection | A1.3 | | |
| | Offshore structures (other than for oil/gas/renewables) | A1.4 | | |
| | Utilization of natural resources: dredging and depositing (coastal and maritime areas) | A1.5 | | |
| Extraction of non-living resources | Utilization of natural resources: extraction/mining of sand, gravel, rocks, minerals | A2.1 | | |
| | Utilization of natural resources: extraction of oil and gas and relative infrastructures | A2.2 | | |
| | Utilization of natural resources: desalination plants | A2.3 | | |
| | Utilization of natural resources: water extraction | A2.4 | | |
| Production of energy | Energy infrastructures: renewables | A3.1 | | |
| | Energy infrastructures: non-renewables | A3.2 | | |
| | Energy transmission (including cables and pipelines) | A3.3 | | |
| Extraction of living resources | Fish and shellfish harvesting | A4.1 | | |
| | Fish and shellfish processing | A4.2 | | |
| | Marine plant harvesting | A4.3 | | |
| | Hunting, collecting and predator control (including birds) | A4.4 | | |
| Cultivation of living resources | Marine aquaculture | A5.1 | | |
| | Freshwater aquaculture | A5.2 | | |
| | Agriculture | A5.3 | | |
| | Forestry (silviculture) | A5.4 | | |
| Transport | Transport infrastructures (including ports) | A6.1 | | |
| | Transport – shipping | A6.2 | | |
| | Transport – air | A6.3 | | |
| | Transport – land | A6.4 | | |
| Urban and industrial uses | Urban uses | A7.1 | | |
| | Industry and industrial uses | A7.2 | | |
| | Waste treatment and disposal infrastructure | A7.3 | | |
| Tourism and leisure | Tourism, sporting, recreational (infrastructure) | A8.1 | | |
| | Tourism, sporting, recreational (activities) | A8.2 | | |
| Security/defence | Military operations and infrastructures | A9.1 | | |
| Education and research | Research, survey and educational activities | A10.1 | | |

In the EA - Table the Expert(s) can provide an indication of the relevance of each EA with respect to the reference geographical context, using a quali-quantitative **Relative level of Presence (RLP)** score:

- RPL = 0 → EA not present
- RPL = 10 → very low presence
- RPL = 20 → low presence
- RPL = 30 → moderate presence
- RPL = 40 → high presence
- RPL = 50 → very high presence

