UNEP/MAP WG.549/4

27 February 2023
Original: English

Meeting of the Ecosystem Approach Correspondence Group on Monitoring (CORMON) Coast and Hydrography

Marseille, 28-29 March 2023

Agenda item 4

Solutions to strengthen Science Policy Interface (SPI) - The case of CIs 1 and 15 in Morocco

UNEP/MAP Plan Bleu
Marseille, 2023

Note by the Secretariat

The present working document is gathering the most important information on how to strengthen and sustain a SPI to support IMAP implementation in Morocco with a specific focus with regards to IMAP Common Indicator 15 "Location and extent of the habitats impacted directly by hydrographic alterations (EO7) to also feed the assessment of EO1 on habitat extent".

Previous studies and works have been capitalized to deliver now some practical solutions to strengthen and sustain the Science-Policy Interface mechanism to support IMAP CI 15 implementation in Morocco.

Two tables summarize current scientific gaps and policy needs with regards to CI 15 monitoring and some solutions to overcome difficulties:

1- Integration of reflections and findings about difficulties and possible solutions in assessing CI 15: scientific and technical difficulties and gaps.

2- Reflections and findings about difficulties and possible solutions in assessing CI 15: policy, governance, administrative and communication difficulties and gaps.

A third table showcases a SPI framework for action in Morocco with focus on IMAP CI 15 implementation.

Participants are invited to provide their feedback to confirm or not the content of the three tables and complement the potential lack of information.

Authors

Consultants for Plan Bleu:

Martina Bocci and Emiliano Ramieri, t-ELIKA – Venice, Italy

Nadia Mhammdi, Mohammed V university of Rabat / Institut Scientifique, Morocco

Reviewer

Marko Prem, UN Environment / MAP / PAP/RAC Deputy Director

Coordinator of the study

Antoine Lafitte, UN Environment / MAP / Plan Bleu's head of the Observatory

Contents

1 Preface

This deliverable is prepared in the context of the activity "Provide practical solutions to strengthen and sustain Science-Policy interface (SPI) mechanism to support IMAP implementation in Morocco". The activity represents a country-level focus of a policy-oriented study already conducted at regional level (Bocci and Ramieri, 2019). The EcAp Coordination Group (in its meeting in Athens, in September 2019) recognized the relevance of the recommendations provided by that study and called for their implementation in a more concrete manner in one pilot country.

Within the same activity, another report has been recently produced (Mhammdi et al., 2022) which provides insights on SPI frameworks and processes in Morocco, including identification of scientific centres/laboratories and institutions that follow the implementation of environmental policies (with particular focus on coastal and marine ones, and specifically on those data relevant for CI 15).

The present report compiles with a synthetic approach the reflections on how to strengthen and sustain an SPI to support IMAP implementation at national level in Morocco, with particular regard to CI 15, identified in recent studies and projects. This report is based on the following sources:

- the Guidance factsheet for CI 15 (UNEP/MAP, 2019)
- the results of the regional study on SPI for IMAP (Bocci and Ramieri, 2019)
- the report on Coastal and Hydrography related indicators in the IMAP-MPA project countries (Algeria, Egypt, Israel, Lebanon, Libya, Morocco and Tunisia) (Brivois, 2022)
- the report on the baseline information for CI 15 in Morocco (Menioui, 2022)
- the previous report prepared in the framework of this activity (Mhammdi et al., 2022).

The present report highlights where scientific gaps and policy needs exist and where are the difficulties to comply with the requirements of the Guidance Factsheet for CI 15. Some of these SPI gaps go beyond Morocco and are of general interest at regional level. In relation to this, the report also makes reference to some experiences of implementation of the Descriptor 7 (analogue to CI 15) under the Marine Strategy Framework Directive.

2 Short background on CI 15

Common Indicator 15 "Location and extent of the habitats impacted directly by hydrographic alterations" aims at assessing benthic habitats that are affected by permanent alterations of hydrographical conditions due to human-made structures. This indicator concerns mainly benthic habitats and has a strong link with Ecological Objective 1 "Biological diversity is maintained. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions."
This indicator is expressed in km² of each habitat type directly impacted by hydrographic alterations (induced by man-made structure) and as a proportion (percentage) of the total extent of the habitat type in the assessment area.

