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Agenda Item 3: Ecosystem Approach (EcAp) Policy and Roadmap for the Mediterranean 2026-2035

Integrated Monitoring and Assessment Programme for the Mediterranean Sea and Coast and Related Assessment Criteria (IMAP) (Third Cycle)

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UNEP/MAP
Athens, 2025

Note by the Secretariat

The Integrated Monitoring and Assessment Programme (IMAP) for the Mediterranean Sea and Coast and Related Assessment Criteria was adopted during COP 19 in 2016 through [Decision IG.22/7](#). Since then significant progress can be reported, including the development of: IMAP-based national monitoring programmes for all Mediterranean Countries, for all IMAP Common Indicators; indicator guidance factsheets; assessment criteria; assessment methodologies; IMAP InfoSystem, the regional data repository and IMAP data policy ([Decision IG.25/10](#)); 2 regional assessments, the 2017 and 2023 Mediterranean Quality Status Reports (MED QSR) ([Decision IG.23/6](#) of COP 20, and [Decision IG.26/3](#) of COP 23), as well as many additional sub-elements.

During COP 23 (Portoroz, Slovenia, 5-8 December 2023), the Contracting Parties request the Secretariat, through [Decision IG.26/3](#), to prepare during the biennium 2024-2025, under the leadership of the Ecosystem Approach Coordination Group (EcAp CG), a revised Ecosystem Approach (EcAp) Roadmap Policy, including IMAP enhancement, taking into account, but not limited to, the outcomes of the 2023 MED QSR; the findings of the independent evaluation of the implementation of the EcAp Roadmap, and other related work of the Secretariat as per the CORMONs and EcAp CG meeting conclusions, and giving due consideration to the most recent relevant developments at global and regional level, including the expected MFSD evaluation and revision, for consideration at COP 24 in Egypt.

The Secretariat prepared and presented during the 11th Meeting of EcAp CG (Videoconference, 2 October 2024), a first proposal (Working and Information Documents UNEP/MED WG.595/5 and UNEP/MED WG.595/Inf.4.) for updating all clusters of IMAP reflecting all the developments undertaken in the framework of IMAP implementation since 2016 as well as a first proposal pertinent to the inclusion of elements and priorities to facilitate and support IMAP third cycle implementation.

Subsequently, the respective CORMONs (i.e. CORMONs on Biodiversity and Fisheries, Pollution, Marine Litter, Coast and Hydrography) and Thematic Focal Points (i.e., SPA/RAC, MED POL, and PAP/RAC) organized in 2024 and 2025, presented, thoroughly reviewed and approved the respective components' content and information, in line with their respective mandate, the outcome of which is reflected in the present document. All new/updated elements are highlighted with **yellow**.

The present document presents the third cycle of IMAP for Biodiversity and Non-Indigenous Species, Pollution and Marine Litter, Coast and Hydrography clusters, whereas the annexes of this document consolidate the established assessment criteria for Biodiversity and Non-Indigenous Species (Annex I) as well as Pollution and Marine Litter (Annex II). This document aims to support and contribute to the preparation of a Draft Decision on EcAp Policy and Roadmap 2026-2035, aimed for submission to the Meeting of the MAP Focal Points (16-19 Sept. 2025) and COP 24 (2-5 December 2025), and respective approval.

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List of Abbreviations and Acronyms

ACCOBAMS	Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic area
ADR	Adriatic Sea Sub-division
AEL	Aegean-Levantine Sea Sub-division
ASCOBANS	Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas
ASI	ACCOBAMS Survey Initiative
BAC	Background Assessment Criteria
BC	Background Criteria
BDL	Below Detection Limit
BV	Baseline Values
Cd	Cadmium
CEN	Central Mediterranean Sea Sub-division
CG	Coordination Group
Chl-a	Chlorophyll-a
CI	Common Indicator
CMS	Convention on Migratory Species
COP	Conference of Parties
COR ESA	Correspondence Group on Economic and Social Analysis
CORMONs	Ecosystem Approach Correspondence Groups on Monitoring
CP	Contracting Party
CPUE	Catch Per Unit of Effort
DCRF	Data Collection Reference Framework
DDE	Dichlorodiphenyldichloroethylene
DDs	Data Dictionaries
DIN	Dissolved Inorganic Nitrogen
DPSIR	Driver-Pressure-State-Impact-Response Framework
DSs	Data Standards
EAC	Environmental Assessment Criteria
EASIN	European Alien Species Information Network
EC	European Commission
EcAp MED II	EU (GPGC) funded project on the “Mediterranean implementation of the Ecosystem Approach, in coherence with the European Union EU Marine Strategy Framework Directive (MSFD)”
EcAp MED III	EU (GPGC) funded project on the “Support to Efficient Implementation of the Ecosystem Approach-based Integrated Monitoring and Assessment of the Mediterranean Sea and Coasts and to delivery of data-based 2023 Quality Status Report in synergy with the EU MSFD”
EcAp	Ecosystem Approach
eDNA	Environmental DNA
EEA	European Environment Agency
EMODnet	European Marine Observation and Data Network
EO	Ecological Objectives
ERL	Effects Range Low
EU	European Union
FET	Final Environmental Targets
G/M	Good/Moderate Status Boundary
GEF	Global Environment Facility
GES	Good Environmental Status
GFCM	General Fisheries Commission for the Mediterranean
H/G	High/Good Status Boundary
HELCOM	Baltic Marine Environment Protection Commission
Hg	Mercury

IAS	Invasive Alien Species
ICES	International Council for the Exploration of the Sea
ICZM	Integrated Coastal Zone Management
IET	Intermediate Environmental Targets
IG	Intergovernmental Meeting
IMAP	Integrated Monitoring and Assessment Programme for the Mediterranean Sea and Coast
IUCN	International Union for Conservation of Nature
LBS Protocol	Land-Based Sources and Activities Protocol
LPUE	Landing Per Unit of Effort
MAMIAS	Marine Mediterranean Invasive Alien Species database
MAP	Mediterranean Action Plan
MED POL	Mediterranean Pollution Assessment and Control Programme
MED QSR	Mediterranean Quality Status Reports
MED	Mediterranean Sub-division
MEDITS	Mediterranean International Bottom Trawl Surveys
MFSD	Marine Strategy Framework Directive
NGOs	Non-Governmental Organizations
NIS	Non-Indigenous Species
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
PAHs	Polycyclic Aromatic Hydrocarbons
PAP/RAC	Priority Actions Programme Regional Activity Centre
Pb	Lead
PCB	Polychlorinated Biphenyls
QA	Quality Assurance
QC	Quality Control
QSR	Quality Status Report
RAS	Rapid Assessment Survey
ROVs	Remoted Operated Vehicles
S	Salinity
SIDA	Swedish International Development Cooperation Agency
SoED	State of Environment and Development Report
SoMFi	State of Mediterranean and Black Sea Fisheries
SPA/RAC	Specially Protected Areas Regional Activity Centre
SPAMI	Specially Protected Area of Mediterranean Importance
TM	Trace Metals
TP	Total Phosphorus
TV	Threshold Values
UNEP/MAP	United Nations Environment Programme/Mediterranean Action Plan
WHO	World Health Organization
WHO-PCDD/F-TEQ	World Health Organization Toxic Equivalency of Polychlorinated dibenzo-p-dioxins and Polychlorinated dibenzofurans
WMS	Western Mediterranean Sea Sub-division
γ-HCH	Gamma-Hexachlorocyclohexane
σt	Density

1. Introduction

1. Monitoring and assessment, based on scientific knowledge, of the sea and coast is the indispensable basis for the management of human activities, in view of promoting sustainable use of the seas and coasts and conserving marine ecosystems and their sustainable development. The Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria (IMAP) adopted in 2016 (Decision IG.22/7 – COP19) describes the strategy, themes, and products that the Contracting Parties to the Barcelona Convention are aiming to deliver, through collaborative efforts, over the second cycle (2016 – 2021) of the implementation of the Ecosystem Approach (EcAp) Process, and the third cycle (2022 – 2028/2030) which is underway, in order to assess the status of the Mediterranean sea and coast, as a basis for further and/or strengthened measures.

Background:

2. IMAP builds on the monitoring and assessment related provisions of the Barcelona Convention and its Protocols, previous Decisions of the Contracting Parties related to monitoring and assessment, and a number of Decisions related to the preparation of the 2017 and 2023 Mediterranean Quality Status Reports and the implementation of EcAp Roadmap.

3. In addition, the development of IMAP has duly taken into account the implementation of the Contracting Parties' monitoring and assessment programmes, as well as practices of other Regional Sea Conventions and other Regional bodies.

Timeline:

4. Significant progress was made in achieving IMAP's objectives and targets during its second phase (2016-2021). This implies in practice that the existing national monitoring and assessment programmes were reviewed and revised as appropriate so that national implementation of IMAP and regional and sub-regional assessments can be fulfilled in an effective manner, including updated GES definitions and targets, further refinement and establishment of assessment criteria, development and implementation of the GES and alternative environmental assessment alongside the assessment scales, harmonization and standardization of monitoring practices, advancement of data management and data Quality Assurance and Quality Control (QA/QC).

5. Furthermore, the 2017 and 2023¹ Mediterranean Quality Status Reports (MED QSR) as well as the 2019 State of Environment and Development Report (SoED) were built based on the structure, objectives and data reported under IMAP. The validity of the IMAP should be reviewed once at the end of every EcAp cycle, and in addition it should be updated and revised as necessary on a mid-term basis, based on lessons learnt of the implementation of the IMAP and on new scientific and policy developments.

2. IMAP Common Principles and Structure

2.1 Overarching Principles² and the Overall IMAP Structure

6. The key elements addressed through IMAP, in line with Decision IG.22/7 of COP19, are the Common Indicators, monitoring and assessment methodologies for all IMAP clusters (i.e., Biodiversity and Non-Indigenous Species, Pollution and Marine Litter, Coast and Hydrography), as well as assessment criteria. On the other hand, the objectives, indicators, GES definitions and targets are also part of the Ecosystem Approach (EcAp) Roadmap implementation.

¹ <https://medqsr2023.info-rac.org/>

² Clarification about the IMAP principles are provided in the Integrated Monitoring Guidance Document and respective Indicators' Guidance Factsheets.

7. The overarching principles guiding the development, implementation and revision of the IMAP include: (i) adequacy; (ii) coordination and coherence; (iii) data architecture and interoperability based on common parameters; (iv) concept of adaptive monitoring; (v) risk-based approach to monitoring and assessment; and (vi) the precautionary principle in addition to the overall aim of integration. In line with the above overarching principles, data and information is gathered through integrated monitoring activities on the national level and shared in a manner that creates a compatible, shared regional pool of data, usable by each Contracting Party.

8. The IMAP information system (Info System) ensures the establishment of a regional data repository which will allow the production of common indicator assessment reports in an integrated and harmonized manner, following the monitoring procedures and standards and data provided, thus ensuring comparability across the Mediterranean region.

9. In line with the above, integration is achieved through IMAP implementation at regional and national levels, through the standardized and harmonized monitoring systems, following common principles undertaken in a coordinated manner, with the overall aim to assess the Good Environmental Status (GES) of the marine and coastal environment.

2.2 IMAP Monitoring

10. The IMAP monitoring requirements focus on, based on agreed Common Indicators and related parameters, the prevailing anthropogenic pressures and their impacts, and the progress towards the GES (Ecological Objectives and Targets). The monitoring is carried out in such a way that an assessment with adequate confidence and precision is achieved.

11. IMAP sets out the basis on how the Contracting Parties should design and carry out their national IMAP-based integrated monitoring programmes and work together in the framework of the UNEP/MAP Barcelona Convention to produce quality-assured data of optimal quality across all common indicator to ensure reliable and up-to-date regional assessments on the status of the Mediterranean Sea and Coast.

12. Since 2016-2017, the Contracting Parties updated their existing monitoring programmes in order to enhance monitoring and assessment in line with the Indicator Guidance Factsheets developed under IMAP. It has to be noted that the Mediterranean has gone through a number of important advancement pertinent to IMAP implementation:

- Development of IMAP-based national monitoring programmes;
- Data reporting and submission through the IMAP Info System based on their existing national monitoring programmes;
- Establishment of region and four sub-regions wide assessment criteria;
- Setting a basis for the aggregation and integration of assessments across specific IMAP Common Indicators and Ecological Objectives, towards an integrated Good Environmental Status (GES);
- Establishment of the initial the assessment scales within the IMAP nested framework based on monitoring scales defined in national IMAP Pollution monitoring programme;
- Development and implementation of GES and alternative environmental assessment methodologies, alongside the assessment scales, assessment criteria, and the DPSIR approach;
- Development and implementation of standardized and harmonized monitoring procedures and standards;
- The 2017 and 2023 Mediterranean Quality Status Reports (MED QSRs).

13. During national implementation, the Contracting Parties have been encouraged to coordinate within and between each other in order to use resources in an efficient way. Shared monitoring stations and activities, information, and data could be steps towards this direction.

14. The IMAP assessment products, produced by the UNEP/MAP Secretariat, such as the MED QSRs and the 2019 State of Environment and Development Report in the Mediterranean (SoED), should be mainly based on the common indicators and monitoring data provided and verified by the Contracting Parties, and/or complemented by satellite-derived data and reliable scientific literature as available for individual CP/groups or CPs.

15. In areas of scientific and/or data gaps, the assessment products can also build on relevant scientific projects, pilot outcomes, and comparable data of other regional organizations and in case these are not available, on scientific literature. In addition, they will analyze trends, drivers and will build on available socio-economic data.

16. The common indicator Guidance Factsheets provide information on the status of the environment and information needed to evaluate the severity of environmental problems and distance from GES targets of the ecological objectives.

17. The Indicator Guidance Factsheets are linked to specific indicators and together they set methodologies and statistical elaborations to assess whether the GES targets are met or not. Following the EO level assessment, the integrated assessment should take place on the state of the Mediterranean Sea and Coast.

18. The recent 2023 Mediterranean Quality Status Report was based on and structured along the respective Ecological Objectives and Common Indicators, by building on the guidance set in the established and approved common indicator Guidance Factsheets.

19. During the development of the above, an integrated approach for assessing GES was used, considering the Integrated Monitoring and Assessment Guidance Factsheets, describing state-based common indicators and relating them to the pressure-based indicators.

20. Some studies have been undertaken by UNEP/MAP to provide with practical solutions to structure, strengthen and sustain a "science-policy-interface" to support IMAP implementation, both for monitoring and assessment. These solutions touch upon evidence (science), outreach (policy) & engagement (human and financial means) and are valid for the 3 clusters of IMAP (Biodiversity and Non-Indigenous-Species, Pollution – Marine Litter, Coast and Hydrography).

21. As part of the EcAp governance structure, COR ESA meetings allow to work on the socio-economic characteristics of the Mediterranean Sea with information on demography, economy & employment and qualitative description of the links between human activities and the coastal and marine environment. To deeply assess the level of environmental and social sustainability of human activities that impact the coastal and marine environment, UNEP/MAP is measuring the sustainable blue economy based on a sustainability framework and associated core set of indicators.

2.3 UNEP/MAP Strategy Towards an Integrated Data and Information System

22. Assessments arising from monitoring data are critically dependent upon practical mechanisms for handling data from different activities that ensure that documents, data, and products are managed consistently and are easily available to users. This supports integrated assessments, for example from integrated biological and chemical programmes, or linking the observed changes in spatial distribution and temporal trends in substances or their effects to inputs into the UNEP/MAP Barcelona Convention maritime area.

23. Data storage and handling processes are therefore central, and it is important that the role of the various components in this is clear and continuously developed and strengthened.

24. IMAP thus requires an updated and integrated data and information system for UNEP/MAP Barcelona Convention with clear set roles for data handling and assessment for the various components and with a user-friendly reporting platform for Contracting Parties ([IMAP Info System](#)), based on the following strategic points:

- The UNEP/MAP Barcelona Convention data and information are collected according to the official MAP data policy approved at COP22 ([Decision IG.25/10](#));
- The UNEP/MAP Barcelona Convention data and information system aims to support a reliable, quantitative assessment of the GES of the Mediterranean Sea and Coast;
- The UNEP/MAP Barcelona Convention data and information facilitate access and knowledge of the general public to environmental information.

25. Core elements of the UNEP/MAP Barcelona Convention integrated data and information system include:

- Data Standards (DSs) and Data Dictionaries (DDs) monitoring reporting formats based on IMAP Common Indicator factsheets and tools for data exchange;
- Relevant quality control for both data reporting by national IMAP users and data validation procedures within the IMAP Info System, as well as ensure assessment products are available in an integrated manner, on a common platform.

26. Data and information available using harmonized standards and practices, following the UNEP access-to-information policy (UNEP/EA. 1/INF/23).

27. IMAP Info System, developed during the second IMAP cycle, is fully operational and allows Contracting Parties to report data for 18 IMAP Common Indicators (i.e. 1, 2, 3, 4, 5, 6, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24) through 30 Information Standards.

28. IMAP Info System is accessible to the general public (<http://imapinfosystem.info-rac.org/app/#/>) and login is required only to access reserved sections. An IMAP Info System Technical Guide is available to help users in browsing the web site.

29. The structure of IMAP Info System is user-friendly and allows-easy navigation with three main section:

- Reporting (Standards, Conformity check, Upload);
- Explore (Published data, Geographical data, Dashboard, Utility tools);
- Info (Documents, Guidelines and tutorials, Info and contact).

2.4 Cooperation with Relevant Regional Bodies in the Context of IMAP Implementation

30. The current IMAP covers with agreed common indicators the Ecological Objectives (EOs) related to Biodiversity (EO1), Non-Indigenous Species (EO2), Harvest of Commercially Exploited Fish and Shellfish (EO3), Marine Food Webs (EO4), Eutrophication (EO5), Sea-Floor Integrity (EO6), Hydrographic alterations (EO7), Coastal Ecosystems and Landscapes (EO8), Contaminants (EO9), Marine Litter (EO10), and Energy including Underwater Noise (EO11).

31. In addition, candidate common indicators are included under EO11 (Energy including Underwater Noise), with the intention to elevate their candidate status into common indicators further to new scientific knowledge availability and projects' results supporting monitoring activities.

32. While some of the elements of fisheries (EO3) and marine food webs (EO4) are partly covered by the monitoring and assessment of EO1 and EO2 the Contracting Parties have agreed on the GFCM developed list of common indicators. In this regard, the monitoring and assessment specifics of EO3 are being developed by the GFCM, in close cooperation with UNEP/MAP.

