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8<sup>th</sup> Meeting of the Ecosystem Approach Coordination Group

Videoconference, 9 September 2021

**Agenda Item 4: Implementation of the Ecosystem Approach Roadmap****Implementation of the 2023 MED QSR Roadmap****Corrigenda****1. Progress on the implementation of the 2023 MED QSR Roadmap in 2020**

In paragraph 2 of the original text, *substitute* (UNEP/MED WG.514/Inf.6) *with* (UNEP/MED WG.514/Inf.7).

**Table 1. 2023 MED QSR Roadmap implementation in 2020-2021****Milestone 1. Scales of monitoring, assessment and reporting**

Under **Biodiversity** in the original text, *substitute* (UNEP/MED WG.514/Inf.9 and UNEP/MED WG.514/Inf.10) *with* (UNEP/MED WG.514/Inf.11 and UNEP/MED WG.514/Inf.12).

**Assessment Criteria**

Under **Marine Litter** in the original text, *substitute* Working Document UNEP/MED WG.514/10 *with* Working Document UNEP/MED WG.514/7.

Under **Pollution** in the original text, *substitute* Working Document UNEP/ME WG.514/11 *with* Working Document UNEP/MED WG.514/8.

Under **Pollution** in the original text, *substitute* (UNEP/MED WG.514/12) *with* (UNEP/MED WG.514/9).

Under **Biodiversity** in the original text, *substitute* (UNEP/MED WG.514/Inf.7 and UNEP/MED WG.514/Inf.8) *with* (UNEP/MED WG.514/Inf.11 and UNEP/MED WG.514/Inf.12).

**Milestone 3. Implementation of national IMAPs throughout the Mediterranean****Milestone 6. Technical assistance and support**

Under **Status of implementation of the national IMAP Pollution and Marine Litter monitoring programmes**, *substitute* Information Document UNEP/MED WG.514/Inf.7 *with* Information Document UNEP/MED WG.514/Inf.8.

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**Milestone 4. IMAP Info System**

**Milestone 5. Monitoring Protocols and Data Quality Assurance and Quality Control**

Under **IMAP Info System**, *substitute* (UNEP/MED WG.514/13) *with* (UNEP/MED WG.514/11).

Under **IMAP Info System**, *substitute* the proposal is included as an Information Document for the attention of the present meeting (UNEP/MED WG.514/Inf.7) *with* the proposals **are** included as Information Documents **s** for the attention of the present meeting (UNEP/MED WG.514/Inf.13 and WG.514/Inf.14).

Under **Monitoring Protocols and Data Quality Assurance and Quality Control**, *substitute* (UNEP/MED WG.514/9) *with* (UNEP/MED WG.514/10).

**2. Way forward to 2023 MED QSR: analysis of gaps, concrete requirements and deadlines of output delivery**

In paragraph 6 of the original text, *substitute* the QSR Operational Plan is attached as Information document to the present Meeting (UNEP/MED WG.514/Inf.6) *with* the QSR Operational Plan is attached as Information document to the present Meeting (UNEP/MED WG.514/Inf.7).



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**Agenda Item 4: Implementation of the 2023 MED QSR Roadmap**

**Implementation of the 2023 MED QSR Roadmap**

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UNEP/MAP  
Athens, 2021

### **Note by the Secretariat**

The 2023 MED QSR Roadmap and Needs Assessment was endorsed by COP 21 (Naples, Italy, December 2019) with Decision IG.24/4. It defines the vision for the successful delivery of the 2023 MED QSR, and outlines key IMAP-related processes, milestones and outputs to be undertaken, with their timelines.

In the biennium 2020/2021 the Secretariat developed an Operational Plan (included as Information Document UNEP/MED WG.514/Inf.7 for the present Meeting) with concrete activities per each Milestone/Output of the Roadmap, supported by the UNEP/MAP Programme of Work 2020-2021 and proposed Programme of Work 2022-2023, and externally-funded Projects (namely, the EU-funded EcAp MED III, IMAP MPA, Marine Litter Med II Projects and the GEF-funded MedProgramme).

The present document provides information on the progress achieved in 2020-2021, in relation to the implementation of the 2023 MED QSR Roadmap, structured around the Roadmap's main processes and milestones.

A table on the status of IMAP implementation per Common Indicator and Contracting Party with predefined categories (as of December 2020-February 2021), was developed and completed by several Contracting Parties after the Integrated CORMONs Meetings (1-3 December 2020), and is included as an Information document for the present Meeting (UNEP/MED WG.514/Inf.8).

## **List of Abbreviations / Acronyms**

<b>BAC</b>	Background Assessment Criteria
<b>CI</b>	Common Indicator
<b>CMEMS</b>	Copernicus Marine Environment Monitoring Service
<b>CMLS</b>	Copernicus Land Monitoring service
<b>COP</b>	Conference of the Parties
<b>CORMON</b>	Correspondence Group on Monitoring
<b>DD</b>	Data Dictionaries
<b>DS</b>	Data Standards
<b>EAC</b>	Environmental Assessment Criteria
<b>EcAp</b>	Ecosystem Approach
<b>EO</b>	Ecological Objective
<b>EU</b>	European Union
<b>GEF</b>	Global Environment Facility
<b>GES</b>	Good Environmental Status
<b>GFCM</b>	General Fisheries Commission for the Mediterranean
<b>HELCOM</b>	Baltic Marine Environment Protection Commission - Helsinki Commission
<b>IAEA</b>	International Atomic Energy Agency
<b>IMAP</b>	Integrated Monitoring and Assessment Programme
<b>IMO</b>	International Maritime Organisation
<b>MAP</b>	Mediterranean Action Plan
<b>MED POL</b>	Programme for the Assessment and Control of Marine Pollution in the Mediterranean Sea
<b>MESL</b>	Marine Environment Studies Laboratory
<b>MPA</b>	Marine Protected Area
<b>MSFD</b>	Marine Strategy Framework Directive
<b>NIS</b>	Non-indigenous Species
<b>OC</b>	Organic Contaminants
<b>OSPAR</b>	Convention for the Protection of the Marine Environment for the North-East Atlantic
<b>PoW</b>	Programme of Work
<b>PT</b>	Proficiency Tests
<b>QA/QC</b>	Quality Assurance/Quality Control
<b>QSR</b>	Quality Status Report
<b>SPI</b>	Science Policy Interface
<b>TDA</b>	Transboundary Diagnostics Analysis
<b>TE</b>	Trace Elements
<b>TG</b>	Technical Group
<b>TGML</b>	Technical Group on Marine Litter
<b>WG</b>	Working Group
<b>WG DIKE</b>	Working Group on Data, Information and Knowledge Exchange

## 1. Progress on the implementation of the 2023 MED QSR Roadmap in 2020

1. Following the adoption of the Roadmap and Needs Assessment for the 2023 Mediterranean Quality Status Report (2023 MED QSR Roadmap) by the Contracting Parties to the Barcelona Convention at its 21<sup>st</sup> Ordinary Meeting (COP 21) in Naples, Italy, 2-5 December 2019 through Decision IG.24/4 – Assessment Studies, the main focus of work of the Secretariat in 2020-2021 has been to implement the Roadmap, as described in Section 2 of the present document.

2. The Secretariat developed an Operational Plan (hereinafter the QSR Operational Plan) including concrete activities per each Milestone/Output of the Roadmap, supported by the UNEP/MAP Programme of Work 2020-2021 and proposed Programme of Work 2022-2023, and externally-funded Projects (namely, the EU-funded EcAp MED III, IMAP MPA, Marine Litter Med II, and GEF Adriatic Projects). The QSR Operational Plan is attached as Information document to the present Meeting (UNEP/MED WG.514/Inf.6).

3. Table 1 provides an overview of the progress marked in the implementation of the 2023 MED QSR Roadmap from its endorsement to July 2021, structured around the Roadmap's main processes and milestones.

**Table 1. 2023 MED QSR Roadmap implementation in 2020-2021.**

<b>2023 MED QSR Roadmap Main Processes and Milestones</b>	
Milestone 1. <b>Scales of monitoring, assessment and reporting</b>	Ongoing
<b>Outputs and Timeline:</b>	The section related to scales of assessment with regard to the Pollution and Marine Litter cluster of IMAP, due to its integrated dimension, is reported under Milestone 2 of the 2023 MED QSR Roadmap.
Analysis for each IMAP cluster on knowledge gaps, with focus on scales of monitoring prepared (mid 2019 - end 2020);	<b>Biodiversity:</b> the update of existing monitoring scales and the development of scales of assessment for the CIs related to Biodiversity is still ongoing. Proposals on scales of monitoring and assessment of CIs 3, 4, and 5 related to marine turtles and marine mammals were discussed with the members of the informal OWGs (29 March 2021 and 7 April 2021, respectively) approved by the CORMON Biodiversity and Fisheries meeting (10-11 June 2021) and by the subsequent SPA/RAC Focal Points Meeting (23-25 June 2021). They are submitted as Information Documents for the present meeting (UNEP/MED WG.514/Inf.9 and UNEP/MED WG.514/Inf.10). A proposal on scales of monitoring and assessment for CI 6 (Non-Indigenous Species, NIS) was discussed with the members of the related informal OWG (20 April 2021), then reviewed by the CORMON Biodiversity meeting (June 2021), which agreed to further review the document within the informal OWG on NIS and submit it to the next CORMON Biodiversity meeting planned for 2022. The work on the development of monitoring and assessment scales for CIs 1 and 2 related to benthic habitats and CIs 3, 4 and 5 related to sea birds is ongoing for the consideration of the CORMON Biodiversity meeting planned for 2022.
Approaches on scales of monitoring for IMAP Common Indicators included in the IMAP Pilot Info System defined (2019);	The proposed scales of assessment are planned to be tested throughout 2021-April 2022 for their use to prepare the first draft of the 2023 MED QSR upon agreement by the respective CORMON.
Scales of monitoring for all IMAP Common Indicators agreed (2021);	
Scales of assessment products for all IMAP Common Indicators clustered per Ecological Objectives proposed (2021-2022);	<b>It is important to encourage the Contracting Parties, either individually or in collaboration with each other, to test and validate the proposed methodologies for the assessment areas per cluster and Common Indicator in order to have a final discussion at the CORMON meetings of the lessons</b>