General DPSIR Methodology Analysis Phase 1 – Assessment - EP

| TYPE | CODE | UNIFIED PRESSURE CLASSIFICATION | CORRESPONDING PRESSURES FROM IMAP (IG.22/Inf.7-2016) | CORRESPONDING PRESSURES FROM MSFD ANNEX III | REFERENCE IMAP INDICATORS | REFERENCE MSDF CRITERIA | REFERENCE PRESSURE- BASED EOs | POTENTIALLY AFFECTED STATUS-BASED EOs |
|-----------------------------|------|--|--|---|---------------------------------|--|-------------------------------------|--|
| Physical | P1.1 | Physical damage/disturbance and morphological alteration (substrate, sea-floor, coast, land, shoreline, including erosion/accretion) | Alteration of sea-floor/water body morphology | Physical disturbance to seabed (temporary or reversible) | - | D6C1, D6C2, D6C3 | - | EO6, EO8 |
| | | | Change of sea-floor substrate | | - | | - | |
| | | | Disturbance/damage to sea-floor | | - | | - | |
| | P1.2 | Extraction of sea-floor and land (soil and subsoil) | Extraction of sea-floor and subsoil minerals (e.g. sand, gravel, rock, oil, gas) | Physical loss (due to permanent change of seabed substrate or morphology and to extraction of seabed substrate) | - | D6C1 | - | |
| Hydrological | P2.1 | Changes to hydrological conditions (e.g. wave action, currents, salinity, temperature, input/extraction of water) | - | Changes to hydrological conditions | CI15 | D7C1, D7C2 | EO7 | EO1, EO3-CI7, EO4, EO6, EO8 |
| | | | Water discharges (with/without contaminants) | Input of water - point sources (e.g. brine) | | | | |
| | | | Water movement changes | - | | | | |
| | | | Water extraction | - | | | | |
| Energy | P3.1 | Input of sound | Input of sound | Input of anthropogenic sound (impulsive, continuous) | CI26, CI27 | D11C1, D11C2 | EO11 | EO1, EO3-CI7, EO4 |
| | P3.2 | Input of electromagnetic fields or light | Input of electromagnetic and seismic waves | Input of other forms of energy (including electromagnetic fields, light and heat) | - | - | | |
| | P3.3 | Input of seismic waves | Input of light | | - | - | | |
| | P3.4 | Input of heat | Input of heat | | - | - | | |
| Biological | P4.1 | Translocation of (native) species, introduction/spread of non-indigenous or genetically modified species | Translocation of (native) species | Input of genetically modified species and translocation of native species | CI6 | - | EO2 | EO1, EO3-CI7, EO4 |
| | | | Introduction of genetically modified species | | | - | | |
| | | | Introduction or spread of non-indigenous species | | | Input or spread of non-indigenous species | | |
| | P4.2 | Introduction of microbial pathogens | Introduction of microbial pathogens | Input of microbial pathogens | CI21 | - | EO3 | EO1, EO3-CI7 |
| | P4.3 | Removal of species (target/non-target, selective extraction) | Removal of species (targeted, non-targeted) | Extraction of, or mortality/injury to, wild species (by commercial and recreational fishing and other activities) | CI8 to CI12 | D3C1, D3C2, D3C3 | | |
| | P4.4 | Disturbance, injury and death to species | Injury/death to species | | CI9 to CI12 | D6C3, D7C2; D2C3 | | |
| | P4.5 | Cultivation/artificialisation of natural habitat | Disturbance of species | Disturbance of species (e.g. where they breed, rest and feed) due to human presence | | | - | - |
| Chemical, pollution, litter | P5.1 | Input of nutrients and organic matter (diffuse/point sources, atmospheric deposition) | Nutrient enrichment (N, P, organic matter) | Input of nutrients — diffuse sources, point sources, atmospheric deposition | C17 to C21, C13, C14 | D5C1, D5C2, D5C3, D5C4, D5C5, D5C6, D5C7, D5C8 | EO9, EO5 | EO1, EO3-CI7, EO4, EO6, EO8 |
| | | | | Input of organic matter — diffuse sources and point sources | | | | |
| | P5.2 | Input of contaminants (synthetic, non-synthetic, radionuclides) – diffuse/point sources, atmospheric deposition, acute events | Input of contaminants (synthetic substances, non-synthetic substances, radionuclides) - diffuse sources, point sources, acute events | Input of other substances (e.g. synthetic sub- stances, non-synthetic substances, radionu- clides) — diffuse sources, point sources, at- mospheric deposition, acute events | C17 to C21 | D8C1, D8C2, D8C3, D8C4, D9C1 | EO9 | |
| | P5.3 | Input of litter (solid waste matter, micro-sized litter) | Input of litter (solid waste matter) | Input of litter (solid waste matter, including micro-sized litter) | CI22 to CI24 | D10C1, D10C2, D10C3, D10C4 | EO10 | |
| | P5.4 | Input of CO2 and greenhouse gases | Input of CO2 and other greenhouse gases | - | - | - | - | |

General DPSIR Methodology Analysis Phase 1 – Assessment - EP

| EP TABLE | | | | | | | |
|-----------------------------|--|------|------------|----|----|----|-----------|
| TYPE | ENVIRONMENTAL PRESSURE | CODE | EPL | | | | DATA GAPS |
| Physical | Physical damage/disturbance and morphological alteration (substrate, sea-floor, coast, land, shoreline, including erosion/accretion) | P1.1 | | | | | |
| | Extraction of sea-floor and land (soil and subsoil) | P1.2 | | | | | |
| Hydrological | Changes to hydrological conditions (e.g. wave action, currents, salinity, temperature, input/extraction of water) | P2.1 | | | | | |
| Energy | Input of sound | P3.1 | | | | | |
| | Input of electromagnetic fields or light | P3.2 | | | | | |
| | Input of seismic waves | P3.3 | | | | | |
| | Input of heat | P3.4 | | | | | |
| Biological | Translocation of (native) species, introduction/spread of non-indigenous or genetically modified species | P4.1 | | | | | |
| | Introduction of microbial pathogens | P4.2 | | | | | |
| | Removal of species (target/non-target, selective extraction) | P4.3 | | | | | |
| | Disturbance, injury and death to species | P4.4 | | | | | |
| | Cultivation/artificialisation of natural habitat | P4.5 | | | | | |
| Chemical, pollution, litter | Input of nutrients and organic matter (diffuse/point sources, atmospheric deposition) | P5.1 | | | | | |
| | Input of contaminants (synthetic, non-synthetic, radionuclides) – diffuse/point sources, atmospheric deposition, acute events | P5.2 | | | | | |
| | Input of litter (solid waste matter, micro-sized litter) | P5.3 | | | | | |
| | Input of CO2 and greenhouse gases | P5.4 | | | | | |
| | | | LW | IN | SW | IS | |
| | | | ICZM ZONES | | | | |

