

**D6**

**Italy: System of Indicators to  
Monitor Plan Implementation  
and Performance**

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## Introduction

IUAV, CNR and CORILA, in supporting the Italian maritime plans have performed a set of tasks as scientific advisors, among those the monitoring program was designed for the monitoring and evaluation of the plan. The current document describes the institutional background and design of the monitoring strategy, presenting the principles and indicators that forms it.

As preamble it is key to consider that to facilitate the drafting of Italian Plans among the many actors involved, 6 operational phases were defined:

- Phase 1 - Initial status and current and expected trends
- Phase 2 - Analysis of interaction (conflicts and synergies) between uses and impacts on environmental components
- Phase 3 - Vision and strategic objectives
- Phase 4 - Planning: vocations, specific objectives, specific measures (by areas and by sectors)
- Phase 5 - Methodology and indicators for monitoring and adaptation of the Plan
- Phase 6 - Activities for the consolidation, implementation and updating of the Plan.

The present deliverable will then focus on phase 5, describing how monitoring is foreseen by the Italian national plan and how indicators were identified to help assess the performance of the plan and its correct implementation that establish the first cycle of planning.

## Monitoring Program Framework

As included in the art. 24 and 26 of *National guidelines (Decree of the President of the Ministers Council, 1/12/2017)* each plan must include a monitoring and control system, as well as the measurement of results, to be implemented through appropriate procedures and indicators provided in the drafting phase of the plan. The Monitoring Program is carried out by the Competent Authority (MIMS) supported by the Technical Committee, which annually informs the Inter-Ministerial Coordination Board of the status of their implementation.

The plans will have a 10-year duration, with the option of a mid-term review, or if considered required by the monitoring activity of the plan's implementation or events that require revision.

The development and preparation of a monitoring program (MP) capable of responding to the objectives set within the Maritime Space Plans (MSPs) are elements of great importance.

The basic purpose of the MP is to enable monitoring of the effectiveness of the Plan (achievement of stated qualitative or quantitative objectives) and monitoring of the progress of Plan actions.

The approach adopted follows the division by themes/sectors in Chapter 5 on Phase 3 - Vision and Strategic Objectives and refers to the strategic objectives identified in that phase, as well as the specific sub-area-level objectives identified in Phase 4 - Strategic Level Planning.

It is crucial to mention the strong spatial connotation of MSPs and the consequent need to produce and collect data and information that are as spatially representable as possible regardless of their nature. Moreover, the approach proposed through this tool is an integrated approach. In fact, the

implementation of the Plans can only be monitored when the data and information collected and related to the different themes/sectors are integrated and interpolated to obtain a complete and integrated information picture.

The monitoring program for MSPs assumes the need to be a flexible tool, capable of adapting to the different sectoral domains and spatial and temporal scales of detail on which the Plans operate. For this reason, a conceptual framework has been formed (Figure 1), which directs and guides, through the development of six main steps, the process required in order to establish the integrated MP for MSPs.

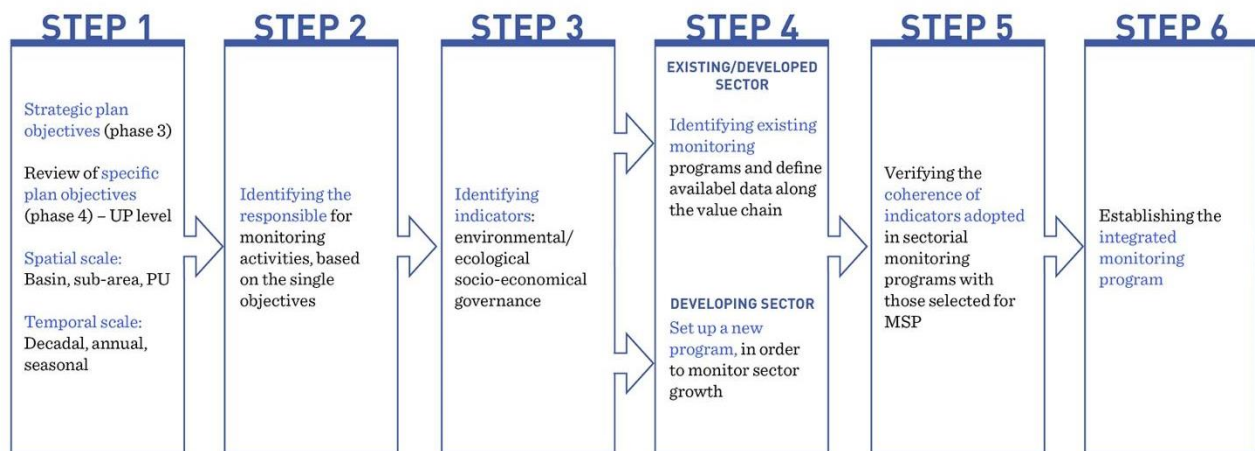


Figure 1: Conceptual framework consisting of 6 Steps that guides the construction of the Integrated Monitoring Program (MP) of Maritime Spatial Plans (MSPs)

A description of each step of the proposed conceptual framework follows.

**STEP 1 - Resume plan objectives.** The preparation of the program arises according to the strategic and specific objectives of the MSPs, respectively defined during Step 3 and Step 4 of the plan process. Step 1 allows, starting with each objective under consideration, regardless of whether it is strategic or specific and its level of detail, to effectively guide the MP by preliminarily identifying the spatial and temporal scale on which monitoring is developed for the purpose of adequately informing the Plans. This approach makes it possible to increase the effectiveness of the MP by fostering its ability to give the necessary information to the MSPs while respecting the different spatial and temporal scales in which they are articulated. The spatial scale varies according to the territorial extension involved by the different objectives set; the broadest is that configured by the basin dimension as well as by the three maritime areas covered by the plans: the Adriatic, Tyrrhenian and Ionian. Going down to greater detail, especially in relation to the specific objectives, monitoring must be carried out at the sub-area level and in specific cases at the level of the individual Planning Units (PUs). The choice of the spatial scale at which monitoring is to be applied depends directly on (i) the objective that the monitoring program sets out to achieve and (ii) the consistency and completeness of the data that the area under consideration presents. These same factors also condition the choice of time scale. It assumes a key role within the MSPs since, downstream of the monitoring activity, the Plans will be submitted to mid-term reviews (Art.26). The temporal dimension is related both to the variability of the phenomena considered and to the monitoring capacity: it can vary from a multi-year monitoring to a monthly

update depending on the timing with which the collection and analysis of data is significant with respect to the selected monitoring indicators and the objectives set.

The monitoring program is divided into two priority levels:

Priority 1 with reference to Phase 3 strategic objectives and the Maritime Area scale (possibly with aggregation of data at a larger scale)

Priority 2 with reference to the specific objectives of individual sub-areas and the

*STEP 2 - Identify the actors.* Once objectives are defined that are linked to a spatial scale of reference or, 'authority responsible for monitoring activity in relation to each plan objective is identified or assigned (if absent). In addition to setting up the monitoring activity and defining the entity responsible for its implementation, it is also responsible for handling and processing the data, as well as flowing and sharing them with the MSP Competent Authority. This data flow should be as facilitated and timely as possible. The MSP Competent Authority is responsible for managing the different data flows from the different entities responsible for monitoring and for managing and systemizing them.

*STEP 3 - Definition of indicators.* In Step 3, indicators are defined for individual strategic and specific objectives, which can be traced to four main families of indicators identified as priorities for informing MSPs: ecological-environmental, pressure, socio-economic, and governance. The ecological-environmental indicators, along with the pressure indicators, allow the degree of environmental sustainability of implemented plan measures to be monitored over time. Socio-economic indicators, on the other hand, mainly reflect the degree of productivity of a sector and the level of employment it provides in relation to its level of development. Finally, the term governance indicators refers to indicators that measure the performance, progress and quality of the management actions of the sector under consideration and of the MSPs themselves, as well as the financing and management programs for the purpose of supporting sector development. These indicators are of particular importance for the purpose of monitoring sectors that have not yet been developed, which are therefore not yet productive but for which an initial development plan needs to be prepared. Each indicator in addition to its type is classified as priority or ancillary and is related to one or more objectives against which it expresses effectiveness or progress.

*STEP 4 - Integration of existing programs or new findings.* The MP potentially serves as a collector of the various existing national monitoring programs. In this step, existing sectoral monitoring strategies and tools are considered and their possible integration into the MSP's MP is assessed, depending on the qualitative and quantitative indicators adopted by the MSPs and the consistency and completeness of the data collected. In case the sector being monitored is developed, existing monitoring plans are identified, data sources and their production chain defined, to assess their adequacy to support the MP. Instead, if the sector is at an early stage of development and there are no programs directed at monitoring it, the MP aims to monitor its readiness and early stages of development primarily with governance indicators.

*STEP 5 - Sources of data and information.* Having identified the status of the sector under consideration and analysed the main monitoring programs already in place at the national level, if any, one assesses the adequacy of their monitoring indicators and the consistency and completeness of the data collected under these programs to check their congruence with those identified by the MP in Step 3. It also characterizes the primary source and additional secondary sources, determines whether the data collection is done automatically within an existing program or whether it is a new program to be

established, or whether existing surveys need to be deepened, such as by changing the spatial domain, resolution, or sampling period.

*STEP 6 - Periodic Reporting.* The integrated MP is officially established complete with guidance regarding how and when the activity should be carried out in order to direct and monitor the effective implementation of the MSPs. The characteristics and methods of data processing and reporting are defined, which may use qualitative or quantitative assessments with respect to baselines and targets; aspects related to spatialization of data and overcoming situations of inhomogeneity are clarified. Possible data presentations organized by theme or sector, by type of indicator, and by type of evaluation (effectiveness or progress) are set.