33. In light of the above, UNEP/MAP has strengthened its cooperation with the relevant regional bodies, especially in relation to:

- EO1: with the General Fisheries Commission for the Mediterranean (GFCM) for commercial species of fish and shellfish, the International Union for Conservation of Nature (IUCN) and the Secretariat of the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic area (ACCOBAMS), Noting that the ACCOBAMS Survey Initiative II will provide important inputs, including: monitoring cetaceans and other marine species by tracking the distribution, abundance, and trends of cetaceans, sea turtles, seabirds, elasmobranchs, and pelagic fish; assessing human pressures such as pollution, underwater noise, fisheries interactions, ship strikes, and other anthropogenic threats; as well as enabling the early detection of environmental changes, including population declines, shifts in species distribution, and emerging threats related to climate change.
- EO3: with the GFCM, noting that EO3 Common Indicators are based on GFCM methodologies and assessed through its biennial SoMFi reports, which inform IMAP integrated assessments.
- EO5: with EMODnet, COPERNICUS and HELCOM to utilize alternative data sources, aiming to compensate for gaps in the *in-situ* data reporting within the IMAP Info System, and to support the development of assessment methodologies;
- EO9: with EMODNET, EEA, and MSFD Technical Bodies to enhance the use of alternative data sources to compensate for gaps in the *in-situ* data reporting within the IMAP Info System, and to support the development of robust assessment methodologies;
- EO10: with ACCOBAMS, in particular for floating marine litter (i.e., links with ACCOBAMS Survey Initiative (ASI³);
- EO11: with ACCOBAMS, noting that new scientific knowledge and project results supporting monitoring activities have led to the establishment of threshold values aimed at maintaining Good Environmental Status (GES) for both short-term and long-term exposure to impulsive noise events, and development of Initial GES Assessment Methodologies for impulsive and continuous noise. These advancements laid the foundation for elevating noise candidate indicators to full common indicators.

34. In addition, cooperation with other regional and international bodies will be key for the successful implementation of IMAP, to ensure that no double obligation is created for those Contracting Parties, which are Parties to various Regional Seas Conventions and/or members of the European Union and undertake monitoring activities under other specific frames.

35. Cooperation with other regional and international bodies can also strengthen the cost- efficiency and scientific adequacy of IMAP. Exchange of best practices and information is encouraged during the IMAP implementation, both in between Contracting Parties participating in various monitoring programmes and in between UNEP/MAP and other relevant regional, international bodies.

³ <https://accobams.org/main-activites/accobams-survey-initiative-2/accobams-survey-initiative/>

3. Key Elements of IMAP

3.1 Common Indicators

36. The common indicators are the backbone of IMAP.

37. In the context of the Barcelona Convention, a common indicator is an indicator that summarizes data into a simple, standardized, and communicable figure and is ideally applicable in the whole Mediterranean basin, or at least on the level of sub-regions, and is monitored by all Contracting Parties. A common indicator is able to give an indication of the degree of threat or change in the marine ecosystem and can deliver valuable information to decision makers.

38. Candidate indicators are indicators which still have many outstanding issues regarding their monitoring and assessment and therefore are recommended to be monitored in the initial phase of IMAP on a pilot and voluntary basis.

39. The Common and candidate indicators **currently** agreed, which are at the core of IMAP, include:

- 1) Habitat distributional range (EO1) to also consider habitat extent as a relevant attribute;
- 2) Condition of the habitat's typical species and communities (EO1 related to benthic and pelagic habitats);
- 3) Species distributional range (EO1 related to marine mammals, seabirds, marine reptiles);
- 4) Population abundance of selected species (EO1, related to marine mammals, seabirds, marine reptiles);
- 5) Population demographic characteristics (EO1, e.g. body size or age class structure, sex ratio, fecundity rates, survival/mortality rates related to marine mammals, seabirds, marine reptiles);
- 6) Trends in abundance, temporal occurrence, and spatial distribution of non-indigenous species, particularly invasive, non-indigenous species, notably in risk areas (EO2, in relation to the main vectors and pathways of spreading of such species);
- 7) Spawning stock Biomass (EO3);
- 8) Total landings (EO3);
- 9) Fishing Mortality (EO3);
- 10) Fishing effort (EO3);
- 11) Catch per unit of effort (CPUE) or Landing per unit of effort (LPUE) as a proxy (EO3);
- 12) Bycatch of vulnerable and non-target species (EO1 and EO3)
- 13) Concentration of key nutrients in water column (EO5);
- 14) Chlorophyll-a concentration in water column (EO5);
- 15) Location and extent of the habitats **potentially** impacted by hydrographic alterations (EO7)⁴;
- 16) Length of coastline subject to physical disturbance due to the influence of **human**⁵-made structures (EO8);
- 17) Concentration of key harmful contaminants measured in the relevant matrix (EO9, related to biota, sediment, seawater);
- 18) Level of pollution effects of key contaminants where a cause-and-effect relationship has been established (EO9);
- 19) Occurrence, origin (where possible), and extent of acute pollution events (e.g. slicks from oil, oil products and hazardous substances) and their impact on biota affected by this pollution (EO9);
- 20) Actual levels of contaminants that have been detected and number of contaminants which have

⁴ Several CORMON meetings agreed to simplify the original Guidance Factsheet in order to allow for monitoring of this indicator due to its complexity, requirements for historic data, significant human and financial resources required and alike. Some simplification has been already proposed however further steps are needed and agreed (for the last time at CORMON meeting in Marseille 28-29 March 2023). Title to be changed accordingly.

⁵ Change of the term "man-made" to "human-made" in the title of the indicator due to gender equality reasons, further to the proposal that has been requested by the EU and several CPs.

- exceeded maximum regulatory levels in commonly consumed seafood (EO9);
- 21) Percentage of intestinal enterococci concentration measurements within established standards (EO9);
 - 22) Trends in the amount of litter washed ashore and/or deposited on coastlines (including analysis of its composition, spatial distribution and, where possible, source.) (EO10);
 - 23) Trends in the amount of litter in the water column including microplastics and on the seafloor (EO10);
 - 24) Trends in the amount of litter ingested by marine organisms and in the number of individuals entangled in marine litter (EO10);
 - 25) Land cover change (EO8)⁶;
 - 26) Proportion of days and geographical distribution where loud, low, and mid-frequency impulsive sounds exceed levels that are likely to entail significant impact on marine animals (EO11, Candidate Indicator);
 - 27) Levels of continuous low frequency sounds with the use of models as appropriate (EO11, Candidate Indicator);
 - 28) Trends in the amount of litter coming from riverine sources (EO10);
 - 29) Biomass or abundance of species/genera/taxa or trophic groups (EO4);
 - 30) Average of Mean Trophic Level of species/genera/taxa or trophic groups from biomass and/or catches (EO4);
 - 31) Biodiversity indices (EO4);
 - 32) Pelagic/Demersal ratio (EO4);
 - 33) NIS/Demersal ratio (EO4);
 - 34) Zooplankton/ phytoplankton ratio (EO4);
 - 35) Size distribution of trophic groups (EO4);
 - 36) Production of Megafauna (*Megafauna variables from EO5) (EO4);
 - 37) Extent of physical loss of natural habitat (EO6);
 - 38) Extent of adverse effects on benthic habitat (EO6).

40. During the implementation of IMAP since 2016, the CORMONs have played an instrumental role in further developing the respective common and candidate indicators towards common indicators as well as to further refine their specifics, including a number of technical elements, for the agreed common indicators, in particular on the assessment scales, in light of the ongoing implementation experience of IMAP.

Note on Geographic Reporting Scales:

41. A scale of reporting units' has been defined in the framework of IMAP taking into account both ecological considerations and management purposes, following a nested approach.
42. The nested approach aims to accommodate the needs of the above by taking into account 4 main assessment scales:
 - a) Whole region (i.e. Mediterranean Sea and Coastal Regions as defined by the Convention and its Protocols);
 - b) Mediterranean sub-regions the Western Mediterranean Sea, the Adriatic Sea, the Central Mediterranean, and the Aegean and Levantine Seas in the Eastern Mediterranean part, as presented in the Initial Assessment of the Mediterranean Sea (UNEP(DEPI)/MED IG.20/Inf.8), 2017 and 2023 MED QSRs;
 - c) Coastal waters and offshore marine waters; and
 - d) Subdivisions of coastal waters provided by Contracting Parties.

⁶ The CORMON Coast and Hydrography (Marseille, 28-29 March 2023) agreed to put this indicator to the list of Common indicators. The title should be "Land cover change". Testing has been done with several projects (SIDA, EcAp MED II and III, GEF MedProgramme) and results for the Adriatic sub-region were included in the 2023 MED QSR, training sessions have been completed or are in progress for all GEF MedProgramme countries. The COP23 Decision on 2023 QSR proposes some technical elements for the Guiding Factsheet that have been inserted to the method.

43. The work was undertaken by further developing the assessment scales of the nested approach.

3.2 Monitoring and Assessment of Biodiversity and Non-Indigenous Species related Common Indicators

Biodiversity (EO1):

44. Biological diversity is the “variability among living organisms from all sources, including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems”.

45. The common indicators to be monitored and assessed in relation to biodiversity are as following:

- | | |
|---------------------|---|
| Common Indicator 1: | Habitat distributional range (EO1) to also consider habitat extent as a relevant attribute; |
| Common Indicator 2: | Condition of the habitat's typical species and communities (EO1); |
| Common Indicator 3: | Species distributional range (EO1 related to marine mammals, seabirds, marine reptiles); |
| Common Indicator 4: | Population abundance of selected species (EO1, related to marine mammals, seabirds, marine reptiles); |
| Common indicator 5: | Population demographic characteristics (EO1, e.g. body size or age class structure, sex ratio, fecundity rates, survival/mortality rates related to marine mammals, seabirds, marine reptiles). |

46. Climate change represents a major long-term threat to Mediterranean biodiversity. To address this, future work should clarify the Guidance Factsheets and GES definitions, and integrate climate change impacts into indicators and methodologies, including the determination of baselines and thresholds.

47. As it is not possible or even necessary to monitor all attributes and components of biological diversity throughout the region, IMAP monitoring is focusing, in line with the risk-based approach, on the most representative sites and species, which can showcase the relationship between environmental pressures and their main impacts on the marine environment. In light of the above, an updated reference list of species and habitats with a good representativity of Mediterranean marine biodiversity to be monitored is presented in Annex I, noting that those Contracting Parties who have the necessary means and are willing to do so can go beyond the monitoring requirements of this reference list.

48. The Contracting Parties while updating their national monitoring programmes, for the new six-year cycle, need to take into consideration the results of the MED QSR and to include at least the monitoring of the updated reference list species and habitats with, at least, two monitoring areas, one in a low-pressure area (e.g. marine protected area/ Specially Protected Area of Mediterranean Importance (SPAMI) and one in a high-pressure area from human activity).

49. To achieve a comprehensive assessment of the state of the Mediterranean Sea, it is essential to expand the monitoring protocols for EO1 CI1 and CI2, to include pelagic habitats. Currently, The Contracting Parties focus on Benthic habitats and specific types such as well illuminated infralittoral rock, algal-dominated infralittoral rock, *Posidonia oceanica* meadows, coralligenous, and circalittoral rhodolith beds provides valuable information about the benthic zone. However, to gain a full understanding of the ecosystem, it is crucial to also consider both benthic and pelagic zones, taking into account the anthropogenic pressures.

50. Two common indicators have been proposed for assessing the pelagic habitat of the Mediterranean Sea under the IMAP framework: CI1 and CI2. Contracting Parties are encouraged to use the agreed common reference list of pelagic habitat types, as well as operational objectives and indicators based on phytoplankton and zooplankton, to ensure coherent and coordinated monitoring across the region.

51. Pelagic habitats are closely linked to several Ecological Objectives of the EcAp, particularly EO4 (Marine Food Webs) and EO5 (Eutrophication). Strengthening the connections between these objectives requires improved data collection and sharing, as well as enhanced data harmonization and interoperability.

52. For EO1 CI1 and CI2, given the importance and vulnerability of *Posidonia oceanica* meadows in the context of climate change, the Contracting Parties shall make every effort to monitor the selected parameters of *Posidonia* meadow to ensure better protection of this essential habitat, which fulfills a functional role for many species, limits coastal erosion, and contributes to climate change mitigation. Additionally, parameters that could provide insights into their resilience to climate change impacts should also be studied and monitored.

53. The Mediterranean Sea harbours 11 cetaceans' species, which are subject to various human pressures, which reflect on their conservation status. The few species of cetaceans regularly present in the Mediterranean Sea should all be considered when updating the national monitoring programmes for the new six-year cycle. The Contracting Parties shall make every effort to identify a minimum of two species to be included in their national monitoring programme, based on the specificity of their marine environment and biodiversity, and taking into account that these species should belong to, at least, two different functional groups, where possible (Baleen whales / Deep-diving toothed whales / Shallow-diving toothed whales). As far as possible, the choice of monitored species should be coordinated at sub regional scale to ensure coherence with cetacean population distribution in the Mediterranean Sea, as proposed in the Monitoring and Assessment Scales, Assessment Criteria, Thresholds and Baseline Values for the IMAP Common Indicators 3, 4 and 5 related to marine mammals.

54. Seabirds *sensu lato* form a crucial component of the region's marine biodiversity and ecosystem, with many of the relevant taxa being endemic or near-endemic to the Mediterranean. A list of priority species, which includes 11 representative species from a range of functional groups that can showcase the relationship between environmental pressures and their main impacts on the marine environment, was selected from Annex II of the Barcelona Convention. This list will be utilized for the assessment of the three relevant IMAP Common Indicators (CIs) related to seabirds according to the Monitoring and Assessment Scales, Assessment Criteria, Thresholds, and Baseline Values for the IMAP Common Indicators 3, 4, and 5 related to seabirds. As far as possible, the Contracting Parties should implement coordinated monitoring efforts within subdivisions or subregions to improve the representativeness of monitoring samples.

55. Monitoring and Assessment Scales, Assessment Criteria, Thresholds, and Baseline Values are available to the Contracting Parties for Common Indicators 1,2, related to three habitat types (*Posidonia*, coralligenous, and rhodoliths), as well as for Indicators 3,4 and 5 for related to seabirds, Marine Mammals, Marine Turtles (Annex I to the present document). The Contracting Parties are encouraged to use those elements while developing national assessments

56. The methodologies, quality control and quality assurance measures are available for Contracting Parties and have been considered in their IMAP-based national monitoring programmes, in line with the Integrated Monitoring and Assessment Guidance as well as the numerous technical guidelines prepared by SPA/RAC.

57. Regarding the assessment of biodiversity, it has to be noted that the quantitative definition of GES is difficult, considering the variety of assessment elements and the effects of climate change. The conceptual approach for a quantitative GES setting can be framed in a way that the resilience of the

ecosystem is suited to accommodate the quantified biodiversity, or, in other words, it will be accounted in the determination of the GES boundaries as the “acceptable deviation from a reference state which reflects conditions largely free from anthropogenic pressures.

58. The scale of monitoring is of specific importance for biodiversity, due to the nature of the biodiversity related common indicators.

59. Furthermore, Data Standards (DSs) and Data Dictionaries (DDs) are available for the OE1 common Indicators (i.e., coralligenous, Rhodolith and *Posidonia oceanica* meadow's habitat, Marine Mammals, Marine Turtles and Marine Birds).

Non-Indigenous Species (EO2):

60. Non-indigenous species (NIS; synonyms: alien, exotic, non-native, allochthonous) are species, subspecies, or lower taxa introduced outside of their natural range (past or present) and outside of their natural dispersal potential.

61. Invasive alien species (IAS) are a subset of established NIS which have spread, are spreading, or have demonstrated their potential to spread elsewhere, and which have an effect on biological diversity and ecosystem functioning (by competing with and on some occasions replacing native species), socio-economic values, and/or human health in invaded regions.

62. The common indicator in relation to NIS is:

Common Indicator 6: Trends in abundance, temporal occurrence, and spatial distribution of non-indigenous species, particularly invasive, non-indigenous species, notably in risk areas (EO2, in relation to the main vectors and pathways of spreading of such species in the water column and seabed, as appropriate);

63. Non-indigenous species monitoring in the Mediterranean is a trend monitoring, where it is key to establish reliable, standardized monitoring and long-term data-sets as a first step of monitoring.

64. In addition, monitoring of non-indigenous species (NIS), following the risk-based approach, needs to be focused on the invasive alien species (IAS) in IAS introduction “hot spots” (e.g. ports and their surrounding areas, docks, marinas, aquaculture installations, heated power plant effluents sites, offshore structures). In addition, areas of special interest such as marine protected areas or lagoons may be selected on a case-by-case basis, as appropriate, depending on the proximity to alien species introduction hot spots.

65. With the application of the risk-based approach as stated above, it is possible to obtain an overview of the non-indigenous species present at a large spatial scope while only monitoring a relatively small number of locations.

66. Based on existing regional databases, such as the Marine Mediterranean Invasive Alien Species database, (MAMIAS), the “Andromeda” invasive species database for the Mediterranean and Black Sea, and the European Alien Species Information Network (EASIN), as well as subregional and regional Non-Indigenous Species (NIS) inventories, each Contracting Party should update the list of IAS to be monitored in its national monitoring programme at the start of each new phase of IMAP and start collecting data regarding these species.

67. Key next steps for GES assessment of NIS involve elaborating on CI6 aspects related to impacts by developing criteria and targets for vulnerable species and habitats. This should be coordinated with EO1 CI1 and CI2 and EO6 on sea-floor integrity. It is also crucial to assess the impact of Invasive Alien Species on habitat condition within EO1-CI2 and to include NIS impacts on seabed habitats in EO6, which is currently missing from IMAP.

68. The methodologies and quality control and quality assurance measures are available for Contracting Parties and have been considered in their IMAP-based national monitoring programmes, in line with the Integrated Monitoring and Assessment Guidance as well as the numerous technical guidelines prepared by SPA/RAC.

69. As the most effective monitoring method a Rapid Assessment Survey (RAS) will be carried out, at least yearly, by the Contracting Parties in hot-spot areas (e.g. ports and their surrounding areas, docks, marinas, aquaculture installations, heated power plant effluents sites, offshore structures). Contracting Parties with the necessary resources are encouraged to use Environmental DNA (eDNA) surveys.

70. In addition, UNEP/MAP will develop during the next phase of IMAP citizen survey guidance for NIS, to enable Contracting Parties to use this additional cost-efficient methodology, which also strengthens public awareness and participation.

71. Guidance on monitoring non-indigenous species, monitoring and assessment Scales, Assessment Criteria, Thresholds, and Baseline Values are available and wide agreed for the Mediterranean with regards to Common Indicators 6. The Contracting Parties are encouraged to use those elements while developing national assessments, following the assessment criteria set out in the Integrated Monitoring and Assessment Guidance.

Harvest of Commercially Exploited Fish and Shellfish (EO 3):

72. The GES for EO3 is “Populations of selected commercially exploited fish and shellfish are within biologically safe limits, exhibiting a population age and size distribution that is indicative of a healthy stock”.

73. The current IMAP framework for EO3 is based on the set of Common Indicators and operational objectives developed by the General Fisheries Commission for the Mediterranean (GFCM) and adopted under the Ecosystem Approach (EcAp) process. No revisions to the operational objectives, Common Indicators, GES definitions, or proposed targets are introduced in this document. The elements presented here remain aligned with the guidance factsheets agreed upon at the 6th Meeting of the EcAp Coordination Group and continue to serve as the technical basis for implementation under IMAP.

74. The Common Indicators under EO3 are the following:

Common Indicator 7: Spawning stock Biomass ;

Common Indicator 8: Total landings ;

Common Indicator 9: Fishing Mortality ;

Common Indicator 10: Fishing effort;

Common Indicator 11: Catch per unit of effort (CPUE) or Landing per unit of effort (LPUE) as a proxy ;

Common Indicator 12: Bycatch of vulnerable and non-target species (also relevant to EO1).

75. The GES definitions and assessment criteria for CI7, CI8, and CI9 follow GFCM's stock units, geographical sub-areas, and regional stock assessment methodology as outlined in the Data Collection Reference Framework (DCRF). These indicators are monitored according to GFCM sub-regional and species-specific guidance and remain valid unless formally revised by GFCM. They are assessed through the GFCM regional stock assessment process, with overall status and trends reported biennially in the State of Mediterranean and Black Sea Fisheries (SoMFi) report.