<p>Assessment criteria/thresholds/baseline values proposed/updated for IMAP Common Indicators included in the IMAP Pilot Info System (2020-2021);</p> <p>Assessment criteria/thresholds/baseline values initiated for all IMAP Common Indicators (2021-2022);</p> <p>Reporting formats adjusted to agreed scales of monitoring and scales of assessment products (2021-2022).</p>	<p><b>learnt and any need for their adjustments, with the view for the Secretariat to progressing on developing accordingly the final drafts of the 2023 MED QSR sections by the end of 2022.</b></p> <p><b>Assessment criteria</b></p> <p>In line with the MAP PoW 2020-2021 and the 2023 MED QSR Roadmap, work has been performed in the context of the EU-funded EcAp MED III and IMAP MPA projects, to update/upgrade and develop assessment criteria using a trend and threshold approach as appropriate for 10 CIs already included in the IMAP Info System (CI 1, 2, 6, 13, 14, 16, 17, 21, 22, 23) as well as for 3 CIs not yet included in the IMAP Info System (i.e., CIs 3, 4 and 5). More details per each IMAP Cluster are provided below:</p> <p><b>Marine Litter:</b> A proposal for updated Baseline Values (BV) and proposal for Threshold Values (TV) for CI 22 (beach macro-litter), was presented and reviewed at the Integrated CORMON meetings (December 2020). Further to the inputs received from the participants of the Integrated CORMON meetings, MED POL prepared an updated version (UNEP/MED WG.509/11) which was presented, reviewed and approved during the resumed session of the MED POL Focal Points meeting (9 July 2021). It is presented for endorsement at the present Meeting as Working Document UNEP/MED WG.514/10. The collection of national monitoring data has been also undertaken from MED POL in order to upgrade/set BVs and TVs for CI 23 (seafloor macro-litter). Along with the requests of monitoring data shared with national authorities, exchanges with partners have been initiated, including the use of datasets from MEDITS.</p> <p><b>Pollution:</b> The proposals for upgrading the Background Concentrations (BC) and Background Assessment Concentration (BAC) values for IMAP Common Indicator 17, and possible approaches for upgrade of Environmental Assessment Criteria (EAC) for IMAP Common Indicators 17, 18 and 20 (UNEP/MED WG.492/12 and UNEP/MED WG.492/Inf. 11) were prepared for consideration of the CORMON Pollution Meeting (26-28 April 2021). This work has been undertaken by building on the 2019 update of the sub-regional Mediterranean BAC values for heavy metals in biota and sediment provided to contribute to the preparation of the 2019 State of Environment and Development in the Mediterranean (SoED). Considering the evolving nature of this process, the CORMON Pollution Meeting agreed to recommend the use of the document UNEP/MED WG. 492/12 as a basis towards development and testing of the methodologies for GES assessment related to EOs 9 and 10, and recommended its submission to the Meeting of the MED POL Focal Points (9 July 2021) for its consideration, while work on its further elaboration will continue, including within the informal OWG on Contaminants (EO9). To this aim, the Contracting Parties were requested to support the present work including in the framework of the informal OWG for EO9 by: i) undertaking an analysis of proposed values of the assessment criteria against the new monitoring data to be reported into IMAP Pilot Info System, as well as to be made available through another relevant sources; and ii) supporting improvements of existing methodology for the calculation of the assessment criteria. The Meeting appreciated the work undertaken by the Secretariat and recommended submission of Document UNEP/MED WG.509/12 to the present 8<sup>th</sup> EcAp Coordination Group Meeting for its consideration, as Working Document UNEP/ME WG.514/11.</p> <p>As to further progress with development of region-wide harmonized criteria for reference conditions and threshold/boundaries values for key nutrients in water</p>
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column, as it was requested by Decision IG.23/6 related to the 2017 MED QSR, the proposals for: i) setting the reference conditions and boundary values for Dissolved Inorganic Nitrogen (DIN) and Total Phosphorous (TP); and ii) testing practical application of the methodological approaches for their calculation in relevant sub-areas, were prepared (UNEP/MED WG. 492/11 and UNEP/MED WG. 492/Inf.12) for consideration of the CORMON Pollution meeting (26-28 April 2021). Due to nitrogen/phosphorus limitations present in the Mediterranean (i.e., restricted measurements of Dissolved Inorganic Phosphorous - DIP), as well as due to limited data availability and related demanding statistics, these documents set the basis for further elaboration of the following methodologies in relevant sub-areas: i) methodological approach developed for Adriatic Sea; ii) Best Practice Guide for nutrients toolkit (JRC) and iii) FAN/FLU index (Spain). In addition, the practical application of the methodological approach is showcased for Adriatic Sea, in order to set the reference conditions and boundary values for DIN and TP. Considering the evolving nature of the document UNEP/MED WG.492/11, the CORMON Pollution Meeting agreed to recommend its use as a basis for progressing towards setting the assessment criteria for DIN and TP, and recommended its submission to Meeting of the MED POL Focal Points for its consideration. To this aim, the Contracting Parties were invited to support this work in the framework of the informal OWG on Eutrophication (EO5) through: i) analysis of available/ new monitoring data; and ii) elaboration and testing of proposed methodological approaches for setting boundary values, including relevant statistical approaches, as suitable for specific areas in Mediterranean sub-regions/sub-areas. The MED POL Focal Points Meeting (9 July 2021) recommended submission of this Working Document to the present EcAp Coordination Group Meeting for its consideration (UNEP/MED WG.514/12).

**During the discussions of the OWGs on Eutrophication (EO 5) and Contaminants (EO 9), a lack of reporting of series of monitoring data into IMAP Info System by the Contracting Parties was identified as a key obstacle in setting the assessment criteria and applying the assessment methodology for GES for the respective CIs. Moreover, different methodologies were discussed for GES assessment for Eutrophication. Due to the need to respect the timeline for preparation of the 2023 MED QSR, and to the fact that the Secretariat may not be able to work on the application of more than one methodology for each EO that could be applied across the region, it was agreed to launch the testing of the NEAT tool for GES assessment for EO5, and EO 9.**

**Biodiversity:** Assessment criteria, thresholds and baseline values for CIs 3, 4 and 5 related to marine mammals, and assessment criteria, thresholds and baseline values for CIs 3, 4 and 5 related to marine turtles were reviewed and approved by the CORMON Biodiversity meeting and endorsed by the SPA/RAC Focal Points meeting (June 2021), for submission at the present meeting (UNEP/MED WG.514/7 and UNEP/MED WG.514/8). The assessment criteria and threshold values for CI 6 related to NIS were reviewed by the CORMON Biodiversity meeting (June 2021), which agreed to further discuss the document within the informal online Working Group on NIS and submit it to the next CORMON meeting planned for 2022. The progress in the development of the baseline values for CI 6 related to NIS was discussed at the CORMON Biodiversity meeting (June 2021), which asked the Secretariat to further discuss



	<p>the national lists within the informal online working group on NIS. The work on the assessment criteria, thresholds and baseline values for the IMAP CIs 1 and 2 related to benthic habitats and CIs 3, 4 and 5 related to seabirds is ongoing. The documents will be discussed within the respective thematic OWGs and submitted to the next Biodiversity CORMON meeting planned for 2022.</p> <p><b>Coast and Hydrography:</b> work started in the context of the EU-funded EcAp MED III Project for the provision of technical support to data monitoring and processing for Common Indicator 16, and the development of methodology and conduction of baseline assessment for Common Indicator 15. Also, the development of assessment criteria and of the related Guiding document for the application of assessment criteria for CI 16 has been initiated. The conclusions of this work will be presented at the CORMON Coast and Hydrography meeting, planned for October/November 2021 (tbc).</p> <p>In the context of the EU-funded project EcAp MED III, additional progress will be marked in 2021-2022 on testing and application of the assessment criteria for all clusters at national level, as well as in the testing of the integrated assessment approaches/methodologies, including approaches to interrelate pressures/impacts/state of the marine environment for the 2023 MED QSR. This includes regional cooperation on assessment methodologies through regional and sub-regional expert group meetings and CORMONs and a stronger Science-Policy Interface. This will be instrumental to prepare the very first draft of the 2023 MED QSR as early as possible in 2022 using thresholds approach to the extent possible for a considerable number of Common Indicators.</p> <p>Ongoing cooperation between OSPAR, HELCOM, and REMPEC should be noted regarding the definition of Significant (oil) spill, format of reporting systems and the determination of GES for significant acute pollution events (EO9 CI 19 / MSFD D8C3- D8C4).</p>
<p>Milestone 2.  <b>Integrated assessment of GES</b></p> <p><u>Outputs and Timeline:</u></p> <p>Analysis of interrelations between sectors, activities, pressures, impacts and state of marine environment for each Common Indicators included in the IMAP Pilot Info System prepared (2018-2019);</p> <p>Approaches for mapping the pressures/impacts/status of marine environment for the above IMAP Common Indicators defined (Rome Meeting); (2019-2020);</p>	<p>Ongoing</p> <p>Most of the outputs planned in 2018, 2019, and 2020 are completed. Work is ongoing on the remaining outputs, in particular the work for analyzing the interrelations between sectors, activities, pressures, impacts and state of marine environment for each Common Indicator included in the IMAP Pilot Info System.</p> <p>The work on scales of monitoring and assessment is supported through seven ongoing regional assignments in the framework of the EU-funded <b>IMAP-MPA</b> Project, aiming at supporting: (i) the integrated implementation of IMAP at pilot scale in MPA and High-Pressure areas for Pollution-Marine Litter, Biodiversity-NIS, and Coast &amp; Hydrography, including a broad package for enhancing capacity building activities and technical capacities; and (ii) the work on scales of monitoring and assessment, including an analysis of knowledge gaps with focus on scales per cluster (i.e. for Habitats, Species, NIS, Eutrophication, Contaminants, Marine Litter and Coast and Hydrography). Moreover, an in-depth analysis was performed of the scales of monitoring proposed for IMAP Biodiversity Common Indicators within the national Biodiversity IMAPs of the Southern Mediterranean countries, prepared with support from the EcAp MED II Project. Regarding the IMAP Pollution Cluster, the project activities will contribute to the integration of national IMAPs related to Pollution with national IMAPs on Biodiversity and Coast and Hydrography.</p>