The Guidance factsheet for CI 15 indicates the methodology for the assessment that should encompasses elaboration on:

i. Mapping of area where human activities may cause permanent alterations of hydrographical conditions (using i.e. existing environmental impact assessment (EIA) , Strategic Environmental Assessment (SEA) and Maritime Spatial Planning -MSP); and

ii. Mapping of habitats of interest in this area of hydrographical changes; and

iii. Intersection of the spatial map of the areas of hydrographical changes with spatial maps of habitats to determine the areas of individual habitat types that are impacted by hydrographical changes.

As indicated in the Guidance factsheet, in case of insufficient data and resources and if the implementation of hydrodynamic modeling is not feasible, a simplified approach for assessing hydrographical alterations is proposed:

- assessment of physical loss induced by the structure itself (on sea floor and in water column)
  => from EIA or planning documents
- assessment of permanent changes to the seabed due to human activities (related to the construction and the use of the structure)
  => from EIA or interviews on-site
- assessment of hydrographical changes induced by the structure in the surrounding area
  => from EIA or other available sources of information concerning similar or close sites

If the assessment of hydrographic alterations presents a high level of uncertainty, a risk-based approach[1] can be used to identify habitats that are most sensitive to expected alterations (references are provided in the Guidance factsheet).

As highlighted by Brivois (2022), CI 15 is almost equivalent to the criteria D7C2 of the EU Marine Strategy Framework Directive "Spatial extent of each benthic habitat type adversely affected (physical and hydrographical characteristics and associated biological communities) due to permanent alteration of hydrographical conditions" that is derived from the assessment of criteria D7C1 "Spatial extent and distribution of permanent alteration of hydrographical conditions (e.g. changes in wave action, currents, salinity, temperature) to the seabed and water column, associate" (Decision EU 2017/848). But whereas criteria D7C1 (and D7C2) consider all anthropic activities that could induce permanent changes in hydrographic conditions (man-made structures, granulate extraction, dredging …). CI 15 considers only human-made structures (coastal and off-shore). This is because there is another indicator that deals with the sea-floor integrity. Guidance Factsheet for it are under development.

3 Assessing CI 15: difficulties and possible solutions

Based on the sources indicated in the Preface, difficulties and gaps in implementing the assessment of CI 15 are compiled, as well as possible solutions and ways forward.

Findings from source documents are summarised in the following tables. Table 1 and Table 2 focus on scientific/technical elements and on policy elements, respectively. Issues belonging to these two categories are strictly interconnected and should be considered jointly to identify a strategy in order to reach improvements in the assessment of this indicator.

Table 1 on scientific and technical collates elements from:

- the Guidance factsheet for CI 15 (relevant at regional level and referenced as [1] in the Table – column 1 and 2),
- the report on Coastal and Hydrography related indicators in the IMAP-MPA project countries (Brivois, 2022) (relevant for Algeria, Egypt, Israel, Lebanon, Libya, Morocco and Tunisia and referenced as [2] in the Table - column 3 and 4), and
- the report prepared from the SPI pilot site activity in Morocco (Mhammdi et al., 2022) (relevant for Morocco and referenced as [3] in the Table - column 5 and 6)

[1] Workshop on Science Policy Interface (SPI) strengthening for the implementation of the UNEP/MAP IMAP in relation to Marine Litter, Biodiversity & fisheries, Hydrography, with a focus on the Risk Based Approach (RBA) for monitoring

In addition, elements from the report on the baseline information for CI 15 in Morocco (Menioui, 2022) are considered (and they are referenced as [4] in the Table).

Table 2 includes policy, governance, administrative and communication issues and includes findings from the Moroccan pilot site activity only (source reference [3] - see above).

In addition, considerations are integrated from the reports on Descriptor 7 of the Marine Strategy Framework Directive from Italy (MSFD Report Italy D8, 2018) of Spain (MSFD D8 Report Spain, 2019) and Malta (MSFD D8 Report Malta, 2020),

To move forward towards improving capacity of assessing CI 15, the Moroccan national level findings and reflections on solutions and ways forward are reorganised in Table 3 and presented according to the *recommended framework for action on a SPI to sustain IMAP implementation* (Bocci and Ramieri, 2019) (referenced as [5] in Table 3). Such a framework clusters the actions to be undertaken into three categories 1. Structure; 2. Strengthen; and 3. Sustain, in view of promoting the implementation of a SPI for IMAP and GES achievement in the Mediterranean. Since it represents a reorganisation of findings from the pilot site, elements in Table 3 duplicate some of the elements in Table 1 and 2.