76. The status of EO3 in the 2023 Mediterranean Quality Status Report (2023 MED QSR), is provided by GFCM based on the most recently published SoMFi.

77. CI10, CI11, and CI12 are pending further methodological updates to incorporate recent advances. Their use in regular monitoring may be considered when standardized methodologies are finalized by GFCM.

Marine Food Webs (EO4):

78. Alterations to components of marine food webs caused by resource extraction or human-induced environmental changes do not have long-term adverse effects on food web dynamics and related viability.

79. The following are the Common Indicators related to Marine Food Webs:

Common Indicator 29: Biomass or abundance of species/genera/taxa or trophic groups

Common Indicator 30: Average of Mean Trophic Level of species/genera/taxa or trophic groups from biomass and/or catches

Common Indicator 31: Biodiversity indices

Common Indicator 32: Pelagic/Demersal ratio

Common Indicator 33: NIS/Demersal ratio

Common Indicator 34: Zooplankton/phytoplankton ratio

Common Indicator 35: Size distribution of trophic groups

Common Indicator 36: Production of Megafauna

80. Given the complexity of monitoring Ecological Objective 4 (EO4), it is recommended to adopt a step-by-step approach, starting with simple methods and indicators and gradually moving to more advanced ones. Key variables such as biomass, abundance, diet, and trophic levels of marine species, as well as commercial catches and fishing activities, can be useful starting points for estimating common indicators. These variables are generally available to all Contracting Parties through open-access platforms such as GFCM-DCRF, FishBase, FishStatJ, and Global Fishing Watch.

81. The assessment of EO4 is particularly challenging due to the complexity of food webs and the interactivity of the multiple pressures on ecosystems. In addition, there are still significant gaps in data availability, which makes it difficult to develop reliable indicators and link indicator changes to pressures, and consequently to set thresholds. Addressing these gaps is a prerequisite for setting common regional targets and ensuring harmonized monitoring across the Mediterranean.

82. The next phase should concentrate on establishing a robust knowledge base through coordinated data collection and the refinement of indicators relevant to food web dynamics. Once this foundation is established, it will be possible to define threshold values and align monitoring methodologies, in accordance with the criteria outlined in the Integrated Monitoring and Assessment Guidance.

Sea-Floor Integrity EO 6:

83. Sea-floor integrity is maintained, especially in priority benthic habitats.

84. The Sea-floor integrity Common Indicators are the following:

Common Indicator 37: Extent of physical loss of natural habitat

Common Indicator 38: Extent of adverse effects on benthic habitat (this may comprise several indicators which address specific pressures or particular aspects of habitat condition)

85. Contracting Parties shall implement EO 6 in close association with other state-based EOs (EO1, EO3, EO8), by making use of their Common Indicators, data and assessment results, where appropriate.

86. Monitoring and assessment efforts under Ecological Objective 6 should focus on collating data on the distribution and intensity of anthropogenic activities and pressures affecting the sea-floor, as a means to priorities monitoring of seabed state. This should also be conducted in coordination with the pressure-based Ecological Objectives (EO2, EO5, EO7), making use of their respective Common Indicators, data and assessment findings, as appropriate. Providing such information disaggregated by seabed habitat type in each assessment area is strongly recommended to facilitate its relevance and applicability within the context of EO6 assessments.

87. Ecological Objective 6 is intended to have a broad scope, encompassing all seabed habitats across the Mediterranean, from the littoral zone to the deep-sea floor. With regard to assessment scales and areas, Contracting Parties should use the agreed subdivisions of the Mediterranean region which are based primarily on biogeographic criteria, to ensure ecological coherence and comparability of results.

88. During the next phase, Contracting Parties are invited to define GES for EO6 habitats by setting quality thresholds for habitat condition, as well as acceptable limits for habitat loss and the extent of adverse effects and apply these to each habitat in an assessment area. In order to achieve GES for EO6, actions and measures should be prioritized towards those habitats and areas which are most affected by pressures (below threshold values and above acceptable limits) within each assessment area, in line with the EO6 focus on 'priority benthic habitats'.

3.3 Monitoring and Assessment of Pollution and Marine Litter related Common Indicators

Eutrophication (EO5):

89. Eutrophication is a process driven by enrichment of water by nutrients, especially compounds of nitrogen and/or phosphorus, leading to increased growth, primary production and biomass of algae; changes in the balance of nutrients causing changes to the balance of organisms; and water quality degradation.

90. Eutrophication related Common Indicators:

Common Indicator 13: Concentration of key nutrients in water column (EO5);

Common Indicator 14: Chlorophyll-a concentration in water column (EO5).

91. The monitoring of eutrophication under IMAP builds on the monitoring system of UNEP/MAP MED POL Monitoring programme. The Contracting Parties have IMAP-based monitoring programmes in place for eutrophication all over the Mediterranean basin.

92. The Contracting Parties, building on their national monitoring programmes, the lessons learned during the initial phase of implementing the Integrated Monitoring and Assessment Programme and previous MED POL experience with eutrophication, update their IMAP-based national monitoring programmes. The overall aim is to enhance harmony and coherence among the national monitoring programmes and to establish coherent datasets at the entire regional sea level.

93. The methodologies, monitoring protocols and quality control and quality assurance measures are available for the Contracting Parties in line with the Indicators' Guidance Factsheets.

94. The geographical scale of monitoring for the assessment of GES for eutrophication depends on the hydrological and morphological conditions of an area, particularly the freshwater inputs from rivers, salinity, general circulation, upwelling, and stratification.

95. The spatial distribution of the monitoring stations should thus, prior to the establishment of the eutrophication status of the marine sub-region/area, be risk-based and proportionate to the anticipated extent of eutrophication in the sub-region under consideration, as well as its hydrographic characteristics aiming for the determination of spatially homogeneous areas. Consequently, each Contracting Party determines the optimal spatial distribution of monitoring stations.

96. The Contracting Parties should use reference conditions and boundary values for chlorophyll-a (Chl-a) and nutrients, as outlined in Annex I, developed and region-wide approved for major coastal water types in the Mediterranean, including their application in the GES/non-GES /environmental classifications. To this aim, further work is required to expand and upgrade the reference conditions and boundary values for the four Mediterranean sub-regions, ensuring optimal GES assessment.

97. The Contracting Parties should use the assessment methodologies as described in the Indicators' Guidance Factsheets for eutrophication.

98. Work should be undertaken to upgrade GES reference conditions and boundary values for Chl-a, nutrients, transparency, and oxygen, using an adequate geographical scale, as well as to harmonize existing assessment tools.

99. Work should continue to further develop the assessment scales based on the monitoring scales, aiming for optimal integration of monitoring and assessment areas among the Ecological Objectives of IMAP.

100. The Contracting Parties should ensure that adequate interlaboratory quality assurance and quality control (QA/QC) procedures are established for IMAP-competent laboratories concerning Common Indicators 13 and 14, and to this aim intercalibration testing should be conducted, and the IMAP Info System should integrate data quality control categories. These efforts should be supported through greater harmonization of diverse data management systems at the international level.

101. The Contracting Parties should exchange experiences and strengthen their capacities in monitoring and conducting GES assessments at the national level, while also contributing to sub-regional and regional efforts for Common Indicators 13 and 14, based on the approved monitoring standards, assessment tools, and criteria within the framework of IMAP implementation.

Contaminants (EO9):

102. The monitoring of chemical contaminants in water, sediments and biota under IMAP builds on the monitoring system with a long-standing history in the Mediterranean, under the auspices of the UNEP/MAP Barcelona Convention, its Land-Based Protocol, and UNEP/MAP MED POL monitoring programme.

103. Contaminants related Common Indicators:

Common Indicator 17: Concentration of key harmful contaminants measured in the relevant matrix (EO9, related to biota, sediment, seawater);

Common Indicator 18: Level of pollution effects of key contaminants where a cause-and-effect relationship has been established (EO9);

Common Indicator 19: Occurrence, origin (where possible), extent of acute pollution events (e.g. slicks from oil, oil products and hazardous substances), and their impact on biota affected by this pollution (EO9);

Common Indicator 20: Actual levels of contaminants that have been detected and number of contaminants which have exceeded maximum regulatory levels in commonly consumed seafood (EO9);

Common Indicator 21: Percentage of intestinal enterococci concentration measurements within established standards (EO9).

104. All Mediterranean countries, building on their national monitoring programmes, the lessons learned during the initial phase of implementing the IMAP and previous MED POL experience with contaminants, update their IMAP-based national monitoring programmes for contaminants. The overall aim is to enhance harmony and coherence among the national monitoring programmes and to establish coherent datasets at the entire regional sea level.

105. Biological effects monitoring has been progressively integrated in the IMAP-based national monitoring programmes. It is essential to further expand and develop the use of biological effects methods, including the integration of chemical and biological effects monitoring and assessment, to cover properly the EO9.

106. In addition, it is important to further harmonize monitoring of contaminants in different matrices in order to optimize assessments at regional, sub-regional, and national levels, as well as to enhance assessment criteria and apply integrated chemical and biological assessment methods.

107. While monitoring stations are well defined in the IMAP-based national monitoring programmes, there is also a need for the Contracting Parties to strengthen monitoring in offshore areas.

108. The methodologies, monitoring protocols and, quality control and quality assurance measures, are available for the Contracting Parties in line with the Indicators' Guidance Factsheets.

109. Regarding acute pollution events, while the Contracting Parties already have existing monitoring obligations under Article 9 of the Prevention and Emergency Protocol, the efforts of which need to be strengthened, it is also foreseen that further analysis of the links between acute pollution events and effect on biota should be enhanced.

110. IMAP-based monitoring of contaminants in biota used for human consumption also builds on previous monitoring requirements and measures contaminants in foodstuffs for which the maximum regulatory limits have been set as outlined in Annex I.

111. Regarding the percentage of intestinal enterococci, threshold values are developed and region-wide-agreed for the Mediterranean through Decision IG.20/9 on “Criteria and Standards for bathing waters quality in the framework of the implementation of Article 7 of the LBS Protocol” (COP 17, 2012) to ensure GES assessment of bathing water quality.

112. The Contracting Parties should use the Background Criteria (BC), Background Assessment Criteria (BAC) and Environmental Assessment Criteria (EAC) values, as outlined in Annex I, developed and region-wide approved for IMAP Common Indicators 17, 18 and 20 in the Mediterranean, including their application in the GES/non-GES /environmental classifications. To this aim, further work is required to regularly upgrade BC and BAC values, and to develop or upgrade the EAC values for IMAP Common Indicators 17, 18, and 20 by using data relevant to the specific ecological characteristics of the four Mediterranean sub-regions, ensuring optimal GES assessment.

113. The Contracting Parties should use the assessment methodologies as described in the Indicators' Guidance Factsheets for Ecological Objective 9.

114. Work should continue in developing the assessment scales based on the monitoring scales, aiming for optimal integration of monitoring and assessment areas among the Ecological Objectives of IMAP.

115. The Contracting Parties should ensure that adequate interlaboratory quality assurance and quality control (QA/QC) procedures are enhanced for IMAP-competent laboratories concerning Common Indicators 17, 18 and 20, and to this aim intercalibration testing should be conducted, and the IMAP Info System should integrate data quality control categories.

116. The Contracting Parties should exchange experiences and strengthen their capacities in monitoring and conducting GES assessments at the national level, while also contributing to sub-regional and regional efforts for Common Indicators 17, 18, 19, 20 and 21, based on the approved monitoring standards, assessment tools and criteria within the framework of IMAP implementation.

Marine litter (EO10):

117. Marine litter monitoring builds on the monitoring requirements of the Regional Plan on Marine Litter Management in the Mediterranean (Decision IG. 25/9, COP 22), on the UNEP Guidelines for Comprehensive Beach Litter Assessment and on the Guidance on Monitoring of Marine Litter in Seas surrounding Europe and on the following agreed common indicators:

Common Indicator 22: Trends in the amount of litter washed ashore and/or deposited on coastlines (EO10);

Common Indicator 23: Trends in the amount of litter in the water column including microplastics and on the seafloor (EO10);

Common Indicator 24: Trends in the amount of litter ingested by marine organisms and in the number of individuals entangled in marine litter (EO10).

Common Indicator 28: Trends in the amount of litter coming from riverine sources (EO10).

118. All Contracting Parties have established since 2016 national IMAP-based monitoring programmes in relation to Common Indicators 22 and 23 (in particular on beach macro-litter, seafloor macro-litter, and floating microplastics). The Contracting Parties should include in their monitoring programmes Common Indicator 24 related to ingestion and entanglement of marine litter from sea turtles and to undertake pilot monitoring activities on the latter.

119. The methodologies, monitoring protocols and quality control and quality assurance measures are available for the Contracting Parties in line with the Indicators' Guidance Factsheets.

120. The Contracting Parties should use the agreed Baseline Values (BV) and Threshold Values (TV⁷) for Common Indicators 22, 23 and 24 of IMAP EO10 as presented in Annex II – Part II. GES/nonGES assessment classification scales build on the Threshold Values.

121. The Contracting Parties should encourage citizens, communities (NGOs, civil society initiatives), and environmental protection associations and institutes across the Mediterranean to take part in activities related to marine litter monitoring.

122. Regarding beach macro-litter (Common Indicator 22), cost-efficient and easy to follow monitoring and sampling methodologies and techniques are well established, as described in the Indicator Guidance Factsheets, with at least two surveys per year in spring and autumn recommended and ideally 4 surveys per year in spring, summer, autumn and winter.

123. The Contracting Parties should establish their national monitoring programs for IMAP EO10 based on a master list of litter categories and items as presented in the respective Integrated Monitoring Indicator Guidance Factsheets. Further work is needed to update within IMAP EO10 for beach macro-litter, the minimum size of recorded marine litter items which need to be considered as of 2.5 cm.

124. Regarding monitoring of marine litter at the sea (Common Indicator 23), due to the low occurrence of litter in midwater, the common indicator focuses on surface floating and seafloor litter, including microplastics. Due to the observation methodology (observation from ships), the type of marine macro-litter objects can only be noted during very short visual observation. Therefore, in contrast to beach litter, only rough litter categories can be determined, even though monitoring size categories should also include relevant small items, in line with the Integrated Monitoring and Assessment Guidance.

125. The Contracting Parties are encouraged to apply the approved regional Guidelines detailing the monitoring of floating microplastics.

126. Monitoring of seafloor macro-litter (Common Indicator 23), focuses on opportunistic monitoring which is a cost-efficient method, being jointly implemented with national/regional fish-stock assessment survey programmes (e.g., the Mediterranean International Bottom Trawl Surveys (MEDITS), including the use of scuba divers and compatible professional trawling operations. Upcoming technologies based on observation/imaging (e.g., ROVs, diver-based recording etc.) may be considered and conducted also as part of other surveys (e.g., within the programmes on biodiversity, with methodologies and technical requirements prescribed in the Indicator Guidance Factsheets.

127. Riverine litter is considered as part of IMAP EO10. The Contracting Parties should/are encouraged to apply the approved region-wide Guidelines for Monitoring Riverine inputs of Marine Litter.

128. It is important to note that while micro-litter and in particular microplastics are considered in IMAP-EO10, further work is still necessary at regional level, recognizing that the understanding of the potential impact on organisms and in the environment is still under development. Contracting Parties are encouraged to undertake pilots monitoring, further research and work in this area (e.g., microplastics and mesoplastic on beaches, microplastics on sediment, pellets on beaches etc.).

129. The Contracting Parties should monitor the ingestion and entanglement of marine litter from biota, in particular from sea turtles (Common Indicator 24) considering that the most representative species are identified; in line with the approved and available region-wide monitoring protocols addressing ingestion and entanglement; They are encouraged to consider taking into account the Regional

⁷ Threshold Values (TV) for IMAP EO10 (Marine Litter) are subject to update for the third iteration of the MED QSR.

Operational Strategy and apply the approved Baseline Values (BV) and Threshold Values (TV) (Annex II – Part II).

130. In designing, upgrading their national monitoring programme, and undertaking the respective assessment for EO10, the Contracting parties are encouraged to use the Indicators' Guidance Factsheets that detail technical specifications on assessment methodologies and scales.

Energy including Underwater Noise (EO11):

131. EO 11 is introduced in IMAP with the support of experts of the Joint ACCOBAMS/ ASCOBANS/ CMS Working Group on Noise.

132. The two Candidate Common Indicators related to energy including underwater noise are:

Candidate Common Indicator 26: Proportion of days and geographical distribution where loud, low, and mid-frequency impulsive sounds exceed levels that are likely to entail significant impact on marine animals;

Candidate Common Indicator 27: Levels of continuous low frequency sounds with the use of models as appropriate.

133. Candidate Common Indicators 26 and 27 are more closely related to the acoustic biology of key marine mammal species of the Mediterranean which are known to be sensitive to noise, i.e., the fin whale, the sperm whale and the Cuvier's beaked whale. The monitoring strategy of these two candidate indicators, is set in the Indicators' Guidance Factsheets, ensuring an effective and widely agreed monitoring of underwater noise at a regional scale.

134. In line with the above, the Contracting Parties should consider including these two Candidate Common Indicators in their IMAP-based national monitoring programmes.

135. Work should continue by developing monitoring and assessment methodologies along with Threshold Values and GES/non-GES boundary values applied for continuous and impulsive noise.

136. For GES assessment related to EO11, the Contracting Parties should use the approved threshold levels and applied to the percentage of habitat occupied by noise-sensitive species affected by impulsive noise events concerning Candidate Common Indicator 26, following a risk-based approach, and a single Threshold Value developed and applied to the percentage of habitat of noise-sensitive species affected by continuous noise concerning Candidate -Common Indicator 27.

137. Work should continue to improve the quality and availability of underwater noise data, as well as monitoring and assessment practices.

3.4 Monitoring and Assessment of Coast and Hydrography related Common Indicators

Hydrography (EO7):

138. Monitoring under this ecological objective aims to address new developments of permanent alterations (constructions lasting for more than 10 years) that can potentially impact marine habitats. It is therefore closely related to CI 1 (EO1).

Common Indicator 15: Location and extent of the habitats potentially impacted by hydrographic alterations

139. Taking into considerations the difficulty in monitoring this indicator; due to its complexity, requirements for historic data, significant human and financial resources required and alike, several CORMON meetings agreed to simplify the original Guidance Factsheet in order to allow its implementation. Simplification has been already proposed and agreed by the Meetings of the CORMON on Coast and Hydrography in 2023 and 2025.

140. In line with the above, the monitoring under EO7 focuses on:

- a) 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);
- b) Mapping of the surrounding area around the structure of potential changes to habitats; and
- c) Intersection of the spatial map of the areas of these hydrographical changes (defined under (i) and (ii)) with spatial maps of habitats (deriving from EO1) to determine the areas of individual habitat types that are impacted by hydrographical changes. Until the habitat map from EO1 is available the Contracting Parties will use their own habitat maps.

Coastal Ecosystems and Landscapes (EO8):

141. One particularity of the IMAP (compared to other regional/RSC monitoring and assessment programmes) is the inclusion of an Ecological Objective focusing on the terrestrial part of the coastal zone. This reflects that the Barcelona Convention also covers coastal areas in its work, in line with the ICZM Protocol.