<p>Methodological concepts developed and proposed to assess the interrelation of pressures/impacts/status of marine environment (2020);</p> <p>Methodological concepts to support better integration of thematic assessment products related to IMAP Common i.e., integration between Ecological Objectives (at national, sub-regional and regional scale) is agreed and tested (2020-2021);</p> <p>Thematic assessment products are prepared (2021-2022);</p> <p>2023 MED QSR delivered (2023)</p>	<p>The ongoing work for developing a methodology towards integrated assessment of GES was reported under the previous section of the present document.</p> <p><b>Pollution and Marine Litter:</b> The initial proposal related to scales of assessment for IMAP Pollution and Marine Litter Cluster, was agreed by the CORMON Pollution Meeting organized in 2019 and the 7<sup>th</sup> Meeting of EcAp Coordination Group (September 2019). This proposal was further elaborated by developing a methodology to define the areas of assessment for EO5, EO9 and EO10 within the nested approach. These rules consider all IMAP Pollution and Marine Litter Cluster Common Indicators 13, 14, 17, 18, 20, 21, 22, 23. The proposed methodology was discussed by the CORMON Pollution Meeting (26-28 April 2021), which agreed to recommend its use as a basis for progressing towards integrated GES assessment, and recommended its submission to the Meeting of the MED POL Focal Points, while work on its further elaboration will continue, including through OWG on Contaminants. The MED POL Focal Points Meeting recommended to return the proposed Document to the CORMON for some adjustments and terms definition, with a view to avoiding possible confusion with issues which fall outside the scope/mandate of the Barcelona Convention and its Protocols.</p> <p>Work will continue to test and validate the proposed methodology by the Contracting Parties, as appropriate, individually or in collaboration at country, area or subregional level. The intention is to discuss the outcome of the testing and validation at the next CORMON meetings (scheduled in 2022), and further refine the methodology also adding a number of technical definitions on the terms used for the application of the methodology.</p> <p><b>It is expected that the interested Contracting Parties, either individually or in collaboration, will test the proposed methodology with a view to its validation, with support from the Secretariat. The findings of this process will be submitted to the CORMON meetings in early 2022 as appropriate for their consideration.</b></p> <p>The CORMON Marine Litter Meeting endorsed the document “Addressing interrelation of pressures impacts of marine litter and the status of marine ecosystem components”, and agreed to integrate the input and information included in this document into the broader work under preparation by the MED POL programme pertinent to integration/aggregation aspects of the Pollution-Marine Litter Cluster of IMAP.</p> <p>In 2021, as part of the GEF Adriatic project, first documents towards integrated GES assessment (addressing EO1 on Biodiversity, EO2 on NIS, EO5 on Eutrophication, EO7 on Hydrography, EO8 on Coastal ecosystems and landscapes, EO9 on Contaminants and EO10 on Marine litter, and related CIs) were prepared for Albania and Montenegro as a joint collaboration of international experts and national responsible institutions.</p>
<p><b>Milestone 3. Implementation of national IMAPs throughout the Mediterranean</b></p>	<p>Ongoing</p> <p>Support to National IMAPs implementation has been given the highest priority. Further to activities under implementation of the MAP PoW 2020-2021, three EU-funded projects were developed and launched in 2020 to support national implementation of the IMAP in Southern Mediterranean Countries (Algeria, Egypt, Israel, Lebanon, Libya, Morocco, and Tunisia), building mainly on the</p>

<p><b>Milestone 6. Technical assistance and support</b></p>	<p>results of the EcAp MED II project which supported the development of national monitoring programmes for all clusters in the seven countries in coherence with the IMAP recommendations, but also on the results of Marine Litter MED</p>
<p><u>Outputs and Timeline:</u></p>	<p>Project pertinent to the development of IMAP Candidate Indicator 24: IMAP MPA (August 2019 – February 2023), EcAp-MED III (September 2020 – August 2023), and Marine Litter MED II (September 2020 – August 2023).</p>
<p>State of the national implementation of IMAP reported by the Contracting Parties (2018/2019, 2020/2021, 2021/2022);</p>	<p>These projects, in particular IMAP-MPA and EcAp MED III, support the beneficiary countries in implementing their national monitoring programmes in high-pressure and MPA areas with the aim to achieve a minimum of 3 sets of data on IMAP Common Indicators for EO5, EO9, EO10; a minimum of 1 set of data on IMAP Common Indicators for EO1 and EO2, and a minimum of 1 set of data on IMAP Common Indicators for EO7 and EO8.</p>
<p>Minimum 3 sets of data on IMAP Common Indicators (EO5, EO9, EO10) reported by the Contracting Parties (2019, 2020, 2021/2022);</p>	<p>Below a summary of the main activities and achievements of the three EU-funded Projects:</p> <p>1. <b>IMAP MPA:</b> In depth identification at country level of the capacities required to enable IMAP implementation and facilitate the provision of reliable and quality assured data for the MED 2023 QSR started, with the recruitment of national experts to perform this activity. In relation to capacity building, several bilateral coordination meetings with the project focal points, and MAP/ MED POL/ SPA/BD National Focal Points as appropriate, have been organized with all beneficiary countries (i.e. Algeria, Egypt, Israel, Lebanon, Libya, Morocco, and Tunisia) during the period May-December 2020 to follow-up and support the establishment of the National IMAP Committees; the organization of the project national kick-off meetings; and the potential designation of thematic/national experts. Regional experts are on board to support integrated/joint monitoring in MPAs and high-pressure areas in identified pilot sites for agreed common indicators, most of which participated in the Integrated CORMON meetings (December 2020) and in the thematic CORMONs (2021).</p>
<p>Minimum 1 set of data (EO1 and EO2) reported by Contracting Parties (2021/2022);</p>	<p>2. <b>EcAp-MED III:</b> The activities started for the design of concrete monitoring plans and to prepare and support implementation of field survey programmes for each beneficiary country for Pollution, Marine Litter, and Biodiversity. During the period December 2020-February 2021, an analysis was undertaken of the national IMAP-based monitoring programmes of the beneficiary countries, whose most important findings were submitted to the CORMON Pollution Meeting (26-28 April 2021). The design of the monitoring plans on Biodiversity is ongoing for Tunisia and Libya. Preliminary meetings were organized with national institutions (i.e., Ministry of Local Affairs and Environment, APAL in Tunisia and EGA in Libya) to ensure a successful coordination and implementation of the respective national IMAP. Gaps identified in the 2017 MED QSR were discussed to try to overcome them during this phase of IMAP implementation. Considering the situation induced by the ongoing COVID-19 pandemic and the measures taken at national, regional and international levels to contain its spread, the Secretariat is currently undertaking steps to build the Legal Instruments with four Contracting Parties. A bilateral meeting with ACCOBAMS was organized (teleconference, 16 October 2020) to discuss the lessons learnt and difficulties faced during the implementation of the regional survey on marine mammals (ACCOBAMS Survey Initiative, ASI) elaborated in June and July 2018.</p>
<p>Minimum 2 sets of data (EO7, EO8) reported by the</p>	<p>Work started to implement the Joint Monitoring and Assessment programme on NIS related to fisheries in the Eastern Mediterranean (i.e., Egypt, Israel, and</p>

Lebanon), involving also other non-beneficiary countries (namely Cyprus, Greece, and Turkey). A list of NIS was prepared in 2021 as a first step for the elaboration of a baseline assessment of NIS, in collaboration with GFCM and in synergy, as appropriate, with the work performed at EU level by the European Commission Joint Research Centre (JRC).

In relation to Coast and Hydrography, work started to provide technical support in 2021 to data monitoring and processing for CI 16 (*Length of coastline subject to physical disturbance due to the influence of man-made structures*) and for reporting on baseline situation for CI 15 (*Location and extent of the habitats potentially impacted by hydrographic alterations*) in Algeria, Egypt, Israel (excluding CI 16 which was addressed in previous project), Lebanon, Libya, Morocco and Tunisia.

**3. Marine Litter MED II:** work in 2020 focused on contribute to the development of IMAP Candidate Indicator 24, towards making it operational at country level, with the “Regional Operational Strategy for Monitoring IMAP Candidate Indicator 24” that was endorsed by the CORMON Marine Litter meeting (30 March 2021, videoconference), which highlighted the need to base the development of the future national monitoring programmes for Candidate Indicator 24 in the Regional Operational Strategy.

