

Guidance Factsheet for Common Indicator 15

Adopted at MAP FPs meeting (16-19 September 2025, Athens)

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Ecological Objective 7	Alteration of hydrographic conditions does not adversely affect coastal and marine ecosystems.	
Indicator Title	Location and extent of the habitats potentially impacted by hydrographic alterations	
Relevant GES definition	Related Operational Objective	Proposed Target(s)
Negative impacts due to new structure are minimal with no influence on the larger scale coastal and marine system.	Alterations due to permanent constructions on the coast and watersheds, marine installations and seafloor anchored structures are minimised.	Planning of new structures takes into account all possible mitigation measures in order to minimize the impact on coastal and marine ecosystem and its services integrity and cultural/historic assets. Where possible, promote ecosystem health.
Rationale		
Justification for indicator selection After agreeing to progressively apply the ecosystem approach (EcAp) to the management of human activities in the Mediterranean at the 15th Meeting of the Contracting Parties to the Barcelona Convention (COP15, 2008), the Contracting Parties agreed, at COP17 in 2012, on an overall vision and goals for EcAp, and on 11 ecological objectives for the Mediterranean. Among these ecological objectives was the Ecological Objective 7 („Alteration of hydrographic conditions“), with its clearly outlined operational objectives and indicators. EO7 corresponds to Descriptor 7 (Permanent alteration of hydrographic conditions does not adversely affect marine ecosystems) of the European Marine Strategy Framework Directive (MSFD). Ecological Objective 7 („Alteration of hydrographic conditions“) addresses permanent alterations in the hydrographic regime of currents, waves and sediments due to new large-scale developments that have the potential to alter hydrographic conditions. An agreed common indicator - 'Location and extent of habitats potentially impacted by hydrographic alterations' considers marine habitats which may be affected or disturbed by changes in hydrographic conditions (currents, waves, suspended sediment loads). There is a clear link between EO7 and other ecological objectives, especially EO1 (Biodiversity). Such link needs to be determined on a case-by-case basis. Refer to Annex 1 for habitats to be considered in EO7. Ultimately, the assessment of impacts, including cumulative impacts, is a cross-cutting issue for EO1 and EO7.		
Scientific References		
EC JRC (2015). Review of Commission Decision 2010/477/EU concerning MSFD criteria for assessing good environmental status Descriptor 7: Permanent alteration of hydrographic conditions does not adversely affect marine ecosystems EMEC Ltd (2005). Environmental impact assessment (EIA) guidance for developers at the European Marine Energy Centre. OSPAR Commission (2012). MSFD Advice document on Good environmental status - Descriptor 7: Hydrographic conditions. A living document - Version 17 January 2012. OSPAR Commission (2013). Report of the EIHA Common Indicator Workshop. Royal Haskoning DHV (2012). Environmental Impact Assessment (EIA) and Appropriate Assessment (AA) Evaluation of assessment tools and methods. Lot 2: Analysis of case studies of port development projects in European estuaries. Tidal River Development (TIDE) Interreg IVB Some reference and guidance documents on EIA can be found at:		

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http://ec.europa.eu/environment/eia/eia-support.htm and in the „Guidance Document on how to reflect changes in hydrographic conditions in relevant assessments” (UNEP/MAP/PAP, 2015).	
Policy Context and targets	
Policy context description Following the COP17 agreement on an overall vision and goals for EcAp, on 11 ecological objectives, operational objectives and indicators for the Mediterranean, a six-year cyclic review process of EcAp implementation was established (EcAp MED I 2012-2015), with the next EcAp cycle set to cover 2016-2021. At COP18, in 2013, the targets for achieving GES of the Mediterranean Sea and its coastal zone by 2020 were adopted. In addition, through Decision IG. 21/3 (the so called "COP18 EcAp Decision") the EcAp roadmap was agreed on. The Contracting Parties also agreed to design an Integrated Monitoring and Assessment Programme (IMAP) by COP19, which would, for the first time, ensure a common assessment basis for the Mediterranean marine and coastal environment. At COP19, in 2016, the IMAP was adopted. The IMAP provides guidance to the parties on how to practically implement quantitative monitoring and assessment of the ecological status of the Mediterranean Sea and coast in line with the EcAp. As part of the EcAp roadmap, expert-level monitoring discussions took place in the various Correspondence Groups on Monitoring (CORMONs) meetings on Biodiversity and Fisheries; Pollution and Litter; and Coast and Hydrography sub-clusters. An Integrated Correspondence Group on Monitoring Meeting (Integrated CORMON) took place on 30 March-1 April 2015, to discuss the main elements of the Integrated Monitoring and Assessment Programme. As for Protocols of the Barcelona Convention relevant for the EO7, the Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean calls to Contracting Parties of the Barcelona Convention for continuous monitoring of ecological processes, population dynamics, landscapes, as well as the impacts of human activities (Article 7 b). In addition, it calls to Parties to evaluate and take into consideration the possible direct or indirect, immediate or long-term impacts, including the cumulative impact of the projects and activities, on protected areas, species and their habitats (Article 17). Another Protocol of the Barcelona Convention, the Protocol on the Integrated Coastal Zone Management in the Mediterranean, in its Article 9, calls for Parties to minimize negative impacts on coastal ecosystems, landscapes and geomorphology, coming from infrastructure, energy facilities, ports and maritime works and structures; or where appropriate to compensate these impacts by non-financial measures. In addition, the Article 9 demands maritime activities to be conducted “in such a manner as to ensure the preservation of coastal ecosystems in conformity with the rules, standards and procedures of the relevant international conventions”. Out of other international legislation that can be relevant for the EO7 Ecological Objective, it is essential to mention Marine Strategy Framework Directive – MSFD 2008/56/EC since EcAp's EO7 corresponds to MSFD's Descriptor 7 to large extent. The hydrographic conditions outlined under the MSFD are, to a large extent, comparable to the hydromorphological conditions referred to under the Water Framework Directive (WFD) which calls for the protection of all water bodies, including coastal waters. EO7 overlaps with other policy frameworks, such as the Environmental Impact Assessment (EIA) procedure on the assessment of the environmental impacts of certain public and private projects; the Strategic Environmental Assessment (SEA) procedure on the assessment of the effects of certain plans and programs on the environment; assessments undertaken under Marine Spatial Planning (MSP); and in the context of integrated coastal zone management (ICZM).	