The monitoring program implementation, once the SOs of Stage 3 and specific Stage 4 (Step 1) have been transposed, allows for: i) Step 2. identifying the authorities responsible for monitoring each sector/issue; Step 3. developing a set of indicators suitable for monitoring the implementation of the MSPs; Step 4. identifying the main sectoral monitoring programs in place on a national scale; Step 5. verifying the adequacy of the indicators adopted by existing monitoring programs with those proposed for the MSPs for the purpose of their integration into the MP, which is then defined in Step 6.

According to the guidelines, the implementation of the monitoring is the responsibility of the competent authority (Ministry of Sustainable Infrastructure and Mobility) and could be managed by the Technical Committee that drafted the plan with the operational input of three Working Groups, one for each maritime area, to take charge of activating the data flows or manual collection of the indicators envisaged by the MP starting with the priority indicators.

As represented by the flowchart in Figure 2 for each group of indicators depending on the monitoring program to which it refers (including the SEA of the plan) and the nature of the input data it is necessary to establish a procedure supported by an adequate IT infrastructure that allows to collect an indefinite number of input streams, according to different types of data: raw data available from sensors (remote sensing, ARPA etc.) or processing available in continuous flow (e.g. Copernicus Marine) as well as the periodic statistical survey campaigns or collection of ecological, environmental, landscape data. The results of existing programs in the form of documents and data will also be integrated.

Through cooperative agreements with the owners and managers of each data/program, it is desirable that this information be collected in an automated form through the use of interoperable information services that will enable the different information systems to talk to each other to collect and spatially aggregate the monitoring program data into a single geodatabase that will be linked to the maritime spatial plan information system. For each maritime area, a working group is required to define how the information will be spatialized and integrated: these will be implemented with appropriate procedures and applications in a single information infrastructure.

The individual working groups will proceed annually to submit the periodic monitoring report to the competent authority for publication and integration in the plan portal.

Constant telematic access to digital monitoring information will also enable thematic reports and maps to be generated even for individual sub-areas by other planning contributors (e.g., regions).

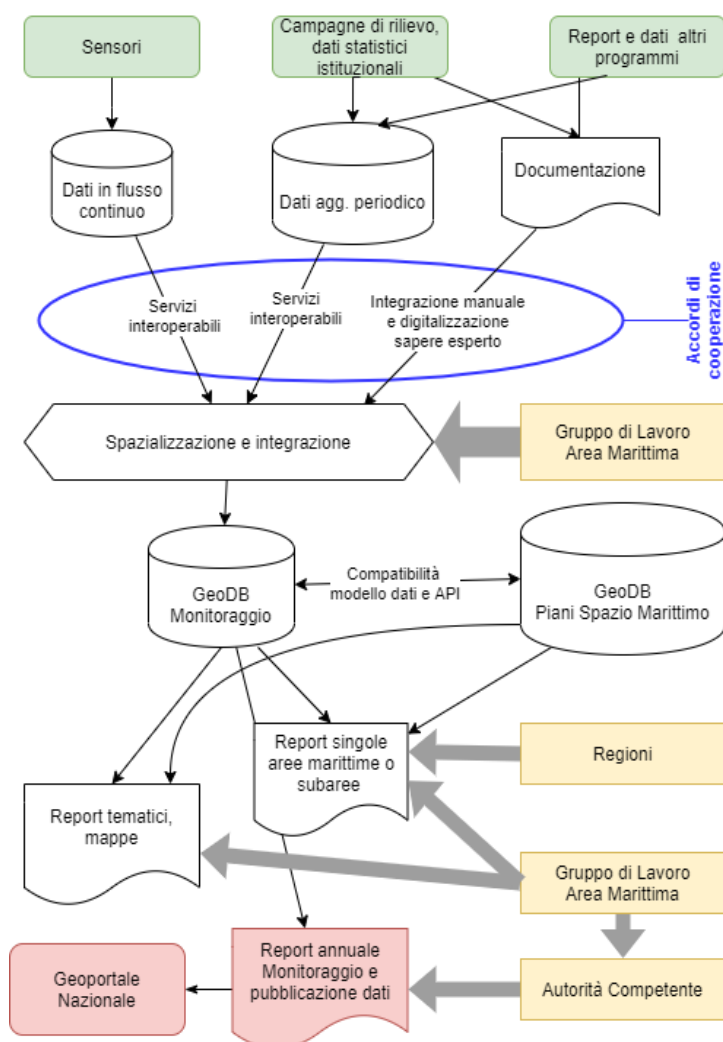


Figure 2: Outline of the data flow from the different types of input data (in green) with related pro-cessing and actors involved (in yellow) to official publication (in red)

## Indicators

In this chapter, we report useful elements to further the implementation of the MP obtained from the application of the conceptual framework (Figure 1) on each thematic MP OS that emerged from Phase 3 and the specific objectives made available by the Regions. For the time being, the analysis was carried out on the specific objectives of three selected Regions, i.e. Friuli Venezia Giulia, Sardinia and Emilia-Romagna. The implementation of the conceptual framework highlights the data sources that can potentially be integrated into the MP and their responsible authorities and provides an initial proposal of thematic indicators to be used in the monitoring program (reference to Steps 2, 3, 4 and 5 of the conceptual framework).

A legend of the indicators is given below.

Type	P/A	Eff/Av	Units of Measurement	Period	Scale
A = Environmental P = Pressure	P = Priority A = Accessory	Eff = Effectiveness		ANN = Annual SEM - Semester	AM = Maritime Area



SE = Socio-economic G = Governance		Av = Advance		SEA = Seasonal QUAR = Quarterly MON = Monthly ND = undefined	SA = Subarea UP = Planning Unit
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### Cross-cutting principles - Sustainable development

The Sustainable Development theme is a cross-cutting principle that spans all sectors and uses considered by MSPs. The SOs related to this theme are essential and serve as a driver for action of national MSPs.

SO1 Develop a sustainable marine economy, multiplying growth opportunities for marine and maritime sectors	This is a cross-cutting objective that is linked to the socio-economic indicators of individual sectors. Below are some indicators specific to the fisheries and aquaculture sectors
SO2 Contribute to the National Strategy for Sustainable Development.	The indicators required by the SNSvS are integrated into the plan's monitoring program, particularly environmental and pressure indicators 1.1 to 1.12
OS3 Contributing to the European Green Deal	The objective is monitored by governance indicators such as 1.13 and 1.14
OS4 Fully grasp the economic and environmental sustainability opportunities arising from the circular economy	Circular economy is a complex concept and should be related to specific uses, some indicators on the amount of waste can be useful such as 1.30, 1.31

Here reference is made to the indicators defined by the Iter Agency Expert Group (IAEG-SDGs) established by the United Nations Statistical Commission that populate the United Nations 2030 Agenda achievement monitoring program. At the Italian level, the National Strategy for Sustainable Development (SNSvS) was established consisting of 5 areas: People, Planet, Prosperity, Peace and Partnership. The government relies on the Ministry of Environment and the Ministry of Foreign Affairs to develop it. ISTAT is the coordinating institute for this monitoring program. The data produced by this program are also consistent and complete in terms of time given the annual reporting cadence.

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
1.1	Water classification index bathing	A	P	Eff	N of falling waters in each class	ANN	SA	Existing, ISPRA on Ministry of Health-CCM data, Monitoring by European Directive 2006/7/EC, bilateral periodic flow
1.2	Percentage swimmable coastline	A	A	Eff	%	ANN	SA	Existing, ISTAT (elaboration on Ministry of Health data), periodic flow
1.3	Number of beaches classified as clean through the Clean Coast Index (CCI)	A	A	Av	N	ANN	SA	Existing, ISPRA on ARPA data, Monitoring Directive 2008/56/EC, periodic flow
1.4	Percentage Infrastructure Area / Area marine-coastal water	P	P	Eff	%	6 ANN	AM	Existing, ISPRA, monitoring required by the Framework Directive.

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
	bodies defined under Directive 2000/60/EC.							On the Marine Strategy 2008/56/EC for Descriptor 7, periodic flow
1.5	Quality element Biological Benthic Macroinvertebrates M-AMBI	A	A	Eff	N between 0 and 1	ANN	SA	Existing, coastal harp, monitoring Pursuant to the Water Framework Directive (Legislative Decree 152/06). EIONET periodic flow, EQB from European Directive 2000/60/EC (implemented by Legislative Decree 152/2006, as amended).
1.6	Element of biological quality Chlorophyll-a	A	A	Eff	mg/m <sup>3</sup>	MEN	SA	Existing, Coastal Harp, Periodic flow (6 times in one year detection) EQB from European Directive 2000/60/EC (implemented by Legislative Decree 152/2006, as amended).
1.7	Number of water bodies With "good" chemical status	A	P	Eff	N	ANN	AM	Existing, ISPRA, D.Lgs. 152/2006 monitoring, periodic flow
1.8	Number of water bodies With "good" ecological status	A	P	Eff	N	ANN	AM	Existing, ISPRA, D.Lgs. 152/2006 monitoring, periodic flow
1.9	Quantity Of total waste in number of pieces per 100 meters of shoreline	A	P	Eff	N	SEM	SA	Existing, ISPRA - MATTM from coastal ARPA, Bilateral periodic flow, monitoring by Directive 2008/56/EC
1.10	Quantity of waste from fisheries and aquaculture In number of pieces per 100 meters of shoreline	A	A	Eff	N	SEM	SA	Existing, ISPRA - MATTM from coastal ARPA, Bilateral periodic flow, monitoring by Directive 2008/56/EC
1.11	Percentage breakdown in categories IUCN risk status of species of Italian Marine Vertebrates and Invertebrates.	A	A	Av	%	4 ANN	AM	New, ISPRA, periodic flow
1.12	Percentage breakdown in categories IUCN risk status of Italian marine floristic species.	A	A	Av	%	4 ANN	AM	New, ISPRA, periodic flow
1.13	Number of projects implemented	G	P	Av	N	ANN	AM	New,ISPRA, periodic flow

