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Agenda item 4: Review of Quality Status Report (QSR) Fact Sheet Assessment (Coast and Hydrography)

Quality Status Report (QSR) Fact Sheet Assessment (Coast and Hydrography)

Ecological Objective 7 (EO7): Hydrography

Note: The maps and illustrations are provisional.

EO7: Location and extent of the habitats impacted directly by hydrographic alterations

GENERAL

Reporter: PAP/RAC

Geographical scale of the assessment:

Contributing countries:

Mid-Term Strategy (MTS) Core Theme 3-Land and Sea Interaction and Processes

Ecological Objective Ecological Objective 7(EO7): Alteration of hydrographical conditions

IMAP Common Indicator Common Indicator 15 (CI15): Location and extent of the habitats impacted directly by hydrographic alterations

Indicator Assessment Factsheet Code EO7CI15

RATIONALE/METHODS

Background (short)

Large-scale coastal and off-shore developments have the potential to alter the hydrographical regime of currents, waves and sediments in marine environment (UNEP/MAP/PAP, 2015).

To address these issues, UN Environment/MAP has included the Ecological Objective 7 ("Alteration of hydrographical conditions") into the Integrated Monitoring and Assessment Programme (IMAP) of the Mediterranean Sea and Coast (UNEP(DEPI)/MED IG.22/Inf.7, 2016) . EO7's Common Indicator 15 - 'Location and extent of habitats impacted directly by hydrographic alterations' considers marine habitats which may be affected or disturbed by changes in hydrographic conditions due to new developments. The main target of this indicator is to ensure that all possible mitigation measures are taken into account when planning the construction of new structures, in order to minimize the impact on coastal and marine ecosystem and its services, integrity, and cultural/historic assets. The Good Environmental State (GES) regarding EO7 Hydrography is achieved when negative impacts due to new structures are minimal with no influence on the larger scale coastal and marine systems.

There are clear links between EO7 and other ecological objectives, especially EO1 (Biodiversity), and these need to be determined on a case-by-case basis.

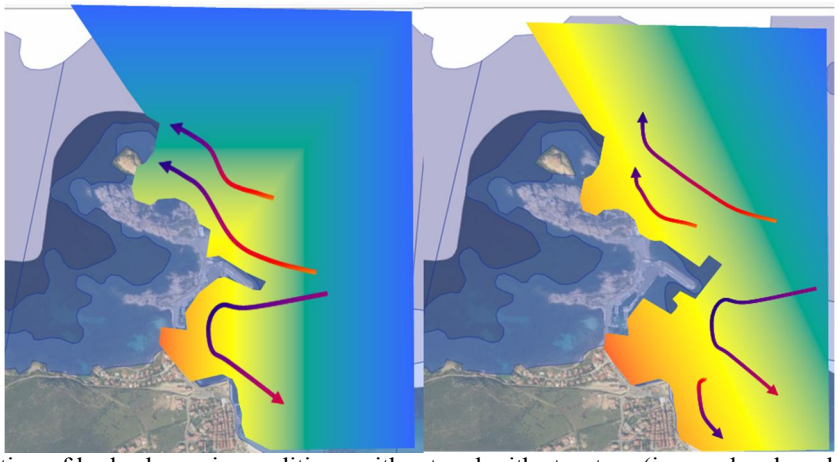

Figure 1. Illustration of hydrodynamic conditions without and with structure (image developed and provided by O. Brivois)

Background (extended)

Ecological Objective 7 is dedicated to assess permanent alterations in the hydrographic conditions due to new developments. By definition the term 'hydrography' is meant to include depth, tidal currents and wave characteristics of marine waters, including the topography and morphology of the seabed.

EO7 Common Indicator 15 considers only new developments, since existing structures have already changed the hydrographic conditions and potentially impacted the habitats. Since the baseline conditions before the construction of existing structures are unknown, the monitoring of CI15 for existing structures is not possible.
There is a clear link between EO7 and other ecological objectives, especially EO1 (Biodiversity). By definition of functional habitats under EO1, the priority benthic habitats for consideration in EO7 are to be selected. Ultimately, the assessment of impacts, including cumulative impacts, is a cross-cutting issue for EO1 and EO7.

The guidance document on how to reflect changes in hydrographical conditions in relevant assessments was prepared in 2015, aiming to define a methodological approach for assessing alterations of hydrographical conditions and the impact this may have on habitats due to permanent constructions and activities on the coast or at sea (UNEP/MAP/PAP, 2015).