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Targets Planning of new structures takes into account all possible mitigation measures in order to minimize the impact on coastal and marine ecosystem and its services, integrity and cultural/historic assets. Where possible, promote ecosystem health.	
Policy documents Protocol on the ICZM in the Mediterranean - http://www.pap-thecoastcentre.org/pdfs/Protocol_publikacija_May09.pdf Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean - http://www.rac-spa.org/sites/default/files/protocole_aspdb/protocol_eng.pdf MSFD Directive - http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008L0056&from=EN WFD Directive - https://eur-lex.europa.eu/resource.html?uri=cellar:5c835afb-2ec6-4577-bdf8-756d3d694eeb.0004.02/DOC_1&format=PDF Other EU-related documents can be found at: http://ec.europa.eu/environment/eia/eia-support.htm	
Indicator analysis methods	
Indicator Definition The EO7 Common Indicator reflects location and extent of the habitats potentially impacted by the alterations and/or the circulation changes induced by them. It concerns area/habitat of the seafloor lost by the construction of the structure itself, i.e. the „footprint“ of the structure; and the surrounding area of potentially affected habitats. This surrounding area should be estimated based on the data/information extracted from the EIA (Environmental Impact Assessment) and/or Strategic Environmental Assessment (SEA) procedures to which these structures are subject.	
Methodology for indicator calculation Methodology used for indicator measurement encompasses elaboration on: (i) Mapping of the area where human activities cause permanent loss of the seafloor by the construction of the structure itself, i.e. the „footprint“ of the structure; and (ii) Mapping of the surrounding area around the structure of potential changes to habitats. These areas (under i and ii) should be estimated based on the data/information extracted from the Environmental Impact Assessment (EIA) and/or Strategic Environmental Assessment (SEA) reports required for such structures and possibly from Marine Spatial Planning (MSP) documents; and (iii) Intersection of the spatial map of the areas of these hydrographic changes (defined under i and ii) with spatial maps of habitats to determine the areas of individual habitat types that are impacted by hydrographic changes. Link to EO1- habitat map. Until the habitat map from EO1 is available the Contracting Parties will use their own habitat maps. <u>New structures to be considered under EO7 assessment:</u> As far as the type and dimension of structures to be taken into account: use the case-by-case approach depending on the nature of the coast, the function of the structure and the depth reached by the structure where appropriate threshold values are taken into account (such as absolute surface in m², range of depths where structure will be built (to avoid habitat “segmentation”). As an additional criterion it was agreed that all permanent structures, for which an EIA and/or a planning/building permit is required, should be considered. If the EIA does not provide a sufficient level of information, other available sources of information concerning similar or close sites have to be explored: historical evolution of sediment supply, analysis	