142. The coast related common indicator and candidate common indicator are as follows:

Common Indicator 16: Length of coastline subject to physical disturbance due to the influence of human-made structures

143. Based on the findings and recommendations of the 2023 MED QSR and experience from the first monitoring cycle (2018 – 2022), the Meetings of the CORMON on Coast and Hydrography in 2023 proposed minor technical improvements in the Guiding Factsheet including the inclusion of “archeological remains” and “other” structures (e.g. parking lots, quarries, pilings if not part of ports and marinas, etc.), as well as to consider off shore breakwaters as structures to be taken into account as artificial.

144. During the development of the national integrated monitoring programmes’ coastal component, the Contracting Parties, in line with the above, first need to assess the length of coastline affected by human-made structures in the current state, in line with the Indicator Guidance Factsheet, noting that the length of coastline subject to physical disturbance due to the influence of human-made structures is an impact indicator, which assumes that the coastlines occupied by human-made structures are potentially impacted areas.

145. For assessment of indicator on length of coastline influenced by human-made structures (CI16), definition of thresholds as % and / or m, to be developed, during the initial phase of IMAP, should be based on expert assisted procedure to take into account the typology of the coast including its ecosystem goods and services related to social and economic benefits. The assessment should also include disturbance that comes from such structures. The Guidance document “Assessment criteria and the Guiding document for application of assessment criteria for the IMAP Common Indicator 16” was endorsed by the Meeting of the CORMON on Coast and Hydrography in 2023, tested in Morocco and applied in Montenegro and Türkiye, should be used to define GES in other countries, as well as to define assessment requirements. This is also mandated by Decision IG.26/3 on “The 2023 Mediterranean Quality Status Report and a Renewed Ecosystem Approach Policy in the Mediterranean” (COP 23).

146. In line with the above, the monitoring under this Ecological Objective is meant to address human activities causing coastal artificialization by sealing the coast with the implementation of coastal structures and therefore impacting the coastal ecosystems and landscapes.

147. The term ‘human-made structures’ typically refers to different types of coastal defenses (such as seawalls, breakwaters, dykes etc.), ports/marinas, as well as to landward structures built on land, and intersect with the coastline.

Common Indicator 25: Land cover change

148. Based on the agreement by Contracting Parties representatives in the Meeting of the CORMON on Coast and Hydrography in 2023 and 2024, there is a sufficient ground for this candidate common indicator to become a common indicator, with the title “Land cover change”. Testing of this indicator has been carried out within several projects (SIDA, EcAp MED II and III, GEF MedProgramme); results for the Adriatic sub-region were included in the 2023 MED QSR; training sessions have been completed or are in progress for all GEF MedProgramme countries.

149. In relation to Common Indicator on land cover change (CI25), Contracting Parties are encouraged to develop monitoring programmes and undertake monitoring activities in line with the pilot monitoring undertaken since 2016, undertaken in the Adriatic and presented in the 2023 MED QSR, as well as the training /capacity building activities and pilot projects implemented in GEF MedProgramme eligible countries. This indicator is very important for the analysis of processes, including land-sea interaction and climate change impact in coastal areas and allows countries to propose adequate measures to achieve GES and mitigate Climate Change impacts. It will bring more objectivity into reporting on the state and evolution of their coastal zones and implementation of the ecosystem approach in coastal zones.

Annex I

**Updated Reference List of Species and Habitats, Assessment Criteria and Scales,
Threshold and Baseline Values for Biodiversity and Non-Indigenous Species**

Annex I: Updated Reference List of Species and Habitats, Assessment Criteria and Scales, Thresholds, Baseline Values for Biodiversity and Non-Indigenous Species

PART I: Reference List of Habitats and Species

1. Reference List of Habitats

Marine Benthic Habitat Types:

- a. B1 Coralligenous
 - i. MB1.55 Coralligenous (enclave of circalittoral)
 - ii. MC1.51 Coralligenous cliffs (with 17 sub-types)
 - iii. MC1.52a Coralligenous outcrops (with 9 sub-types)
 - iv. MC1.52b Coralligenous outcrops covered by sediment (see MC1.52a for examples of facies)
 - v. MC1.52c Deep banks (with 3 sub-types)
 - vi. MC2.51 Coralligenous platforms (with 12 sub-types)
- b. B2 Maërl
 - i. MB3.511 Association with maërl or rhodoliths⁸
 - ii. MB3.521 Association with maërl or rhodoliths
 - iii. MC3.52 Coastal detritic bottoms with rhodoliths (with 9 sub-types)
- c. B3 *Posidonia*
 - i. *Posidonia oceanica* meadow (MB2.54 with 7 sub-types⁹)

Pelagic Habitat Types

Table 1: Reference list of pelagic Habitat Types for the epipelagic layer (0-200m) (Annex VII of Decision IG.26/5)

	Pelagic Habitat Types	Water mass	Comments*
A.1.	Reduced salinity water	coastal lagoons	WFD correspondence ¹⁰
A.2.	Variable salinity water – high surface or subsurface CHL (>3 mg/m3)	estuaries, river plumes	Transitional waters with WFD correspondence ¹¹ (Values should be revised)
A.3.	Marine water: neritic - medium surface or subsurface CHL (0.5-3 mg/m3)	upwellings, re-suspension in shallow waters and outskirts of river plumes, winter mixing areas	WFD water type II, type III
A.4.a	Marine water: oceanic - medium surface or subsurface CHL (0.5-3 mg/m3)	Upwellings, and winter mixing areas	WFD water type III
A.4.b	Marine water: oceanic - low to medium surface CHL (~0.1-1.0 mg/m3)	Hydrological features (fronts and gyres)	WFD water type III
A.5.a.	Marine water: oceanic - very low surface CHL (<0.1 mg/m3) with deep CHL maximum	euphotic depth > mixed layer depth	WFD water type III
A.5.b.	Marine water: oceanic - very low surface CHL (<0.2 mg/m3) without deep CHL maximum	euphotic depth < mixed layer depth	WFD water type III

* Each country should specify the range of Chl-a, Salinity, depth and if annual/seasonal values are used

⁸ MB3.511 and MB3.521 have the same habitat names but are listed under separate higher types (MB3.51 Infralittoral coarse sediment mixed by wave and MB3.52 Infralittoral coarse sediment under the influence of bottom currents).

⁹ Sub-types for a) *Posidonia* on artificial substrata and b) *Posidonia* association with *Zostera noltii* are not specifically defined in BC or EUNIS habitat classifications.

¹⁰ European Commission Decision 2018/229/EU establishing, pursuant to Directive 2000/60/EC of the European Parliament and of the Council, the values of the Member State monitoring system classifications as a result of the intercalibration exercise, and repealing Commission Decision 2013/480/EU (notified under document C (2018) 696) <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018D0229&from=PL>

¹¹ WFD Annex 2 part 1.2.3. defines Transitional waters. see also Guidance document n.o 5 , Transitional and Coastal Waters, Typology, Reference Conditions and Classification Systems and Water Framework Directive Intercalibration Technical Report - Part 3: Coastal and Transitional Waters

2. Reference List of Species:

Marine Sea Birds:

Coastal top predators:	<i>Pandion haliaetus</i>
Intertidal benthic-feeders:	<i>Charadrius alexandrinus</i>
Inshore benthic feeders:	<i>Gulosus aristotelis desmarestii</i>
Offshore surface-feeders:	<i>Ichthyaetus audouinii</i>
Inshore surface feeders:	<i>Croicocephalus genei</i> , <i>Thalasseus bengalensis emigrates</i> , <i>Thalasseus sandvicensis</i>
Offshore (surface or pelagic) feeders:	<i>Hydrobates pelagicus melitensis</i> , <i>Calonectris diomedea</i> , <i>Puffinus yelkouan</i> , <i>Puffinus mauretanicus</i>

Marine Mammals

Cetaceans:

- a) Baleen whales: fin whale (*Balaenoptera physalus*).
- b) Deep-diving cetaceans: sperm whale (*Physeter macrocephalus*), Cuvier's beaked whale (*Ziphius cavirostris*), long-finned pilot whale (*Globicephala melas*) and Risso's dolphin (*Grampus griseus*).
- c) Other toothed species: short-beaked common dolphin (*Delphinus delphis*), striped dolphin (*Stenella coeruleoalba*), common bottlenose dolphin (*Tursiops truncatus*).

Recommended rare species of cetaceans:

- a) Harbour porpoise (*Phocoena phocoena*)
- b) Rough-toothed dolphin (*Steno bredanensis*)
- c) False killer whale (*Pseudorca crassidens*)
- d) Killer whale (*Orcinus orca*).

Monk Seal:

- The Mediterranean monk seal (*Monachus monachus*)

Marine Turtles:

- a) Loggerhead turtle (*Caretta*; IUCN (regionally) Least Concern).
- b) Green turtle (*Chelonia mydas*; IUCN (globally) Endangered).

PART II: Assessment Criteria and Thresholds for Biodiversity Common Indicators 1 and 2

Table 2: Proposed parameters, metrics and indices for assessing CI1 and CI2 for the three habitat types at monitoring sites.

Habitat/CI	Minimum protocol	Optimal protocol
B1 Coralligenous CI1	Habitat extent (km ²) Habitat loss (m ²) Extent (km ²) and proportion (%) of habitat loss across all monitored sites	Extent of habitat loss at assessment area/national level
B1 Coralligenous CI2	For MACS (Enrichetti et al., 2019): Extent of hard bottom (% rock and biogenic) Species richness of conspicuous megabenthic sessile and sedentary species Structuring species: count, height (cm) and density (no. of colonies/individuals m ⁻²) % sediment cover % of colonies with epibiosis, necrosis and entangled in lost fishing gears for all structuring anthozoans Marine litter (density m ⁻²)	For EBQI ¹² and other indices (Di Camillo et al., 2023): Typical species composition Condition of key species/groups: • Filter- and suspension feeders (cover and diversity) • Detritivores abundance • Related fish assemblage biomass (distinguishing piscivores, carnivores of invertebrates, planktivores) Sensitivity level
B2 Maërl CI1	Analysis of existing knowledge (scientific and grey literature) on the presence of maërl/rhodolith beds Habitat extent (km ²) ¹³ Habitat loss (m ²) Extent (km ²) and proportion (%) of habitat loss across all monitored sites	Extent of habitat loss at assessment area/national level
B2 Maërl CI2	Index to be defined. Rhodolith/maërl (% cover live and dead) Rhodolith/maërl density	Index to be defined. Species composition: abundance and diversity (filter-feeders, carnivores, detritivores, etc.) including echinoderms Particulate organic matter cover Detritic litter cover Rhodolith size and shape
B3 Posidonia CI1	Habitat extent (km ²) Habitat loss (m ²) Upper and lower depth limit of meadow (to nearest 0.1m) at monitored sites Extent (km ²) and proportion (%) of habitat loss across all monitored sites Change in vertical distribution of habitat (+ or – m) at monitored sites	Extent of habitat loss at assessment area/national level
B3 Posidonia CI2	For PREI (Gobert et al., 2009): Leaf surface Leaf biomass Shoot density Lower limit depth and type Leaf epiphytes biomass For BiPO (Lopez y Royo et al., 2010) (same parameters as PREI but without sampling living material): Leaf surface Shoot density Lower limit depth and type For functional assessment: Sea urchin density	For EBQI (Personnic et al., 2014): Growth rate of vertical rhizomes Meadow cover Biomass density and species diversity in all compartments: • Filter- and suspension feeder density • Sea urchin <i>Paracentrotus lividus</i> density • Related fish assemblage biomass (distinguishing piscivores, carnivores of invertebrates, planktivores) • <i>Pinna</i> spp. density (not only <i>Pinna nobilis</i> now that <i>P. rudis</i> occurrence is increasing)
All sites	Parameters related to water quality (sea temperature, salinity, turbidity, transparency)	

¹² FR: From Ruitton et al. 2014 updated by Astruch et al. (under review). See also: https://www.researchgate.net/publication/325607434_Guide_methodologique_pour_l%27evaluation_ecosystemique_des_habitats_marins.

¹³ ES: To estimate this parameter for RMBs, firstly it will be necessary to have the maps of the benthic biocenoses throughout the entire continental shelf. Currently, these maps are only available for certain (few) areas.

Table 3: Overview of the main aspects of monitoring and assessment elements for CI1 and CI2 for the three habitat types Posidonia, coralligenous and maërl

Element	CI1 & CI2
Habitat types	Define more clearly each of the habitat types, including specification of which EUNIS/BC subtypes are to be considered, and the most important pressures they face
Monitoring scale: number of sites	A minimum of five sites per habitat type per assessment area (28 subdivisions of Mediterranean region) Sites to be distributed across countries within each assessment area, and represent a gradient of conditions from impacted to non-impacted locations Assess state of habitats (extent and condition) at monitoring sites as a proxy for their state across the wider assessment areas and region (to make monitoring and assessment process feasible for all Contracting Parties)
Monitoring methods: parameters	Refer to Table 2 for minimum and optimal set of parameters per habitat type.
State/impact monitoring in context of pressures	Sites selected for detailed monitoring should include a range of pressures or intensities of pressures, as well as sites which are 'unimpacted'. Pressures (and related activities) should be reported at monitoring sites and across each country (linked to EO6), assigning data to a standardised grid system.
Assessment scale	Use same set of assessment areas (28 subdivisions of the 4 Mediterranean subregions) as proposed for EO6.
Assessment methods	Use several indicators to represent differing aspects of habitat distribution and extent (CI1) and structure and function (CI2), as given in Table 2. The indicators need testing with data from multiple CPs to help define suitable thresholds and ensure comparability of results across the region.
Data standards	Simplify data standards to facilitate data submission and aggregation for analyses.
Baselines	Use unimpacted sites to establish the current extent and state of each habitat type in reference state (under prevailing physiographic, geographic, climatic and environmental conditions).
Quality threshold	Re-evaluate threshold once sufficient data are available to set fully meaningful threshold for the assessment area/subregion and habitat type. Ensure equivalent level of quality across assessment areas, habitats, indicators and pressures.
Extent thresholds	Set thresholds for the maximum extent of habitat loss (for CI1) and habitat which is adversely affected (for CI2) that is permitted per habitat in each assessment area.
Progress with monitoring and assessment processes	Contracting Parties should update their monitoring programmes, if necessary, based on general agreements for monitoring and assessment elements. SPA/RAC should evaluate progress in implementation of the monitoring programmes, say at a mid-point in the 6-year data collection phase. This evaluation should include the state of data submissions to the IMAP Info System and undertaking a trial region-wide assessment. Outcomes should guide further implementation of the programmes in the lead up to the next MED QSR assessment.

PART III: Assessment Criteria and Thresholds for Biodiversity Common Indicators 3, 4 and 5 related to Marine Mammals

Table 4: Biodiversity common indicators 3, 4 and 5 related to Marine Mammals (Ecological Objectives, GES Definitions and Targets, Monitoring and Assessment Scales, Assessment Criteria, Threshold and Baseline Values) (Extracted from UNEP/MED WG.514/Inf.11¹⁴)

Common Indicator 3 (CI3) ¹⁵					
Refining scales of monitoring, by revising the existing IMAP proposals and identifying adequate scales for the most relevant species in the Mediterranean context.		Developing scales of assessment (if different from those of monitoring) and assessment criteria		Develop threshold and baseline values	
Species/functional group	Proposed changes Key: WM=Western Mediterranean; I&CM=Ionian and Central Mediterranean; A=Adriatic; A&LS=Aegean and Levantine seas.	Existing context	Proposed changes	Existing context	Proposals
Fin whale / Mysticetes	Primary monitoring • Geographic scale: Regional. • Method: standard & synchronised between all countries (i.e. ASI-like). • Frequency: at least once per reporting period. Secondary monitoring • Geographic scale: Sub-Regional / National. ◦ High Priority sub-regions (HP): in WM and I&CM key habitats for this species (i.e. feeding, corridor). ◦ Low priority sub-regions (LP) in A and A&LS. • Method: ◦ in HP: systematic regular monitoring (including photo-id). ◦ in LP complement systematic monitoring with other adequate and standard method (UNEP MAP 2019). • Frequency: ◦ in HP sub-regions the minimum requirement is at least three times (better annually in selected places); ◦ in LP at least one time over the reporting period.	New proposal in UNEP/MED WG.450/3: • Regional: large cetaceans	• Primary assessment/MRU: Regional. • Frequency: once every reporting period.	None	Reference values distributional range: • Mediterranean cetaceans (all species): map to be created based on Mannocci et al. 2018, Canadas et al. 2018 (<i>Ziphius</i>) • Adriatic cetaceans: Fortuna et al. 2018 (<i>Tusiops</i>, <i>Stenella</i>) • Monk seals: map to be created based all existing data. Thresholds for distributional range: • The extent of the distribution of each species remains stable or expanding compared to a reference map (see above). In particular, the Extent of occurrence (EOO) shows: 1) no decline (in all sub-regions where the species was regularly found since last assessment, 2) no decline of number of locations or local putative populations for the species within its distributional range. Given the difficulty to assess the distribution of cetacean species at a finer scale, both reference values and thresholds for this CI should be revised at each assessment cycle.
Sperm whale / Odontocete (deep feeder)	Primary monitoring • Geographic scale: Regional. • Method: As in previous cell. • Frequency: As in previous cell. Secondary monitoring • Geographic scale: Sub-Regional / National. ◦ High Priority (HP) in WM, I&CM and A&LS key habitats for this species (i.e. breeding, corridor). ◦ Low priority (LP) in A • Method: As in “Fin whale” cell. • Frequency: As in “Fin whale” cell.			None	
Cuvier's beaked whale (deep feeder)	Primary monitoring • Geographic scale: Regional. • Method: As in “Fin whale” cell. • Frequency: As in “Fin whale” cell. Secondary monitoring • Geographic scale: Sub-Regional / National. ◦ High Priority (HP) in WM, I&CM and A&LS key habitats for this species (i.e. feeding). ◦ Low priority (LP) in A • Method: As in “Fin whale” cell. • Frequency: As in “Fin whale” cell.			None	

Key: MS=Monitoring Scale, AS=Assessment Scale, MRU=Marine Reporting Units

¹⁴ 8th Meeting of the Ecosystem Approach Coordination Group (EcAp CG), Videoconference, 9 September 2021.

