



Mediterranean Action Plan
Barcelona Convention



EO8 – Indicator 8.1.4. - Length of coastline subject to physical disturbance due to the influence of manmade structures

**Implementation issues: gaps and
difficulties**

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IMAP – Ecological Objective 8

General context

Decision 20/4 of the 17th CPs Meeting in Paris 2012:
Operational Objective 8.1:

The natural dynamics is respected and coastal areas are in good condition

Indicators:

8.1.1 - Areal extent of coastal erosion and coastline instability

8.1.2 – Changes in sediment dynamics along the coastline

8.1.3 – Areal extent of sandy areas subject to physical disturbance
(including: beach cleaning by mechanical means, sand mining,
beach sand nourishment)

**8.1.4 - Length of coastline subject to physical disturbance
due to the influence of manmade structures**



Indicator 8.1.4. – Length of coastline

Definition and implementation

Length of coastline ...

- Coastline is defined with reference to highest winter/spring tide or storm surge with definite return time
- Shoreline is a mobile line that depends on tide, sea level, etc..

...subject to physical disturbance ...

- Alter coastal hydrodynamics: waves, tides, currents
- Change sediments flow
- Modify hydrostatic balance between seawater and groundwater, alter water table
- Alter capacity to trap sands transported by winds

...due to manmade structures.

- Hard coastal defence (excluding soft techniques, e.g. beach nourishment)
- Ports and marinas
- Land claim
- Impervious surfaces in the hinterland (100 mt. from the coastline)



Which coastline has to be considered?

Indicator 8.1.4. : gaps and difficulties

- The implementation of 8.1.4 indicator requires a reference coastline on which the length subject to physical disturbance is calculated
- To assure comparability of results between successive reporting exercises, each CP should choose during all the process a fixed reference coastline.
- Coastal erosion, sea level rise and morphological modifications induce coastline changes
- Compromise between the level of accuracy and details of the coastline and its chance to represent a lasting and homogenous reference between CPs



Which coastline has to be considered?

Indicator 8.1.4. : proposal 1

1) Proposal:

- Use the fixed reference official coastline as defined by responsible government office
- Optimal resolution would be 5m or 1:2000 spatial scale.



How manmade structures are identified?

Indicator 8.1.4. : gaps and difficulties

- Starting point: Very High Resolution satellite imagery or aerial photographs for the identification of manmade structures
- But also, common procedures have to be agreed in order to map manmade structures in a comparable way between CPs.
- Every CP has to fix a reference year as a baseline. It cannot be the same for all CPs but a common time interval where such reference year falls has to be agreed on. For ex. 2000-2012.



How manmade structures are identified?

Indicator 8.1.4. : proposal 2

2) Proposal:

- Typical situations with regard to manmade structures identification procedure added to the indicator Fact Sheet, including the minimum size (length, width of manmade structures) to be taken into account.
- Monitoring should be done every 6 years. 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



How manmade structures are reported on coastline?

Indicator 8.1.4. : gaps and difficulties

- To calculate the length of coastline subject to physical disturbance due to the influence of manmade structures, such structures have to be reported on the coastline polyline.
- The following options are available:
 - ❖ Length of artificial coastline is calculated as equal to the sum of length of polylines representing manmade structures;
 - or
 - ❖ Length of artificial coastline is calculated as the sum of segments on reference coastline identified as the intersection of polylines representing manmade structures with reference coastline
- Minimum distance between coastal defense structures should be set in order to classify such segments as natural or artificial



How manmade structures are reported on coastline?

Indicator 8.1.4. : proposal 3

3) Proposal:

- Length of artificial coastline is 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.
- Minimum distance between coastal defense structures is set to 10 m in order to classify such segments as natural, i.e. if the distance between two adjacent coastal defense structures is less than 10 m, all the segment including both coastal defense structures is classified as artificial.



How is represented the length of artificial coastline?

Indicator 8.1.4. : gaps and difficulties

- The length of coastline subject to physical disturbance due to manmade structures should be reported as the overall percentage on the total length of coastline of the CP
- Some common features should be fixed for the representation of such coastline as green color segment for natural and red color segment for artificial
- Shapefile format with common Geographic reference system as WGS84 should also be fixed



How is represented the length of artificial coastline?

Indicator 8.1.4. : proposal 4

4) Proposal:

- Assessment outputs should be presented on a map, showing the coastline subject to physical disturbance due to manmade structures (artificial segments) in red line and the rest (natural segments) in green line.
- The total length of coastline and the length of artificial segment should be reported in km, and the percentage (%) of natural coastline on the total coastline length.
- Common shapefile format with GRS as WGS84



Spatial scale issue

Indicator 8.1.4. : gaps and difficulties

- If spatial resolution is too low manmade structures could be poorly identified or completely missed with heavy consequences on the calculation of length of artificial coastline.
- Spatial resolution depends both on resolution of data sources as satellite imagery or aerial photographs and on the accuracy assured by the digitalization process.
- Necessity to employ well trained personnel for GIS digitalization and agreed procedures applied uniformly on the overall coastline. Merging products done by different teams, although based on the same data sources, can result in an inhomogeneous final output.



Spatial scale issue

Indicator 8.1.4. : proposal 5

5) Proposal:

- Optimum spatial scale for a proper identification of manmade structures is 5 m by satellite imagery or aerial photographs.
- Common procedures for GIS digitalization



Thank you



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