Other projects are also instrumental for the implementation of National IMAPs, such as the GEF Programme for activities related to monitoring of CI 15, 16 and CCI 25, with the view of completing the coastline and land cover of as much the Mediterranean region as possible, as well as GEF Adriatic, supporting the monitoring of CI 16 related to coastline in Montenegro and Albania. The recently launched CAMP project in Bosnia and Herzegovina will assist monitoring activities in the country, related to pollution and marine litter as well as CI 16.

#### **Status of implementation of the national IMAP Pollution and Marine Litter monitoring programmes**

A tool to mark progress in IMAP implementation per Common Indicator and per Contracting Party was presented at the last Integrated CORMONs Meetings (December 2020), with the aim to have it completed during and immediately after the meeting with inputs from Contracting Parties’ representatives, related to the status of IMAP implementation across four categories: (i) establishment of national IMAPs; (ii) nomination of national IMAP users; (iii) submission of available data; and (iv) collection of 2020 data and readiness for submission in 2021. To date, the majority of Contracting Parties have provided their feedback to the tables, which show that National IMAP are in place and operational in the vast majority of CPs and for a high number of Common Indicators, while EO 3 (Harvest of commercially exploited fish and shellfish) and EO11 (Energy including underwater noise) are lagging behind. The full results of the tool, updated as of December 2020-February 2021, are presented to the attention of the present Meeting as Information Document UNEP/MED WG.514/Inf.7.

It has to be noted that all Contracting parties have built national monitoring programmes which are fully compatible with or even larger in scope than IMAP requirements with regards to IMAP Pollution and Marine Litter cluster: i) the eutrophication parameters, as well as the parameters related to the concentration of heavy metals and organic compounds in surface sediments are currently monitored by the Contracting Parties at a relatively acceptable level, whereas

	<p>marine litter can be considered as a recently introduced set of monitoring parameters for IMAP; ii) in most cases, there is a very good compatibility between the monitoring areas established for Ecological Objectives 5 and 9, while these are less compatible with the monitoring areas for Ecological Objective 10; however these areas are established close to areas of pollution monitoring; iii) regarding time scales, most monitoring programmes considered appropriately the time frame and the risk-based approach, and the high-pressure areas and sensitive areas are identified for monitoring as prioritized areas; however, the integration of risks is not fully ensured within all national monitoring programmes; v) the National IMAP Pollution and Marine Litter monitoring programmes do not specify how the integration and aggregation of the monitoring efforts and assessment products should be carried out for GES assessment.</p> <p>Actions were undertaken to identify specific knowledge and technical needs of individual laboratories of the Contracting Parties to apply good laboratory practices for analysis of trace elements and organic contaminants as requested by the CORMON Pollution meeting of 2 -3 April 2018 (Podgorica, Montenegro). Along with the missions to two IMAP Pollution Cluster competent laboratories that were realized in 2020, the capacities of national laboratories in relation to monitoring of IMAP Common Indicators 13, 14, 17, 18 and 20 were assessed as provided in UNEP/MED WG.492/10 and UNEP/MED WG.492/Inf.10, which were submitted for consideration of the CORMON Pollution meeting of 26-28 April, 2021. The assessment findings related to 36 national IMAP Pollution Cluster competent laboratories refer to their capacities to apply the analytical methodologies, as recommended in relevant IMAP Monitoring Guidelines/Protocols. This assessment was based on the questionnaires that were distributed through respective MED POL Focal Points to designated national IMAP Pollution Cluster competent laboratories. Although only laboratories from 7 countries replied, this exercise gave a good insight into their capability to comply with IMAP Guidance Factsheets and new Monitoring Guidelines/Protocols and problems laboratories face. The specific knowledge and technical needs of individual laboratories were recognized regarding implementation of IMAP Common Indicators 13, 14, 17, 18 and 20.</p> <p>Means of implementation established for the revision of the Transboundary Diagnostic Analysis (TDA), with support through the GEF-funded MedProgramme, further address a need to support the development of a strategy for offshore monitoring and data sharing policy for the Mediterranean.</p> <p>Thanks to effective communication with the Contracting Parties, National Steering Committees for IMAP implementation were established in Algeria, Israel, Libya, Morocco, and Tunisia and recently in Lebanon in the context of the EU-funded IMAP MPA Project. The Contracting Parties started to submit the unreported 2019 data and 2020 data, following the respective data submission call and in line with the respective COP decisions as described below.</p>
<p><b>Milestone 4. IMAP Info System</b></p> <p><b>Milestone 5. Monitoring Protocols and Data Quality Assurance and Quality Control</b></p> <p><b>Outputs and Timeline:</b></p>	<p>Ongoing</p> <p><b>IMAP Info System</b></p> <p>In line with COP Decisions IG.22/7 and IG.23/6 providing for “the Contracting Parties to regularly report quality-assured data deriving from the implementation of the updated integrated national monitoring and assessment programmes”, in June 2020 the call has been opened for the Contracting Parties to start uploading and sharing their monitoring data using the approved Data Dictionaries and Data Standards for 11 selected IMAP Common Indicators, respectively CI 1, 2, 6, 13,</p>

<p>IMAP information and data sharing policy developed (2019);</p>	<p>14, 15, 16, 17, 21, 22 and 23. The Contracting Parties have started to upload all available and compatible data and new 2020 monitoring data with the original deadline set for no later than 31 January 2021. However, only a few new data sets have been validated for IMAP Common Indicators 13,14,17, 21, 22 and 23. It must also be noted that the present level of data reporting is poor and represents serious obstacles for the preparation of the 2023 MED QSR based on data.</p>
<p>IMAP Pilot Info system ready to upload monitoring data (end of 2019);</p>	<p>The IMAP Pilot Info System, developed and launched in 2019, has been designed for 11 IMAP Common Indicators (CI 1, 2, 6, 13, 14, 15, 16, 17, 21, 22 and 23). A testing phase with the participation of 10 Contracting Parties, namely Albania, Croatia, Cyprus, Israel, Italy, Lebanon, Malta, Montenegro, Slovenia and Spain, took place from July 2019 to May 2020 with test datasets provided for CI 1, 2, 13, 14, 15, 16, 17, 21 and 22. Data from the MED POL Info System database have been migrated by INFO/RAC into the IMAP Info System. The migration process, carried out in consultation with MED POL during 2020/2021, involved the information standards of CIs 13-14 (eutrophication) and 17 (contaminants) and the MED POL monitoring data for nutrients and contaminants (sediment and biota). The monitoring data have been received from Mediterranean countries over the last 15 years from 2005 to 2015-2017 and include some MED POL Info System datasets dating back to the early 1990s, in compliance with the LBS Protocol. The entire dataset is now available on the IMAP Info System in a standardized format and stored on an infrastructure able to guarantee its integrity and preservation over time.</p>
<p>Data dictionaries and data standards finalized for all IMAP Common Indicators (mid 2021);</p>	<p>Further expansion and full operationalization of the IMAP Info System to cover all IMAP mandatory Common Indicators is ongoing, also with support through the EU-funded EcAp MED III project. To this respect, the update and upgrade of the IMAP Info System is proceeding; moreover, technical support has been provided by the Secretariat and MAP components to upgrade the hardware and software platform, accommodate DS/DD that are being developed for the additional CIs, and to support the implementation of data flows for all the remaining CIs.</p>
<p>IMAP Pilot Info System updated to cover all IMAP Common Indicators (mid-2022);</p>	<p>New elements of the IMAP Data Policy have been presented at the Integrated CORMONs Meeting, December 2020, and welcomed without further requested changes. These elements will be integrated into the IMAP Data Policy Annex that will be built in the next biennium in line with the MAP Data Policy to be submitted to COP 22 (December 2021). The last updated version of the IMAP Data Policy has been finalized for review at the present meeting (UNEP/MED WG.514/13).</p>
<p>IMAP Info System fully operational enabling the Contracting Parties to report their monitoring data in 2020, 2021 and 2022.</p>	<p>Data Dictionaries (DD) and Data Standards (DS) have been developed by INFO/RAC in close cooperation with the other MAP Components for CI 1, 2, 6, 13, 14, 15, 16, 17, 21, 22 and 23 in the period 2017-2019 biennium. DD and DS for CI 19 need to be agreed for integration of existing data under MEDGIS-MAR within IMAP Info System.</p>
<p>Monitoring Protocols drafted for IMAP Common Indicators included in the IMAP pilot Info System; (2018/2019);</p>	<p>MED POL prepared a proposal of the DDs/DSs for CIs 18 and 20 (UNEP/MED WG. 492/8, Annex II) for consideration of the CORMON Pollution meeting (26-28 April 2021). Further to comments received from the participants, the proposal was further improved and finalized by INFO/RAC and MED POL; given that it was not considered by the MED POL Focal Point meeting (July 2021), the</p>
<p>Quality Assurance and Quality Control schemes in place for IMAP Common Indicators included in the IMAP Pilot Info System (2019-2020);</p>	<p>MED POL prepared a proposal of the DDs/DSs for CIs 18 and 20 (UNEP/MED WG. 492/8, Annex II) for consideration of the CORMON Pollution meeting (26-28 April 2021). Further to comments received from the participants, the proposal was further improved and finalized by INFO/RAC and MED POL; given that it was not considered by the MED POL Focal Point meeting (July 2021), the</p>
<p>Quality Assurance and Quality Control schemes expanded to cover all IMAP Common Indicators (2021-2022).</p>	<p>MED POL prepared a proposal of the DDs/DSs for CIs 18 and 20 (UNEP/MED WG. 492/8, Annex II) for consideration of the CORMON Pollution meeting (26-28 April 2021). Further to comments received from the participants, the proposal was further improved and finalized by INFO/RAC and MED POL; given that it was not considered by the MED POL Focal Point meeting (July 2021), the</p>

proposal is included as an Information Document for the attention of the present meeting (UNEP/MED WG.514/Inf.7).