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
	For the conservation of ecosystems marine							
1.14	Number of interventions of habitat restoration marine-coastal	G	P	Av	N	ANN	AM	New, ISPRA, periodic flow
1.15	Total number of individuals fish and cephalopods deaths due to unintentional capture	P	P	Eff	N	ANN	SA	In goodwill, National Alimentary Data Collection Work Program -. ISPRA - MiPAAF <a href="https://dcf-italia.cnr.it/web/#/pages/home">https://dcf-italia.cnr.it/web/#/pages/home</a> , periodic flow.
1.16	Total number of individuals reptiles and Dead marine mammals due to capture unintentional	P	P	Eff	N	ANN	SA	New, ISPRA - MiPAAF Rural development - agriculture - fisheries section Regional, periodic flow
1.17	Total number of individuals of birds, reptiles and Marine mammals that died due to ingestion of litter in the sea or on the beach	P	P	Eff	N	ANN	SA	New, ISPRA - MiPAAF Rural development - agriculture - fisheries section Regional, periodic flow
1.18	Abundances (estimated populations) of species Of birds, reptiles and mammals marine	A	A	Eff	N	ANN	AM	Existing, MATTM - ISPRA, Program of National Monitoring For marine strategy, D1
1.19	Number of individuals of species Of marine birds, mammals and reptiles recovered by CRAS.	P	A	Eff	N	ANN	SA	New, Rural Development Section - regional agriculture-fisheries, periodic flow
1.20	No. exceedances of the threshold value (10000 cells/L) of <i>Ostreopsis ovata</i> in bathing water	P	A	Eff	N	ANN	SA	Existing to be reworked, ISPRA-Coastal ARPA, Monitoring "Algal blooms of <i>Ostreopsis ovata</i> along Italian coasts" by Toxic Algae Program Directive, automatic flow.
1.21	Number of allochthonous species in marine - coastal habitat	P	P	Eff	N	ANN (for allochthonous species of	AM	Existing to be amended, ISPRA, periodic flow

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
	introduced in Italy currently present					national significance), 2 ANN for all other		
1.22	Number of newly introduced non-native species in areas associated with major introduction vectors (port areas and aquaculture facilities)	P	P	Eff	N	ANN	AM	Existing, MATTM - ISPRA, National Monitoring Program. for the Marine Strategy, D2
1.23	Surface area in square meters marine protected areas	G	P	Av	%	ANN	AM	Existing, ISPRA, periodic flow.
1.24	Area expansions % for new area proposals. marine and natural protected	G	A	Av	%	ANN	AM	New, ISPRA, periodic flow
1.25	Surface area in square meters marine areas that fall within Natura 2000 sites	G	A	Av	%	ANN	AM	Existing, ISPRA, periodic flow.
1.26	No. new proposals per Fishery institution Restricted Area (FRA)	G	P	Av	N	ANN	AM	New, MiPAAF, periodic flow
1.27	Prolongation or reduction % of the period of fishing cessation	G	A	Eff	%	ANN	SA	New, MiPAAF, periodic flow
1.28	% coastal urbanization coverage in the 300 m from the shore	P	P	Eff	%	3 ANN	AM	Existing, ISTAT - Ispra - Land use, spatial dynamics and ecosystem services, ISTAT Census 2000 Project, periodic flow
1.29	Number of berths per kilometer coastal	P	P	Eff	N/Km	ANN	SA	Existing, ISPRA processing of MIT and ISPRA data, Automatic flow, monitoring not linked to Directives
1.30	Quantity of waste by category in numbers of pieces per square kilometer (km <sup>2</sup> ) In the surface layer of the water column.	P	P	Eff	N	ANN	SA	Existing, MATTM, Monitoring Program National Marine Strategy, D10, periodic flow
1.31	Amount of waste by category in	P	P	Eff	N	ANN	SA	Existing, MATTM, Monitoring Program

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
	numbers of pieces per square kilometer (km <sup>2</sup> ) on the bottom							National Marine Strategy, D10, periodic flow
1.32	Km identified as bicycle and pedestrian routes within 300 m from the shore	G	A	Av	Km	2 ANN	SA	New, Land Management and Land Use Protection Service Transportation, logistics and regional roads section, periodic flow
1.33	Number of concession or free beaches equipped Of separate waste collection points	G	A	Av	N	ANN	SA	New, Regional Environment Department, periodic flow
1.34	No. of ports that have set up collection points Fishing waste from boats at the time of the landing	G	A	Av	N	ANN	SA	New, Regional Environment Department, periodic flow
1.35	Tons of waste per year at collection points fishing waste to ports	G	A	Av	tons	ANN	SA	New, Regional Environment Department, periodic flow
1.36	Volume of organic aquaculture production	S/E, P	P	Eff	tons	ANN	SA	Existing, SINAB - ICEA - EMFF, Operational Program. EMFF 2014-2020, periodic flow
1.37	Energy efficiency of capture	P	P	Eff	L/tonn	ANN	SA	Existing, EMFF, Operational Program EMFF 2014-2020, periodic flow
1.38	Certified aquaculture production volume under systems of voluntary sustainability	S/E	A	Eff	tons	ANN	SA	Existing, EMFF, Operational Program EMFF 2014-2020, periodic flow
1.39	Aquaculture enterprises providing environmental services	G	A	Eff	N	ANN	SA	Existing, EMFF, Operational Program EMFF 2014-2020, periodic flow
1.40	Number of interventions Impact reduction Of aquaculture on the environment (eco-management and audit systems, environmental services related to aquaculture)	G	P	Av	N	ANN	SA	Existing, EMFF, Operational Program EMFF 2014-2020, periodic flow
1.41	Number of interventions	G	P	Av	N	ANN	SA	Existing, EMFF, Operational Program.

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
	aimed at increasing potential Of aquaculture sites and health measures public and animal health							EMFF 2014-2020, periodic flow
1.42	Percentage of stocks in overfishing Compared to the total stock assessed	P	P	Eff	%	ANN	SA	Existing, ISPRA on stock assessment data. validated internationally by the STECF and the GFCM, periodic flow

### *Cross-cutting principles - Protection and preservation of species, habitats and ecosystems*

National environmental monitoring plans to date are mostly linked to specific legislative instruments, i.e., Water Directive (2000/60/EC), Marine Strategy Directive (2008/56/EC, Habitats Directive (1992/43/EEC), and Birds Directive (2009/147/EC), arise from a long process of conceptualization, and then coordination among the different parties involved in their implementation and enforcement. These plans are important and potentially supportive tools for monitoring MSPs on environmental conservation and management.

The Water Directive prepares a monitoring activity that includes all surface and groundwater bodies. Surface water bodies include lakes, rivers, transitional or coastal waters, as well as artificial or heavily modified water bodies. Monitoring programs under the Water Directive are structured in river basin districts, which are areas of both land and sea. This peculiarity makes these programs suitable to support the integration of data collected in marine, coastal and lagoon environments within the MSP monitoring program. At the same time, however, the completeness of the data collected according to the watershed division, which may not be suitable for the purposes of meeting the monitoring needs of MSPs, must be verified. Thus, the data provided by the monitoring carried out under the Water Directive are potentially consistent in relation to Plan objectives, especially in relation to SO 33, but not spatially complete considering their collection and aggregation. Their aggregation at the basin and sub-area level is suggested. In addition, the monitoring of parameters considered by this directive is adequate as annual, but the three-year reporting cadence is not adequate to inform the effectiveness of measures taken by MSPs in a timely manner. Therefore, it is necessary to consider adjusting the timing of analysis and provision of data corresponding to priority indicators in order to inform the effectiveness of plan measures.

The monitoring programs prepared and implemented under the Marine Strategy Directive focus on monitoring the marine environment and present an extensive list of indicators associated with each of the environmental targets defined to achieve the objectives set by the directive. The Directive's 11 descriptors are intended to guide monitoring programs by observing the state of the environment in terms of habitats and priority species for conservation (set forth in the Habitats Directive, Birds Directive, and the Barcelona Convention), and at the same time in terms of the effectiveness of measures taken to manage pressures arising from human activities and impacting the environment itself. This connotation makes the monitoring programs of the Marine Strategy largely consistent with several objectives of the MSPs. In addition, the division of these programs into the three subregions Western Mediterranean Sea, Adriatic Sea, Ionian Sea, and Central Mediterranean Sea, makes data collection and their aggregation complete from a spatial coverage point of view with respect to the three MSPs. Monitoring of the parameters considered by this directive is adequate as annual but the

cadence of reporting every six years is not adequate to inform the effectiveness of the measures taken by the MSPs in a timely manner. Therefore, again, it is necessary to consider adjusting the timing of analysis and data provision on an annual scale to inform the effectiveness of plan measures.

SO 1 Apply a consistent Ecosystem based approach (EBA) in all stages of drafting Plans for Maritime Space	The achievement of this goal is monitored through the use of all indicators that define the level of environmental sustainability achieved by plan actions. It is closely linked to the achievement of the GHG defined in the National Marine Strategy that incorporates the MSFD. Each proposed indicator is useful in informing MSPs with respect to the level of actual implementation of the ecosystem approach
SO 2 Promote the extension of EU sea protection to 30 percent by 2030	Specific governance and socio-economic indicators are proposed
OS 3 Transpose and promote the implementation of key space measures in the MSFD Program of Measures.	Proposed environmental, pressure and governance indicators give information with respect to the implementation of space measures envisaged in the MSFD Program of Measures. In addition, a specific indicator is proposed that monitors the number of space measures in the Program of Measures implemented
SO 4 Integration of land-sea interaction aspects and integrated coastal zone management, with special reference to environmental aspects	It is indicated that there is a need to integrate data collected from monitoring activities prepared under the Water Directive and under descriptor 5 Eutrophication of the Marine Strategy

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
2.1	Funds allocated for the establishment and implementation of coastal and marine protection areas	IF	P	Av	euro	To be defined according to the national strategy	SA, AM	Existing flow, check its suitability - MIT/MITE
2.2	Economic incentives allocated by sector to encourage implementation of environmental conservation measures	IF	A	Av	euro	ANN	SA, AM	Existing flow, verify its suitability - MIT
2.3	No. of projects funded for the purpose of research and monitoring activities in support of the development and application of the ecosystem-based approach	IF	A	Av	n° projects	≥ANN	SA, AM	new - MIT/MIR
2.4	Number of interministerial meetings to support decision-making processes inherent in the Plan and nature	G	P	Av	No. of meetings	ANN	AM	new - MIT