As for Protocols of the Barcelona Convention relevant for the EO7, the Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean (UNEP/MAP/PAP, 1999) calls to Contracting Parties of the Barcelona Convection for continuous monitoring of ecological processes, population dynamics, landscapes, as well as the impacts of human activities (Article 7b). In addition, it calls to Parties to evaluate and take into consideration the possible direct or indirect, immediate or long-term impacts, including the cumulative impact of the projects and activities, on protected areas, species and their habitats (Article 17).

Another Protocol of the Barcelona Convention, the Protocol on the Integrated Coastal Zone Management in the Mediterranean (UNEP/MAP/PAP, 2008), in its Article 9, calls for Parties to minimize negative impacts on coastal ecosystems, landscapes and geomorphology, coming from infrastructure, energy facilities, ports and maritime works and structures; or where appropriate to compensate these impacts by non-financial measures. In addition, the Article 9 demands maritime activities to be conducted "in such a manner as to ensure the preservation of coastal ecosystems in conformity with the rules, standards and procedures of the relevant international conventions".

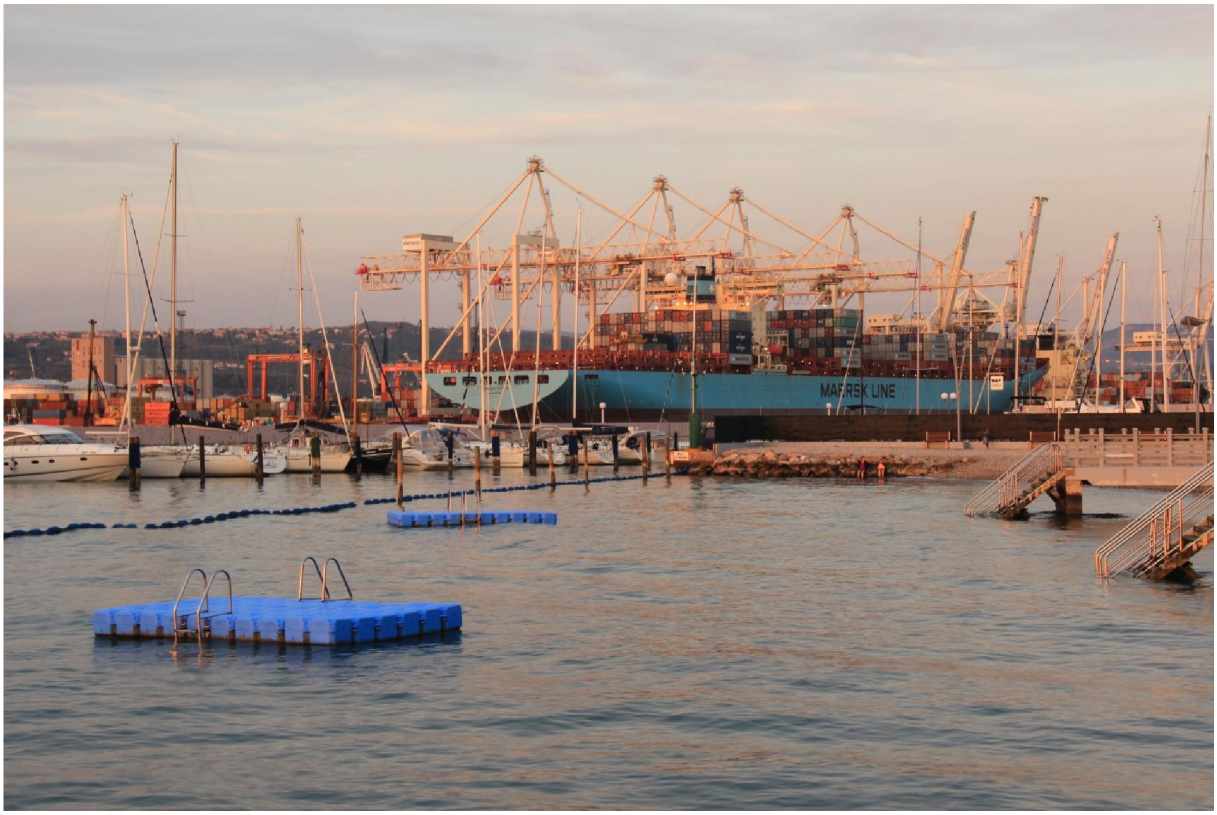

Photo by Marko Prem

Assessment methods

In brief, the methodology to assess the indicator can be divided in three main steps:

(i) Baseline hydrographical conditions characterisation (Monitoring and modelling of actual conditions without structure);
(ii) Assessment of hydrographical alterations induced by new structure (comparing baseline conditions and with structure conditions, using modelling tools); and
(iii) Assessment of habitats impacted directly by hydrographic alterations (by crossing hydrographical alterations and habitat maps).