In the EP Table, a quali-quantitative **Environmental Pressure Level (EPL)** score is used to quantify the intensity of EPs affecting the area:

- EPL = 0 → no pressure,
- EPL = 10 → very low pressure intensity,
- EPL = 20 → low level of pressure intensity,
- EPL = 30 → moderate level of pressure intensity,
- EPL = 40 → severe level of pressure intensity,
- EPL = 50 → very severe level of pressure intensity.

General DPSIR Methodology Analysis Phase 1 – Assessment - S

| STATUS COMPONENTS CLASSIFICATION | | | | | | |
|----------------------------------|--|---|---------------|-------------------------------|------|--|
| CODE | STATUS COMPONENTS | DESCRIPTION | REFERENCE EOs | REFERENCE INDICATORS/CRITERIA | | |
| | | | | IMAP | MSFD | DESCRIPTION |
| S1 | Biodiversity | Biological diversity is maintained or enhanced. The quality and occurrence of coastal and marine habitats and the distribution and abundance of coastal and marine species are in line with prevailing physiographic, hydrographic, geographic and climatic conditions. | EO1 | CI1 | | Habitat distributional range (EO1) to also consider habitat extent as a relevant attribute |
| | | | | CI2 | | Condition of the habitat typical species and communities |
| | | | | CI3 | | Species distributional range (EO1 related to marine mammals, seabirds, marine reptiles and coastal protected species) |
| | | | | CI4 | | Population abundance of selected species (EO1, related to marine mammals, seabirds, marine reptiles and coastal protected species) |
| | | | | CI5 | | Population demographic characteristics (EO1, e.g. body size or age class structure, sex ratio, fecundity rates, survival/mortality rates related to marine mammals, seabirds, marine reptiles and coastal protected species) |
| S2 | Marine and coastal food webs and fish stocks | Alterations to components of marine and coastal food webs caused by resource extraction or human-induced environmental changes do not have long-term adverse effects on food web dynamics and related viability | EO4 | - | D4C1 | The diversity (species composition and their relative abundance) of the trophic guild is not adversely affected due to anthropogenic pressures |
| | | | | - | D4C2 | The balance of total abundance between the trophic guilds is not adversely affected due to anthropogenic pressures. |
| | | | | - | D4C3 | The size distribution of individuals across the trophic guild is not adversely affected due to anthropogenic pressures |
| | | | | - | D4C4 | Productivity of the trophic guild is not adversely affected due to anthropogenic pressures (to be used in support of criterion D4C2, where necessary) |
| | | Populations of selected commercially exploited fish and shellfish are within biologically safe limits, exhibiting a population age and size distribution that is indicative of a healthy stock | EO3 | CI7 | | Spawning stock Biomass |
| S3 | Sea-floor and coastal integrity | | EO6 | - | D6C4 | The extent of loss of the habitat type, resulting from anthropogenic pressures, does not exceed a specified proportion of the natural extent of the habitat type in the assessment area |
| | | | | - | D6C5 | The extent of adverse effects from anthropogenic pressures on the condition of the habitat type, including alteration to its biotic and abiotic structure and its functions (e.g. its typical species composition and their relative abundance, absence of particularly sensitive or fragile species or species providing a key function, size structure of species), does not exceed a specified proportion of the natural extent of the habitat type in the assessment area. |
| S4 | Coastal ecosystems, landscapes, seascape coastal wetlands, estuaries, coastal forest and wood, dunes | The natural dynamics of coastal areas are maintained and coastal ecosystems and landscapes are preserved | EO8 | CI16 | | Length of coastline subject to physical disturbance due to the influence of man-made structures |
| | | | | CI25 | | Land use change |

General DPSIR Methodology Analysis Phase 1 – Assessment - S

| STATUS COMPONENTS TABLE | | | | | | | |
|-------------------------|-----------------------------------|----------|--|------------|----|----|----|
| STATUS COMPONENTS | | | | SAL | | | |
| S1 | Biodiversity | EO1 | | | | | |
| S2 | Marine and coastal food webs | EO4, EO3 | | | | | |
| S3 | Sea-floor and coastal integrity | EO6 | | | | | |
| S4 | Coastal ecosystems and landscapes | EO8 | | | | | |
| | | | | LW | IN | SW | IS |
| | | | | ICZM ZONES | | | |

In the SC Table, a quali-quantitative **Status Alteration Level (SAL)** score is used to classify the alteration level of each SC with respect to GES:

- SAL = 0 → no alteration,
- SAL = 10 → very low alteration,
- SAL = 20 → low alteration,
- SAL = 30 → moderate alteration,
- SAL = 40 → severe alteration,
- SAL = 50 → very severe alteration

General DPSIR Methodology Analysis

Phase 2 - Interactions.