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
	conservation and protection objectives							
2.5	Number of stakeholders involved in decision-making processes	IF	A	Av	No. of stakeholders	ANN	SA	new - MIT
2.6	Number of stakeholders supporting/aiding decisions	IF	A	Eff	No. of stakeholders	ANN	SA	new - MIT
2.7	Percentage of Italian marine waters in which marine protected areas are established	A	P	Eff	%	2ANN	SA, AM	Existing flow, periodic - MITE
2.8	Number of marine protected areas that are managed in an equitable, ecologically representative, and functionally interconnected manner	A	A	Eff	Reference to the evaluation criteria of the Marine Strategy	ANN	SA, AM	Existing flow, periodic, verify time cadence - MITE/ISPRA/ARPA
2.9	Number of space measures planned in the MSFD Program of Measures implemented	G	A	Eff	No. of measures	ANN	SA, AM	new - MITE
2.10	Percentage of Italian marine waters where other spatial protection/conservation measures are established - OECMs	A	A	Eff	%	ANN	SA,AM	Existing MITE - UNEP WCMC
2.11	Integration of indicators Water Directive monitoring plans for integration of aspects related to land-sea interactions.	A	P	Eff	Reference to the biological, physical, and physicochemical quality elements of the Water Directive	ANN	SA	Existing flow, periodic, verify temporal cadence and spatial coverage of data - MITE/ISPRA/ARPA
2.12	All indicators used in MSFD monitoring under descriptor 5 for integrating aspects related to land-sea interactions	A	P	Eff	Reference to the evaluation criteria of the Marine Strategy	ANN	SA	Existing flow, periodic, verify temporal cadence and spatial coverage of data - MITE/ISPRA/ARPA
2.13	Cumulative impacts are within precautionary limits (link with MSFD monitoring)	P	A	Eff	Reference to the evaluation criteria of the Marine Strategy	ANN	SA, AM	new - MITE/ISPRA
2.14	Update management plans of protected areas. Where absent or inadequately updated monitor their formulation or reformulation within 1 year	G	A	Av	plan no. updated	3ANN	SA	new - MITE/REGIONS
2.15	Presence of adequate wastewater and waste management plans in ports. Where absent formulation within 1 year. Ref: ISPRA's GRRinPORT project.	G	A	Av	plan no. updated	3ANN	SA	new - System Authority
2.16	Abundance of populations of marine species listed in the Habitats Directive, Birds Directive, or SPA/BD Protocol	A	P	Eff	Reference to the Marine Strategy criteria and	ANN	SA	Existing flow, periodic, verify temporal cadence and spatial



ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
					related parameters			coverage of data - MITE/ISPRA/ARPA
2.17	Population characteristics of marine species listed in the Habitats Directive, Birds Directive, or SPA/BD Protocol	A	A	Eff	Reference to the Marine Strategy criteria and related parameters	ANN	SA	Existing flow, periodic, verify temporal cadence and spatial coverage of data - MITE/ISPRA/ARPA
2.18	All indicators used in MSFD monitoring under descriptor 6 to monitor the health status of benthic habitats listed in the Habitats Directive, SPA/BD Protocol and considered as vulnerable (VME)	A/P	P	Eff	Reference to the evaluation criteria of the Marine Strategy	ANN	SA	Existing flow, periodic, verify temporal cadence and spatial coverage of data - MITE/ISPRA/ARPA

### Cross-cutting principles - Landscape and cultural heritage

The theme of landscape and from the protection of cultural heritage within the Maritime Space Plan is not easy to define because it is closely related to other themes and by its characteristic cross-cutting. As defined by the European Landscape Convention (2000), the character of a portion of the territory is related to the perception of the people and by different factors, natural and anthropogenic, that interact with each other over time.

The strategic objectives related to this area are formulated as follows:

OS1 Support the scenic value of the coastal strip	The coastal strip is protected by ex lege and declared landscape constraints: monitoring of squatting prosecutions can provide evidence on compliance with these constraints although for each prosecution and municipality other variables that affect
OS2 Encourage the rehabilitation and redevelopment of protected properties and areas	It is not easy to devise qualitative indicators for rehabilitation and redevelopment interventions, in a first stage monitor projects on the topic in national and European spheres both in number and budget
OS3 Encourage and support the conservation of underwater archaeological heritage	The national superintendency dedicated to underwater heritage has been in operation for a short time: the indicators with respect to its activity are significant
OS4 Promote regional and international collaboration on the subject.	Monitoring of ongoing projects on the topic
OS5 Promote and create awareness of intangible cultural heritage	Monitoring of ongoing projects on the topic
OS6 Combat illegal construction in coastal territories.	Monitoring of ongoing projects on the topic

The coastal strip referred to in OS1 is among the areas protected *ex lege* by Art. 142 of Legislative Decree 42/2004, but it is also home to numerous properties protected under Art. 10 and assets of public interest under Art. 136. Thus, in this system of protections, natural components (for which a good level of environmental indicators should mean effective protection) and man-made works that

necessarily require maintenance, conservation and enhancement interventions are intertwined. Very often the character of the protected assets also consists of intangible aspects from which derives, for example, the need to protect activities traditionally related to the coastal environment and land-sea interactions.

The matter is subject to interventions and prescriptions by both the regions and the state according to a subdivision of competences that sometimes presents aspects that are still to be clarified, therefore, an integrated management is required also of the control and monitoring process that cannot disregard the involvement of the Regions, in the implementation of the Landscape or Territorial Plans of their competence, of the Individual Superintendencies, bodies responsible for issuing landscape authorization and ultimately the municipalities themselves that are involved in the processes of authorization and control of building transformations that impact on landscape elements.

Given the difficulty of devising qualitative indicators on such a complex subject, it is proposed to monitor the control activity of the supervisory bodies and the execution of prosecutions, although the case of a limited number of complaints to the prosecutor's office could be due to the inertia of the supervisory bodies and not to the scarcity of violations.

Within the annual report on equitable and sustainable well-being ISTAT publishes an indicator on the rate of construction squatting developed in collaboration with CRESME, which if available at the municipal level could offer a measure of the pressure on the coastal landscape and on constrained real estate. Similarly, the ISTAT survey of crimes for which prosecution has been initiated by the judicial authorities can return a figure of violations of the Landscape Code, although the detail (currently by province) would need to be further investigated. The Legambiente report has in the past used a census of executed and unexecuted demolition orders, a survey to which few municipalities responded, however, but a similar revelation could be entrusted to the regions as part of actions related to the landscape plan.

There are also four UNESCO sites along the Italian coast: the natural site of the Aeolian Islands and the cultural sites of Portovenere and Cinque Terre, the Amalfi Coast, and Venice and the Lagoon. Managing authorities can provide indicators on the status of the site and the pressures facing each area.

Another proposed indicator concerns the completeness of the staffing levels provided for the various superintendencies. As far as underwater cultural heritage is concerned, the relevant national superintendency is newly established and is the holder of the interventions provided for by the UNESCO Convention on the Protection of Underwater Cultural Heritage according to the rules of the annex to the same convention. The very activity of this office is an indicator of the effectiveness of the Plan or pressure on this aspect.

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
3.1	Building squatting rate	P	P	Eff	% on building practices	ANN	AM	New to be built on CRESME methodologies and annual ISTAT data, to be aggregated by coastal municipalities and maritime area

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
3.2	Prosecutions for violations of the landscape code	P	A	Av	Num	ANN	SA	New indicator, extraction on ISTAT survey by proxy, to be characterized by coastal municipalities
3.3	Number of fixed infrastructure at sea and distance/visibility from the coast	P	A	Av	Num	ND	SA	New, platform data and Offshore Wind from MISE/MITE visual impact estimation methodologies to be finalized
3.4	Regional Landscape Planning Update	G	P	Av	Num	ANN	AM	New, MIC expertise, timely detection
3.5	Presence Coastal Scope Plans	G	P	Av	Num	ND	AM	New, by Regions and MIC Landscape Superintendence Departments, timely survey.
3.6	Resource adequacy of SABAP and SNPCS offices.	G	A	Eff	Num units	ANN	AM	New, by the offices involved, timely detection to be related to actual needs and not only to regulatory requirements
3.7	Number of recovery cultural heritage restoration work carried out in the implementation phases of the planprojects	S	A	Av	Num projects	ANN	AM	New, by MIC Landscape Superintendencies, data flow to be established in relation to management tools used
3.8	Number SNPCS Protective Interventions.	S	P	Av	Num interventions, protected heritage value	ANN	AM	New, by MIC Submarine Cultural Heritage Superintendence, data flow to be established in relation to management tools used
3.9	Number of SNPCS seizure interventions.	P	P	Av	Num interventions, recovered asset value	ANN	AM	New, by MIC Submarine Cultural Heritage Superintendence, data flow to be established in relation to management tools used
3.10	European Projects on Coastal Landscape and Cultural Heritage.	G	A	Av	Num projects, Euro	ANN	NAZ	New, edited by Regions and MIC Landscape Superintendence Departments, timely survey.

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
3.11	Number of awareness projects on intangible heritage	G	A	Av	Num projects, Euro	ANN	NAZ	New, edited by Regions and MIC Landscape Superintendence Departments, timely survey.
3.12	Number of sites/evidence related to known archaeological properties as a result of preventive archaeology procedures related to the implementation phases of the plan	S	A	Av	Num sites	ANN	AM	New, by MIC Landscape Superintendencies, data flow to be established in relation to management tools used
3.13	Number of cultural heritage restoration work carried out in the implementation phases of the plan	S	A	Av	Num interventions	ANN	AM	New, by MIC Landscape Superintendencies, data flow to be established in relation to management tools used

#### Sectors and uses - Navigation safety, maritime security and surveillance

This area brings together three closely related activities, safety of navigation related to maritime traffic, safety for people and surveillance related to pollution prevention. These matters are largely managed at the community level through the European Union Agency for Safety at Sea (EMSA), which also maintains a monitoring program on oil spill pollution events using satellite data. At the national level, the General Command of the Harbour Master's Office contributes to the European project and carries out aerial remote sensing activities with its equipment.