Among hydrographical conditions, at least waves and currents changes should be assessed, with changes in sediment transport processes and turbidity in case of sandy sites, and salinity and/or temperature changes in case of structures that involve water discharge, water extraction or changes in fresh water movements.

The monitoring should focus on habitats of interest around new permanent constructions (lasting more than 10 years). At first, the spatial scale (in cross-shore and long-shore directions) to be used should be about 10 to 50 times the characteristic length of the structure, and should be enlarged depending on the first results obtained for this area.

To correctly assess changes in time on habitats induced by constructions, the monitoring should be performed: before construction (baseline conditions); during construction; and after construction - short term changes 0 to 5 years after (at least yearly up to 5 years), midterm changes 5 to 10 years after (at least biennium to 10 years), and long-term changes (10 to15 years after construction).

RESULTS

Results and Status, including trends (brief)

Since there was no systematic monitoring on this particular indicator on regional level until now, examples of intersection of modeled area of hydrographic alterations with habitat area were not found. The methodology applied in some partial examples consisted mostly in measurement of trends for certain hydrographic parameters (temperature, salinity, waves, currents, marine acidification etc.) and limited, mostly qualitative, analysis on impacts on habitats at a national level.

The data presented in the Extended section are mainly from the EU countries. It needs to be highlighted that the information presented here is extracted from technical assessment of the European Commission of submissions on Descriptor 7 by the EU countries. This information end up with 2012 and are not fully in line with the Indicator Guidance Fact Sheet for the CI15.

There are some partial information which are more in line with CI15 Guidelines fact sheets, but these surveys were done on much local scale and are presented as case studies (namely, LNG terminal in Monfalcone Port, Italy; and container terminal Haifa Bay in Israel)

Results and Status, including trends (extended)

A brief overview of initial assessments of the current environmental status of marine waters belonging to Mediterranean-based EU countries has been summarized here. It needs to be highlighted that the information presented here is extracted from technical assessment of the European Commission of submissions on Descriptor 7 by the EU countries. This information end up with 2012 and are not fully in line with the Indicator Guidance Fact Sheet for the CI15.

Nearly all of the EU Member States focused on coastal zones in their report, with most Member States (e.g. France, Greece, Italy Spain) expressed the readiness to address the existing knowledge gaps.

Many countries have focused on specific hydrographic parameteres, most of them on temperature and salinity (e.g. Croatia, Cyprus, Italy), while some countries also assessed other parameters such as wave/current regime (e.g. Malta, France) and marine acidification (e.g. Cyprus, Greece)

The proportion of the assessment area affected by hydrological processes was reported for some countries (Cyprus, Greece, Italy, Slovenia, Spain) although numbers quite varied due to the different methodologies used.

Some countries indicated different drivers behind pressures on hydrographic conditions (France, Greece, Malta, Slovenia). Some countries also estimated the impact of hydrographic alterations on marine habitats, such as Cyprus (impacts on macroalgae), Greece (impacts on seabed habitats), and Malta (impacts on algae and seagrass).

Photo by Marko Prem

CONCLUSIONS

Conclusions (brief)

The EO7 Common Indicator 15 reflects location and extent of the habitats impacted directly by hydrographic alterations due to new coastal structures. The big issue on deriving concluding remarks for this indicator on regional level is that the national monitoring programmes are currently being developed for most Mediterranean countries. Therefore, assessment results on this indicator (as proposed in indicator guidance fact sheet) were not found on national, nor regional level.

The findings here were mostly based on literature review of technical assessments on EU countries' reports on hydrographic alterations. However, these reports mainly focus on measurement of trends for certain hydrographic parameters, which is not completely in line with requirement for common Indicator 15. However, measurement of baseline hydrographic conditions can serve as a baseline for more detailed assessments in the future. Two local scale projects are presented as case studies namely, LNG terminal in Monfalcone Port, Italy; and container terminal Haifa Bay in Israel.