¹⁵ <https://www.medqsr.org/common-indicator-3-species-distributional-range-marine-mammals>

Common Indicator 3 (CI3)					
Refining scales of <u>monitoring</u> , by revising the existing IMAP proposals and identifying adequate scales for the most relevant species in the Mediterranean context.		Developing scales of assessment and assessment criteria		Develop threshold and baseline values	
Species/ functional group	Proposed changes Key: WM=Western Mediterranean; I&CM=Ionian and Central Mediterranean; A=Adriatic; A&LS=Aegean and Levantine seas.	Existing context	Proposed changes	Existing context	Proposals
Long finned pilot whale (epipelagic feeder)	Primary monitoring • Geographic scale: Regional. • Method: standard & synchronised between all countries (i.e. ASI-like). • Frequency: at least once per reporting period. Secondary monitoring • Geographic scale: Sub-Regional / National. ◦ High Priority sub-regions (HP) in WM key habitats for this species (i.e. feeding, corridor). ◦ Low priority (LP) in I&CM. • Method: ◦ in HP: systematic regular monitoring; ◦ in LP complement systematic monitoring with other adequate and standard method (UNEP MAP 2019). • Frequency: ◦ in HP sub-regions the minimum requirement is biannual; ◦ in LP at least one time over the reporting period.	New proposal in UNEP/MED WG.450/3: • Sub-regional: small cetaceans	• Primary assessment/MRU: Regional. • Frequency: once every reporting period.	None	See previous page.
Risso's dolphin (epipelagic feeder)	Primary monitoring • Geographic scale: Regional. • Method: As in previous cell. • Frequency: As in previous cell. Secondary monitoring • Geographic scale: Sub-Regional / National. ◦ High Priority sub-regions (HP) in WM & A key habitats for this species (i.e. feeding, corridor). ◦ Low priority (LP) in I&CM and A&LS. • Method: As in "Fin whale" cell. • Frequency: As in "Fin whale" cell.			None	
Bottlenose dolphin (epipelagic feeder)	Primary monitoring • Geographic scale: Regional. • Method: As in previous cell. • Frequency: As in previous cell. Secondary monitoring • Geographic scale: Sub-Regional / National. ◦ High Priority sub-regions (HP) in key habitats for this species in all sub- regions (i.e. feeding, corridor). ◦ Low priority (LP) in offshore areas. • Method: As in "Fin whale" cell. • Frequency: As in "Fin whale" cell.			None	
Common dolphin (epipelagic feeder)	Primary monitoring • Geographic scale: Regional. • Method: As in previous cell. • Frequency: As in previous cell. Secondary monitoring • Geographic scale: Sub-Regional / National. ◦ High Priority sub-regions (HP) in WM, A&LS key habitats for this species (i.e. feeding, corridor). ◦ Low priority (LP) in A, I&CM. • Method: As in "Fin whale" cell. • Frequency: As in "Fin whale" cell.			None	
Striped dolphin (epipelagic feeder)	Primary monitoring • Geographic scale: Regional. • Method: As in "Fin whale" cell (except for photo-id). • Frequency: As in "Fin whale" cell.			None	

Common Indicator 3 (CI3)					
Refining scales of monitoring , by revising the existing IMAP proposals and identifying adequate scales for the most relevant species in the Mediterranean context.		Developing scales of assessment and assessment criteria		Develop threshold and baseline values	
Species/ functional group	Proposed changes Key: WM=Western Mediterranean; I&CM=Ionian and Central Mediterranean; A=Adriatic; A&LS=Aegean and Levantine seas.	Existing context	Proposed changes	Existing context	Proposals
Monk Seal	Primary monitoring • Geographic scale: Sub-regional ○ In Group A countries; ○ Specifically, monitor populations in sites consistent with the Regional Strategy for the conservation of Monk seal in the Mediterranean (RSMS). ○ In Group B and C countries: area with suitable habitat and/ historical presence. • Method: ○ In Group A countries: ▪ Registry on opportunistic sightings / citizen science - Photo traps in selected caves ○ In Group B & C countries: ▪ Registry on opportunistic sightings (minimum requirement) - Photo traps in selected caves of selected locations identified by the revised RSMS. • Frequency: Annual (minimum requirement) or all known locations in each Group A country covered at least three times (biannually) per reporting period.	None	• Primary assessment/MRU: Regional. • Frequency: once every reporting period.	None	Reference values distributional range: • <i>Monk seals:</i> map to be created based all existing data.

Key: MS=Monitoring Scale, AS=Assessment Scale, MRU=Marine Reporting Units

Common Indicator 4 (CI4)					
Refining scales of monitoring , by revising the existing IMAP proposals and identifying adequate scales for the most relevant species in the Mediterranean context.		Developing scales of assessment and assessment criteria		Develop threshold and baseline values	
Species/functional group	Proposed changes Key: WM=Western Mediterranean; I&CM=Ionian and Central Mediterranean; A=Adriatic; A&LS=Aegean and Levantine seas.	Existing context	Proposals	Existing context	Proposals
Fin whale	Primary monitoring • Geographic scale: Regional. • Method: standard & synchronised between all countries (i.e. ASI-like). • Frequency: at least once per reporting period. Secondary monitoring • Geographic scale: Sub-Regional / National. ◦ High Priority sub-regions (HP): in WM and I&C. ◦ Low priority (LP): in A and A&LS. • Method: ◦ in HP: systematic regular monitoring (including photo-id); ◦ in LP complement systematic monitoring with other adequate and standard method (UNEP MAP 2019). • Frequency: ◦ in HP sub-regions the minimum requirement is biennial. ◦ in LP at least one time over the reporting period.	IMAP Monitoring Protocols 2019	• Assessment / MRU: Regional. • Frequency: once every reporting period.	None	• Check IUCN Mediterranean Red Listing and if EN, CR, VU then maintain total abundance at or above reference levels. • When listed as LC, no decrease of $\geq 20\%$ over 3 generations (1.5% within a 6-year reporting period). • Regional reference value: ASI 2018 DS design-based estimate (see Box 4 for details).
Sperm whale	Primary monitoring: As in “Fin whale” cell. Secondary monitoring: • Geographic scale: Sub-Regional / National. ◦ HP: in WM, I&CM and A&LS. ◦ LP: in A. • Method: As in “Fin whale” cell. • Frequency: As in “Fin whale” cell.	None.		None.	• Check IUCN Mediterranean Red Listing and if EN, CR, VU then maintain total abundance at or above reference levels. • When listed as LC, no decrease of $\geq 20\%$ over 3 generations (1.3% within a 6-year reporting period). • Regional reference value: ASI 2018 DS design-based estimate (see Box 4 for details).
Cuvier's beaked whale	Primary monitoring: As in “Fin whale” cell. Secondary monitoring • Geographic scale: Sub-Regional / National. ◦ HP in WM, I&CM and A&C. ◦ LP in A. • Method: As in “Fin whale” cell. • Frequency: As in “Fin whale” cell.	None.		None.	• Check IUCN Mediterranean Red Listing and if EN, CR, VU then maintain total abundance at or above reference levels. • When listed as LC, no decrease of $\geq 1.5\%$ within a 6-year reporting period. • Regional reference value: Canadas <i>et al.</i> 2018 & ASI 2018 DS design-based estimate (see Box 4 for details).
Long finned pilot whale	Primary monitoring: As in “Fin whale” cell. Secondary monitoring • Geographic scale: Sub-Regional / National. ◦ High Priority sub-regions (HP) in WM. ◦ Low priority (LP) in I&CM. • Method: As in “Fin whale” cell. • Frequency: As in “Fin whale” cell.	None.		None.	• Check IUCN Mediterranean Red Listing and if EN, CR, VU then maintain total abundance at or above reference levels. • When listed as LC, no decrease of $\geq 20\%$ over 3 generations (1.7% within a reporting period). • Regional reference value: ASI 2018 DS design-based estimate (see Box 4 for details).

Risso's dolphin	Primary monitoring: As in "Fin whale" cell. Secondary monitoring • Geographic scale: Sub-Regional / National. ◦ High Priority sub-regions (HP) in WM & A. ◦ Low priority (LP) in I&CM and A&LS. • Method: As in "Fin whale" cell. • Frequency: As in "Fin whale" cell.	None.		None.	• Check IUCN Mediterranean Red Listing and if EN, CR, VU then maintain total abundance at or above reference levels. • When listed as LC, no decrease of $\geq 20\%$ over 3 generations (2.0% within a reporting period). • Regional reference value: ASI 2018 DS design-based estimate (see Box 4 for details).
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Key: MS=Monitoring Scale, AS=Assessment Scale, MRU=Marine Reporting Units

Common Indicator 4 (CI4)					
STEP 1 Refining scales of monitoring , by revising the existing IMAP proposals and identifying adequate scales for the most relevant species in the Mediterranean context.		STEP 2 Developing scales of assessment and assessment criteria		STEP 3 Develop threshold and baseline values	
Species/ functional group	Proposed changes Key: WM=Western Mediterranean; I&CM=Ionian and Central Mediterranean; A=Adriatic; A&LS=Aegean and Levantine seas.	Existing context	Proposals	Existing context	Proposals
Bottlenose dolphin	Primary monitoring: As in “Fin whale” cell. Secondary monitoring • Geographic scale: Sub-Regional / National. ◦ High Priority sub-regions (HP). ◦ Low priority (LP) in offshore areas. • Method: As in “Fin whale” cell. • Frequency: As in “Fin whale” cell.	None.		None.	- Check IUCN Mediterranean Red Listing and if EN, CR, VU then maintain total abundance at or above reference levels. - No decrease of ≥20% over 3 generations (1.9% within a reporting period). - Regional reference value: ASI 2018 DS design-based estimate (see Box 4 for details). - Adriatic: Reference value (2010: Fortuna et al. 2018)
Common dolphin	Primary monitoring: As in “Fin whale” cell. Secondary monitoring • Geographic scale: Sub-Regional / National. ◦ High Priority sub-regions (HP) in WM, A&LS key habitats for this species (i.e. feeding, corridor). ◦ Low priority (LP) in A, I&CM. • Method: As in “Fin whale” cell. • Frequency: As in “Fin whale” cell.	None.		None.	- Check IUCN Mediterranean Red Listing and if EN, CR, VU then maintain total abundance at or above reference levels. - When listed as LC, no decrease of ≥20% over 3 generations (2.7% within a reporting period). - Regional reference value: ASI 2018 DS design-based estimate (see Box 4 for details).
Striped dolphin	Primary monitoring: As in “Fin whale” cell.	None.		None.	- Check IUCN status and if EN, CR, VU then > only. - Maintain total abundance at or above reference levels. - When listed as LC, no decrease of ≥20% over 3 generations (1.8% within a reporting period). - Regional reference value: ASI 2018 DS design-based estimate (see Box 4 for details).
Monk Seal	Primary monitoring (pending definition of a single standardized method to avoid double counting and allow inter-regional comparison) • Geographic scale: Sub-regional • Method: ◦ Group A countries: ▪ Individuals counts based on cave monitoring (minimum requirement) and/or mark-recapture based on photo-identified seals data in sites consistent with the revised Monk seal strategy. ◦ Group B & C countries: ▪ Photo-identification of individuals based on images obtained from non-invasive monitoring of resting caves. Caves in sites that require monitoring should be decided based on evidence of recurrent sightings recorded through the results of the opportunistic sighting registry ◦ Frequency: Annual.	None.	• Assessment/MRU: Regional	None.	- Increase on total population of 1% over six-year reporting period AND increase in number of pups compared to the last assessment. - Provisional reference value: to be estimated.

Key: MS=Monitoring Scale, AS=Assessment Scale, MRU=Marine Reporting Units

Common Indicator 5 (CI5)					
Refining scales of monitoring , by revising the existing IMAP proposals and identifying adequate scales for the most relevant species in the Mediterranean context.		Developing scales of assessment and assessment criteria		Develop threshold and baseline values	
Species/ functional group	Proposed changes Key: WM=Western Mediterranean; I&CM=Ionian and Central Mediterranean; A=Adriatic; A&LS=Aegean and Levantine seas.	Existing context	Proposals	Existing context	Proposals
Cetaceans (<i>Stenella</i> , <i>Tursiops</i> and <i>Balaenoptera</i> as proxy for functional groups)	Primary monitoring • Geographic scale: Sub-regional / National. • Species: focus on <i>Stenella</i>, <i>Tursiops</i> and <i>Balaenoptera</i>. Parameters: ◦ adult survival probability, juvenile survival probability; fecundity/breeding productivity/rate; age class distribution; sex ratio; population growth rate. Method: ◦ Stranding network collecting standard measures and biological material (e.g., teeth and reproductive organs) ◦ Photo-ID network collecting standard pictures (list of parameters including calf) Frequency: continuous for strandings', regularly and frequent for photo-ID.		• Assessment/MRU: Sub-regional & all "local populations" (long-term studies). • Frequency: once per reporting period.		It is not possible to develop reference and threshold values at this point.
Monk seal	Primary monitoring • Geographic scale: Sub-regional in countries Group A. • Method: Pup counts in critical/selected breeding caves (minimum requirement). • Frequency: annual.		• Assessment/MRU: Sub-regional & all "colonies". • Frequency: once per reporting period.		Reference values demography: • <i>Total annual national pup counts:</i> to be estimated. • <i>Annual birth rate:</i> define index areas and produce estimates. Threshold values: • Increase from last assessment.

Key: MS=Monitoring Scale, AS=Assessment Scale, MRU=Marine Reporting Units

CI12: Bycatch of vulnerable and non-target species (EO1 and EO3)					
Refining scales of monitoring , by revising the existing IMAP proposals and identifying adequate scales for the most relevant species in the Mediterranean context.		Developing scales of assessment and assessment criteria		Develop threshold and baseline values	
Species/ functional group	Proposed changes Key: WM=Western Mediterranean; I&CM=Ionian and Central Mediterranean; A=Adriatic; A&LS=Aegean and Levantine seas.	Existing context	Proposals	Existing context	Proposals
Marine mammals	- In each GFCM GSA, at least one year of cetacean bycatch rate monitoring per each high priority fishing métiers (to be defined), within each reporting cycle. - GFCM provides data on fishing effort during reference year for priority fishing métiers, for each GSA. Annually: bycatch (onboard observations, questionnaires and strandings) and systemic pollution (strandings) - CPs monitor their fleets (at least one métier per sub-region per year, rotating). - National stranding network collect data on fishery-induced mortality and level of pollutants in marine mammal tissues. They provide biennial reports on these matters. - Each CP: national monitoring schemes to provide bycatch rates and annual fishing effort.		Assessment /MRU: Regional & Sub-regional (or aggregated GFCM GSAs). Frequency: annual or biennial.		Regional: BRA on each species for the potentially most dangerous fishing gears. - Threshold of the total estimated bycatch per all fishing gears: 1% of the total population. This triggers in-depth monitoring programmes. Sub-regional: thresholds calculated with CLA or RLA on each species, based on actual observations on bycatch rates, total fishing effort, biological parameters and conservation objectives (CLA = 72% K; RLA = 80% K).

Key: MS=Monitoring Scale, AS=Assessment Scale, MRU=Marine Reporting Units

PART IV Assessment Criteria, Thresholds and Baseline Values for the IMAP Common Indicators 3, 4 and 5 related to Marine Turtles

Table 5. Summary Tables of the methodological approach and results of the analysis on monitoring and assessment scales, assessment criteria and thresholds and baseline values for the Common Indicators 3,4 and 5 related to sea turtles

Common Indicator 3 (CI3)							
STEP 1 Refining scales of monitoring, by revising the existing IMAP proposals and identifying adequate scales for the most relevant species in the Mediterranean context.		STEP 2 Developing scales of assessment		STEP 3 Developing assessment criteria		STEP 4 Develop threshold and baseline values	
Existing context	Proposed changes	Existing context	Proposals	Existing context	Proposals	Existing context	Proposals
Species distribution ranges ¹⁶ can be gauged at local (i.e., within a small area like a national park) or regional (i.e., across the entire Mediterranean basin) scales using a variety of approaches. Long-term monitoring of these areas provides information on the temporal evolution in species distributions.	Revise mapping requirements to two maps; one for <u>nesting areas</u> and one for <u>marine areas</u>. <u>Nesting areas monitoring</u> • Geographic scale: ◦ (sub-)National. Up to 7 established sites or 75% of national nesting activity (index areas) • Method: ◦ standard nesting beach surveys. • Frequency: ◦ Minimum = June/July annually for index areas. ◦ six-yearly national scale. <u>Nearshore monitoring</u> • Geographic scale: ◦ (sub-)National. Up to 4 sites. • Method: ◦ systematic regular monitoring index areas. ◦ bycatch/stranding data. • Frequency: ◦ biannual monitoring index areas. ◦ year-round bycatch/stranding recording. ◦ six-yearly national scale. <u>Offshore monitoring</u> • Geographic scale: ◦ (sub-)National/regional. • Method: ◦ Aerial surveys ◦ Boat surveys ◦ Bycatch recording. ◦ Opportunistic boat surveying. • Frequency: ◦ Yearly for aerial and boat surveys ◦ Year-round for bycatch records ◦ <i>Ad hoc</i> boat surveying. ◦ six-yearly national scale.	The European (ETRS) 10x10km grid is used for mapping the distribution and range... Three different maps (grids) are produced yearly for each species accounting for breeding sites, wintering sites and feeding/developmental sites. Number of 10x10 km cells (presence/absence) occupied for breeding or wintering or feeding/developmental areas along the Mediterranean (or subregional) coast and in all pelagic marine areas.	<u>Nesting areas</u> National and Subdivisional level GES assessments based on maintenance of distribution of all nesting sites. <u>Marine areas</u> Subregional GES assessments.	Turtles continue to nest in all known nesting sites. Turtle distribution is not significantly affected by human activities.	<u>Nesting areas</u> Turtles remain present in all parts of annually monitored nesting sites and at all established sites during periodic surveys. <u>Marine areas</u> Turtles remain present in all annually monitored, CP defined, hotspot areas and no evidence of definitive absences in any other area within the RMU distribution.	None	<u>Nesting areas</u> Baselines centred on 1992 to be used for established nesting sites. More recent data to be modelled to 1992 era levels for these sites. New and emerging sites to use maximum existing 6-year average as baseline. <u>Marine areas</u> All areas assumed to have turtle presence (in line with updated IUCN-MTSG RMU boundaries) unless proven otherwise.