DDs for CIs 3 and 4 for marine mammals and marine turtles have been presented by INFO/RAC for review at the Integrated CORMON meetings (December 2020). They have been further elaborated in 2021 based on the feedback received, and based on the outcomes of a meeting organized by INFO/RAC in April 2021 with ACCOBAMS and SPA/RAC to discuss the harmonization of DSs with the ACCOBAMS Survey Initiative. A revised version of DSs and DDs for CI 3, 4 and 5 for marine mammals and marine turtles, and a first version for CI 3, 4 and 5 for sea birds and monk seals have been reviewed by the CORMON Biodiversity meeting (June 2021), which agreed to further work on these DSs and DDs within the biodiversity OWG and to submit them for adoption at the next CORMON Biodiversity meeting (2022).

Finally, a first draft proposal for DSs and DDs for the Candidate CI 25 (land cover change) is in preparation for the submission to the next Coast & Hydrography CORMON Meeting (October/November 2021, tbc).

### **Monitoring Protocols and Data Quality Assurance and Quality Control**

In accordance with the MAP Programme of Work (PoW) 2020-2021 in the framework of its collaboration with the Marine Environment Studies Laboratory (MESL) of the International Atomic Energy Agency (IAEA), MED POL prepared the Monitoring Guidelines related to IMAP Common Indicators 13, 14, 17, 18 and 20 along with the Monitoring Guidelines related to Analytical Quality Assurance and Reporting Monitoring Data. Following their acceptance by the Integrated CORMON Meetings (1-3 December 2020) and by the CORMON Pollution meeting (26-28 April 2021), these Monitoring Guidelines, composed of 98 specific Protocols, have been submitted for approval of the Meeting of MED POL focal Points (Part II, 6-7 October 2021). These Monitoring Guidelines present coherent manuals to guide technical personnel of IMAP competent laboratories of the Contracting Parties for the implementation of the standardized and harmonized monitoring practices related to the analytical procedures of sampling, sample preservation and transportation, sample preparation and analysis, along with the quality assurance and reporting of monitoring data for IMAP Common Indicators 13, 14, 17, 18 and 20. A Monitoring Guideline/Protocols for Floating Microplastics was also agreed by the CORMON Marine Litter Meeting (30 March 2021) for submission to the Meeting of MED POL Focal Points (Part II, 6-7 October 2021). This guideline aims to guide the technical personnel of the IMAP Pollution competent laboratories for implementation of the standardized and harmonized monitoring practices for IMAP Common Indicator 23. The list of Monitoring Guidelines and Protocols developed by MED POL is presented as Annex I to the present document.

It should be noted that the Guidance Factsheets and Monitoring Protocols were already developed for Common Indicators 1, 2, 3, 4, 5 and 6. The Guidance Factsheets for IMAP Common Indicators 13, 14, 15, 16, 17, 18, 19, 20 and 21 were further updated in 2019, and approved by the 7<sup>th</sup> Meeting of the Ecosystem Approach Coordination Group, along with Guidance Fact Sheets for IMAP Candidate Indicators 25, 26 and 27. The “Revised Guidance Fact Sheet for the IMAP Common Indicator 6 related to Non-Indigenous Species” was further

updated in 2020. It was reviewed by the Integrated CORMON Meetings (December 2020), further discussed by the competent OWG, reviewed by the CORMON Biodiversity meeting, endorsed at the SPA/RAC Focal Points meeting (June 2021), and submitted for approval by the present meeting (UNEP/MED WG.514/9).

As for Biodiversity, and concerning threatened species, marine key habitats and NIS, several guidelines and tools have been developed by SPA/RAC (or with the contribution of SPA/RAC), in line with the IMAP requirements and made available to Contracting Parties through the SPA/RAC website or in hard copies; the most recent ones are:

- Monitoring guidelines to assess cetaceans' distributional range, population abundance and population demographic characteristics
- Guidelines for the long-term monitoring programmes for marine turtles nesting beaches and standardized monitoring methods for nesting beaches, feeding and wintering areas
- Guidelines to standardize methodologies to estimate demographic parameters for marine turtles' populations in the Mediterranean
- Guidelines for monitoring cetaceans
- Guidelines for monitoring Mediterranean monk seal
- Guidelines for monitoring sea birds
- Guidelines for monitoring marine turtles
- Guidelines for monitoring benthic marine habitats and updated reference list of marine habitat types
- Guidelines for Inventorying and Monitoring of Dark Habitats
- Guidance on developing invasive alien species national and sub-regional lists and Guidelines for monitoring NIS
- Common Standards and Guidance on the Disposal of Oil and Oily Mixtures and the Use and Disposal of Drilling Fluids and Cuttings
- Common Standards and Guidelines for Special Restrictions or Conditions for Specially Protected Areas (SPA) within the Framework of the Mediterranean Offshore Action Plan
- Guidelines for the Conduct of Environmental Impact Assessment (EIA)
- Monitoring the incidental catch of vulnerable species in the Mediterranean and Black Sea fisheries – Methodology for data collection.

In line with UNEP/MED WG. 467/13 related to schemes for database Quality and Quality Assurance and Quality Control (QA/QC) of data related to Pollution that was approved at the 7<sup>th</sup> Meeting of the Ecosystem Approach Coordination Group, MED POL is working to propose additional quality controls categories to be built by INFO/RAC into IMAP Pilot Info System. Further assistance for establishment and implementation of QA/QC schemes and categories to be applied into IMAP Info System is planned for 2021-2022 as part of the EU-funded EcAp MED III project.

INFO/RAC, in close cooperation with CU and the other MAP Components and, through a dedicated help desk, has provided continuous technical support to Contracting Parties (CPs) to facilitate understanding, access, and use of the IMAP Pilot Info System functions, and technical assistance to help them in the process of filling-in of DSs and of data submission. In addition, in the biennium 2020-2021, Bilateral Assistance/Training meetings have been organized to provide to the majority of CPs, via videoconference, an organic and structured presentation for monitoring data reporting. More substantial assistance to the countries is planned from INFO/RAC in the upcoming biennium to strengthen



	<p>national capacities for data control and reporting and to increase national capacities to report data into IMAP Info System.</p> <p>The new Proficiency Tests (PTs) were also launched in the second trimester of 2020 for the determination of trace metals and organic contaminants in sediment and biota related to IMAP Common Indicator 17, resulting with the nomination of IMAP competent laboratories from 16 Contracting Parties for participation in this inter-calibration laboratory testing. Given several nominations were received with delay in early September, the communication with nominated laboratories and sending of samples was started with a delay. In addition, administrative biosecurity issues related to shipment of fish samples to laboratories located in the European Union (EU) further delayed realization of PT for determination of trace elements.</p>
<p><b>Milestone 7. Outreach and Visibility</b></p> <p><u>Outputs and Timeline:</u></p> <p>Timeline for data-sharing with regional partners defined (2019-2021);</p> <p>Agreements reached with Regional Partners (2020);</p> <p>Communication and visibility strategy for the 2023 MED QSR developed and agreed (2021);</p> <p>Outreach to key partners is undertaken and relevant meetings held (2019-2020);</p> <p>Communication and visibility strategy for the 2023 MED QSR is implemented (2021-2023);</p> <p>2023 MED QSR published in 2 languages and on line available and presented at COP 23.</p>	<p>Ongoing</p> <p>Outreach to regional partners was supported throughout 2020-2021 through bilateral meetings and exchanges to ensure synergies and collaboration for the development of the 2023 MED QSR.</p> <p>In line with relevant COP Decisions, attention was paid to maximize where appropriate the synergies between IMAP and the European Union Marine Strategy Framework Directive (MSFD) implementation. The Secretariat and MAP components have followed relevant recent developments under the MSFD Working Groups (WG) - in particular, WG on Good Environmental Status, WG on Data, Information and Knowledge Exchange and WG on Good Environmental Status and Technical Groups on Marine Litter, Chemical and Noise.</p> <p>The MED REGION Project was invited to present the main outcomes of the Project at the Integrated CORMON meetings in December 2020, related to critical aspects of IMAP implementation (completion of gaps in monitoring data in the Mediterranean; the support to the development and operational implementation of (sub)regional indicators, lists of elements, threshold values; and towards the support to the development of effective regional measures, with a special focus on biodiversity).</p> <p>An informal meeting was held by the Secretariat with the Contracting Parties that are Member States of the EU in March 2021 to with the objectives to discuss the obligations and requirements of the 2023 MED QSR and MSFD implementation. This consultation reaffirmed the commitment of these Contracting Parties towards data submission required for preparation of the 2023 MED QSR. The Secretariat became better aware of the timelines for MSFD assessment and reporting and other technical issues, and some actions were agreed in this respect to provide technical support accordingly.</p> <p>UNEP/MAP-MED POL representatives participated in the following meetings: Meeting organized by permanent Secretariat of ACCOBAMS within ASI Project; Meetings organized by HCMR within MEDREGION project; meetings organized by EEA within Copernicus and EMODnet Projects, as well as the meetings of MSFD technical bodies as follows: 22nd Meeting of the Working Group on Data, Information and Knowledge Exchange (WG DIKE), March 2020; Drafting Group on Good Environmental Status (DG GES) Workshop on Horizontal Issues, March, 2020; EMODnet-CMEMS Thematic Workshop on Coastal Issues, June 2020; 14th Meeting of the Technical Group on Marine Litter</p>

(TGML), June 2020; 15th Meeting of the MSFD Common Implementation Strategy Technical Group on Underwater Noise (TG-Noise), June 2020; MSFD Expert Network on Contaminants annual (Webex) meeting, April 2020 and Meeting related to deselection of Priority Substances, June 2020; Drafting Group on Good Environmental Status (DG GES) Workshop on Thresholds, September, 2020; 23 Meeting of the WG on GES; MSFD Expert Network on Contaminants Core group: Significant oil spills, June 2020; 16th Meeting of the MSFD Common Implementation Strategy Technical Group on Underwater Noise (TG-Noise), 6-7/27 October 2020; 23<sup>rd</sup> and 24<sup>th</sup> Meetings of the Working Group on GES (October 2020 and April 2021); Workshop on GES related to Sea Turtles, (October 2020); Joint Bluemed-JPI Workshop on “Musing on the concept of Good Environmental Status”, 2-4 December 2020; TAIEX EPPA Online Sub-Regional Workshop on Assistance for the implementation of the Barcelona Convention, February and May 2021; TAIEX EPPA Online Workshops on MPAs management (20-21 April 2021); Training for Contaminants organized in collaboration of JRC/DG on Contaminants and Swedish Env Agency (February - April 2021); TG ML (June/September 2020; June 2021); the Informal Meeting of the EU Water and Marine Directors, 14-15 June 2021.