Conclusions (extended)

Key messages

- The EO7 Common Indicator 15 considers marine habitats which may be affected or disturbed by changes in hydrographic conditions (currents, waves, suspended sediment loads) due to new coastal structures;
- The national monitoring in Mediterranean countries regarding EO7 has not been initiated yet, or it is just being initiated;

- There is no sufficient data to derive conclusions/observe trends on Common Indicator 15 on regional, sub-regional or even national level.

Photo by Marko Prem

Knowledge gaps

There is a significant knowledge gaps on implementation of the Common Indicator 15. It is a complex and only introduced indicator. The knowledge gaps are mainly related to insufficient surveys and monitoring of this indicator on all geographical levels. Assessments that estimate the extent of hydrographic alterations (knowing conditions before and after construction) and its intersection with marine habitats are currently rare in the Mediterranean, except for some local studies of EIA/SEA.

Like everywhere, there is certainly a lack of hydrographic data in the Mediterranean Sea (bathymetric data, seafloor topography, current velocity, wave exposure, turbidity, salinity, temperature, etc.), which is one of the main problems to implement this indicator, in particular to define the base-line conditions. To identify these gaps, a clear inventory of existing and available data in Mediterranean Sea should be done.

Other difficulties come from the use of numerical model to assess hydrographic alterations before the structure is built. These tools need many data (bathymetry, offshore hydrodynamics data, field data); can be costly and time-consuming; and their use requiers experience and knowledge about the processes and theories involved.

The link to EO1 is so essential, as map of benthic habitats in the zone of interest (broad habitat types and/or particular sensitive habitats) is required. Therefore, identifying the priority benthic habitats for consideration in EO7 together assessment of impacts, including cumulative impacts, is a cross-cutting issue of high priority for EO1 and EO7. In addition, effort needs to be given to detect the cause-consequence relationship between hydrographic alterations due to new structures and habitat deterioration.

To conclude, such an integrated assessment of impacts calls for additional research efforts on habitat modeling, pressure mapping and cumulative impacts, along with monitoring of potentially affected areas.

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Ecological Objective 8 (EO8): Coastal Ecosystems and Landscapes

Note: The maps and illustrations are provisional.

EO8: Common Indicator 16: Length of coastline subject to physical disturbance due to the influence of manmade structures

GENERAL

Reporter: PAP/RAC

Geographical scale of the assessment: National: France, Italy, Montenegro

Contributing countries: France, Italy, Montenegro

Mid-Term Strategy (MTS) Core Theme: 3-Land and Sea Interaction and Processes

Ecological Objective Ecological Objective 8 (EO8): Coastal Ecosystems and Landscapes

IMAP Common Indicator Common Indicator 16 (CI16): Length of coastline subject to physical disturbance due to the influence of manmade structures

Indicator Assessment Factsheet Code EO8CI16

RATIONALE/METHODS

Background (short)

The Mediterranean coastline is approximately 46000 km long, with around 40% of the coastal zone being under some form of artificial land cover (Plan Bleu, 2005). Mediterranean coastal areas are threatened by development that modifies the coastline through the construction of buildings and infrastructure needed to sustain residential, tourism, commercial, transport and other activities. This kind of development can cause irreversible damage to landscapes; habitats and biodiversity; and shoreline configuration.
This EO does not have a precedent in other regional ecosystem approach initiatives, such as Helcom or OSPAR, neither in Marine Strategy Framework Directive.

The MAP emphasizes the integrated nature of the coastal zone, particularly through consideration of marine and terrestrial parts as its constituent elements required by the ICZM Protocol. The aim of monitoring the EO8 common indicator 16 “Length of coastline subject to physical disturbance due to the influence of manmade structures**”** is twofold: to quantify the rate and the spatial distribution of the Mediterranean coastline artificialisation; and to provide a better understanding of the impact of those structures to the shoreline dynamics.

GES for Common Indicator 16 can be achieved by minimizing physical disturbance to coastal areas close to the shoreline induced by human activities. Definition of targets, measures and interpretation of results regarding this common indicator is left to the countries, due to strong socio-economic, historic and cultural dimensions in addition to specific geomorphological and geographical conditions.