Table 1 - Integration of reflections and findings about difficulties and possible solutions in assessing CI 15: scientific and technical difficulties and gaps.

Scientific and technical difficulties and gaps and related solutions, opportunities and ways forward					
Known gaps and uncertainties in the Mediterranean [1]	**Solutions, opportunities, ways forward [1]**	**IMAP-MPA project countries [2]**	**Solutions, opportunities, ways forward [2]**	**Morocco specificities [3]**	**Solutions, opportunities, ways forward [3]**
Source: Guidance factsheet for CI 15		*Source: Report on Coastal and Hydrography related indicators in the IMAP-MPA project countries (Brivois, 2022)*		*Source: SPI pilot site activity in Morocco (Mhammdi et al., 2022)*	
Lack of coherence in definitions, standard approaches in the development and application of indicators and in the assessment of impacts, together with lack of methodological standards. Lack of knowledge and understanding on the link between physical pressures and biological impacts and on the cumulative impacts. Lack of data on physical characteristics in the Mediterranean Sea (bathymetric data, seafloor topography, current velocity, wave exposure, turbidity, salinity, temperature, etc.). _____	A global and clear inventory of existing and available data in the Mediterranean Sea should be done. In case of no sufficient data, the use of assessment methods needing less data (empirical formulae, scientific expertise from natural and social sciences, comparison with similar sites) should be considered, as well as acquisition/monitoring of missing data, promoting regional cooperation.	Monitoring of CI 15 still raises many questions. So far, no clear and pragmatic methodologies have been defined. None of the IMAP-MPA project countries has ever calculated the CI 15 or set up specific monitoring for it. Countries seem relatively reluctant or uninterested in implementing this indicator. This could be partly explained by the relative complexity of the CI15 assessment.	Regarding availability of operational approaches, the Guidance Fact-sheet proposes different levels of assessment (Indicator analysis methods - Steps to assess hydrographical alterations). It is important to carry out at least the first level of evaluation (assessing the footprint of the structures on the seabed and in the water column) or, failing that, the land claimed from the sea. The footprint of these structures on the marine environment will be considered as physical losses with	<u>Barriers related to data acquisition</u> Lack of skills in hydrography. The community of marine geologists represents only 3.8% of the national scientific potential (Hamoumi, 2021) Heterogeneity of methodologies, tools and monitoring protocols. Impact assessment studies due before future infrastructure construction must be based on real investigations and	Develop opportunities to train national staff with the necessary skills to carry out monitoring under IMAP. Attract young people and skilled workers by (1) improving ocean literacy of young people by building interest, engagement, awareness, and knowledge base; (2) reducing skills gap between education offer and marine monitoring needs; (3) improving communication and cooperation between education institutions and marine sectors. Promote training and development for professionals.

Scientific and technical difficulties and gaps and related solutions, opportunities and ways forward					
Application of this indicator throughout the Mediterranean is difficult, due to the heterogeneity of its parameters (physical, chemical, biological, etc.); but also the insufficiency or lack of equipment, technology and technicality of measurements for small and medium-sized projects and, very often, even for large projects [4]. The indicator is still unknown or little known to those concerned with the execution of construction projects on the coast (administrations, investors, development partners, etc.) [4].	As indicated in the Guidance fact-sheet, the COPERNICUS programme provides many relevant data on the coast, useful for CI 15 assessment.	CI 15 is strongly linked with EO1 CI 1 and CI 2 for benthic habitats, but information on existing data/maps or existing monitoring is not available.	respect to EO6 "Sea-floor integrity". Until EO6 is defined, assessing footprint of structures and losses of habitats should be done. This should first be done in an EIA, and if the project is approved then monitoring should be established after the structure has been built. For the already built structures it is now too late to start monitoring as impacts have already happened. Countries should report on monitoring results for all new structures during the period from one QSR to the next one. Use of EIAs. All beneficiary countries have legislation on EIAs. EIAs could constitute a significant amount of information useful for the assessment of CI 15	not only on the bibliographic basis. Lack of funding or limited financial resources for data collection and monitoring programmes. Prevalence of foreign funded research, not necessarily addressing national research priorities. Duplication of effort is common. <u>Barriers related with data quality and distribution in space and time</u> There is a serious lack of statistically valid data and time series. Data is not available along the entire national coast but rather concentrated in some areas. Assessment of CI 15 is possible but limited to certain areas and	Improve the attractiveness and awareness of career opportunities in the blue economy. Create a long-term national oceanographic programme to monitor Moroccan waters in order to complete the picture of the state of the Western Mediterranean. Using existing data as a start baseline. Create a kind of scientific watch or alert system to capture all scientific work on C15.