UNEP/MAP (through PAP/RAC) and EEA invited jointly Morocco and Tunisia to prepare a Feasibility Study to implement Land cover change indicator (EO8) based on Copernicus Land Monitoring service (CMLS) in collaboration with the Copernicus Marine Environment Monitoring Service (CMEMS) that may also provide info related to EO5 and EO9 of IMAP or relevant descriptors of MSFD. Technical details were discussed so that the product can be used by both organisations and contacts with relevant focal points were coordinated. Similar cooperation is expecting for the implementation of GEF Programme projects.

In line with the Naples Ministerial Declaration calling for bold action to protect Mediterranean ecosystems, including through the enhancement of a regional science-policy interface enabling the articulation of evidence-based sustainable development policies, the Secretariat, in close collaboration with the Italian Oceanographic Commission, the IOC-UNESCO and the European Commission, supported the organization of the Regional Workshop “The Mediterranean Sea We Need for the Future We Want” that was held from 21 to 23 January 2020, in Venice, Italy, in the framework of the preparations for the United Nations Decade of Ocean Science for Sustainable Development 2021-2030 (Decade). It was an excellent opportunity to connect numerous institutions and initiatives contributing to strengthened marine environment knowledge and science in the Mediterranean region, as well as to encourage future research partnerships and collaboration in the region.

As a follow up to Mediterranean Regional Workshop, the strategic orientations and related initial set of actions will be reviewed by the present meeting (UNEP/MED WG.482/26). It capitalizes on information from two sources: (a) SPI recommendations to support IMAP implementation produced under the ECAP MED II Project; and (b) Implementation Plan on the UN Decade Ocean Science. These re-confirm the commitment of UNEP/MAP to the objectives of the Implementation Plan of United Nations Decade on Ocean Science for Sustainable Development for period 2021 – 2030, by supporting knowledge management at regional level, including through the policy and science interface and strengthening of related partnership modalities. Furthermore, UNEP/MAP-MED POL contributed to the preparation of the SciNMeet Programme for Mediterranean that was submitted for review of the IOC, as well as to the Med

	<p>Paper within the Ocean Decade Community White Papers (CWPs) on the Global South at Ocean and Coastal Research.</p> <p>The 2023 MED QSR Communication and Visibility Strategy has been prepared in the context of the EU-funded EcAp MED III Project, and presented for endorsement at the present meeting (UNEP/MED WG.514/6). A timeline for implementation of activities related to outreach, partnership development and communication and visibility for the 2023 MED QSR are defined as part of the workplan of the EU-funded EcAp MED III project. To this respect, a meeting is planned for August/September 2021 to actively engage partners from scientific projects and institutions, aiming to clarify their potential contribution to 2023 MED QSR and to establish a Partnership Plan and Timeline for regional data sharing, which would integrate the data to be submitted by Contracting Parties for the preparation of the 2023 MED QSR.</p>
<p><b>Milestone 8. Effective regional collaboration</b></p> <p><u>Outputs and Timeline:</u></p> <p>CORMON meetings are held (minimum 1/year/cluster between 2019-2022);</p> <p>Integrated CORMON meetings are held (minimum 1/biennium 2020, 2022);</p> <p>Ecosystem Approach Coordination Group meetings are held (minimum 1/year between 2019-2023);</p> <p>Sub-regional expert groups to address monitoring and assessment sub-regional specifics, including scales of assessment products and their integration, are held (minimum 1/biennium for all 4 sub-regions in integrated manner, for all clusters);</p> <p>Online expert groups are held for each cluster, to ensure continuous work between CORMON meetings (to be re-</p>	<p>Ongoing</p> <p>The implementation of the 2023 MED QSR Roadmap is progressing in coordination with the Contracting Parties and through the Ecosystem Approach Governance Framework.</p> <p>Progress in the implementation of IMAP and the 2023 MED QSR Roadmap by all MAP Components is regularly reviewed by the EcAp Task Force which meets virtually on a monthly basis. The EcAp Task Force members keep updated monitoring tools on the nomination of IMAP users, submission of monitoring data in the IMAP Info System, and the work under regional assignments, which enable the Secretariat to identify challenges and take rectifying actions when needed. In this respect, the relevant MAP Components contacted again in September 2020 their Focal Points which had not yet formally nominated their national IMAP users. Monitoring data submitted during the testing phase of the IMAP Pilot Info System have been re-uploaded by INFO/RAC with an indication of “testing data”, requesting the relevant Contracting Parties to validate them and proceed to the official release into the system. The re-establishment and scope of IMAP online working groups is expected to be operationalized through the CORMON meetings discussion.</p> <p>The Integrated CORMON Meetings, held via videoconference on 1-3 December 2020, were a key milestone in the QSR Roadmap implementation. They aimed to: boost the implementation of National IMAPs, take stock of the status of implementation of the 2023 MED QSR Roadmap and review the elements for the development and structure of the 2023 MED QSR; provide information on, and launch, the new EU-funded projects supporting IMAP implementation (i.e. EcAp MED III, Marine Litter MED II, and IMAP MPA); address cross-cutting issues related to IMAP implementation and share related best practices; and recommend ways and means to strengthen the Science-Policy Interface (SPI) in the Mediterranean in support of IMAP implementation.</p> <p>Based on the feedback received by the participants on the work and technical documents presented, work started immediately after the meeting to further revise and prepare them for the thematic CORMON meetings (held in Spring 2021), in order to further advance the work under the respective IMAP Clusters.</p> <p>The CORMON <b>Marine Litter</b> meeting was held on 30 March 2021 via videoconference, with the following aims:</p>

<p>established in CORMONs in 2019);</p> <p>Bilateral meetings on MoU implementation are held, new MoUs are considered and partnerships with key partners are further strengthened;</p> <p>Progress reports are submitted to the meetings of the Bureau of the Contracting Parties, the meetings of the MAP Focal Points and the COPs (2019-2023) for guidance and approval as appropriate.</p>	<p>a) To review the regional operational strategy for monitoring IMAP Candidate Indicator 24;</p> <p>b) To address the interrelation of pressures impacts of marine litter and the status of marine ecosystem components; and</p> <p>c) To analyze the potential complementarities and synergies between IMAP and the European Commission new GES Decision (2017/848/EU) for marine litter.</p> <p>The CORMON <b>Pollution</b> meeting was held on 26-28 April 2021, via videoconference, with the aim to review and approve:</p> <p>a) the monitoring guidelines for CI 18, the monitoring guidelines/protocols for Quality Assurance and Reporting of Monitoring Data for CI 13, 14, 17, 18 and 20;</p> <p>b) the state of play of inter-laboratory testing and good laboratory practice related to CI 5 and 9;</p> <p>c) the integration and aggregation rules for EO5, 9, and 10; and the assessment criteria for contaminants and nutrients.</p> <p>The CORMON <b>Biodiversity</b> meeting was held on 10-11 June 2021, via videoconference, with the aim to review and agree on the monitoring protocols of benthic habitats, discuss the scale of monitoring, assessment criteria, thresholds and baseline values of the CIs on Biodiversity (i.e. CI 3,4,5 and 6) as well as the comparison analysis between the IMAP and the new EU GES Decision, and the methodological approach for mapping the interrelations between Pressures-Impacts and the status of marine ecosystem components for the Biodiversity cluster of IMAP.</p> <p>Finally, the CORMON <b>Coast &amp; Hydrography</b> meeting will be held on October/November 2021 (tbc), with the aim to present the Assessment criteria and the Guiding document for the application of the assessment criteria for CI 16, the methodology for baseline sub-regional assessment of CI 15, and DD and DS for the candidate CI 25.</p> <p>The calendar of key EcAp and QSR Roadmap governance meetings, supported through the UNEP/MAP PoW 2020-2021 and EcAp MED III project, is presented in Section 2.</p> <p>Online Working Groups (OWGs) were re-established at the Integrated CORMON Meetings (December 2020), to provide important scientific feedback and technical support to the IMAP implementation at regional/sub-regional level, in particular on the aspects related to development of methodologies, assessment, scales, integration, protocols and guidelines in line with the approved 2020-2021 Programme of Work, taking into account the need to ensure in these groups a balanced representation of the Contracting Parties. Accordingly, the following OWGs were re-established and made operational at the beginning of 2021: marine mammals, marine turtles, Non-Indigenous Species (NIS), and habitats for the Biodiversity and Fisheries Cluster of IMAP; and contaminants, eutrophication, and marine litter for the Pollution and Marine Litter Cluster of IMAP. They worked on the preparation of proposals of technical documents for submission to the respective Cluster CORMON Meetings, held in March-June 2021.</p>
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## **2. Way forward to 2023 MED QSR: analysis of gaps, concrete requirements and deadlines of output delivery**

### **a) Overall analysis of gaps and needs**

4. The 2017 MED QSR identified several knowledge gaps and provided recommendations on key directions to address in order to deliver a fully data-based 2023 MED QSR:

#### **General directions:**

- Harmonize and standardize monitoring and assessment methods.
- Improve availability and ensure long time series of quality assured data to monitor the trends in the status of the marine environment.
- Improve availability of the synchronized datasets for marine environment state assessment, including use of data stored in other databases were some of the Mediterranean countries regularly contribute.
- Improve data accessibility with the view to improve knowledge on the Mediterranean marine environment and ensure that Info-MAP System is operational and continuously upgraded, to accommodate data submissions for all the IMAP Common Indicators.