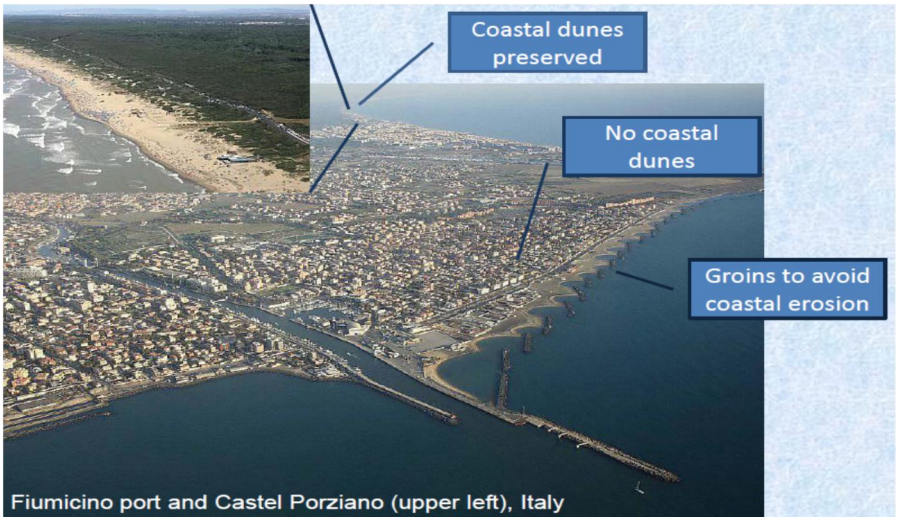

Figure 1. Example of urbanized coastline (photo provided by G.Giorgi)

Background extended

The land, inter-tidal zone and near-shore estuarine and marine waters in Mediterranean are increasingly altered by the loss and fragmentation of natural habitats and by the proliferation of a variety of built structures, such as ports, marinas, breakwaters, seawalls, jetties and pilings. These coastal manmade infrastructures cause irreversible damage to landscapes, losses in habitat and biodiversity, and strongly influence the configuration of the shoreline. Indeed, physical disturbance in particular in sandy coasts due to the development of artificial structures in the coastal fringe can disrupt the sediment transport, reduce the ability of the shoreline to respond to natural forcing factors, and fragment the coastal space. The modification of emerged beach and elimination of dune system contribute to coastal erosion phenomena by lessening the beach resilience to sea storms. Coastal defence infrastructures have been implemented to solve the problem together with beach nourishment, but preserving the natural shoreline system with adequate sediment transport from river has proved to be the best solution.

Around 40% of Mediterranean coastal zone is already under some form of artificial land cover. This share is expected to grow, especially since urban population in Mediterranean coasts is expected to grow to 90 million in 2025, compared to 70 million in 2000 (Plan Bleu, 2005). In addition, importance of tourism in these areas should be considered as well, since tourists can double the number of permanent dwellers in peak periods in some areas. That is why construction of holiday homes is one of the important drivers of land consumption.

In Mediterranean, the linear nature of coastal urbanization and the speed of the phenomenon is significant (Plan Bleu, 2005). The consequence of the growth in population growth, infrastructure and facilities results in increase in artificial land cover in the coastal zone. Monitoring the length of coastline subject to physical disturbance due to the influence of manmade structures and its trend is therefore of paramount importance, in order to preserve habitat, biodiversity and prevent coastal erosion phenomena. Also, access to the coast, beaches, visual qualities of coastal landscapes, decreasing potentials for other users to develop, such as tourism etc. are important elements to take into account.

The EO8 also reflects the aim of the Barcelona Convention to include coastal areas in the assessment, which became a legal obligation upon the entry into force of its Protocol on Integrated Coastal Zone in the Mediterranean (ICZM Protocol). In the Article 16 of the Protocol, the Contracting Parties are required to “set out an agreed reference format and process to collect appropriate data in national inventories“regarding the state and evolution of coastal zones.

Photo by Marko Prem

Assessment methods

Monitoring of the EO8 Common Indicator 16 focuses on measuring the length of artificial coastline and its share in total country's coastline, on a proper geographical scale. An example of artificial vs. natural coastline can be seen in example on breakwaters in Figure 2.