¹⁶ <https://www.medqsr.org/common-indicator-3-species-distributional-range-marine-turtles>

Common Indicator 4 (CI4)							
STEP 1 Refining scales of monitoring, by revising the existing IMAP proposals and identifying adequate scales for the most relevant species in the Mediterranean context.		STEP 2 Developing scales of assessment		STEP 3 Developing assessment criteria		STEP 4 Develop threshold and baseline values	
Existing context	Proposed changes	Existing context	Proposals	Existing context	Proposals	Existing context	Proposals
For counts carried out on an annual basis, a number of sites should be selected that represent a sufficiently large proportion of the subregional or national population, with criteria being delineated by expert groups. of selected species ¹⁷	<u>Nesting areas monitoring</u> • Geographic scale: ○ (sub-)National. Up to 7 sites or 75% of national nesting activity (index areas) • Method: ○ standard nest count surveys. • Frequency: ○ Minimum = June/July annually for index areas. ○ six-yearly national scale. <u>Nearshore monitoring</u> • Geographic scale: ○ (sub-)National. Up to 4 sites. • Method: ○ systematic regular monitoring index areas. ○ bycatch/stranding data. • Frequency: ○ biannual monitoring index areas. ○ year-round bycatch/stranding recording.	For counts carried out on an annual basis, a number of sites should be selected that represent a sufficiently large proportion of the subregional or national population, with criteria being delineated by expert groups. The “Demography Working Group” suggests that comprehensive surveys should be carried out every 5 years, with the aim of covering all breeding, foraging, wintering and developmental sites. However, here, it is recommended that the whole coastal and marine area is covered on a national or subregional scale to take into account changes in population	<u>Nesting areas</u> National and Subdivisional level GES assessments based on maintenance of nesting abundance at all sites. <u>Marine areas</u> Subregional GES assessments based on relevant population segments present in each area.	<u>Nesting areas</u> The average breeding population size during at least a decade is suggested as the base level (based on International Union for Conservation of Nature Red List minimal criteria for sea turtles) <u>Marine areas</u> for non-breeding animals at wintering / foraging / developmental sites, number of individuals (n) with appropriate modelling to extrapolate population numbers	<u>Nesting areas</u> Rolling average of previous six years’ data to count in the annual assessment. To coincide with the six-yearly nationwide GES assessments. <u>Marine areas</u> Rolling average of previous six years’ data to count in the annual assessment. To coincide with the six-yearly nationwide GES assessments. Observations on numbers of turtles in different life-stages and sex ratios to be considered	None.	<u>Nesting areas</u> Baselines centred on 1992 to be used for established nesting sites. More recent data to be modelled to 1992 era levels for these sites. New and emerging sites to use maximum existing 6-year average as baseline. <u>Marine areas</u> GES baseline taken as annual abundance derived from existing modelled

¹⁷ <https://www.medqsr.org/common-indicator-4-population-abundance-selected-species-marine-reptiles>

Cardona L, et al. (2015) Demography of marine turtles nesting in the Mediterranean Sea: a gap analysis and research priorities. Demography Working Group of the 5th Mediterranean Conference on Sea Turtles. 37pp. Bern Convention, T-PVS/Inf (2015) 1

4 Sparks LM & DiMatteo AD (2020) Loggerhead sea turtle density in the Mediterranean Sea. NUWC-NPT Tech Rep 12360. 77pp.

Common Indicator 5 (CI5)							
STEP 1 Refining scales of monitoring, by revising the existing IMAP proposals and identifying adequate scales for the most relevant species in the Mediterranean context.		STEP 2 Developing scales of assessment		STEP 3 Developing assessment criteria		STEP 4 Develop threshold and baseline values	
Existing context	Proposed changes	Existing context	Proposals	Existing context	Proposals	Existing context	Proposals
A number of sites should be selected that represent a sufficiently large proportion of the subregional or national population for demographic data to be collected (reflecting the breeding, wintering, foraging and developmental populations that are representative of the region) ¹⁸ . If possible, populations should be selected where animals have been tracked with a sufficient number of units (i.e., >50 individuals), from which the connectivity among these different habitat types can be established.	Nesting areas monitoring • Geographic scale: ◦ (sub-)National. Up to 7 established sites or 75% of national nesting levels • Methods: ◦ Standard: hatchling emergence success (HES) and nest temperature data. ◦ Additional: Sex ratio adults • Frequency: ◦ Annually, Minimum: Aug./Sept. or for index area HES and May- September for temperature data. April-May for adult sex ratios. ◦ six-yearly national scale. Nearshore monitoring • Geographic scale: ◦ (sub-)National. Up to 4 index hotspot sites. • Method: ◦ systematic regular monitoring index areas. ◦ bycatch/stranding data. • Frequency: ◦ biannual monitoring index areas. ◦ year-round bycatch/stranding recording. ◦ six-yearly national scale. Offshore monitoring • Geographic scale: ◦ (sub-)National. • Method: ◦ Bycatch recording. ◦ Opportunistic boat surveying. • Frequency: ◦ Year-round bycatch records ◦ Ad hoc boat surveying. • ◦ six-yearly national scale.	The selected breeding sites should aim to be genetically diverse, so as this diversity can be detected at foraging/ wintering/ developmental grounds where different populations diverge. This will facilitate the selection of marine areas for protection that support the highest genetic diversity (i.e., the greatest accumulation of different breeding populations), as well as those that support single breeding populations, which may be of equal importance. Opportunistic data should be collected from all possible sources, wherever possible, and compiled into a single database, which might be used to provide an overview of the entire area. Knowledge about the sex, health and genetic structure of the different populations/sub-populations will be obtained, by Understanding recruitment and mortality within different parts of a population and across populations. This information is important to understand whether there are sex-specific mortality risks at different age/size classes, which is important towards aiding population recovery. Also, knowledge on the physical health and genetic health of populations will be obtained, which will indicate the capacity for resilience to human activities, including climate change.	Nesting areas National and Subdivisional level GES assessments. Marine areas Subregional GES assessments.	publication). Most studies that do exist are focused on the breeding areas; thus, greater focus is required at foraging, wintering and developmental areas, with in-water limitations needing to be accounted for in analyses. Therefore, set analyses need to be established that are applicable within and/or across the different habitat types to allow comparison at the Mediterranean level.	Nesting areas Maintenance of suitable hatchling sex ratios and high hatchling emergence success. Marine areas Quantification of bycatch and calculation of bycatch mortality rates. Observations on numbers of turtles in different life-stages and sex ratios to be considered for indications of perturbations in population structure.	No threshold and baseline values have been consistently defined and applied to date.	Nesting Areas ‘Good’ HES values can be taken from published literature and taken as thresholds with a buffer zone for improved conservation measures. Nest temperature records to be monitored with estimations of over 95% female production as an upper threshold. Marine areas Human-induced mortality as a component of longevity and survivorship is the one factor that can be measured and affected by conservation actions and hence can be considered as an actionable indicator for GES. Numbers of deaths should be used as the indicator with a stable or declining trend in numbers indicating GES

¹⁸ <https://www.medqsr.org/common-indicator-5-population-demographic-characteristics-marine-reptiles>

PART V: Assessment Criteria, Thresholds and Baseline Values for the IMAP Common Indicators 3, 4 and 5 related to Sea Birds

Table 6. Summary Tables of the methodological approach and results of the analysis on monitoring and assessment scales, assessment criteria and thresholds and baseline values for the Common Indicators 3,4 and 5 related to seabirds

	Species	Common Indicator	Assessment Criteria	Baseline	Threshold	Scales of Assessment	Scales of Monitoring
1	Osprey <i>Pandion haliaetus</i>	CI3: Species Distributional Range	% Change in occupancy in distribution range of breeding birds. % Shift in occupancy	Reference-based baseline: pristine conditions baseline with widest known range in the last 100 years. Modern baseline: If no reliable historic data are available, modern baseline with widest known range in last 20 years	Not more than 10% deviation from baseline	Spatial: Regional and sub- regional Temporal: Annual, with reporting every six years	Spatial: National, surveys covering at least all known breeding areas Temporal: Annual where feasible and depending on scale, alternatively one time to two times within six years, linked to IMAP reporting cycles
		CI 4: Population abundance	Annual relative breeding bird abundance (annual abundance / baseline abundance)	Reference-based (modern) baseline: Abundance at the start of the implementation of BD (1981) Alternatively: highest breeding abundance estimate in the last 20 years Additionally: Highest abundance of entering population in the last 20 years	Deviation from baseline: annual relative breeding and wintering abundance > 0.7	Spatial: Regional and sub- regional (all sub-regions, but with main focus on Western Mediterranean Sea) Temporal: Aiming at annual assessment with reporting every six years	Spatial: National or sub- national (aiming at 100% of known nesting sites) Temporal: Annual
		CI5: Population Demographic Characteristics	Population growth rate: Reproductive success of monitored nests Survival rates of adult and young from capture-mark- resighting (colour- ringing of nestlings)	Model-based baseline: growth rates in the last assessment cycle Population	Deviation from growth rate of 1.0 or higher baseline: Population	Spatial: Regional, sub- Temporal: Annual breeding success and survival rates with reporting every 6 years regional and national	Spatial: National or sub-national, aiming at 100% assessment (all known nests) of reproductive success Representative subsample of accessible nests for colour- ringing of nestlings Temporal: Annual for breeding success and survival via reading of colour rings

2	Kentish Plover <i>Charadrius alexandrinus</i>	CI3: Species Distributional Range	% Change in occupancy in distribution range of breeding and wintering populations % Shift in occupancy for breeding and wintering population	Reference-based baseline for breeding and wintering population separately: Widest known range in the last 20 years, except a major and reversible decline in the range is known to have taken place before	Not more than 10% deviation from baseline	Spatial: Sub-regional Temporal: Every six years	Spatial: National Temporal: Annual
		CI 4: Population abundance	For breeding birds: Annual relative breeding bird abundance For non-breeding birds Annual relative wintering bird abundance	Reference-based (modern) baseline: Highest breeding abundance estimates and wintering abundance estimates (separately) in the last 20 years	Deviation from baseline: annual relative breeding and wintering abundance > 0.7	Spatial: Sub-regional Temporal: Every 6 years, linked to IMAP reporting cycle, alternatively every 3 years linked to NE- Atlantic flyway count initiative	Spatial: Breeding population: National or sub-national (at least 40% of the national breeding population and certainly no less than 10% of the national population,) Non-breeding population: sub-national representative number of known sites
		CI5: Population Demographic Characteristics	Population growth rate Reproductive success of monitored nests reproductive success Adult survival rates from capture- mark- resighting of monitored nests (colour-ringing of breeding adults) Immature survival rates from capture- mark- resighting (via colour ringing of chicks directly after hatching	Model-based baseline: Population growth rates in the last 6 to 12 years where data is available	Population growth rate to be set close to 1.0 over a 6-year average as requirement to reach GES	Spatial: Sub-regional Temporal: Annual: breeding success from sub-samples Every six years: adult and immature survival	Temporal: Annual Spatial: National or sub-national Representative sample of colonies from high pressure vs protected areas Representative subsample of nests from these sample colonies Temporal: Annual: breeding success Every six years: adult and immature survival

3	Mediterranean Shag <i>Gulosus aristotelis desmarestii</i>	CI3: Species Distributional Range	Distribution of breeding colonies, and separately, distribution during non-breeding (July roosts)	Reference-based baseline for breeding and non-breeding population separately: Widest known range in the last 20 years, except a major and reversible decline in the range is known to have taken place before	Not more than 10% deviation from baseline, (potentially re- evaluated at higher threshold due to potentially strong fluctuations between years, alternatively: 10% deviation between averages)	Spatial: Regional and sub-regional Temporal: Every six years	Spatial: National Temporal: Annual where feasible and depending on scale, alternatively one time to two times within six years, linked to MSFD reporting cycle
		CI 4: Population abundance	For breeding birds: Annual relative breeding bird abundance For non-breeding birds: Annual relative non-breeding bird abundance	Reference-based (modern) baseline: Highest breeding and non-breeding abundance estimates in the last 20 years	Deviation from baseline: Annual relative breeding and non-breeding abundance > 0.7	Spatial: Regional and sub-regional Temporal: Every six-years	Spatial: Breeding population: National or sub-national (at least 40% of the national breeding population and certainly no less than 10% of the national population) Non-breeding population: sub-national: relevant, representative sites during mid-winter counts Temporal: Annual
		CI5: Population Demographic Characteristics	Population growth rate Reproductive success of monitored nests (alternatively count of fledglings pre- dispersal to reduce disturbance) Adult survival rates from capture-mark- resighting of monitored nests (colour- ringing of breeding adults) Immature survival rates from capture-mark- resighting (via colour ringing of chicks), additionally by ratio adult vs first year birds at roosts (July counts).	Model-based baseline: Population growth rates in the last assessment cycle	Deviation from baseline: Population growth rate of at least 1.0	Spatial: Regional and sub-regional Temporal: Every six year: adult and immature survival Annual: reproductive success	Spatial: National or sub-national Representative sample of colonies from high pressure vs protected areas Representative subsample of nests from these sample colonies Relevant, representative sites for mid-winter counts Temporal: Annual

4	Audouin's Gull <i>Ichthyaeetus audouinii</i>	CI3: Species Distributional Range	% Change in occupancy in distribution range of breeding birds. % Shift in occupancy	Maximum range of breeding colonies as measured in the last 20 years, alternatively since implementation of the BD (1981)	Not more than 10% deviation from baseline	Spatial: Regional and sub-regional Temporal: Every six years	Spatial: National, surveys covering all known (major) breeding colonies per country Temporal: Annual highly recommended! (where not feasible 1 to 2 times within a 6 years reporting cycle)
		CI 4: Population abundance	For breeding birds in colonies: Annual relative breeding bird abundance For non-breeding birds during coastal mid-winter roost counts and at bottleneck during post-breeding/ post fledging migration (Gibraltar Strait): Annual relative non-breeding bird abundance	Reference-based (modern) baseline: Highest breeding and non-breeding abundance estimates in the last 20 years	Deviation from baseline: annual relative breeding and non-breeding abundance > 0.7	Spatial: Regional and sub-regional Temporal: Annual with reporting every six-years	Spatial: Breeding population: National or sub-national, all (larger) colonies Non-breeding population: sub-national, all known roost sites during mid- winter, bottleneck during outbound migration Temporal: Annual
		CI5: Population Demographic Characteristics	Population growth rate Reproductive success of monitored colonies or subsamples Post-fledging, immature and adult survival rates modelled from capture-mark- resighting of birds colour-ringed as chicks in colonies Ratio of first winter versus adult birds from counts at bottleneck and mid- winter roosts for cross-assessment of reproductive output	Model-based population growth rate	Population growth rate 1.0 or higher	Spatial: Sub-regional Temporal: Annual: breeding success, immature and adult survival rates with reporting every six years	Spatial: National or sub-national Representative sample of colonies from high pressure vs protected areas Representative subsample of nests from these sample colonies All-important mid-winter roosts per country for ratio of adult versus 1st winter birds and reading of colour ringed individuals bottleneck (Gibraltar Strait) for ratio of adult versus 1st year during outbound migration Temporal: Annual for breeding success, adult and immature survival

5	Slender-billed Gull <i>Chroicocephalus genei</i>	CI3: Species Distributional Range	% Change in occupancy in distribution range of breeding birds. % Shift in occupancy	Average range of breeding colonies as measured in the last 20 years, alternatively since implementation of the BD (1980)	Not more than 10% deviation from baseline	Spatial: Regional and sub-regional Temporal: Every six years	Spatial: National, surveys covering all known (major) breeding colonies per country Temporal: Annual if feasible, alternatively 1 to 2 times within a 6 years reporting cycle
		CI 4: Population abundance	For breeding birds in colonies: Annual relative breeding bird abundance For non-breeding birds during coastal mid-winter roost counts and at roosting areas during post-breeding. Annual relative non-breeding bird abundance	Reference-based (modern) baseline: Average breeding and non-breeding abundance estimates in the last 20 years	Deviation from baseline: Annual relative breeding and non-breeding abundance > 0.7	Spatial: Regional and sub-regional Temporal: Annual with reporting every six-years	Spatial: Breeding population: National or sub-national, all (larger) colonies Non-breeding population: sub-national, all known roost sites during mid-winter Temporal: Annual
		CI5: Population Demographic Characteristics	Population growth rate Reproductive success of monitored colonies or subsamples Post-fledging, immature and adult survival rates modelled from capture-mark-resighting of birds colour-ringed as chicks in colonies Ratio of first winter versus adult birds from counts at bottleneck and mid-winter roosts for cross-assessment of reproductive output	Model-based population growth rate	Population growth rate 1.0 or higher	Spatial: Sub-regional Temporal: Annual: breeding success, immature and adult survival rates with reporting every six years	Spatial: National or sub-national Representative sample of colonies from high pressure vs protected areas Representative subsample of nests from these sample colonies All-important mid-winter roosts per country for ratio of adult versus 1st winter birds and reading of colour ringed individuals Temporal: Annual for breeding success, adult and immature survival

6	Lesser- crested Tern <i>Thalasseus bengalensis emigratus</i>	CI3: Species Distributional Range	% Change in occupancy in distribution range of breeding birds. % Shift in occupancy	Maximum range of breeding colonies as measured in the last 20 years	Not more than 10% deviation from baseline, set as a preliminary value, potentially to be set lower due to restricted range	Spatial: Sub-regional Temporal: Every six years	Annual for breeding success, adult and immature survival
		CI 4: Population abundance	For breeding birds in colonies: Annual relative breeding bird abundance For non-breeding birds during coastal mid-winter roost counts and at bottleneck during post-breeding/ post fledging migration (Gibraltar Strait) Annual relative non-breeding bird abundance	Reference-based (modern) baseline: Highest breeding and non-breeding abundance estimates in the last 20 years	Deviation from baseline: annual relative breeding and non-breeding abundance > 0.7	Spatial: Regional and sub-regional Temporal: Annual with reporting every six-years	Spatial: Breeding population: National or sub-national, all (larger) colonies Non-breeding population: sub-national, all known roost sites during mid- winter, bottleneck during outbound migration Temporal: Annual
		CI5: Population Demographic Characteristics	Population growth rate Reproductive success of monitored colonies or subsamples Post-fledging, immature and adult survival rates modelled from capture-mark- resighting of birds colour-ringed as chicks in colonies Ratio of first winter versus adult birds from counts at bottleneck and mid- winter roosts for cross-assessment of reproductive output if feasible	Model-based population growth rate	Population growth rate 1.0 or higher	Spatial: Sub-regional, national (Libya) Temporal: Annual: breeding success, immature and adult survival rates with reporting every six years	Spatial: National or sub-national All colonies Representative subsample of nests/ chicks from these sample colonies All mid-winter aggregations per country for ratio of adult versus 1st winter birds and reading of colour ringed individuals bottleneck (Gibraltar Strait) for ratio of adult versus 1st year during outbound migration Temporal: Annual for breeding success, adult and immature survival, alternatively, breeding success every second year to reduce disturbance

7	Sandwich Tern <i>Thalasseus sandvicensis</i>	CI3: Species Distributional Range	% Change in occupancy in distribution range of breeding and wintering birds % Shift in occupancy for breeding and wintering population	Maximum range of breeding colonies as measured in the last 20 years	Not more than 10% deviation from baseline	Spatial: Sub-regional Temporal: Every six years	Spatial: National Temporal: Annual where feasible and depending on scale, alternatively one time to two times within six years, linked to EcAp reporting cycles
		CI 4: Population abundance	Relative abundance for breeding and wintering birds	Reference-based (modern) baseline: Highest breeding and non-breeding abundance estimates in the last 20 years	Annual relative abundance > 0.7	Sub-regional Annual where feasible, with reporting every six- years	Sub-national: Breeding: high- and low-pressure areas > sample of nests Wintering: selection of high- and low-pressure areas or all known areas Temporal: annual
		CI5: Population Demographic Characteristics	Population growth rate ^[1] Reproductive success of monitored colonies or subsamples Post-fledging, immature and adult survival rates modelled from capture-mark-resighting of birds colour-ringed as chicks in colonies Ratio of first winter versus adult birds from counts at mid-winter roosts for cross-assessment of reproductive output if feasible	Model-based population growth rate	Population growth rate 1.0 or higher	Spatial: Regional, Sub-regional Temporal: Annual: breeding success, immature and adult survival rates with reporting every six years	Spatial: National or sub-national Temporal: Annual for breeding success, adult and immature survival, alternatively, breeding success every second year to reduce disturbance

8	Mediterranean Storm- petrel <i>Hydrobates pelagicus melitensis</i>	CI3: Species Distributional Range	% Change in occupancy in distribution range of breeding birds. % Shift in occupancy	Reference-based baseline: Widest known range in the last 20 years, except a major and reversible decline in the range is known to have taken place before	Not more than 10% deviation from baseline	Spatial: Regional and sub-regional Temporal: Every six years	Spatial: National Temporal: Annual where feasible and depending on scale, alternatively one time to two times within six years, linked to EcAp reporting cycles
		CI 4: Population abundance	Annual relative breeding bird abundance	Reference-based (modern) baseline: Highest breeding abundance estimate in the last 20 years	Deviation from baseline: Relative annual abundance > 0.8	Spatial: Regional and sub-regional Temporal: Every six years	Spatial: National or sub-national (at least 40% of the national population and certainly no less than 10% of the national population, according to suggestions by UNEP/IMAP (2017)) Temporal: every 3 to 6 years
		CI5: Population Demographic Characteristics	Population growth rate: Adult survival rates from capture-mark-recapture of monitored colonies	Model-based baseline: Average population growth rates if available in the last 6 to 12 years	Average growth rate of at least 1.0	Spatial: Regional and sub-regional Temporal: Aiming at annual monitoring and assessment with reporting every six years	Spatial: National or sub-national, representative subsamples Representative sample of colonies from high pressure vs protected areas Representative subsample of nests from these sample colonies Temporal: Annual