For the navigation safety-related part of the safety regulations, it is believed that we can rely on the control activities carried out by the individual harbor master's offices, which perform traffic control and SAR nuclei among their institutional tasks.

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
4.1	Number of Oil Spill Events Detected - CleanSeaNet Program (surveillance).	P	P	Eff	Num events	ANN	SA	Existing, EMSA, requires verification and data harmonization from MIMS/MITE data flow to be established
4.2	Number of Oil Spill events detected - MARICOGECAP Environmental Remote Sensing Program (surveillance).	P	A	Eff	Num events	ANN	SA	Existing, EMSA, requires verification and data harmonization from MIMS/MITE data flow to be established
4.3	Ratio of Checks/Infractions Detected on Compliance with Safety Equipment (Safety Navigation)	G	A	Eff	%	ANN	SA	New, activity data in the availability of MIMSMARICOGECAP, initial processing and

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
								data flow to be activated.
4.4	Number of SAR (maritime safety) incidents and operations.	P	P	Eff	Num events	ANN	BAC	New, activity data in MIMS MARICOGECAP availability, manual processing to be reconciled with weather, traffic and other variables.

### Sectors and Uses - Fishing

The use related to fisheries has six main OSs below:

SO 1 Promoting the sustainable development of fish supply chains	The proposed socio-economic and governance indicators make it possible to collect data that when integrated give comprehensive information on the state of the sector's growth and production, its level of development with a view to technological advancement and promotion of human capital with a focus on fishermen's health and safety
SO 2 Facilitate the implementation of the forecasts of the European and National Multi-Year Management Plans in the Geographical Sub-Areas (GSAs).	The proposed socio-economic and governance indicators make it possible to collect data that when integrated give comprehensive information on the state of growth and production of the sector, of its level of development with a view to technological advancement and promotion of human capital with a focus on the health and safety of fishermen. Pressure indicators make it possible to monitor the sector's level of environmental sustainability.
SO 3 Promotion, development and spatial management of small coastal fisheries practiced with sustainable techniques	The proposed socio-economic and governance indicators make it possible to collect data that when integrated give comprehensive information on the state of growth and production of the sector, of its level of development with a view to technological advancement and promotion of human capital with a focus on the health and safety of fishermen. Pressure indicators make it possible to monitor the sector's level of environmental sustainability.
SO 4 Encourage the establishment of areas aimed at the recovery and protection of fish stocks and protection of Essential Fish Habitat (EFH)	Progress in achieving this MD is monitored through governance indicators related to implementation of transboundary agreements to support biodiversity restoration and protection of fish stocks including in transnational areas, and effectiveness indicators through definition of new areas designated as ZTBs and FRAs
SO 5 To foster cooperation among states in order to arrive at concerted measures for the sustainable management of the activities of their respective national fisheries sectors	Progress in achieving this MD is monitored through governance indicators related to the implementation of transboundary agreements to support the restoration of biodiversity and protection of fish stocks including in transnational areas

OS 6 Monitoring and combating illegal fishing	Progress in achieving this MD is monitored through governance indicators related to the presence and implementation of programs dedicated to combating illegal fishing
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The proposal for priority monitoring indicators related to this theme complements the indicators used by the 2014-2020 EMFF 3-year national program as these were assessed as consistent with the Plans' MDP. However, there is a need to make the data produced by that national program complete from a spatial and temporal perspective. For this to happen, it is necessary that data for the indicators shown in Table 3 be collected and provided on an annual basis in order to have constantly updated data. These data will then be further analyzed at the mid-term review to see how the results of the measures implemented by the Plan have changed over time and inform the Plan itself. Data should also be aggregated and provided on a basin and/or sub-area scale so that it is spatially complete. Several indicators used in the monitoring subprograms of the Marine Strategy have been assessed as suitable with those identified as priorities and integrated. The data collected through these indicators are consistent but their completeness on spatial and temporal scales needs to be ascertained.

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
5.1	Number of national projects on conservation measures, reducing the impact of fishing on the marine environment, and adapting fisheries to species protection	G	A	Av	no. of projects	ANN	AM, SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
5.2	Number of projects on protection and restoration of marine biodiversity and ecosystems	G	A	Av	no. of projects	ANN	AM, SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
5.3	No. of transboundary projects on conservation measures, reducing the impact of fisheries on the marine environment, and adapting fisheries to species protection	G	A	Av	no. of projects	ANN	AM	new -MIPAAF
5.4	Percentage of Italian marine waters in which ZTBs and FRAs are established.	A	P	Eff	% area	ANN	AM	new -MIPAAF
5.5	Number of ZTBs and FRAs established	A	P	Eff	No. of ZTB and FRA	ANN	AM	new -MIPAAF
5.6	Estimated infractions for noncompliance with ZTB and FRA.	P	P	Eff	% of fleet	ANN	AM	new -MIPAAF
5.7	Number of projects on fishing opportunity allocation systems	G	A	Av	no. of projects	ANN	SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
5.8	No. of projects on promotion of human capital and social dialogue, diversification and new forms of income, start-up for fishers as well as health and safety	G	P	Av	no. of projects	ANN	SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
5.9	Change in the volume of aquaculture production certified under voluntary sustainability schemes	IF	P	Eff	ton	ANN	AM, SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
5.10	Number of projects on decreasing the impact of marine litter derived from fishing and aquaculture activities	G	P	Av	no. of projects	ANN	AM, SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
5.11	Developing and updating regulatory filings for marine litter production and disposal	G	A	Av	Presence/absence of investigations	ANN	SA	new - MIPAAF
5.12	Change in net income related to commercial fishing sector	IF	A	Eff	Euro	ANN	SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
5.13	Change in value of output related to commercial fishing sector	IF	A	Eff	Euro	ANN	SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
5.14	Jobs created in the commercial fishing sector	IF	A	Av	no. of jobs	ANN	SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
5.15	Jobs retained in commercial fishing sector	IF	A	Eff	no. of jobs	ANN	SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
5.16	Landings subjected to material control	G	P	Av	n° landings	ANN	SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
5.17	Variation in unwanted catches	P	P	Eff	ton	ANN	SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
5.18	Percentage change in unwanted catches	P	P	Eff	% catches	ABB	SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
5.19	Change in production volume	A/P	P	Eff	ton	ANN	SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
5.20	Current fishing mortality (Fcurr) or exploitation rate (E), for fish stocks of target species in commercial fisheries that currently have fishing mortality above the relevant sustainable reference limit	P	P	Eff	Fcurr o E	ANN	SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
5.21	Percentage of area related to substrates exploitable by fisheries that have interaction with the seafloor in an active	P	A	Eff	% area	ANN	SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
	manner, which is under a protection regime							
5.22	Percentage of the fleet operating fishing gears that have active seafloor interaction (particularly hydraulic dredges and trawls with LFT < 15 m) equipped with instruments for recording and transmitting vessel position data	P	P	Eff	% fleet	ANN	SA	Existing data flow, periodic, verify temporal cadence and spatial coverage of data - MITE - MSFD
5.23	Extent of the seafloor significantly influenced by anthropogenic activities related to fisheries for different substrate types and transmission of vessel position data	P	P	Eff	km2	ANN	SA	Existing data flow, periodic, verify temporal cadence and spatial coverage of data - MITE - MSFD
5.24	Change in energy efficiency of capture activity (l fuel, ton landed)	IF	A	Eff	l fuel/ton of landed	ANN	SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
5.25	Change in % of fleets in unbalanced situation.	IF	A	Eff	% fleets	ANN	SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
5.26	Jobs created in the small-scale fishing and fishing tourism and ichthyic tourism sector	IF	P	Av	no. of jobs	ANN	SA	new - MIPAFF
5.27	Jobs retained in the small-scale fishing and fishing tourism and fish tourism sector	IF	P	Eff	no. of jobs	ANN	SA	new - MIPAFF
5.28	Net profit and its change related to the small-scale fishing and fish and fish tourism sector (Euro)	IF	P	Eff	Euro	ANN	SA	new - MIPAFF
5.29	No. of projects in the field of engine replacement or modernization	G	A	Av	no. of projects	ANN	SA	new - MIPAFF
5.30	No. of projects in the field of developing new maritime technologies in order to decrease greenhouse gas emissions	G	A	Av	no. of projects	ANN	SA	new - MIPAFF
5.31	Development and updating of regulatory instances of recreational fishing in Italian marine waters and evaluation of its impact	P/G	A	Av	Presence/absence of investigations	ANN	SA	MATTM - MSFD
5.32	Development of programs of monitoring, control, surveillance and verification activities relevant to port state measures to combat illegal unreported and unregulated (IUU) fishing	G/P	A	Av	Presence/absence of dedicated programs	ANN	SA	new - MIPAFF



## Sectors and Uses - Aquaculture

The aquaculture sector reports two strategic objectives below:

SO 1 Promoting the sustainable growth of the aquaculture sector.	The combination of socio-economic and governance indicators, both progress and effectiveness, allows monitoring of the sector's growth and sustainability
SO 2 Promote quality aquaculture and support the process of establishing Allocated Zones for Aquaculture (AZAs).	Through the governance indicator of progress dedicated to projects addressed to the definition of AZAs, the approach to this OS is monitored. The combination of socio-economic and governance indicators, including effectiveness, allows monitoring of the sector's growth and sustainability