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of the evolution of the coastline and the seabed, analysis of the impact of existing defence structures and ports on the morphodynamics of the coastline and alike. These available data and studies are not directly applicable to assess hydrographic alterations induced by the new structure. Nevertheless, they can be used by experts to extrapolate evolution tendencies on the site of interest, thus providing a first level of characterization of expected hydrographic alterations and allowing to roughly specify their extent and location. At the end, the results of the above assessments are integrated on one single GIS layer (i.e. hydrographic alterations GIS layer). The last step of the EO7 indicator calculation consists of overlaying hydrographic alterations GIS layer with habitats GIS maps/layer. Calculations are made with GIS tools in order to define habitats potentially impacted by hydrographic alterations. If the assessment of hydrographic alterations presents a high level of uncertainty, a risk-based approach can be used to identify habitats that are most sensitive to expected alterations. To do this sensitivity matrix can be used (see for instance: La Rivière M. et al., 2018. <i>An assessment of French Mediterranean benthic habitats' sensitivity to physical pressures</i>. UMS PatriNat, AFB-CNRS-MNHN. Paris, 86 pp.). Due to the ecological importance of <i>Posidonia</i> meadows in the Mediterranean Sea and their vulnerability to coastal development, a specific paragraph for this habitat is presented. <u>Particular considerations for <i>Posidonia</i> meadows:</u> In addition to direct impacts, induced by the structure itself, which will definitively destroy the meadow by recovery, some construction techniques and then indirect impacts, following its construction, on currents and sedimentary transport, may also alter this habitat, on areas much larger than the structure footprint. Indeed, the <i>Posidonia</i> is very sensitive to water turbidity, even transient. Also, during the construction of the structure, a turbid cloud can be generated (discharge at sea of fine materials). This turbid cloud will decrease the transparency of the water, and therefore photosynthesis, in the short term; it can also be deposited on the seagrass meadow that can cause smothering by hyper sedimentation. The thinnest sediments can also be resuspended during storms, thus decreasing the transparency of the water in the long term. Major seagrass meadow destructions due to these phenomena have been observed, for example, in France following the construction of the ports of Pointe Rouge in Marseille and Mouillon in Toulon. Moreover, the construction machines are often fixed on the bottom, for stability reasons, directly and / or by means of anchors, which has a very negative impact on the bottoms: digging holes (feet of the machines) or furrows (chains of anchors) in the <i>Posidonia oceanica</i> meadows. Once the structure is built, its presence can modify the sedimentary transit and induce areas of erosion and accumulation around it. These modifications will alter the equilibrium between the sedimentation rate and the vertical growth of <i>Posidonia</i>. So, if the rate of sedimentation exceeds 5-7cm / year, the vegetative points die; conversely, if this rate is zero or negative (sediment departure), the rhizomes are loosened; they are then very sensitive to breakage (hydrodynamism, anchors, trawling, etc.) It should also be noted that it is extremely rare for a seagrass meadow to survive in a harbor basin in the medium or long term. In order to avoid all these phenomena, it is therefore advisable to: • Use materials and construction techniques that minimize the suspension of fine particles that can induce turbidity in the surrounding waters. (for example: the dumping of fine materials (diameter less than 1 mm) at sea, or of blocks mixed with fine materials, is to be excluded completely; when rockfill is installed, it is advisable to rinse the blocks of rock; geotextile protective screens must be put in place around the site to minimize turbidity induced).	

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• Avoid the use of construction machines located at sea by favouring the use of machines lying on the ground. if it is essential to use them at sea, they must not be anchored or relied on <i>Posidonia</i> meadows. • Avoid carrying out construction work in summer, when the plant rebuilds its reserves for the following year • Build a new development at several tens of meters from the closest living <i>Posidonia</i> meadow • Avoid constructions in areas covered with <i>Posidonia</i> meadows, as appropriate • Monitor the condition of the surrounding seagrass, both during and at the end of the work. (These elements on <i>Posidonia</i> meadows have been taken from: Boudouresque et al., 2006, Préservation des herbiers à <i>Posidonia oceanica</i>. RAMOGE pub.: 1-202, N°ISBN 2-905540-30-3)	
Indicator units • km² of impacted habitats	
List of Guidance documents and protocols available UNEP/MAP/PAP (2015). Guidance document on how to reflect changes in hydrographic conditions in relevant assessment (prepared by Spiteri, C.). Priority Actions Programme. Split, 2015. UNEP(DEPI)/MED IG.22. UNEP(DEPI)/MED IG.22/Inf.7 (2016). Draft Integrated Monitoring and Assessment Guidance UNEP(DEPI)/MED WG.433/1 (2017) PAP/RAC Meeting of the Ecosystem Approach Correspondence Group on Monitoring (CORMON) on Coast and Hydrography – Working Document Advice document on hydrographical conditions (Descriptor 7) in the context of MSFD, published by OSPAR Commission (2012); Scientific and technical review of the MSFD Commission Decision 2010/477/EU in relation to Descriptor 7 carried out by the EC JRC; etc.	
Data Confidence and uncertainties Data used or produced for the monitoring should be in agreement with Shared Environmental Information System (SEIS) principles. More on SEIS principles can be found in Draft Integrated Monitoring and Assessment Guidance.	
Methodology for monitoring, temporal and spatial scope	
Available Methodologies for Monitoring and Monitoring Protocols At this stage, there is no clear available methodology and monitoring protocols (see Known gaps and uncertainties in the Mediterranean). Some methodologies or protocols could be proposed, once done an inventory of existing and available data in Mediterranean Sea. For more details, see “Guidance document on how to reflect changes in hydrographic conditions in relevant assessments“ (2015)	