Phase 2 - Interactions. In the interaction analysis phase, the Expert(s) will deal with the study and evaluation of potential interactions and causal links existing between the elements identified in Phase 1. The Interactions are examined in the following analysis steps.

- **Economic Activities/Environmental Pressures Analysis (EA/EP Analysis)**, to evaluate the correlation existing between the Environmental Pressures present in the area and the underlying Economic Activities which generate them.
- **Environmental Pressures/Status Components Analysis (EP/SC Analysis)**, examining the impact of the Environmental Pressures in terms of their correlation with the detected altered Status Components.

General DPSIR Methodology Analysis Phase 2 – EP/EA Analysis

After having completed the Phase 1 - EA assessment step, and having identified the spectrum of EPs generated by each EA, the Expert(s) will rely on a quali-quantitative **Pressure Generation Capability (PGC) score** to qualifies the ability of a given EA to generate a specific EP. The Expert(s) will use PGC scores to populate the **PGC Matrix**, which quantifies how strongly a particular EP is correlated to each given underlying EA.

| ICZM ZONES | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
|------------|--|----|--|--|--|----|--|--|--|----|--|--|--|----|--|--|--|----|--|--|--|----|--|--|--|----|--|--|--|----|--|--|--|----|--|--|--|----|--|--|--|----|--|--|--|----|--|--|--|----|--|--|--|----|--|--|--|----|--|--|--|----|--|--|--|
| EP | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| EA | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| CODE | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| EPL | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| EA | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| RPL | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A1.1 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A1.2 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A1.3 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A1.4 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A1.5 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A2.1 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A2.2 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A2.3 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A2.4 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A3.1 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A3.2 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A3.3 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A4.1 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A4.2 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A4.3 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A4.4 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A5.1 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A5.2 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A5.3 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A5.4 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A6.1 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A6.2 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A6.3 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A6.4 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A7.1 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A7.2 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A7.3 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A8.1 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A8.2 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A9.1 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |
| A10.1 | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | | LW | | | | IN | | | | SW | | | | IS | | | |

General DPSIR Methodology Analysis Phase 2 – EP/EA Analysis

[illegible]

After assigning **PGC** scores for each row of the EA/EP Matrix, the EIAT automatically computes the EA/EP Matrix. The **EIAT - EA/EP Matrix** (Figure 10) explodes the EP Table, identifying the individual contributions due to the EAs present in the area, whose cumulation results in the spectrum of EPL scored in Phase 1 - EP Table. The values reported in the EA/EP Matrix are (specific) Environmental Pressure Levels (EPL) scores, used to identify the individual contributions of all EAs with values in the 0-50 range.

General DPSIR Methodology Analysis Phase 2 – EP/SC Analysis

| | | | | EP/SC PIS MATRIX | | | | | | | | | | | | | | | |
|-----------------------------|--|------|-----|------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | | | | STATUS RDA | | | | | | | | | | | | | | | |
| | | | | S1 | | | | S2 | | | | S3 | | | | S4 | | | |
| | | | | LW | IN | SW | IS | LW | IN | SW | IS | LW | IN | SW | IS | LW | IN | SW | IS |
| | | | | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| TYPE | PRESSURE | CODE | EPL | | | | | | | | | | | | | | | | |
| | | | LW | IN | SW | IS | | | | | | | | | | | | | |
| Physical | Physical damage/disturbance and morphological alteration | P1.1 | | | | | → | | | | | | | | | | | | |
| | Extraction of sea-floor and land (soil and subsoil) | P1.2 | | | | | → | | | | | | | | | | | | |
| Hydrological | Changes to hydrological conditions | P2.1 | | | | | → | | | | | | | | | | | | |
| Energy | Input of sound | P3.1 | | | | | → | | | | | | | | | | | | |
| | Input of electromagnetic fields or light | P3.2 | | | | | → | | | | | | | | | | | | |
| | Input of seismic waves | P3.3 | | | | | → | | | | | | | | | | | | |
| | Input of heat | P3.4 | | | | | → | | | | | | | | | | | | |
| Biological | Translocation of (native) species, introduction/spread of non-indigenous or genetically modified species | P4.1 | | | | | → | | | | | | | | | | | | |
| | Introduction of microbial pathogens | P4.2 | | | | | → | | | | | | | | | | | | |
| | Removal of species (target/non-target, selective extraction) | P4.3 | | | | | → | | | | | | | | | | | | |
| | Disturbance, injury and death to species | P4.4 | | | | | → | | | | | | | | | | | | |
| | Cultivation/artificialisation of natural habitat | P4.5 | | | | | → | | | | | | | | | | | | |
| Chemical, pollution, litter | Input of nutrients and organic matter (diffuse/point sources, atmospheric deposition) | P5.1 | | | | | → | | | | | | | | | | | | |
| | Input of contaminants – diffuse/point sources, atmospheric deposition, acute events | P5.2 | | | | | → | | | | | | | | | | | | |
| | Input of litter (solid waste matter, micro-sized litter) | P5.3 | | | | | → | | | | | | | | | | | | |
| | Input of CO2 and greenhouse gases | P5.4 | | | | | → | | | | | | | | | | | | |