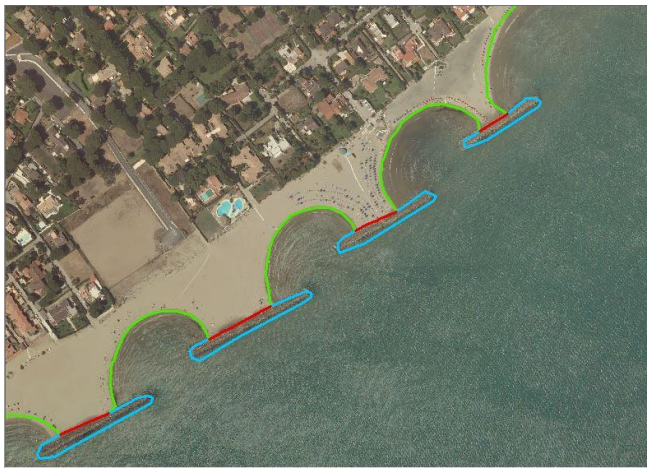

Figure 2. Image showing coastal defence structure (blue), artificial coastline (red) and natural coastline (green) (image developed by G.Giorgi)

The monitoring of this Common Indicator entails an inventory of:
(i) the length and location of manmade coastline (hard coastal defence structures, ports, marinas. Soft techniques e.g. beach nourishment are not included.
(ii) land claim, i.e. the surface area reclaimed from the 1980's onward (ha); and
(iii) the Impervious surface in the coastal fringe (100m from the coastline).

With regard to the coastline to be considered: the fixed reference official coastline as defined by responsible Contracting Party should be available throughout monitoring (initial, and all consequent monitoring should use the same official coastline). The optimal resolution should be 5 m or 1: 2000 spatial scale. The monitoring should be done every 6 years, and so every CP should fix a reference year in the time interval 2000-2012 in order to eliminate the bias due to old or past manmade infrastructures and coastal processes such as coastal erosion.

The length of artificial coastline should be calculated as the sum of segments on reference coastline identified as the intersection of polylines representing manmade structures with reference coastline ignoring polylines representing manmade structures with no intersection with reference coastline. The minimum distance between coastal defence structures should be set to 10 m in order to classify such segments as natural, i.e. if the distance between two adjacent coastal defence structures is less than 10 m, all the segment including both coastal defence structures is classified as artificial.

RESULTS

Results and Status, including trends (brief)

Until now there has been no systematic monitoring in Mediterranean regarding the EO8 Common Indicator. The only country that has implemented the monitoring of this indicator on a national level, at the moment, is Italy. There were also assessments on national level in France and Montenegro, but these assessments, although quite similar, do not fully resemble the implementation of the EO8 indicator, since they pre-date it. However, they still provide a deep insight on the state of Montenegrin and French coastlines regarding length of artificialized coastline.

Italy, for now, is the only country to implement the monitoring of the EO8 common indicator 16 on a national level. Almost 16 % of the coastline was classified as built-up in 2006, with strong regional (sub-national) differences, for example between Continental Italy (20.5%) and Sardinia (4.5%). The share of built-up coastline slightly increased in 2012 in the whole country (+0.36%), again with higher increase in Continental Italy (+0.51%) than in Sardinia (0.06%).

In Montenegro, the assessment in 2013 showed around 32% of built-up coastline on national level with notable differences between coastal counties (e.g. 11.6% in Ulcinj County and 40.4% in Tivat County).

The rate of artificalization of the whole of the French Mediterranean coast is around 11 %, with differences apparent from region to region: from the 19.5% for the coast of Languedoc-Roussillon to around 2 % for the coast of Region of Corsica (MEDAM Project).

It is important to note that in Montenegro and France the inventories of length of built-up coastline took place before the implementation of national Integrated Monitoring Assessment Programmes. However, methodology for delineating built-up coastline is quite similar to IMAP’s monitoring guidelines.

Results and Status, including trends (extended)

The assessment results for Italy on the length of artificialized coastline are summarized in Table 1.