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
6.1	New areas used for aquaculture sites.	IF	P	Eff	no. of areas	ANN	SA	new - MIPAAF
6.2	Change in aquaculture production volume	IF	P	Eff	ton	ANN	SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
6.3	Change in aquaculture production value	IF	A	Eff	Euro	ANN	SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
6.4	Change in net income	IF	A	Eff	Euro	ANN	SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
6.5	Jobs created in the aquaculture sector	IF	P	Av	no. of jobs	ANN	SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
6.6	Maintained jobs	IF	P	Eff	no. of jobs	ANN	SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
6.7	Aquaculture enterprises providing environmental services	IF	P	Av	no. of companies	ANN	SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
6.8	Change in production volume of organic aquaculture	IF	P	Av	ton	ANN	SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
6.9	Change in the volume of aquaculture production certified under voluntary sustainability schemes	IF	P	Av	ton	ANN	SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
6.10	No. of projects in the field of productive investment for aquaculture	G	P	Av	n° projects	ANN	AM, SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
6.11	No. of projects on promotion of aquaculture human capital in general and new aquaculture farmers	G	P	Av	n° projects	ANN	AM, SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
6.12	No. of projects on reducing the impact of aquaculture on the environment (eco-management and audit systems, environmental services related to organic aquaculture)	G	P	Av	n° projects	ANN	AM, SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
6.13	No. of projects in the area of increasing the potential of aquaculture sites and public and animal health measures	G	P	Av	n° projects	ANN	AM, SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
6.14	No. of projects in the field of aquaculture stock insurance	G	A	Av	n° projects	ANN	AM, SA	existing data flow, periodic, verify time cadence - MIPAAF - FEAMP
6.15	No. of projects on AZA definition in accordance with GFCM guidelines and new national guidelines	G	P	Av	n° projects	ANN	AM, SA	new - MIPAAF

### Sectors and uses - Maritime transport

Regarding the issue of maritime transport, the SOs of the plan call for improved environmental aspects, greater collaboration with other sectors and integrated logistics, and improved performance in relation to the national port and logistics plan. More difficult to quantify is the integration with other existing planning systems.

OS1 Promote the use of alternative fuels, reduce discharges into the sea, improve onshore waste collection and management of dredged sediment	Goal linked to sustainability indicators promoted as part of specific projects by individual port authorities (e.g., ECOPORTS 7.1-7.10) with regard to effectiveness, effects are also attested by internal elements of procedures (7.11) and routine environmental indicators (7.13).
SO2 Promote European and regional collaboration on maritime transport and multimodality	Collaborative activities are largely dictated by regulatory directions or market needs: however difficult it is to conduct a survey of ongoing activities and supra-national bodies.
OS3 To contribute to increasing the competitiveness of Italian ports, the sharing of "best practices," and the implementation of the National Strategic Plan for Ports and Logistics (PSNPL)	The PSNPL contains a number of actions but few performance indicators: there needs to be careful reading of the numbers in the statistics collected by ESPO and programming the data flow in an automatic form to identify trends
OS4 Promote integration and dialogue among existing planning systems particularly with regard to the integration of strategic port planning, land planning, and sea plans	These are planning tools that involve different actors: again, a survey of current activities is useful, and a reading of scientific production in the area of maritime spatial planning may be useful

The sector is mature and highly digitized, numerous socio-economic indicators can be taken from the periodic data collection of institutional entities (ISTAT, EUROSTAT, ESPO) and from socio-economic surveys concerning the sector. In particular, the ESPO (European Sea Ports Organization) secretariat prepares a report on the performance of European ports from a sustainability perspective (Ecoports) to which not all Italian ports contribute but which can be a point of reference for identifying homogeneous indicators that can be easily surveyed by the Port System Authorities. Also available from the ESPO institutional website are *deliverables from the Portopia* project that give valuable methodological guidance for performance indicators related to the integration of ports in the cross-border network.

Many ports also implement the PMIS (Port Management Information System) for computerized ship file management from which aggregate information can be extracted according to aspects of interest.

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
7.1	Ecoports - A Existence of a Certified Environmental Management System -EMS (ISO, EMAS, PERS)	G	A	Av	Num	ANN	SA (port)	new, System Authority - upon joining the Ecoports project.
7.2	Ecoports - B Existence of an Environmental Policy.	G	A	Av	Num	ANN	SA (port)	new, System Authority - upon joining the Ecoports project.
7.3	Ecoports - C Environmental Policy makes reference to ESPO's guideline documents.	G	A	Av	Num	ANN	SA (port)	new, System Authority - upon joining the Ecoports project.
7.4	Ecoports - D Existence of an inventory of relevant environmental legislation	G	A	Av	Num	ANN	SA (port)	new, System Authority - upon joining the Ecoports project.
7.5	Ecoports - E Existence of an inventory of Significant Environmental Aspects (SEA)	G	A	Av	Num	ANN	SA (port)	new, System Authority - upon joining the Ecoports project.
7.6	Ecoports - F Definition of objectives and targets for environmental improvement	G	A	Av	Num	ANN	SA (port)	new, System Authority - upon joining the Ecoports project.
7.7	Ecoports - G Existence of an environmental training program for port employees	G	A	Av	Num	ANN	SA (port)	new, System Authority - upon joining the Ecoports project.
7.8	Ecoports - H Existence of an	G	A	Av	Num	ANN	SA (port)	new, System Authority - upon

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
	environmental monitoring program.							joining the Ecoports project.
7.9	Ecoports - I Environmental responsibilities of key personnel are documented	G	A	Av	Num	ANN	SA (port)	new, System Authority - upon joining the Ecoports project.
7.10	Ecoports - J Publicly available environmental report	G	A	Av	Num	ANN	SA (port)	new, System Authority - upon joining the Ecoports project.
7.11	PMIS ship practice - Shipboard waste (quantity , exemptions...)	A	P	Eff	kg	MENS	SA (port)	New, CGCP, automatic data flow from existing system
7.12	Number of Docks Served by Onshore Power Supply	G	P	Eff	Num	ANN	SA (port)	New, System Authority, manual detection
7.13	Port area air quality	A	P	Eff	Num overruns	MENS	SA (port)	existing, Competent ARPA, automatic data flow
7.14	PORTOPIA Connectivity	IF	A	Eff	Intex	ND	SA (port)	to be determined
7.15	PORTOPIA Costs	IF	A	Eff	Eur	ND	SA (port)	to be determined
7.16	PORTOPIA Congestion	IF	A	Eff	Index	ND	SA (port)	to be determined
7.17	Status of TEN-T Corridor Workplan Implementation in the Relevant Area.	G	A	Av		ND	BAC	European Coordinator
7.18	goods embarked and disembarked	IF	P	Eff	TEU	ANN	SA(reg/port)	ISTAT - Maritime Transport
7.19	passengers embarked and disembarked	IF	P	Eff	Num pax	ANN	SA(reg/port)	ISTAT - Maritime Transport
7.20	number of ships arrived	IF	P	Eff	Num ships	ANN	SA(reg)	ISTAT - Maritime Transport
7.21	gross tonnage ships arrived	IF	P	Eff	ton	ANN	SA(reg)	ISTAT - Maritime Transport
7.22	ESPO THROUGHPUT STATISTICS - TOTAL TONNAGE	IF	A	Eff	ton	TRIM	SA (port)	Existing, System Authority - Automatic Data Flow
7.23	ESPO THROUGHPUT STATISTICS - LIQUID BULK	IF	A	Eff	ton	TRIM	SA (port)	Existing, System Authority - Automatic Data Flow
7.24	ESPO THROUGHPUT STATISTICS - DRY BULK	IF	A	Eff	ton	TRIM	SA (port)	Existing, System Authority - Automatic Data Flow
7.25	ESPO THROUGHPUT STATISTICS - GENERAL CARGO	IF	A	Eff	ton	TRIM	SA (port)	Existing, System Authority - Automatic Data Flow

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
7.26	ESPO THROUGHPUT STATISTICS - Number of Containers (in TEU)	IF	A	Eff	Num TEU	TRIM	SA (port)	Existing, System Authority - Automatic Data Flow
7.27	ESPO THROUGHPUT STATISTICS - Cruise passengers	IF	A	Eff	Num pax	TRIM	SA (port)	Existing, System Authority - Automatic Data Flow
7.28	ESPO THROUGHPUT STATISTICS - Ro-Ro units (private/commercial vehicles).	IF	A	Eff	Num ships	TRIM	SA (port)	Existing, System Authority - Automatic Data Flow
7.29	Number of standing tables or service conferences with the participation of the port system authority	G	P	Av	Num	ANN	SA (port)	New, System authority, manual detection
7.30	Number of participations in cross-border projects by the port system authority	G	P	Av	Num	ANN	SA (port)	New, System authority, manual detection

### Sectors and Uses - Energy

The Plan directs the energy theme toward the development of the areas of renewable energy production from the sea with particular reference to wave, tide and currents, and solar, including through the identification of suitable areas. It pays attention to enhancing environmental, social and economic sustainability by identifying marine areas for the capture and geological storage of CO<sub>2</sub> and defining, where permitted, the conduct of hydrocarbon prospecting, exploration and production activities. It also helps promote European cooperation. The relevant SOs follow:

SO 1 Help foster the energy transition to renewable and low-emission sources through the development of offshore renewable energy production	Through governance indicators capable of monitoring the progress of the respective sectors, accompanying them toward their emergence and development. To support this, pressure indicators from the MSFD's monitoring program capable of identifying the effects of installations on the marine environment in terms of noise pollution and the ecological status of waters were chosen.
SO 2 Pursue environmental, social and economic sustainability of offshore hydrocarbon exploration, exploration and production activities	Through governance indicators capable of monitoring the progress of the respective sectors, accompanying them toward their emergence and development. To support this, pressure indicators from the MSFD's monitoring program capable of identifying the effects of installations on the marine environment in terms of noise pollution and the ecological status of waters were chosen.