#### **Biodiversity:**

- Improve knowledge on distributional range, extent and condition of habitats, as well as on the pressures affecting them, their spatial distribution and potential cumulative effects, leading to structured data-led assessments of environmental status of the Mediterranean's marine habitats.
- Define the reference state of habitats and species as well as a target threshold value to achieve at the national and sub-regional levels.
- Improve information on distribution, population abundance and demographic characteristics of key species (marine birds, mammals, reptiles, fish and cephalopods) and on the condition of their habitats, as well as on the pressures affecting them, leading to structured data-led assessments of environmental status of the Mediterranean's marine species.
- Work to further improve the develop assessment criteria, when feasible, for those habitats and species based on adequate data availability.
- Develop a specific roadmap, in line with Decision IG.20/4, for the upcoming CORMONs to discuss, on how to further develop Ecological Objectives, which are currently not part of IMAP, namely Ecological Objective 4 “Food webs” and Ecological objective 6 “Sea-floor integrity”.
- Better estimate the trends in rates of introduction, abundance and distribution of non-indigenous species, through elaboration of regular dedicated monitoring.
- Provide for sound conclusions with regard to impacts of non-indigenous species, based on experiments or ecological modelling.

#### **Coast and Hydrography:**

- Enhance human and technical capacities for monitoring and assessment of the coast and hydrography.
- Fill the knowledge and scientific gaps (e.g., impacts of hydrographic alterations to habitats).
- Further develop the indicator on land use change with the view to be included in the Common Indicators list.

#### **Pollution and Litter:**

- Review the scope of the biological effects monitoring programmes and confirm the added value of biomarkers in long-term marine monitoring as ‘early warning’ systems.
- Further develop harmonized monitoring protocols, risk-based approaches, analytical testing and assessment methodologies for monitoring levels of the contaminants in commonly consumed sea food.
- Test new research-proved tools for monitoring toxic effects.

- Develop region-wide harmonized criteria for reference condition and threshold/boundaries values for key nutrients in water column, taking account of available standards for coastal waters.
- Develop assessment criteria for integrated chemical and biological assessment methods.
- Continue the work on underwater noise and its impact on marine fauna, in close collaboration with the relevant bodies, especially ACCOBAMS.
- Improve knowledge on Emerging Chemicals.
- Ensure testing of the Background Assessment Criteria (BACs) and Environmental Assessment Criteria (EACs) and thresholds application on a trial basis in interested countries and regional and sub-regional level.
- Have application of the BACs and EACs as an evolving process to be updated on a continuous basis, their further update and refinement need to be ensured as to take into account new available data, as well as sub-regional specificities in the Mediterranean basins.
- Sea-based sources of litter should be further analyzed and specified, given the fact that Mediterranean is a global hotspot for maritime transport and sea-based tourism such as cruises.
- Follow up development of harmonized and standardized monitoring and assessment methods for marine litter and its impacts, including through active participation of MAP in relevant processes such as the ongoing work of MSFD Technical Group on Marine Litter. Such methods would facilitate and be used for monitoring the implementation of the Regional Action Plan against marine litter and of achievement of the 20% reduction target (by 2024) established by COP 19 Decision on marine litter [including enhancement of the identification and evaluation of marine litter accumulation (stranding fluxes, loads and linkage with specific sources) and hotspots using GIS and mapping systems and modelling tools, as well understanding of transport dynamics and accumulation zones.

5. Based on the above, the Secretariat developed in 2020 an Operational Plan for the implementation of the 2023 MED QSR Roadmap (hereinafter referred to as QSR Operational Plan). It includes per each Milestone/Outputs of the MED 2023 QSR Roadmap concrete activities supported by the UNEP/MAP Programme of Work and externally funded Projects namely EcAp MED III, IMAP MPA, ML MED II, the timeline of which is fully aligned with 2023 MED QSR Roadmap ensuring a strengthened action at country, sub regional and regional levels and full complementarities.

6. The QSR Operational Plan is attached as Information document to the present Meeting (UNEP/MED WG.514/Inf.6).

7. Tables 2 and 3 below provide a provisional calendar of key QSR Roadmap implementation meetings and a provisional calendar for data reporting and assessment for the 2023 MED QSR.

**Table 2. Calendar of key QSR Roadmap implementation meetings.**

Meeting	Date
Integrated and Thematic CORMON meetings	1-3 December 2020 (videoconference)
CORMON Marine Litter meeting	30 March 2021 (videoconference)
CORMON Pollution meeting	26-28 April 2021 (videoconference)
CORMON Biodiversity meeting	10-11 June 2021 (videoconference)
8 <sup>th</sup> Ecosystem Approach Coordination Group Meeting	9 September 2021 (videoconference)
CORMON Coast and Hydrography meeting	October/November 2021
22 <sup>nd</sup> Meeting of the Contracting Parties to the Barcelona Convention	December 2021

Thematic/cluster CORMON meetings and back-to-back sub-regional meetings	February/April 2022
Integrated CORMON meeting and back-to-back sub-regional/SPI meetings	March 2023
9 <sup>th</sup> Ecosystem Approach Coordination Group Meeting	September 2023
23 <sup>rd</sup> Meeting of the Contracting Parties to the Barcelona Convention	December 2023

**Table 3. Provisional calendar for data reporting and assessment for the 2023 MED QSR.**

<b>Requirements</b>	<b>Deadlines</b>
Reporting in the IMAP Pilot Info System of data sets for CI 1, 2, 6, 13, 14, 15, 16, 17, 21, 22 and 23 monitored prior to 2020 by the CPs	30 September 2020 (Reported)
Reporting in the IMAP Pilot Info System of data sets for CI 1, 2, 13, 14, 17, 21, 22 and 23 monitored in 2020 by the CPs	31 January 2021 (Partial reporting)
Reporting in the IMAP Pilot Info System of 2nd data sets for all available CI, as appropriate (EO1, EO5, EO9, EO10)	30 September 2021 (Partial reporting)
First draft national assessment factsheets prepared for all available CI by the Beneficiary CPs of the EU-funded EcAp MED III Project	31 October 2021 (to be postponed)
First draft assessment factsheets for EO3 common indicators prepared by GFCM	February 2022
Baseline sub-regional assessment conducted for CI 15	February 2022
Reporting in the IMAP Pilot Info System of CI 6 data	30 June 2022
Reporting in the IMAP Pilot Info System of CI 16 data	31 August 2022
Reporting in the IMAP Pilot Info System of 3 <sup>rd</sup> data sets for all available CI, as appropriate (EO1, EO5, EO9, EO10)	30 September 2022
Data collection from complementary sources finalized for non-mandatory indicators and those not included in the IMAP Pilot Info System (EO4, EO6, CCI 24, 26, 27 as applicable)	30 September 2022
National assessment factsheets updated for all available CI by the Beneficiary CPs of the EU-funded EcAp MED III Project	October-December 2022
Assessment factsheets updated for EO3 by GFCM	October-December 2022

**Annex I**

**Monitoring guidelines and protocols developed by MED POL in 2020-2021**



The following Monitoring Guidelines and Protocols have been developed by MED POL during the period 2020/2021:

- Monitoring Guidelines/Protocols for Sampling and Sample Preservation of Seawater for IMAP Common Indicators 13 and 14: Concentration of Key Nutrients and Chlorophyll a – including the following Protocols:
  - Protocol for the use of a single water sampler attached to a line
  - Protocol for the use of a water sampler attached to a rosette
  - Technical note for the sample preservation of seawater for the determination of hydrographic parameter and the measurement of concentration of key nutrients and chlorophyll a
  - Protocol for the sample preservation of seawater for the determination of salinity
  - Protocol for the sample preservation of seawater for the determination of concentration of nutrients
  - Protocol for the sample preservation of seawater for the determination of concentration of chlorophyll a
  
- Monitoring Guidelines/Protocols for Determination of Hydrographic Physical Parameters – including the following Protocols:
  - Protocol for determination of temperature and salinity using CTD
  - Protocols for the determination of temperature using reversing thermometers
  - Protocols for sample preparation and analysis of salinity using bench salinometer
  - Protocol for measuring Secchi depth
  
- Monitoring Guidelines/Protocols for Determination of Hydrographic Chemical Parameters – including the following Protocols:
  - Protocol for sample preparation and analysis of dissolved oxygen in seawater by Winkler Method
  - Protocol for sample preparation and analysis of pH using a potentiometric method
  - Protocol for sample preparation and analysis of pH using spectrophotometric method
  
- Monitoring Guidelines/Protocols for Determination of Concentration of Key Nutrients in Seawater – Nitrogen Compounds – including the following protocols:
  - Protocol for manual colorimetric determination of concentration of nitrite
  - Protocol for automated colorimetric determination of concentration of nitrite
  - Protocol for manual colorimetric determination of concentration of nitrate
  - Protocol for automated colorimetric determination of concentration of nitrate
  - Protocol for manual colorimetric determination of concentration of ammonium
  - Protocol for automated colorimetric determination of concentration of ammonium
  