Pressure Impact Score (PISs) examine how strongly a detected EP can impact on a given SC. PIS are assigned by the Expert(s) to provide an indication of the strength of each EP/SC correlation under examination, according to the following score:

- PIS = 0 → no EP/SC correlation
- PIS = 10 → very-low relevance of the EP/SC correlation
- PIS = 20 → low relevance of the EP/SC correlation
- PIS = 30 → moderate relevance of the EP/SC correlation
- PIS = 40 → high relevance of the EP/SC correlation
- PIS = 50 → very high relevance of the EP/SC correlation.

General DPSIR Methodology Analysis

Phase 3 - Prioritisation

Phase 3 - Prioritisation. During the Prioritisation Phase, the Experts(s) will deal with the synthesis and prioritisation of the interactions analysed in the previous steps. By tracing back the EA→EP→SC flow of interactions, effects of EAs - and their combination in terms of pressures and their impact on the Status components - can be synthesised, classified and prioritised in terms of their environmental relevance. This will allow to provide context to Operational Recommendation and Responses. Within Phase 3, the Expert(s) will also perform an analysis of any transboundary effects of EPs which might be present.

- **Prioritisation of EAs with respect to EPs.** EAs can be listed in terms of their relative EP generation capability, ranked by their aggregated EPL scores (detailed in the above EA/EP Matrix), as an indication of their overall pressure output level.
- **Prioritisation of EAs with respect to a given EP.** EAs are ranked on the basis of their EA-specific EPL score for a given EP as reported in the EA/EP Matrix.
- **Prioritisation of EPs.** EPs are prioritised on the basis of their EPL score as reported in the above EP Table.
- **Prioritisation of altered SCs.** Altered SCs are prioritised on the basis of their SAL score, as reported in the SC Table.
- **Prioritisation of EPs with respect to a given SC.** For any given SC, EPs can be ranked with respect to their PIS value (detailed in the above SC/EP Matrix), in terms of their relative impact. In the absence of dedicated data allowing a direct identification of PIS scores (all plausible interactions are marked as “p” and no PIS value is provided), the prioritisation scheme falls back to the “Prioritisation of EPs” case (all EP/SC links are assumed to be equally relevant).
- **Prioritisation of EPs with respect to a given SC.** EAs can be ranked, given the spectrum of generated EPs, in terms of their relative impact on any given SC. This prioritisation is carried out on the basis of the PGC Matrix and PIS values, as detailed in the EIAT.

General DPSIR Methodology Analysis – challenges in the Italian context

One of the primary challenges encountered during the initial implementation of the DPSIR operational approach was the presence of gaps in the available datasets and information sources. In this context, the methodology's application offers guidance on which monitoring campaigns to potentially promote in order to complete the data and information framework with a local (sub-regional) focus.

This would allow for the improvement of the overall precision and accuracy of the current analysis by minimizing uncertainty in the results. An additional data collection tool proposed to strengthen the specific information and dataset is the developed dedicated questionnaire. This questionnaire targets local authorities and aims to gather their detailed knowledge, expertise, and experience regarding local regions.

The main data and information types that could be enhanced as a result of the first assessment run include environmental pressures and their specific distribution across the CAMP area. Additionally, there is a need to strengthen the available dataset and information on existing environmental impacts in Italian coastal areas and seaward zones.

Thank you!

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