Scientific and technical difficulties and gaps and related solutions, opportunities and ways forward					
			for structures to be built or recently built. More focussed assessment. Focus the assessment on the main hydrographic alterations (those generated by physical losses, i.e. anthropic permanent changes in bathymetry/morphology or seabed substrate) that induce direct impacts of benthic habitats. Once a location of the new structure to be built is defined, a map of habitats should be prepared as well.	not feasible at national scale. <u>Scientific issue</u> Difficulty in deduct influences due to infrastructure presence from changes in benthic habitats due to other anthropogenic or natural pressures.	

Additional reflections from EU-Mediterranean countries, derived from the experience of implementation of Marine Strategy Framework Directive. For example, the report from Italy (2018) regarding Descriptor 7 showcases the application of the assessment methodology to two specific test sites where Environmental Impact Studies were undertaken in relation with new proposed projects (in the areas of Fiumicino - Rome, Lazio region and Monfalcone - Friuli Venezia-Giulia region, respectively). Reference is made in the report to the preparation of a database at national level on coastal infrastructures subjected to national EIA, starting with 2012. A full assessment of this description at national level is not provided in the report.

In the case of Spain, the 2019 report indicates that it is not possible to provide the state of this Descriptor with either of the two D7 criteria (permanent alteration of hydrographic conditions and extension of benthic habitats impacted by new infrastructures), based on the existing information.

In the case of Malta a complete assessment was undertaken (2020), considering: (1) Hydrographical change linked to development, (2) Hydrographical changes linked to discharges and the (3) Extent of benthic habitat type adversely affected due to alteration of hydrographical conditions.

Regarding point (1) 25 project applications (granted between 2010 and 2018) have been considered for the report, with the situation in 2012 taken as the baseline. After a screening phase, 8 projects were considered relevant and assessed in relation to potential changes to currents, water circulation and wave climate, as relevant, on a case by case basis, either through modeling or qualitative assessment.

As regards point (2), changes in thermal regime and salinity have been assessed in relation to two power stations and three desalination plants, respectively.

In relation with point (3), just one infrastructure has been assessed for its possible impacts on with potential impacts on seabed habitats: the cooling water discharge from the Delimara power station, which discharge may affect Posidonia oceanica meadows.

From the examples above, it can be concluded that assessment of Descriptor 7 is feasible at case study level. In relatively small countries, like Malta, the assessment at country level was possible, probably due to a reasonable number of infrastructures to be assessed. For larger countries, a country level assessment for this Description seems to be still challenging.

Table 2 - Reflections and findings about difficulties and possible solutions in assessing CI 15: policy, governance, administrative and communication difficulties and gaps.

Policy, governance, administrative and communication difficulties and gaps and related solutions, opportunities and ways forward	
Morocco specificities [3]	**Solutions, opportunities, ways forward [3]**
Barriers related to Governance Monitoring of the coastal area for the topics of coastal hydrography are under the responsibility of different ministries. There is a lack of communication between science and policy making. There is no national institution specifically dedicated to monitoring of the marine environment Each institution deals exactly only with what is assigned to it per statute. Duplication of effort is common. Lack of operational cooperation between institutions on data exchange. Barriers related to legislation There is no national monitoring strategy for IMAP. **Barriers related to data sharing** The process for data to be available outside the monitoring institution is too long: 1-2 years. It is generally difficult to access scientific knowledge.	Opportunity to elaborate a Strategic Action Programme for marine sciences in Morocco. Opportunity to create an ocean Mediterranean governance framework and especially a CI15 governance. Need to identify a single reference institution in marine science, responsible for CI 15. Such institution should have open access to info of other institutions for the purpose of CI 15 Opportunity to develop a national strategy for IMAP, integrating CI 15. Identify an unique authority responsible for integrating and coordinating monitoring efforts and correct fragmentation of competences, where they exist; Initiate a process of collaboration within national institutions for the assessment of CI 15, such as, for example, developing a protocol for cooperation on data exchange/sharing/policy. From 2018, with the law on the right of access to information n° 31-13, more data and information will become easily available. These include data and statistics expressed in the form of figures, letters, drawings, images and audio-visual recordings whatever their medium: paper or electronic.