9	Scopoli's Shearwater <i>Calonectris diomedea</i>	CI3: Species Distributional Range	% Change in occupancy in distribution range of breeding birds. % Shift in occupancy	Reference-based baseline: Widest known range in the last 20 years, except a major and reversible decline in the range is known to have taken place before	Not more than 10% deviation from baseline	Spatial: Regional and sub-regional Temporal: Every six years	Spatial: National Temporal: Annual where feasible and depending on scale, alternatively one time to two times within six years, linked to EcAp reporting cycles
		CI 4: Population abundance	Annual relative breeding bird abundance supported by or substituted with raft counts where deemed suitable, following the confirmation of connectivity of rafts with certain colonies by means of GPS-tracking	Reference-based (modern) baseline: Abundance at the start of the implementation of BD (1980); needs to be discussed Highest breeding abundance estimate in the last 20 years	Deviation from baseline: Relative annual abundance > 0.8	Spatial: Regional or sub-regional Temporal: Aiming at annual monitoring and assessment with reporting every six	Spatial: National or sub-national (at least 40% of the national population and certainly no less than 10% of the national population, according to suggestions by UNEP/IMAP (2017)) Temporal: Annual
		CI5: Population Demographic Characteristics	Population growth rate Reproductive success of monitored nests Adult survival rates from capture-mark-recapture of monitored nests	Model-based approach: Population growth rates over one assessment and reporting cycle	Population growth rate of at least 1.0	Spatial: Regional Temporal: Annual	Spatial: National or sub-national Representative sample of colonies from high pressure vs protected areas Representative subsample of nests from these sample colonies Temporal: Annual

10	Yelkouan Shearwater <i>Puffinus yelkouan</i>	CI3: Species Distributional Range	% Change in occupancy in distribution range of breeding birds. % Shift in occupancy	Reference-based baseline: Widest known range in the last 20 years, except a major and reversible decline in the range is known to have taken place before	Not more than 10% deviation from baseline	Spatial: Regional and sub-regional Temporal: Every six years	Spatial: National Temporal: Annual where feasible and depending on scale, alternatively one time to two times within six years, linked to EcAp reporting cycles
		CI 4: Population abundance	Annual relative breeding bird abundance by combination of methods including CMR in colonies; supported by land-based passage counts in the evening, combined with telemetry were deemed suitable	Reference-based (modern) baseline: Highest breeding abundance estimate in the last 20 years	Deviation from baseline: annual relative breeding abundance > 0.9	Spatial: Regional and sub-regional Temporal: Every six years	Spatial: National Temporal: Annual where feasible and depending on scale, alternatively one time to two times within six years, linked to EcAp reporting cycles
		CI5: Population Demographic Characteristics	Population growth rate Reproductive success of monitored nests Adult survival rates from capture-mark-recapture of monitored nests	Model-based approach: Population growth rates over one assessment and reporting cycle	Population growth rate of at least 1.0	Spatial: Regional and sub-regional Temporal: Annual	Spatial: National or sub-national Representative sample of colonies from high pressure vs protected areas Representative subsample of nests from these sample colonies Temporal: Annual

11	Balearic Shearwater <i>Puffinus mauretanicus</i>	CI3: Species Distributional Range	Distributional pattern: % change in occupancy in distribution range of breeding birds Distributional pattern: % change in at-sea distribution (50% KDE), modelled from representative number of tracked individuals and/or transect line counts % Shift in occupancy	Reference-based 'modern' baseline: Due to unfavorable conservation status (CR): maximum ranges (at sea and regarding breeding colonies) e.g. since start of the implementation of BD (1980)	No negative deviation in range size between assessment cycles due to precarious conservation status. Maximum 10% in range shift between assessment cycles	Spatial: Sub-regional (Balearic islands for breeding, Western Mediterranean Sea (mainly) for at-sea distribution during breeding (relevant OSPAR sub-region during non-breeding) Temporal: Every six years	For breeding range: Balearic Islands, covering at least all known breeding areas Temporal: Annual
		CI 4: Population abundance	Annual relative breeding bird abundance Annual count net maxima of individuals passing bottleneck on migration	Reference-based (modern) baseline: Highest breeding abundance estimate in the last 20 years	Deviation from baseline: annual relative breeding abundance annual relative breeding abundance 1.0 or larger	Spatial: Regional (Western Mediterranean Sea) Temporal: Aiming at annual monitoring and assessment with reporting every six years	Spatial: Sub-national (ideally 100% but at least 90% of the population) Temporal: Annual
		CI5: Population Demographic Characteristics	Population growth rate Reproductive success Adult survival rates from capture-mark-recapture of monitored nests	Model-based approach: Population growth rates over one assessment and reporting cycle	Population growth rate 1.0 or higher	Spatial: sub-regional Temporal: Annual with reporting every six years	Spatial: Sub-national Representative sample of colonies from high pressure vs protected areas Representative subsample of nests from these sample colonies Temporal: Annual

PART VI: Monitoring and Assessment Scales, Assessment Criteria, Thresholds and Baseline Values for the IMAP Common Indicators 6 related to Non-Indigenous Species (NIS)

Assessment Criteria	Assessment criteria for preparing validated check lists of NIS to be used for assessing GES include a) taxa (all taxa or excluding phytoplankton, parasites); b) species to be considered in trends indicator (extinct species, cryptogenic species, crypto-expanding, questionable species); c) pathways to be considered (all pathways or excluding unaided expanding species, e.g. Lessepsian immigrants). Partly native species, NIS introduced through natural dispersal, unicellular marine algae, parasites, extinct and freshwater species should be reported in NIS lists but considered in CI6 assessments on a case-by-case basis.
Spatial and Temporal Scales of Monitoring and Assessment	Broad Geographic Units: Assessment of threshold values based on the trends indicator (CI6) calculated to date can be achieved at the basin and country level, although it is more meaningful to be assessed at the subregional level (i.e. EcAp subregional units) and, accordingly, at the national part of a subregion for each country, e.g. Greece: EMED, CMED, ADRIA; Italy: WMED, CMED, ADRIA, Tunisia: WMED, CMED. Broad Temporal Scales: For consistency and harmonization reasons, it is recommended that the assessment period of CI6 should be the same across all Mediterranean countries and follow the assessment and reporting 6-year periods already established for EU countries under the MSFD.
Finer scales for NIS monitoring	At basin scale, there are no established standard protocols for the monitoring of NIS. However, guidelines for monitoring NIS in the Mediterranean were developed and endorsed by the CPs to the Barcelona Convention in 2019 under the framework of the EcAp/IMAP (UNEP/MED WG.467/16 (2019) “Monitoring Protocols for IMAP Common Indicators related to Biodiversity and Non-Indigenous species”). The majority of countries do not have a dedicated strategy but have a monitoring strategy including marine NIS applied either at hot-spot areas of the country (i.e. ports, aquaculture units, marine protected areas) or in specific subregions through a related network of sampling stations. Targets of NIS monitoring include mainly the detection of new NIS and the measurement of abundance/coverage/biomass of established and/or invasive NIS, while only a small number of countries monitor the impact of established/invasive NIS on the native communities. The IMAP Common Indicator Guidance propose more intense monitoring effort at “hot-spots” and “steppingstone areas” for non-indigenous species introductions, e.g. sampling at least once a year at ports and their wider area and once every two years in smaller harbours, marinas, and aquaculture sites. Importantly, the same sites should be surveyed each monitoring period, to avoid biases potentially caused by differences among sites.
Threshold Values	Currently, threshold values for the number of new introductions of non-indigenous species have not been set neither at the EU or the Mediterranean level. Ongoing work in the framework of the MSFD (Tsiamis et al., 2021b) has concluded that the most suitable approach for setting threshold values for D2C1 is to adopt the percentage reduction of new NIS and the exact value of percentage reduction should be decided at regional and/or subregional scale, based on the pathways pressure and level of monitoring coverage of each region/subregion. Preliminary analysis of the available data for the Mediterranean between 1970-2017 for the purposes of this report demonstrated that there is a significant increase in the rate of new NIS entering all EcAp subregions after 2000 (presumably as a result of increased scientific effort) and that this parameter is significantly different between EcAp subregions. Consequently, the initial recommendations are that i) the threshold values for CI6 in the Mediterranean need to be set at subregional level and not at regional level and ii) we need to consider data only after 2000s in order to establish today's threshold values. Furthermore, for Mediterranean

	region/subregions that have not been efficiently monitored in terms of NIS during the previous decades, a shorter time span of 6-years cycle periods should be preferred, e.g. 3 years. Conclusively, threshold values should be established separately for each of the Mediterranean subregions and should be sought by examining the data of the last two decades, if not an even more recent time period. At the same time, a consensus needs to be reached about which species groups will be included in the calculations and how their environmental impact will be taken into account. These are decisions that will determine the definition of GES for EO2 and will affect the management obligations of Contracting Parties to the Barcelona Convention. As such, it is proposed that further work takes into account the contribution of regional experts not only from the fields of taxonomy, monitoring and assessment but also conservation and management and last, but not least, ecologists with strong statistical/mathematical background
Baseline	The regional baseline (i.e., UNEP/MED WG.521/Inf.8) includes only validated species records observed up to the end of 2020, harmonizing regional and subregional inventories and updating national lists (including the JRC baselines for EU Mediterranean countries). A total of 1,011 non-indigenous species (NIS) have been recorded in Mediterranean marine waters, of which 748 are considered established—an overall establishment rate of nearly 74%, varying by subregion. These include 144 Macrophytes, 224 Mollusca, 188 Arthropoda, 203 Chordata, 83 Annelida, 33 Bryozoa, 42 Cnidaria, 47 Foraminifera, and 47 other taxa. Alien status and record validity have been clarified for most species. Where information was lacking, data-deficient and questionable records were compiled at regional and subregional levels.

Annex II

IMAP Assessment Criteria for Nutrients, Contaminants and Marine Litter¹⁹

¹⁹ The Assessment Criteria for Nutrients, Contaminants and Marine Litter (except for Common Indicator 24) have been approved by COP23 ([Decision IG.23/3](#), [Annex II](#))

Annex II: IMAP Assessment Criteria for Nutrients, Contaminants and Marine Litter

PART I: Pollution (IMAP EO5 and EO9)

1. The assessment criteria for Common Indicators 13 and 14²⁰

Table 1. Major coastal water types in the Mediterranean

	Type I	Type II-A, II-A Adriatic	Type III-W	Type III-E	Type Island-W
σ _t (density)	<25	25<d<27	>27	>27	All ranges
S (salinity)	<34.5	34.5<S<37.5	>37.5	>37.5	All ranges

Note: With the view to assess eutrophication, the classification scheme on Chl *a* concentration (in µg/l) is optimal in coastal waters as a parameter easily applicable by all Mediterranean countries based on the indicative thresholds and reference values presented in Table 3.

Note: The major coastal water types are also indicative of the part of offshore waters next to coastal waters; however, it should be used with caution in the offshore (open) areas.

Table 2. Coastal water types reference conditions and boundary values in the Mediterranean, along with the new and updated values for coastal and open (offshore) waters in the Adriatic Sea Sub-region²¹.

(Reference conditions and boundary (Good/Moderate status) values, expressed as *G*_{mean} annual values, are based on long time series (>5 years) of monthly sampling at least, which differ from type to type on the sub-regional scale, and therefore, were built with different strategies).

Water Typology	Coastal waters					
	Reference conditions of c(Chla) (µg/L)		Boundaries of c(Chla) (µg/L) for G/M status		Reference conditions of c(TP) (µmol/L)	Boundaries of c(TP) (µmol/L) for G/M status
	<i>G</i> _{mean}	90% percentile	<i>G</i> _{mean}	90% percentile		
Type I	1.19	3.33 ^b	4.1	10		
Type I Adriatic	1.40	3.94	5.0 ^a	14.1	0.19 ^a	0.55 ^a
Type II-A-FR-SP ^d	0.78 ²²	1.9	1.48	3.50 ²³	-	-
Type II-A Adriatic	0.33	0.87	1.5	4.0	0.16 ^a	0.48 ^a
Type II-A ^e Tyrrhenian	0.32	0.77	1.2	2.9	-	-
Type III-W Adriatic ^c	-	-	0.64 ^f	1.7 ^f	-	0.26
Type III-W Tyrrhenian	-	-	0.48	1.17	-	-
Type III-W-FR-SP	0.37	0.9	0.74 ⁱ	1.89 ²⁴	-	-
Type III-E		0.1		0.4		
Type Island-W		0.6		1.2-1.22		

Water Typology	Open (offshore) waters in the Adriatic Sea Sub-region			
	Reference conditions of c(Chla) (µg/L)	Boundaries of c(Chla) (µg/L) for G/M status	Reference conditions of c(DIN) (µmol/L)	Boundaries of c(DIN) (µmol/L) for G/M status

²⁰ For ease of reference, the Secretariat included the values as approved by Decisions IG.22/7 (COP 19) and IG. 23/6 (COP 20) which are shown in shaded cells.

²¹ The new values are calculated based on data as available by December 2022.

²² Gmean values corresponding to the reference and boundary values of Chla (expressed as the 90th percentile) are provided for Type II A FR SP and Type III W FR SP, along with the corrected calculation of Gmean value for Type I, compared to those included in Decisions IG.22/7 and IG.26/3, shown in blue shaded cells.

²³ The value of 3.58 µg/L is corrected to 3.50 µg/L for Type II A FR SP in comparison to the values provided in Decision IG.22/7 on Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria (COP 19, 2016) and Decision IG.26/3 on 2023 MED QSR and a Renewed Ecosystem Approach Policy in the Mediterranean (COP 23, 2023), following the identification of an error by the Joint Meeting of CorMon on Pollution and Marine Litter Monitoring held on 27–28 May 2025 in relation to the boundary values used in the 2023 MED QSR.

²⁴ The value of 1.80 µg/L is corrected to 1.89 µg/L for type III W FR SP in comparison to the values provided in Decisions IG.22/7 and Decision IG.26/3, following the identification of an error by the Joint Meeting of CorMon on Pollution and Marine Litter Monitoring held on 27–28 May 2025 in relation to the boundary values used in the 2023 MED QSR.

	<i>G</i> _mean	90 % percentile	<i>G</i> _mean	90 % percentile		
Type I Adriatic	0.15 ^g ; 0.29 ^h	0.42 ^f ; 0.81 ^g	3.1	8.7	0.21 ^g ; 0.66 ^h	22.3
Type II-A Adriatic	0.11	0.29	-	-	-	-
Type III-W Adriatic ^c	-	-	0.64	1.7	-	-

^a From Giovanardi et al, 2018

^b Applicable to Gulf of Lion Type I coastal waters

^c The ecological classification scheme would not be suitable for proper and safe classification, and therefore the boundary values for WT III-W Adriatic waters are based on the H/G values for WT II-A Adriatic in coastal waters i.e. 0.64 µg/L for Chla and 0,26 µmol/L for TP

^d Correction of error included to ensure consistency with the classification as provided in Commission Decision 2013/480/EU i.e. Type II -FR-SP, as included in Decision IG.22/7, replaced with Type II -A-FR-SP

^e Correction of error included to ensure consistency with the classification as provided in Commission Decision 2013/480/EU i.e., Type II-A Tyrrhenian replaced Type II-B Tyrrhenian, as included in Decision IG.22/7, since the latter does not exist in the Tyrrhenian Sea

^f values based on the H/G values for WT II-A^c The ecological classification scheme would not be suitable for proper and safe classification, and therefore the boundary values for WT III-W Adriatic waters are based on the H/G values for WT II-A Adriatic in coastal waters i.e. 0.64 µg/L for Chla and 0,26 µmol/L for TP

^g for ME; ^h for HR, IT

^h No pressure – effect relationship was found, and therefore RC for DIN and boundary G/M values for Chla and DIN could not be proposed.

2. The assessment criteria for IMAP Common Indicator 17²⁵²⁶

2.1 The BC and BAC values for IMAP Common Indicator 17

Table 3. The BC and BAC values for trace metals in sediments. The units of concentration are given in µg/kg dry wt, as requested by IMAP.

The BC and BAC values for trace metals in sediments					
The BC values in sediments, µg/kg dry wt					
TM	MED	WMS	ADR	CEN	AEL
Cd	107	140	120	#	78.9
Hg	50.0	90.0	50.0	#	31.5
Pb	15000	16000	15700	1805	15674
The BAC values in sediments, (µg/kg dry wt)					
	Med	WMS	ADR	CEN	AEL
Cd	161	210	180	#	118
Hg	75.0	135	75.0	#	47.3
Pb	22500	24000	23550	2708	23511
#All data points for Cd are BDL as well as 72% of the Hg data points.					

²⁵ For ease of reference, the Secretariat included the values as approved by Decisions IG.22/7 OF (COP 19) and IG. 23/6 (COP 20) which are shown in shaded cells.

²⁶ The new values are calculated based on data as available by December 2022.

Table 4. The BC and BAC values for Polycyclic Aromatic Hydrocarbons (PAHs) in sediments. The units of concentration are given in µg/kg dry wt, as requested by IMAP.

The BC and BAC values for Polycyclic Aromatic Hydrocarbons (PAHs) in sediments					
PAH compounds	The BC values in sediments, µg/kg dry wt				
	MED	WMS	ADR	CEN	AEL
Naphthalene	2.00	8.0	2.0	#	2.3
Acenaphthylene	(1.0) [#]	#	#	0.4	#
Acenaphthene	(2.0) [#]	#	#	*	#
Fluorene	(2.0) [#]	#	#	0.4	#
Phenanthrene	3.10	14.9	3.5	0.8	3.1
Anthracene	(2.2) [#]	#	#	#	#
Fluoranthene	5.00	#	7.0	0.1	2.7
Pyrene	6.20	24.8	8.0	0.4	3.0
Benzo[a]anthracene	3.38	19.7	4.1	*	1.8
Chrysene	2.70	35.9	4.6	1.6	1.6
Benzo(b)fluoranthene	5.00	8.7	15.0	*	2.6
Benzo(k)fluoranthene	4.00	#	3.0	*	#
Benzo[a]pyrene	(4.0) [#]	#	4.0	#	1.0
Benzo[g,h,i]perylene	(4.2) [#]	#	5.7	*	1.8
Dibenz[a,h]anthracene	(1.0) [#]	7.0	#	*	#
Indeno[1,2,3-c,d]pyrene	(4.0) [#]	#	4.4	*	2.1
Sum PAHs	27.4	160	41.0	6.3	21.4
PAH compounds	The BAC values in sediments, µg/kg dry wt				
	MED	WMS	ADR	CEN	AEL
Naphthalene	3.0	12.0	3.0	#	3.5
Acenaphthylene	(1.5) [#]	#	#	0.6	#
Acenaphthene	(3.0) [#]	#	#	*	#
Fluorene	(3.0) [#]	#	#	0.5	#
Phenanthrene	4.7	22.4	5.3	1.2	4.7
Anthracene	(3.3) [#]	#	#	#	#
Fluoranthene	7.5	#	10.5	0.2	4.1
Pyrene	9.3	37.1	12.0	0.6	4.5
Benzo[a]anthracene	5.1	29.6	6.2	*	2.7
Chrysene	4.0	53.9	6.9	2.4	2.4
Benzo(b)fluoranthene	7.5	13.0	22.5	*	3.8
Benzo(k)fluoranthene	6.0	#	4.5	*	#
Benzo[a]pyrene	(6.0) [#]	#	6.0	#	1.5
Benzo[g,h,i]perylene	(6.3) [#]	#	8.6	*	2.7
Dibenz [a,h]anthracene	(1.5) [#]	10.5	#	*	#
Indeno[1,2,3-c,d]pyrene	(6.0) [#]	15.0	6.5	*	3.2
Sum PAHs	41.0	240	61.5	9.5	32.0

#most data (>50%) below detection limit, * no data reported

Table 5. The BC and BAC values for trace metals in mussel (*M. galloprovincialis*) and fish (*M. barbatus*) . The units of concentration are given as requested by IMAP.