- Monitoring Guidelines/Protocols for Determination of Concentration of Key Nutrients in Seawater – Phosphorous and Silica Compounds – including the following protocols:
  - Protocol for manual colorimetric determination of concentration of orthophosphate
  - Protocol for automated colorimetric determination of concentration of orthophosphate
  - Protocol for manual colorimetric determination of concentration of orthosilicate
  - Protocol for automated colorimetric determination of concentration of orthosilicate
  - Protocol for preparation of samples for a combined determination of concentration of total nitrogen and total phosphorus
  - Protocol for combined manual colorimetric determination of concentration of total nitrogen and total phosphorus

- Protocol for the combined automated colorimetric determination of concentration of total nitrogen and total phosphorous
- Monitoring Guidelines/Protocols for Determination of Chlorophyll a in Seawater – including the following Protocols:
  - Protocol for sample pretreatment for determination of concentration of chlorophyll a
  - Protocol for spectrophotometric determination of concentration of chlorophyll a
  - Protocol for fluorometric determination of concentration of chlorophyll a
  - Protocol for HPLC determination of concentration of chlorophyll a
- Monitoring Guidelines/Protocols for Sampling and Sample Preservation of Sediment for IMAP Common Indicator 17: Heavy and Trace Elements and Organic Contaminants – including the following Protocols:
  - Protocol for the use of a grab for collecting sediments
  - Protocol for the use of a box corer for collecting sediments
  - Protocol for the use of a multi-corer for collecting sediments
  - Protocol for the use of a gravity corer
  - Protocol for hand collection of sediment with a shovel/scoop and a hand-held corer
  - Protocol for the treatment of sediment sample prior to analysis
- Monitoring Guidelines/Protocols for Sample Preparation and Analysis of Sediment for IMAP Common Indicator 17: Heavy and Trace Elements and Organic Contaminants – including the following Protocols:
  - Protocol for sediment digestion using nitric acid and hydrofluoric acid
  - Protocol for the analysis of heavy metals with Flame AAS
  - Protocol for the analysis of heavy metals with GF-AAS
  - Protocol for the analysis of heavy metals with ICP-MS
  - Protocol for the analysis of Total Mercury with solid Hg analyser
  - Protocol for the normalization of heavy metal concentrations using Al
  - Protocol for the analysis of organochlorine pesticides and PCBs in marine sediments using GC-ECD
  - Protocol for the analysis of organochlorine pesticides and PCBs in sediments using GC-MS
  - Protocol for the analysis of PAHs in sediments using GC-FID
  - Protocol for the analysis of PAHs in sediments using GC-MS
  - Protocol for the normalization of organic contaminants using Total Organic Carbon (TOC)
- Monitoring Guidelines/Protocols for Sampling and Sample Preservation of Marine Biota for IMAP Common Indicator 17: Heavy and Trace Elements and Organic Contaminants – including the following Protocols:
  - Protocol for the collection of fish for heavy metal and organic contaminants analysis
  - Protocol for the collection of bivalves for heavy metal and organic contaminants analysis
  - Protocol for the dissection of fish to collect muscle and liver
  - Protocol for the dissection of bivalves
  - Protocol for the treatment of biota samples prior to analysis of heavy metals
  - Protocol for the treatment of biota samples prior to analysis of organic contaminants
- Monitoring Guidelines/Protocols for Sample Preparation and Analysis of Marine Biota for IMAP Common Indicator 17: Heavy and Trace Elements and Organic Contaminants – including the following Protocols:

- Protocol for biota tissues digestion using nitric acid
  - Protocol for the analysis of heavy metals with Flame AAS
  - Protocol for the analysis of heavy metals with GF-AAS
  - Protocol for the analysis of heavy metals with ICP-MS
  - Protocol for the analysis of Total Hg in samples of marine origin by Cold Vapour Atomic Absorption Spectrometry (CV-AAS)
  - Protocol for the analysis of organochlorine pesticides and PCBs in marine biota using GC-ECD
  - Protocol for the analysis of organochlorine pesticides and PCBs in marine biota using GC-MS
  - Protocol for the analysis of PAHs in marine biota using GC-FID
  - Protocol for the analysis of PAHs in marine biota using GC-MS
  - Protocol for the normalization of organic contaminants concentrations using the lipid content
- Monitoring Guidelines/Protocols for Sampling and Sample Preservation of Seawater for IMAP Common Indicator 17: Heavy and Trace Elements and Organic Contaminants – including the following Protocols:
    - Protocol for seawater sampling for heavy metal analysis
    - Protocol for seawater filtration for heavy metals analysis
    - Protocol for the on-board storing of seawater samples for heavy metals analysis
    - Protocol for seawater sampling for organic contaminants analysis
    - Protocol for seawater filtration for organic contaminants analysis
    - Protocol for on-board storage of seawater samples for organic contaminants analysis
- Monitoring Guidelines/Protocols for Sample Preparation and Analysis of Seawater for IMAP Common Indicator 17: Heavy and Trace Elements and Organic Contaminants – including the following Protocols:
    - Protocol for SPM digestion using nitric acid and hydrofluoric acid
    - Protocol for the analysis of heavy metals in seawater with GF-AAS
    - Protocol for the analysis of heavy metals in seawater with ICP-MS
    - Protocol for the analysis of Total Mercury in seawater with CV-AFS
    - Protocol for the analysis of organochlorine pesticides and PCBs in seawater using GC-ECD or GC-MS
    - Protocol for the analysis of PAHs in seawater using GC-FID or GC-MS
- Monitoring Guidelines/Protocols for Sampling and Sample Preservation of Sea Food for IMAP Common Indicator 20: Heavy and Trace Elements and Organic Contaminants – including the following Protocols:
    - Protocol for the collection of fish, crustaceans, cephalopods and bivalves for heavy metal and organic contaminants analysis
    - Protocol for dissection of fish to collect the edible part for analysis
    - Protocol for dissection of bivalves to collect the edible part for analysis (whole body)
    - Protocol for dissection of crustaceans to collect the edible part for analysis
    - Protocol for dissection of cephalopods to collect the edible part for analysis (mantle and head)
    - Protocol for the treatment of seafood samples prior to heavy metal analysis
    - Protocol for the treatment of seafood samples prior to analysis for organic contaminants

- Monitoring Guidelines/Protocols for Sample Preparation and Analysis of Sea Food for IMAP Common Indicator 20: Heavy and Trace Elements and Organic Contaminants – including the following Protocols:
  - Protocol for biota tissues digestion using nitric acid
  - Protocol for the analysis of heavy metals with Flame AAS
  - Protocol for the analysis of heavy metals with GF-AAS
  - Protocol for the analysis of heavy metals with ICP-MS
  - Protocol for the analysis of Total Hg in samples of marine origin by Cold Vapour Atomic Absorption Spectrometry (CV-AAS)
  - Protocol for the analysis of dioxins and dioxin-like PCBs using GC-HRMS
  - Protocol for the analysis of non dioxin-like PCBs in seafood using GC-ECD
  - Protocol for the analysis of non dioxin-like PCBs in seafood using GC-MS
  - Protocol for the analysis of Benzo(a)pyrene (PAH) in seafood using GC-FID
  - Protocol for the analysis of Benzo(a)pyrene (PAHs) in seafood using GC-MS
  
- Monitoring Guidelines/Protocols for Floating Microplastics
  
- Monitoring Guidelines/Protocols for Sampling and Sample Preservation of Marine Molluscs (such as *Mytilus* sp.) and Fish (such as *Mullus barbatus*) for IMAP Common Indicator 18 – including the following Protocols:
  - Protocol for the collection and transport of marine molluscs (such as *Mytilus* sp.)
  - Protocol for the dissection and storage of tissue samples from marine molluscs (such as *Mytilus* sp.)
  - Protocol for the collection of marine fish (*Mullus barbatus*)
  - Protocol for the dissection and storage of tissue samples from marine fish (*Mullus barbatus*)
  
- Monitoring Guidelines/Protocols for Biomarker Analysis of Marine Molluscs (such as *Mytilus* sp.) and Fish (such as *Mullus barbatus*) for IMAP Common Indicator 18 – Analysis of Lysosomal membrane stability (LMS) – including the following Protocols:
  - Protocol for tissue section preparation, enzymatic determination of lysosomal membrane stability (LMS) on cryostat sections in mussel digestive gland and fish liver and evaluation and interpretation of the results
  - Protocol for in vivo determination of lysosomal membrane stability (LMS) in mussel haemocytes and evaluation and interpretation of the results
  
- Monitoring Guidelines/Protocols for Biomarker Analysis of Marine Molluscs (such as *Mytilus* sp.) and Fish (such as *Mullus barbatus*) for IMAP Common Indicator 18 – Analysis of and micronuclei (MNi) frequency, Acetylcholinesterase (AChE) activity and Stress on Stress (SoS) – including the following Protocols:
  - Protocol for the analysis of micronuclei (MNi) frequency in fish blood cells and evaluation and interpretation of the results
  - Protocol for the analysis of micronuclei (MNi) frequency in mussel gill cells and haemocytes and evaluation and interpretation of the results
  - Protocol for tissue homogenate preparation and for enzymatic determination of AChE activity, as well as evaluation and interpretation of the results
  - Protocol for the evaluation of SoS and interpretation of the results
  
- Monitoring Guidelines/Protocols for Analytical Quality Assurance for IMAP Common Indicators 13, 14, 17, 18 and 20 – including the following Protocols:
  - Protocol on QA in sample collection

- Protocol on QA in sample processing
- Protocol on QA in determination of hydrographical parameters, analytical determinations of dissolved oxygen, pH nutrients, chlorophyll a and contaminants in relevant matrices, biomarker evaluation and environmental analysis
- Protocol on QA in reporting of data