SO 3 Promote the conversion of platforms and infrastructure associated with depleted deposits and synergies between compatible maritime activities	Through governance indicators capable of monitoring the progress of the respective sectors, accompanying them toward their emergence and development. To support this, pressure indicators from the MSFD's monitoring program capable of identifying the effects of installations on the marine environment in terms of noise pollution and the ecological status of waters were chosen.
SO 4 Promote European and regional energy cooperation.	Through governance indicators capable of monitoring the progress of treaties to which Italy will be a party.
OS 5 Encourage planning of suitable areas for CO capture and geological storage <sup>2</sup>	Through governance indicators capable of monitoring the progress of the respective sectors, accompanying them toward their emergence and development. To support this, pressure indicators from the MSFD's monitoring program capable of identifying the effects of installations on the marine environment in terms of noise pollution and the ecological status of waters were chosen.

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
8.1	Definition of "baseline level" for continuous low-frequency sounds ("ambient noise") in the three Marine Subregions (Indicator 11.2.1 of SPr. 7.2 MSFD)	P	A	Eff	decibel	ANN	AM	existing MITE - MSFD program automatic flow?
8.2	Establishment and implementation of a national register related to all anthropogenic activities that introduce impulsive sounds in the 10 Hz - 10 kHz range in the marine environment (Indicator 11.1.1 of SPr 7.1 MSFD)	P	A	Eff	kHz	ANN	NAZ	existing MITE - MSFD program automatic flow?
8.3	Number of projects in energy efficiency and climate change mitigation (EMFF Obj.spec. 5, measure 3, 1.7)	G	P	Av	N*projects	ANN	AM	existing MITE - MSFD program automatic flow?
8.4	Number of anthropogenic activities introducing impulsive sounds in the range 10 Hz - 10 kHz in the marine environment entered in the register out of the total number of authorized facilities.	G	P	Eff	kHz	ANN	AM	existing MITE - MSFD program automatic flow?

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
	Indicator 11.1.2 of SP r 7.1 MSFD)							
8.5	Number of offshore wind and wave blade installations that support the emergence and growth of energy production from the sea	G	P	Av	No. of wind turbines	ANN	AM	new MITE action periodic flow
8.6	Number of projects funded for the development and installation of infrastructure for renewable energy production such as wind and wave blades	G	A	Av	N°projects	ANN	AM	new MITE action periodic flow
8.7	Number of platforms and infrastructure associated with depleted reservoirs repurposed	G	P	Av	No. platforms	ANN	AM	new MITE action periodic flow
8.8	Number of platform and infrastructure development projects associated with disused deposits in facilities converted to multi-use in synergy with other activities	G	P	Av	N°projects	ANN/TRIENN	AM	new MITE action periodic flow
8.9	Number of treaties concluded at the European, national, and regional level on energy issues	G	P	Av	No. treated	ANN/TRIENN	NAZ	new MITE action periodic flow
8.10	Number of areas designated for CO <sub>2</sub> capture and geological storage.	G	P	Av	No. of areas	ANN/TRIENN	AM	new MITE action periodic flow
8.11	Number of projects marked by the definition of suitable areas for geological storage of CO <sub>2</sub>	G	P	Av	N°projects	ANN/TRIENN	AM	new MITE action periodic flow
8.12	Amount of energy produced through renewable technologies (i.e. wind and wave) present within the sub-area (MW)	IF	P	Eff	MW	ANN	SA	new MITE action periodic flow
8.13	Number of available and dedicated jobs in the field of energy production using renewable sources	IF	A	Av	No. of places	ANN	AM	existing ISTAT program automatic flow
8.14	Sound levels expressed in dB re1µPa RMS measured at monitoring stations and the noise maps prepared for the subregions.	P	A	Eff	dB re1µPa RMS	ANN	SA	existing MITE - MSFD program

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
	(Indicator 11.2.2 of Spr. 7.2)							
8.15	Number of projects in the field of construction and development of platforms and facilities for the purpose of producing energy through utilization of renewable sources	G	P	Av	N°projects	ANN	SA	new MITE - MSFD program periodic flow
8.16	Number of projects in energy efficiency and climate change mitigation (EMFF Obj.spec. 5, measure 3, 1.7)	G	P	Av	No. projects	ANN	SA	new MITE - MSFD program periodic flow
8.17	Amount of CO2 produced	P	P	Eff	tonCO2	ANN	SA	existing MITE - MSFD program periodic flow
8.18	Regulations aimed at limiting impacts from sealing on biogenic substrates related to the construction and/or installation of anthropogenic works (Indicator 6.1.1 SPr 2.16 MSFD)	P	A	Eff	No. Regulations	ANN	SA	existing MITE - MSFD program
8.19	Extent of seafloor significantly affected by anthropogenic activities for different substrate types (indicator 6.4.1 SPr 2.1.2.2,2.5,3,4 MSFD)	P	A	Eff	Km2	ANN	SA	existing MITE - MSFD program
8.20	Significant impacts on physiographic conditions and hydrological processes resulting from coastal and offshore infrastructure being built or planned as of 2012 (Indicator 7.1.1 SPr 6.1,6.2,6.3,6.4,6.5,6.6,6.7,6.8, 6.9,6.10,6.11,6.12,6.13 MSFD)	P	P	Eff	-	ANN	SA	existing MITE - MSFD program

### Sectors and uses - Coastal defense

<p>SO1 Promote the development, harmonization and implementation of strategies and measures to defend the coast and combat erosion provided for in the Flood Risk Management Plans prepared at the scale of the Hydrographic District in fulfillment of the provisions of the Floods Directive (2007/60/EC) and in the Coastal Plans/Integrated Coastal Zone Management Plans prepared by many regions</p>	<p>The combination of socio-economic and governance indicators, both progress and effectiveness, allows monitoring and harmonization of the sector across regions/sub-areas (g.1, 9.10-g.16) .</p>
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SO2 Ensure the best consistency between the uses and vocations of sea use provided in the MSP Plans and coastal uses, with reference to their preservation in a scenario of necessary adaptation to ongoing climate change	The identified pressure and environmental indicators allow monitoring the state of the coast and progress/effectiveness under possible climate scenarios (9.3-9.5).
OS3 To properly consider and address the issue of using and safeguarding underwater sands for beach nourishment, to be considered as a strategic resource for coastal defense and adaptation plans	The combination of pressure and socio-economic indicators makes it possible to monitor the amount and interventions of beach nourishment annually (9.2; 9.6).

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
9.1	Beaches prone to erosion	P	P	Eff	km	ANN	AM	existing ISPRA program automatic flow
9.2	Beach nourishment interventions	G	P	Eff	Mc	ANN	AM	existing ISPRA program automatic flow
9.3	Land consumption coastal strip	P	A	Eff	acres	ANN	AM	Reconnaissance carried out by ISPRA/SNIPA with satellite data processing and publication of data annually.
9.4	Percentage of urbanized land cover	P	P	Av	%	ANN	AM	existing ISPRA program automatic flow
9.5	Volume of waste collected for a given length of shoreline	P	A	Eff	mc	ANN	SA	existing ISPRA program automatic flow
9.6	Cost of beach nourishment interventions	IF	P	Av	Euro	ANN	SA	existing ISPRA program automatic flow
9.7	Percentage coverage of protected areas along the coast	A	P	Eff	%	ANN	AM	existing ISPRA program automatic flow
9.8	Coverage of protected areas along the coast	A	P	Eff	acres	ANN	AM	existing ISPRA program automatic flow
9.9	Number of the population living in the coastal area	P	A	Av	N	ANN	SA	existing ISTAT program automatic flow
9.10	Undeveloped coastal area converted to developed area	A	P	Av	acres	ANN	AM	existing (ICZM) ISPRA program periodic flow

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
9.11	Percentage change in coastline	P	P	Eff	%	ANN	SA	existing ISPRA program periodic flow
9.12	Length of coastline protected and defended	P	P	Eff	km	ANN	AM	existing ISPRA program automatic flow
9.13	Extent of the "emerged free beach"	P	A	Av	m <sup>2</sup>	ANN	SA	existing ISPRA/Region program periodic flow
9.14	Submerged beach slope	P	A	Eff	m	ANN	SA	existing ISPRA/Region program periodic flow
9.15	Subsidence of the coastal strip	P	P	Eff	m	ANN	SA	existing ISPRA/Region program automatic flow
9.16	Change in volume of emerged and submerged beach	A	P	Eff	mc	ANN	AM	existing ISPRA program automatic flow

### Sectors and Uses - Tourism

Regarding the theme related to tourism, the plan's SOs provide for increased attention with respect to different forms of tourism and the impact they have on the environment and coastal landscape. In addition, the Plan promotes the organic management of coastal tourism offerings, including by fostering dialogue with other economic sectors of the sea.

SO 1 Promote sustainable forms of coastal and maritime tourism.	For the same number of arrivals and presences, measure seasonal concentration and impacts (indicators 7.1, 7.2...). Indicators make it possible to monitor tourism-related aspects such as the amount of waste and electricity in terms of both effectiveness and progress
SO 2 Promote consistent planning actions on land and sea, including for tourism purposes	The combination of governance and socio-economic indicators makes it possible to monitor regionally promoted sustainable tourism actions along the coastal area.
SO 3 Contributing to the diversification of tourism products and services and countering the seasonality of demand for inland, coastal and maritime tourism	The combination of governance and socio-economic indicators makes it possible to monitor regionally promoted sustainable tourism actions along the coastal area.

Existing indicators make available a variety of elements to be monitored that provide a seasonally and annually updated picture capable of identifying the facets of which tourism, in its forms, is composed. The impact on the environment and the local economy are certainly the two most influential issues on which monitoring focuses, and numerous indicators are available from ISPRA's

periodic data collection and the Bathing Water Monitoring Plan (2006/7/EC), which can provide useful information on the quality status of waters in terms of physical, geographic, hydrological and biological characteristics, while also identifying the causes of biological pollution if found abruptly. Other indicators, focused more on sustainable tourism, can instead be derived from the ETIS Toolkit.