Table 1. Length of built-up coastline in Italy in 2006 (provided by Project EcAp-ICZM Italian Ministry of Environment/ISPRA)

	LENGTH (KM) ***2006***			**PERCENTAGE** ***2006***		**PERCENTAGE** ***2012***		***TREND 2006-2012***
	total	natural	artificial	natural	artificial	natural	artificial	artificial
ITALY – continental	3844.985	3058.103	786.882	79.53	20.47	79.02	20.98	+0.51%
SICILIY	1177.769	1003.140	174.629	85.17	14.83	85.01	14.99	+0.16%
SARDINIA	1512.145	1444.395	67.749	95.52	4.48	95.46	4.54	+0.06%
TOTAL	6535.899	5505.638	1029.261	**84.25**	**15.75**	**83.89**	**16.11**	**+0.36%**

The total length in Table 1 is referred to a reference coastline for year 2006, and does not include islands except Sardinia and Sicily. Built-up coastline includes coastal defense structures, ports and marinas. The spatial extension of impervious surfaces on land side has not been considered in the calculation of the length of built-up coastline. The above results show that meaningful trends as for ex. 2012 over 2006 or 2018 over 2012, have to be calculated considering Sardinia and Sicily separated by the continental part of Italy as they both have share percentage completely different from each other and from the continental part. The high level of artificialisation in Sicily is mainly due to little ports and marinas for touristic and fishery activities that have been built or expanded in the last 30-20 years.

In Montenegro, the built-up assessment of coastal zone was carried out within the frame of Coastal Area Management Program (CAMP), which served as a basis for Spatial plan for six coastal counties and latter National strategy for integrated coastal zone management for Montenegro. The length of built-up coastline in Montenegro was assessed for each of the six coastal counties (Table 2). The indicator was calculated by overlapping the built-up areas with generalized coastline to get the share of the built-up coastline in the whole coastline. The coastline was generalized in order to avoid unrealistic length of anthropogenic coastline (e.g. to avoid undulations by marinas, ports, were groins, etc.). The built-up coastline is shown in Figure 3.

Table 2. Length of built-up coastline in Montenegro (provided by G. Berlengi)

County	**Natural coastline (km)**	**Built-up coastline (km)**	**Total (km)**	**Share (built-up/total) (%)**
Bar	23.615	12.549	36.164	**34.7**
Budva	24.505	7.305	31.810	**23.0**
Herceg Novi	32.883	19.715	52.597	**37.5**
Kotor	39.596	23.819	63.415	**37.6**
Tivat	19.008	12.885	31.893	**40.4**
Ulcinj	32.158	4.236	36.393	**11.6**
Total	**171.764**	**80.509**	**252.273**	**31.9**

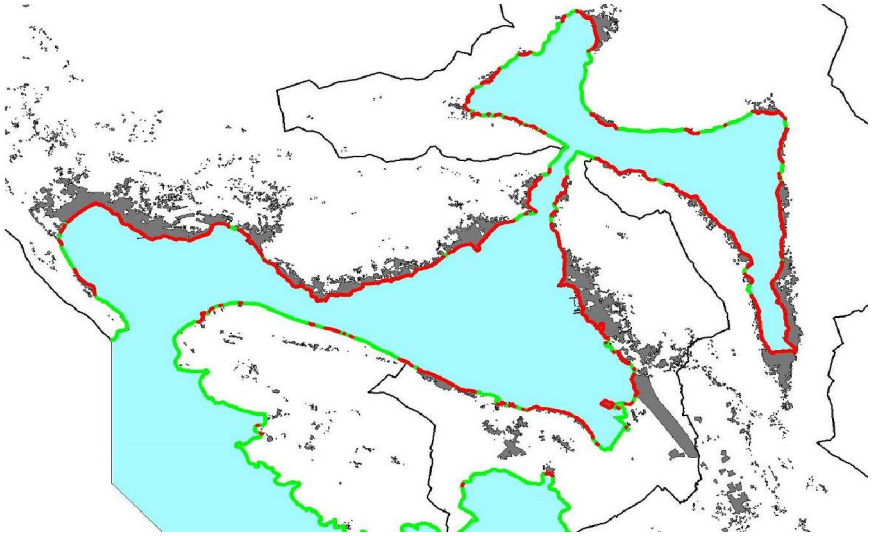

Figure 3. Map showing built-up coastline (in red) and natural coastline (in green) in Montenegro (provided by G. Berlengi)

In France, the MEDAM inventory (i.e. database) was established as a project that monitors the sources of artificial and development pressure on the French Mediterranean Coast, entailing features such as: the total length of coastline; coastline 'artificialised' by reclamation; rate of 'artificialisation' of coastline (linear), etc.

The rate of artificalisation of the whole of the French Mediterranean coast, according to MEDAM, is 11.1 %, with differences apparent from region to region: from the from the 19.5% for the coast of Languedoc-Roussillon to around 2 % for the coast of Region of Corsica (MEDAM Project).