Table 3 Framework for action in Morocco on a SPI for IMAP with focus on CI 15 implementation .

Structuring a framework for science-policy interface for IMAP - CI 15 at national level		
(1) STRUCTURE	• **Science-driven knowledge creation**: indications of what to monitor shall firstly come from the scientific community. Applied scientific research is expected to provide knowledge able to support policy implementation and address actions (adapted from [5]).. • **Collaborative approach**: Collaboration between national authorities, ministries, agencies and scientific institutions on SPI development should start the process of SPI development. Monitoring priorities and feasibility aspects (human and financial means) should be identified. They would also propose the governance framework and precise rules of work (based on existing legislation) (adapted from [5].	Opportunity to elaborate a Strategic Action Programme for marine sciences in Morocco: • Create a long-term national oceanographic programme to monitor Moroccan waters in order to complete the picture of the state of the Western Mediterranean. • Create a kind of scientific watch or alert to capture all scientific work on C15. • Opportunity to create an ocean Mediterranean governance framework and especially a CI15 governance. • Need to identify a single reference institution in marine science, responsible for CI 15.
(2) STRENGTHEN	• In order to strength and coordinate monitoring effort, link with economic / private sectors, interested in infrastructure projects approval [5] • Design interfacing activities before the launch of national level research projects and improve coordination between projects [5].	Develop opportunities to train national staff with the necessary skills to carry out monitoring under IMAP: Attracting young people and skilled workers.
(3) SUSTAIN	• Incorporate SPI in already existing processes / initiatives and its strategic links to on-going policy processes [5]. • Key to involve and rely on existing institutions which already play an SPI role [5]. • No additional structures are needed, but coordination [5].	From 2018, with the law on the right of access to information 31-13, more data and information should become easily available. These include data and statistics expressed in the form of figures, letters, drawings, images and audio-visual recordings whatever their medium: paper or electronic. SIRED, Système d'Information Régional de l'Environnement et de Développement Durable, is an environmental information system capable of structuring and organising all environmental data and guaranteeing efficient and sustainable management of environmental information. The aim of the system is to provide the Regional Observatory for the Environment and Sustainable Development (OREDD) and its partners with a viable source of information and an information heritage to better guide decision-making, through the feeding of alphanumeric and cartographic

Structuring a framework for science-policy interface for IMAP - CI 15 at national level		
		data into the system and the regular updating of a geographical database and the automatic generation of reports, dashboards, thematic maps, electronic cartographic atlases, etc. Initiate a process of collaboration within national institutions for the assessment of CI 15. Identify an unique authority responsible for integrating and coordinating monitoring efforts and correct fragmentation of competences, where they exist;

4 References

UNEP/MAP (2019). Indicator guidance factsheets for EO7 and EO8 Coast and Hydrography Common Indicators 15, 16 and 25. UNEP/MED WG.467/6.

Menioui M. (2022). Rapport sur la situation de base pour l'indicateur commun 15 "Localisation et étendue des habitats potentiellement affectés par les modifications hydrographiques" dans le Maroc Méditerranéen. Prepared for PAP/RAC.

Brivois O. (2022). Regional Consultant to Support the Implementation of IMAP component of the EU-funded IMAP-MPA project for Coast and Hydrography. Activity report. Prepared for PAP/RAC.

Bocci M. and Ramieri E. (2019). Strengthen, structure and sustain a Science Policy Interface (SPI) for IMAP implementation in the Mediterranean. Plan Bleu Working document.

Mhammdi N., Bocci M. and Ramieri E. (2022). SPI frameworks and processes regarding monitoring of IMAP Common Indicators 1 & 15 in Morocco. Prepared for Plan Bleu.