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Available data sources						
Global marine data source at the scale of the Mediterranean Sea:						
- EMODnet Central Portal (http://www.emodnet.eu/) - Mediterranean Marine Data (http://www.mediterranean-marinedata.eu/) - Copernicus, Marine environment monitoring service (http://marine.copernicus.eu/)						
Available regional or local data sources (in each country) should be also identified.						
Spatial scope guidance and selection of monitoring stations						
The monitoring will focus on habitats of interest, around new permanent constructions (lasting more than 10 years) in coastal waters.						
The study area should depend on the footprint of the new construction considered and on the local (or regional) geographical and marine conditions. It should be large enough:						
- to show all the hydrographic alterations induced by the construction, even for long term; - to follow all the habitats of interest that could be potentially impacted.						
It should be highlighted if monitoring was performed in sensitive areas, such as marine protected areas, spawning, breeding and feeding areas and migration routes of fish, seabirds and marine mammals, since they are priority.						
Temporal Scope guidance						
Contracting parties report every 6 years of all new permanent structures built during this reporting period.						
Data analysis and assessment outputs						
Statistical analysis and basis for aggregation						
Expected assessments outputs						
All the outputs that came out of the monitoring (I.e. trend analysis, distribution maps, etc.) should be listed, along with source(s) where they can be found.						
The outputs to be reported are (map and GIS data):						
- The area and location where the future structure will be built (footprint); - The area and location of the habitats of interest potentially impacted by the structures (surrounding area of potentially affected habitats)						
For the area and location where the future structure will be built, additionally to the surface representation of the structure, some information has to be provided as attributes of the GIS layer. The following attributes are proposed:						
Country	Locality / District	ID of the structure	Role of structure	Type of structure	Materials	Extend on the sea floor (in km ²)
Specify the country	Specify the location of the structure	The ID must be unique to identify the structure. It could be a number or a numbered code using letters from the previous column	Harbour, coastal defense, marine energy, ...	Quay, groynes, wind farm, ...	Concrete, rockfill, ...	Area of the structure on sea floor. The used unit has to be provided in the name of the field

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If the structure is composite (in terms of type, materials, ...), several GIS surface objects could be defined.						
For the area and location of expected hydrographic alterations, additionally to the surface representation of these alterations, some information has to be provided as attributes of the GIS layer.						
The following attributes are proposed:						
Count ry	Localit y / Distric t	ID of the structure	Nature of expected hydrographic alterations	Data used	Level of assessment confidence	Extend of hydrographical alteration (in km²)
Specify the count ry	Specify the locatio n of the structu re	The ID must be unique to identify the structure. It could be a number or a numbered code using letters from the previous column	Waves/currents attenuation; anthropic changes of bathymetry; changes in sediment transit inducing erosion/sedimen tation;	Data provided by EIA, SEA, MSP; dredging/dis posal scheme, plan for extension of port/marina; ...	Low/Medium /Good	Area of the structure on sea floor (footprint) and its surrounding area as defined in the EIA, SEA, MSP.
For each GIS data layer produced, a metadata file must be added. This file must provide information on: creation date of the GIS data, GIS data author, contact information, source agency, map projection and coordinate system, scale, error, explanation of symbology and attributes, data dictionary, data restrictions, and licensing (see for instance INSPIRE Directive).						
Known gaps and uncertainties in the Mediterranean						
There are general difficulties, not particular to the Mediterranean context, that can be identified for EO7:						
- Lack of coherence in definitions, standard approaches in the development and application of indicators and in the assessment of impacts, together with lack of methodological standards. - Lack of knowledge and understanding on the link between physical pressures and biological impacts and on the cumulative impacts.						
Another difficulty comes from the hydrographic alterations that EO7 indicator should assess. These alterations, around a particular coastal construction, often change in intensity, in area and indeed in time, depending on the off-shore hydrographical conditions (calm weather/extreme event; seasonality of waves height and directions; local wind conditions...) and on the morphologic history of the site (the present state is due to the succession of these different conditions).						
Contacts and version Date						
Key contacts within UNEP for further information						
Version No		Date			Author	
V.1		27/6/16			PAP/RAC	
V2		11/07/16			Olivier Brivois	
V3		13/07/16			Olivier Brivois	
V4		16/03/17			Olivier Brivois	
V5		19/06/18			Olivier Brivois	
V6		26/07/18			Olivier Brivois	
V7		14/05/2025			PAP/RAC	