In 1960-1985 period, the number of reclamations from the sea tripled along the French Mediterranean, followed by a distinct slow-down of these redevelopments between 1985 and 2010. The slowing down was to a large extent the result of enforcement of an Act (arrêté) that banned the destruction of marine phanerogams (*Posidonia oceanica* and *Cymodocea nodosa*) (Arrêté of 19 July 1988).

CONCLUSIONS

Conclusions (brief)

The inclusion of the EO8 Common Indicator aims to fill the gap of not having systematic monitoring in Mediterranean regarding the physical disturbance of coastline due to the influence of manmade structures. On the other hand, it offers very few examples to follow, especially since this indicator has no precedents in regional ecosystem approach initiatives, such as Helcom or OSPAR, neither in Marine Strategy Framework Directive.

Some countries, such as Italy, France and Montenegro, have developed the inventories of the share of their urbanized coastline, while some countries of South and East Mediterranean are starting to do so in frame of the EcAp MED II project.

Conclusions (extended)

Key messages

- Mediterranean coastal areas are threatened by intensive construction of buildings and other infrastructure that can impact landscapes, habitats and biodiversity. The national reporting on state and evolution of coastal zones is required by the ICZM Protocol

- There was no systematic monitoring in Mediterranean regarding coastal artificialization by now. The only country that has implemented the monitoring of the EO8 common indicator on a national level by this moment is Italy, with Montenegro and France performing similar inventories;
- Targets, GES thresholds, measures and interpretation of results regarding this indicator should be left to the countries due to strong nation-specific socio-economic, historic and cultural dimensions and geographical conditions.

Photo by Marko Prem

Knowledge gaps

It is difficult to point out the knowledge gaps in this phase since there are so few examples of implementation of the EO8 Common Indicator. However, there are some "known" knowledge gaps that could hinder successful implementation of this indicator.

First, it is a choice of a fixed reference coastline that each CP should select in order to assure comparability of results between successive reporting exercises. Unfortunately, it is not unusual to find out that more than one 'official' coastline exists for the same CP produced with different technological techniques. Plus, coastlines change due to coastal erosion, sea level rise and morphological modifications. In addition, if spatial resolution is too low or time period is too long, manmade structures could be poorly identified or completely missed with heavy consequences on the calculation of length of artificial coastline.

The availability of satellite imagery of high resolution could also be a challenge, since these images could be costly. In addition, interpretation of these images requires certain knowledge and experience. In this case, some training and capacity building of national experts is essential.

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UNEP(DEPI)/MED WG.433/1 (2017) PAP/RAC Meeting of the Ecosystem Approach Correspondence Group on Monitoring (CORMON) on Coast and Hydrography – Working Document

Annex I
List of Case Studies for the Ecological Objectives 7 (Hydrography) and 8 (Coastal Ecosystems and Landscapes)

The Annex I provides the list of Case Studies that have been submitted by Contracting Parties and Partners for the Ecological Objectives **7 (Hydrography) and 8 (Coastal Ecosystems and Landscapes). The Case Studies are in the process of editing.**

EO7	**Title**	**Contracting Parties, Partners**	**Authors and Affiliation**
1	Assessment of Environmental Aspects Related to a New Container Terminal (Haifa Bay Port)	Israel	CAMERI – Coastal and Marine Engineering Research Institute, Technion City, Haifa, Israel
2	Hydrological alterations and prediction on habitats impacted by the planned storage, regasification and distribution terminal of LNG in port of Monfalcone – Northern Adriatic	Italy	Giordano Giorgi[1], Federico Rampazzo[1], Daniela Berto[1] Project EcAp-ICZM founded by Italian Ministry of Environment. [1]ISPRA - Italian National Institute for Environmental Protection and Research, Via Vitaliano Brancati, 48 – 00144 – Roma, Italy
EO8	**Title**	**Contracting Parties, Partners**	**Authors and Affiliation**
1	Implementation of indicator on length of artificialized coastline for Italy: continental part, Sardinia and Sicily	Italy	Giordano Giorgi[1], Tania Luti[1], Luca Parlagreco[1], Tiziana Cillari[1], Patrizia Perzia[1] Saverio Devoti[1] Project EcAp-ICZM founded by Italian Ministry of Environment. [1]ISPRA - Italian National Institute for Environmental Protection and Research, Via Vitaliano Brancati, 48 – 00144 – Roma, Italy