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
10.1	Agent load on the territory due to tourism, both in terms of weight (arrivals) and effort endured (presences) ISPRA-environment	P	P	Av	No. of people	ANN	NAZ, SA	existing ISPRA/ISTAT program automatic flow
10.2	Average carbon footprint of tourists and hikers traveling from their home to the destination (ETIS Toolkit Indicator D.1.4)	P	A	Eff	CO <sub>2</sub>	STAG	REG	existing ISPRA program periodic flow
10.3	Share of municipal waste attributable to the tourism sector ISPRA-environment.	P	P	Eff	kg/inh	ANN	NAZ, REG	existing ISPRA program automatic flow
10.4	Electricity consumption of the tourism sector ISPRA-environment	IF	P	Eff	mln kWh	ANN	NAZ	existing ISPRA program automatic flow
10.5	Number of tourist overnights in facilities that adhere to climate change mitigation programs and propose activities and strategies directed toward supporting sustainable tourism	IF	P	Av	N	STAG	BAC	new ISTAT/ISPRA program periodic flow
10.6	Number of tourist overnight stays per month (Indicator B.1.1 of the ETIS Toolkit)	IF	A	Eff	N	STAG	BAC, SA	existing Region/ISPRA program automatic flow
10.7	Percentage of tourism enterprises/structures in the destination that use a voluntary certification/label for measures related to environment/quality/sustainability and/or corporate social responsibility (ETIS Toolkit Indicator A.1.1)	G	A	Eff	%	ANN	BAC	new ISPRA/ISTAT program periodic flow
10.8	Percentage of tourism enterprises participating in climate change mitigation programs, such as CO <sub>2</sub> offsetting, low energy systems, etc., and implementing "adaptation" responses and actions (ETIS Toolkit Indicator D.2.1)	G	A	Av	%	ANN	BAC	new Region program periodic flow
10.9	Number of "blue flags" awarded to various Italian regions for beaches and tourist landings ISPRA-environment	A	P	Av	N	ANN	NAZ, REG	existing ISPRA program automatic flow
10.10	Percentage of local enterprises in the tourism sector that actively	G	A		%	ANN	BAC, SA	new ISPRA/ISTAT

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
	support the protection, conservation and management of biodiversity and local landscapes (ETIS Toolkit Indicator D.7.1)							program periodic flow
10.11	Percentage of locally produced food, beverages, goods and services purchased by tourism enterprises in the destination (ETIS Toolkit Indicator B.4.1)	IF	A	Av	%	ANN	NAZ, BAC	new Region program periodic flow
10.12	Percentage of beaches awarded Blue Flag. (Supplementary Indicator of the ETIS Toolkit + ISPRA-environment)	A	P	Eff	%	ANN	SA	existing ISPRA program automatic flow
10.13	Percentage of accommodation facilities and tourist attraction infrastructure located in "vulnerable zones" (ETIS Toolkit Indicator D.2.2)	P	A	Av	%	STAG	SA	new ISPRA/ISTAT program automatic flow
10.14	Number of docks and moorings for recreational boats (ETIS Toolkit Supplementary Indicator)	P	A	Av	N	STAG	SA	new ISPRA program automatic flow
10.15	Environmental pressure of major tourist infrastructure: marinas	P	P	Eff	No. berths x coastal km	ANN	SA	existing ISPRA program automatic flow
10.16	Tourist flows by mode of transportation	A	P	Eff	N	ANN	SA	existing ISPRA program automatic flow

### Research and innovation

SO1 Target marine research activities on the knowledge needs of the Plan to strengthen and support the planning process and its sustainable growth objectives	The main indicators on research projects concern the budget allocated for some areas (11.1), but also in relation to scientific production and collaboration (11.4, 11.8)
SO2 Encourage the development of innovative technologies and solutions that can be used to improve the effectiveness of the Plan and whose dissemination should be promoted in the various sectors of the marine economy and marine areas	Technology transfer is carried out by a variety of actors. It is necessary to monitor not only the products of research in terms of patents and prototypes (11.2, 11.3) but also the processes initiated (11.9-11.13)
SO3 Encourage the maintenance and consolidation of the observation network and specific needs for experimentation and research, including in order to evaluate the effects and effectiveness of the Plan and support its updating	Objective related to governance indicators and quality judgments. Quantitative indicator regarding sensors useful (11.13)

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
11.1	Economic allocations for projects Blue Growth afferents from Italian public/private entities out of total funding received	S/E	P	Av	Euro	ANN	AM	New - MIUR - flow <a href="#">periodical</a>

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
11.2	No. of patents filed for new technologies and materials traceable by origin and/or use to the marine environment	G	P	Av	N	ANN	SA	New, MISE, periodic flow
11.3	No. of prototypes ready for industrialization On marine-related technology and innovation	G	A	Av	N	ANN	SA	New, ENEA, periodic flow
11.4	No. scientific publications from universities or research centers Italians on Blue Growth	G	P	Av	N	ANN	SA	New, MIUR, periodic flow
11.5	No. partnerships established between research centers or universities and enterprises For development of technologies and materials for Blue Growth	G	A	Av	N	ANN	SA	New, MIUR, periodic flow
11.6	No. vessels that have adopted on-board technologies by reduction of pollutants	G	A	Av	N	ANN	SA	New, MiPAAF - FEAMP, periodic flow
11.7	No. ports that have adopted technologies for the removal of waste in water	G	A	Av	N	ANN	SA	New, MiPAAF - FEAMP, periodic flow
11.8	Increased response rate to data calls	G	A	Av	%	ANN	AM	Existing, EMFF, indicator of output from the Program Operational FEAM 2014 - 2020
11.9	No. of projects on innovation, consulting services and partnerships with scientific experts	G	P	Av	N	ANN	SA	Existing, EMFF, indicator of output from the Program Operational FEAM 2014 - 2020
11.10	No. of projects on energy efficiency and climate change mitigation	G	P	Av	N	ANN	SA	Existing, EMFF, indicator of output from the Program Operational FEAM 2014 - 2020
11.11	No. of projects in the field of replacement or engine modernization	G	P	Av	N	ANN	SA	Existing, EMFF, indicator of output from the Program Operational FEAM 2014 - 2020
11.12	No. of projects concerning innovations, consulting services	G	P	Av	N	ANN	SA	Existing, EMFF, indicator of output from the Program

ID	Indicator	Type	P/A	Eff/Av	Units of Measurement	Period	Scale	Origin and characteristics
								Operational FEAM 2014 - 2020
11.13	No. of sampling stations with multiparameter probes and/or weather buoys	G	A	Av	N	ANN	SA	Existing, coastal ARPA, periodic flow

## Conclusions

The monitoring program should be viewed from the perspective of circularity (Figure 3). Its structure allows it to be constantly updated with respect to plan needs. It is necessary for the MP to be in continuous communication with the MSP implementation process with two main objectives: 1. to adapt over time according to the level of development of each sector and plan objectives that may vary in number, content, and level of detail with time and space; 2. to support the development of an adaptive plan process by informing in a timely manner the implementation of MSPs based on the knowledge gained during their monitoring, thus ensuring the implementation of appropriate plan measures to meet the objectives of pre-set.

A period of time is envisaged during which the integrated Italian MP is to be prepared through coordination of the authorities responsible for existing sectoral monitoring programs. During this time frame, provision is made for the establishment of sectoral monitoring programs if absent but necessary.

Once the national MP is put in place, annual or seasonal monitoring of all proposed indicators is expected with associated data collection to be forwarded to the competent authority and the TC. Mid-term reviews are suggested that would allow the data to be analyzed within a suitable time frame to track the trajectory of the MSPs in terms of efficiency. A technical report is expected to be prepared at each mid-term review.

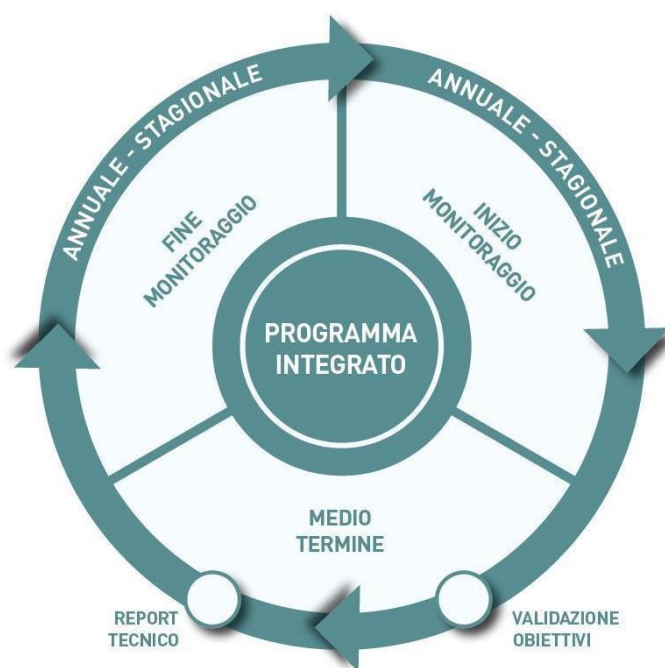


Figure 3: Graphic representation of the MP in its characteristic of double circularity: an annual/seasonal cycle involving continuous data collection and organization (the first cycle coincides with the beginning of monitoring) and a broader cycle involving mid-term review with validation of plan objectives

## Essential references

[Directive 2014/89/EU establishing a framework for maritime spatial planning](#)

[Marine Spatial Planning \(MSP\) Toolkit \(Chapter 4\)](#)

[Marine Spatial Planning A Step by Step Approach toward Ecosystem-Based Management \(Chapter 4\)](#)

[PartiSEApate Handbook on multi-level consultations in MSP](#)

[Stakeholder Participation in Environmental Policy Toolkit \(Chapter 3, 4 and 5\)](#)

[Stakeholder Mapping Guide For Conservation International Country Programs & Partners](#)

[The consensus building handbook: a comprehensive guide to reaching agreement \(1999\)](#)

<https://www.havochvatten.se/en/eu-and-international/marine-spatial-planning/consultation.html>

<https://www.msp-platform.eu/faq/stakeholder-involvement>

[\[Finland\] Feedback on Maritime Spatial Plan and its considerations](#)