The BC and BAC values for trace metals in mussel soft tissue (<i>M. galloprovincialis</i>), µg /kg dry wt					
The BC values					
TM	MED	WMS	ADR	CEN	AEL
Cd	710	1030	629	*	942 ^{>}
Hg	77.9	85.0	75.4	*	110 ^{>}
Pb	1100	1260	1000	*	2300 ^{>}
The BAC values					
TM	MED	WMS	ADR	CEN	AEL
Cd	1065	1545	944	*	1413 ^{>}
Hg	117	128	113	*	165 ^{>}
Pb	1650	1890	1500	*	3450 ^{>}

* Only a few data points were available for the CEN. The calculated BCs were lower than in other sub-regions, however, the few data are not representative of the CEN.

> Since new data were not available in the AEL to update BC/BAC values for *M. galloprovincialis*, it was approved to use the values calculated in 2019.

The BC and BAC values for trace metals in fish muscle (<i>Mullus barbatus</i>), µg/kg wet wt					
The BC values					
TM	MED	WMS	ADR	CEN	AEL
Cd	3.9	*	5.3	*	3.6
Hg	40.6	*	120	*	33.7
Pb	18.3	*	40.8	*	13.5
BAC values					
	MED	WMS	ADR	CEN	AEL
Cd	7.8	*	10.6	*	7.2
Hg	81.2	*	240	*	67.4
Pb	36.6	*	81.6	*	27.0

* Given the lack of data, it was not possible to propose values for BC in these sub-regions, therefore it was approved to use the regional MED BC values for the GES assessment

Table 6. The BC and BAC values for Polycyclic Aromatic Hydrocarbons (PAHs) in mussel (*M. galloprovincialis*). The unit of concentration is given in µg/kg dry wt, as requested by IMAP. No data were available for the CEN and the AEL Sub-regions.

The BC and BAC values for Polycyclic Aromatic Hydrocarbons (PAHs) in mussel (<i>M. galloprovincialis</i>), µg/kg dry wt			
BC values			
	MED	WMS	ADR
Naphthalene	0.56	0.52	#
Acenaphthylene	(0.05) [#]	#	#
Acenaphthene	(0.50) [#]	#	#
Fluorene	2.50	7.87	#
Phenanthrene	5.35	19.9	2.25
Anthracene	1.12	0.94	#
Fluoranthene	4.83	10.0	#
Pyrene	2.50	5.54	#
Benzo[a]anthracene	0.60	0.69	#
Chrysene	2.54	2.98	#
Benzo(b)fluoranthene	1.00	1.36	#
Benzo(k)fluoranthene	1.00	0.73	#
Benzo[a]pyrene	(1.00) [#]	0.94	#
Benzo[g,h,i]perylene	1.00	0.67	#
Dibenz[a,h]anthracene	(0.10) [#]	#	#
Indeno[1,2,3-c,d]pyrene	(0.63) [#]	0.29	#
Sum 16 PAHs ²⁷	5.80	5.60	6.60
The BAC values			
	MED	WMS	ADR
Naphthalene	0.84	0.79	#
Acenaphthylene	(0.08) [#]	#	#
Acenaphthene	(0.75) [#]	#	#
Fluorene	3.75	11.8	#
Phenanthrene	8.03	29.8	3.38
Anthracene	1.68	1.40	#
Fluoranthene	7.25	15.0	#
Pyrene	3.75	8.31	#
Benzo[a]anthracene	0.90	1.04	#
Chrysene	3.81	4.46	#
Benzo(b)fluoranthene	1.50	2.04	#
Benzo(k)fluoranthene	1.50	1.09	#
Benzo[a]pyrene	(1.50) [#]	1.42	#
Benzo[g,h,i]perylene	1.50	1.01	#
Dibenz[a,h]anthracene	(0.14) [#]	#	#
Indeno[1,2,3-c,d]pyrene	(0.94) [#]	0.43	#
Sum 16 PAHs	8.70	8.40	9.90

[#]most data (>50%) below detection limit;

²⁷ Data dictionary gives 2 additional categories: Sum 4 PAHs Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Indeno(1,2,3-cd)pyrene) and Sum 5 PAHs (Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(ghi)perylene, Indeno(1,2,3-cd)pyrene). It is suggested that they be considered for use in the future data reporting.

Table 7. The BAC values for organochlorinated contaminants (PCBs and pesticides) in sediments and mussel (*M. galloprovincialis*). The unit of concentrations is given in µg/kg dry wt, as requested by IMAP. For sediments, very limited data were available for the CEN sub-region, while for biota no data were available for the CEN and AEL sub-regions. When most (>50%) of the data points were below the detection limit for the sub-regions, BACs were not calculated.

The BAC values for organochlorinated contaminants (PCBs and pesticides) in sediments and mussel (<i>M. galloprovincialis</i>)					
SEDIMENTS, µg/kg dry wt	MED	WMS	ADR	CEN	AEL
PCBs					
PCB28	0.10	#	#	#	0.09
PCB52	0.07	0.10	0.09	#	0.04
PCB101	0.10	0.16	0.16	*	#
PCB118	0.10	0.46	0.18	#	0.01
PCB138	0.11	0.26	0.24	#	#
PCB153	0.14	0.40	0.28	#	0.02
PCB180	0.09	0.13	0.13	#	#
Sum 7 PCBs	0.40	1.60	0.21	#	0.19
Pesticides					
γ-HCH (Lindane)	(0.1) [#]	#	#	*	0.02
DDE(p,p')	(0.1) [#]	0.23	#	#	*
Hexachlorobenzene	(0.1) [#]	#	#	#	*
Dieldrin	(0) [#]		#	#	#
BIOTA – MG, µg/kg dry wt	MED	WMS	ADR	CEN	AEL
PCBs					
PCB28	0.20	0.07	1.38	*	*
PCB52	0.38	0.3	0.5	*	*
PCB101	1.20	1.1	1.4	*	*
PCB118	1.23	1.5	1.4	*	*
PCB138	2.31	2.4	3.3	*	*
PCB153	3.45	4.6	4.6	*	*
PCB180	0.50	0.3	0.5	*	*
Sum 7 PCBs	18.4	28.6	17.3	*	*
Pesticides					
γ-HCH (Lindane)	(1.0) [#]	#	#	*	*
DDE(p,p')	3.05	3.05	*	*	*
Hexachlorobenzene	(0.5) [#]	#	#	*	*
Dieldrin	(1.0) [#]	#	*	*	*

most data (>50%) below detection limit. * no data reported

2.2 The Environmental Assessment Criteria (EAC) values for IMAP CI 17

Table 8. The Mediterranean EAC values for trace metals in sediments and biota, as endorsed by Decision IG.23/6

The Mediterranean EAC values for trace metals in sediments and biota			
TM	MedEAC*	#MedEAC	#MedEAC
	Sediments, µg/kg dry wt	<i>M. galloprovincialis</i> , µg/kg dry wt	<i>Mullus barbatus</i> , µg/kg wet wt
	IG.23/6	IG.23/6	IG.23/6
Cd	1200	5000	50
Hg	150	2500&	1000
Pb	46700	7500	300

* Med EAC values equal to ERL (Effects Range Low, Long et al. 1995, idem OSPAR values). # Med EAC values equal to the maximum regulatory levels for contaminants in foodstuffs as provided in EC/EU 1881/2006 and 629/2008 Directives
& Not included in EU directives, but adopted by OSPAR

Table 9. The Mediterranean EAC values for Polycyclic Aromatic Hydrocarbons (PAHs) in sediments and biota, as endorsed by Decisions IG.23/6 and IG.22/7, along with a few updated values to ensure consistency with ERL Long et al., and OSPAR EAC values

The Mediterranean EAC values for Polycyclic Aromatic Hydrocarbons (PAHs) in sediments and biota				
PAH compounds	Sediments, µg/kg dw		Biota Mussels, µg/kg dw	
	EAC* IG.22/7 and IG.23/6 - OSPAR and ERLs	ERL Long et al, 1995 [#]	EAC** IG.22/7 and IG.23/6 - OSPAR	OSPAR [#]
Naphthalene		160		340
Acenaphthylene		44		
Acenaphthene		16		
Fluorene		19		
Phenanthrene	240		1700	
Anthracene	85		290	
Fluoranthene	600		110	
Pyrene	660		100	
Benzo[a]anthracene	261		80	
Chrysene	384			
Benzo(b)fluoranthene				
Benzo(k)fluoranthene			260	
Benzo[a]pyrene	430		600	
Benzo[g,h,i]perylene	85		110	
Dibenz[a,h]anthracene		63.4		
Indeno[1,2,3-c,d]pyrene	240			
Sum 16 PAHs		4022		

* Med EAC values equal to ERL (Effects Range Low, Long et al. 1995, idem OSPAR values)

** Med EAC values equal to OSPAR values

Med EAC values equal to ERL (Effects Range Low, Long et al., 1995) which were not included in Decisions IG.22/7 and IG.23/6.

Table 10. The Mediterranean EAC values for organochlorinated contaminants (PCBs and pesticides) in sediments and biota, as endorsed by Decisions IG.23/6 and IG.22/7 along with the one updated value.

The Mediterranean EAC values for organochlorinated contaminants (PCBs and pesticides) in sediments and biota					
PCBs	Sediments			Mussel	Fish
	EAC [#] IG.22/7 (µg/kg dry wt) – updated	EAC* IG.22/7 (µg/kg dry wt)	EAC** IG.23/6 (µg/kg dry wt)	EAC** IG.22/7 and IG.23/6 (µg/kg dry wt)	EAC** IG.22/7 and IG.23/6 (µg/kg lipid)
CB28			1.7	3.2	64
CB52			2.7	5.4	108
CB101			3	6	120
CB118			0.6	1.2	24
CB138			7.9	15.8	316
CB153			40	80	1600
CB180			12	24	480
Sum 7 PCBs	67,9				
Pesticides					
γ-HCH (Lindane)		3		1.45	11 µg/kg ww
DDE(p,p')		2.2		5-50	
Hexachlorobenzene		20			
Dieldrin		2		5-50	

* ERL (Effects Range Low, (Long et al., 1995) or used by OSPAR (2009)

** From OSPAR (2009)

[#]The EAC value of 11.5 µg/kg dry wt in Decision IG 22/7 originated probably from Long et al, 1995 as explained in document UNEP/MED 427/Inf.3. However, Long et al.,1995 present the ERL value of 22.7 µg/kg dry wt for Total PCBs in sediments but do not specify which congeners were considered. Moreover, OSPAR has not adopted an EAC value for the sum of 7 PCBs in sediments. Therefore, further to experience related to the preparation of the assessments within the 2023 MED QSR, the EAC value of 67,9 is included to present the sum of 7 individual IMAP PCB congeners.

3. The Environmental Assessment Criteria (EAC) values for IMAP CI 18²⁸

Table 11. The Mediterranean BACs and EACs for biomarkers in mussel (*M. galloprovincialis*) as endorsed by Decisions IG.22/7 and IG.23/6.

The Mediterranean BACs and EACs for biomarkers in mussel (<i>M. galloprovincialis</i>)				
Biomarkers/Bioassays and units	BACs IG.23/6 in Mussels (<i>Mytilus galloprovincialis</i>)	EACs IG.23/6 in Mussels (<i>Mytilus galloprovincialis</i>)	BACs IG.22/7 in Mussels (<i>Mytilus galloprovincialis</i>)	EACs IG.22/7 in Mussels (<i>Mytilus galloprovincialis</i>)
Lysosomal membrane stability Neutral Red Retention Assay (minutes)			120 ^{a*}	50 ^{a*}
Lysosomal membrane stability Cytochemical method (minutes)			20 ^{a*}	10 ^{a*}
AChE activity (nmol min ⁻¹ mg ⁻¹ protein) in gills (French Mediterranean waters)			29	20
AChE activity (nmol min ⁻¹ mg ⁻¹ protein) in gills (Spanish Mediterranean waters)			15	10
Stress on Stress (days)	11	5		
Metallothioneins (µg/g digestive gland)	247			
Micronuclei frequency (number of cases /1000 cells) in haemocytes	1			

^aTechnical annex: assessment criteria for biological effects measurements. Integrated monitoring of chemicals and their effects. ICES Cooperative Research Report No. 315. Davies, I.M. and Vethaak, A.D.Eds.

*Moore et al., 2006 (Standard values adopted by ICES)

²⁸ For ease of reference, the Secretariat included the values as approved by Decisions IG.22/7 of (COP 19) and IG.23/6 (COP 20) which are shown in shaded cells.

4. The Environmental Assessment Criteria (EAC) related to IMAP Common Indicator 20

Table 12. The Mediterranean EACs values for CI 20 related to trace metals based on the maximum regulatory levels for trace metals in foodstuffs for the protection of human health, as provided in EC/EU Directives 1881/2006 and its amendments 488/2014 and 1005/2015. The concentrations are presented in mg/kg wet wt.

The EAC CI 20 for trace metals- EU 1881/2006 directive and its amendments 488/2014 and 1005/2015			
matrix	TM, mg/kg wet wt		
	Cd	Hg	Pb
fish muscle	0.05-0.25	0.5-1	0.3
cephalopods	1		1
crustaceans	0.5	0.5	0.5
bivalve mollusc	1		1.5

Table 13. The Mediterranean EAC values for IMAP CI 20 related to Benzo(a)pyrene and sum of four PAHs based on the maximum regulatory levels for these contaminants in foodstuffs for the protection of human health, as provided in EC/EU EC Regulations 835/2011 and 1259/2011 amending Regulation (EC) 1881/2006. The concentrations are presented in µg/kg wet wt.

The EACs values for CI 20 related to Benzo(a)pyrene and sum of four PAHs (benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene and chrysene) - EC Regulation (EC) 1881/2006 and amendments 835/2011 and 1259/2011		
Matrix	Maximum levels (µg kg ⁻¹ wet wt)	
	Benzo(a) pyrene	Sum of Benzo(a) pyrene, Benzo(a) anthracene, Benzo(a) fluoranthene and chrysene
Smoked fish muscle	2-5	12-30
Smoked bivalve mollusc	6	35
Bivalve mollusk (fresh, chilled or frozen)	5	30

Table 14. The Mediterranean EAC values for CI 20 related to Dioxins and PCBs based on the maximum regulatory levels for these contaminants in foodstuffs for the protection of human health, as provided in EC/EU EC Regulation 1259/2011 amending EC Regulation 1881/2006. The concentrations are presented in wet wt.

The EACs values for CI 20 related to Dioxins and PCBs – EC Regulation 1259/2011 amending EC Regulation 1881/2006			
Foodstuffs	Maximum levels		
	Sum of dioxins (WHO-PCDD/F-TEQ) ⁽¹⁾ pg g ⁻¹ ww	Sum of dioxins and dioxin-like PCBs (WHO-PCDD/F-PCB-TEQ) ⁽¹⁾ pg g ⁻¹ ww	Sum of PCB28, PCB52, PCB101, PCB138, PCB153 and PCB180 (ICES 6) ng g ⁻¹ ww
Fish muscle	3.5	6.5	75
Fish liver	3.5	20	200
Eel muscle	3.5	10	300

- (1) Dioxins (sum of polychlorinated dibenzo-para-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs), expressed as World Health Organisation (WHO) toxic equivalent using the WHO-toxic equivalency factors (WHO-TEFs)) and sum of dioxins and dioxin-like PCBs (sum of PCDDs, PCDFs and polychlorinated biphenyls (PCBs), expressed as WHO toxic equivalent using the WHO-TEFs). WHO-TEFs for human risk assessment based on the conclusions of the World Health Organization (WHO) (For TEF values see note 31, (EC) Regulation 1259/2011 – Annex 1.1.9.). Where fish are intended to be eaten whole, the maximum level shall apply to the whole fish.

PART II: Marine Litter (IMAP – EO10)²⁹

5. Baseline Values (BV) and Threshold Values (TV) for IMAP Common Indicator 22

Table 15: Baseline Values and Threshold Values for IMAP Common Indicator 22 (i.e., beach macrolitter).

IMAP Indicator	Categories of Marine Litter	Baseline Values (BV – 2021)	Threshold Value (TV – 2021)
Common Indicator 22	Beach Macro-litter	369 items/100m	130 items/100m

6. Baseline Values (BV) and Threshold Values (TV) for IMAP Common Indicator 23

Table 16. Baseline Values and Threshold Values for IMAP Common Indicator 23 (i.e., seafloor macrolitter, floating microplastic).

IMAP Indicator	Categories of Marine Litter	Baseline Values (BV – 2023)	Threshold Value (TV – 2023)
Common Indicator 23	Seafloor Macro-litter	135 items/km ²	38 items/km ²
Common Indicator 23	Floating Microplastics	0.044338 items/m ²	0.000845 items/m ²

7. Baseline Values (BV) and Threshold Values (TV) for IMAP Common Indicator 24³⁰

Table 17. Updated Baseline Values (BV) and Threshold Values (TV) for IMAP Common Indicator 24 (i.e., for ingestion and entanglement on *Caretta caretta*).

IMAP Common Indicator 24	Updated BV (2025)	Proposed TV (2025)
Common Indicator24: Ingestion	0.07 gr dry weight ML ingested ³¹	0.01 gr dry weight ML ingested
Common Indicator24: Entanglement	35% affected sample	9% affected sample

8. Updated Environmental Targets for Marine Litter

Table 18. Intermediate (IET) and Final (FET) Environmental Targets for IMAP EO10 Marine Litter Common Indicators.

IMAP Common Indicator (CI)	Marine Litter Categories	Threshold Value	ML Average Concentrations*	IET 2026	IET 2028	IET 2030	FET		
							Value	by:	RP**
CI22 (item/100m)	Beach Macrolitter	130	6,425±9,075	150	-	-	130	Approx. 2027	65%
CI23 (item/km ²)	Seafloor Macrolitter	38	570± 2,588	66	58	50	38	> 2030	63%
CI23 (item/m ²)	Floating Microplastics	0.000845	0.36 ± 1.9	0.015	0.010	0.008	0.000845	> 2030	80%

²⁹ Threshold Values (TV) for IMAP EO10 (Marine Litter) are subject to update for the third iteration of the MED QSR.

³⁰ Values for ingestion and entanglement were revised further to the review of the Joint Meeting of the Ecosystem Approach Correspondence Groups on Pollution and Marine Litter Monitoring (Anavyssos, Greece, 27 -28 May 2025). The detailed elaboration and applied methodology with regards to the updated values is provided in WG.627/Inf.10.