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Macrolitter characteristics and abundance/volume

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Monitoring programme: Litter
Programme topic: Litter

SUB-PROGRAMME 1: MACROLITTER CHARACTERISTICS AND ABUNDANCE/VOLUME - BEACH LITTER

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REGIONAL COORDINATION

The monitoring of this sub-programme is: **coordinated**.

PURPOSE OF MONITORING (Q4K)

Follow up of progress towards:

| | | |
|---|---|---|
| Baltic Sea Action Plan (BSAP) | Segments | Hazardous substances Biodiversity Maritime activities |
| | Ecological objectives | Concentrations of hazardous substances close to natural levels Natural landscapes and seascapes Thriving and balanced communities of plants and animals No illegal pollution Safe maritime traffic without accidental pollution |
| Marine strategy framework directive (MSFD) | Descriptors | D10 Litter |
| | Criteria (Q5a) | 10DC1 The composition, amount and spatial distribution of litter on the coastline, in the surface layer of the water column, and on the seabed, are at levels that do not cause harm to the coastal and marine environment. Member States shall establish threshold values for these levels through cooperation at Union level, taking into account regional or subregional specificities. |
| | Features (Q5c) | Other features: A description of any other features or characteristics typical of or specific to the marine region or subregion. |
| Other relevant legislation (Q8a) | Bathing Water Directive OSPAR Convention MSFD D10C1 | |

Assessment of: (Q4k)

| | | |
|--|----------|--|
| State/Impacts | X | temporal trends, spatial distribution, state classification |
| Pressures | X | |
| Human activities causing the pressures | X | |
| Effectiveness of measures | X | Beach litter monitoring will be used to measure the effectiveness of measures when sufficient data (spatial as well as temporal) is available. |

Scale of data aggregation for assessments: (Q10a)

| | |
|--|----------|
| HELCOM assessment unit Level 1: Baltic Sea | |
| HELCOM assessment unit Level 2: Subbasin | |
| HELCOM assessment unit Level 3: Subbasins with coastal and offshore division | |
| HELCOM assessment unit Level 4: Subbasins with coastal WFD division | |
| Other: National | X |

MONITORING CONCEPTS TABLE

| Coordination | Elements Q9a (Q5c) | Parameter Q9a (Q5c) | Method Q9c , Q9d | QA/QC Q9e , Q9f | Frequency Q9h , Q9i | Spatial resolution Q9g , Q9i | Link to HELCOM core indicators | Link to MSFD GES characteristics Q5b | Spatial scope Q4i | Monitoring started Q4h | CPs monitoring |
|--------------|--|--|---|--|---|---|--------------------------------|---|--------------------------------------|---|----------------|
| National | Beach litter | Quantity and type of litter items | OSPAR beach litter guidance | OSPAR | Other (specify) 3 surveys a year (April, June/July, September/October) | 3 beaches | - | Properties and quantities of ML do not cause harm to the coastal and marine environment | Coastal areas | 2015 | Denmark |
| National | Beach litter | Quantity and type of litter items | UNEP/IOC (MARLIN) | National | Other (specify) 3 surveys a year (spring, summer, autumn) | 10 beaches | - | Properties and quantities of ML do not cause harm to the coastal and marine environment | Coastal areas | 2012 | Estonia |
| National | Beach litter | Quantity and type of litter in animal stomachs | UNEP-methodology | National | Other (specify) 3 surveys a year (April-May; July-August; October-November) | 13 beaches | - | Properties and quantities of ML do not cause harm to the coastal and marine environment | Coastal areas | 2012 | Finland |
| National | Beach litter | Quantity and type of litter items | OSPAR guidelines | National | Other (specify) 4 surveys a year (Apr., mid Jun. - mid Jul., mid Sep. - mid Oct., mid Dec. -mid Jan.) | 32 beaches | - | Properties and quantities of ML do not cause harm to the coastal and marine environment | Coastal areas | 2012 | Germany |
| National | Beach litter | Quantity and type of litter items | MARLIN/UNEP | National | Yearly Summer | 42 beaches | - | Properties and quantities of ML do not cause harm to the coastal and marine environment | Coastal areas | 2012 | Latvia |
| National | Beach litter | Quantity and type of litter items | OSPAR Guidelines | National | Other (specify) 4 surveys a year | 4 beaches | - | Properties and quantities of ML do not cause harm to the coastal and marine environment | Coastal areas | 2012 | Lithuania |
| National | Beach litter | Quantity and type of litter items | National methodology | National | Other (specify) 4 surveys a year (Apr., mid Jun. - mid Jul., mid Sep. - mid Oct., mid Dec. - mid Jan.) | 15 beaches | - | Properties and quantities of ML do not cause harm to the coastal and marine environment | Coastal areas | 2015 | Poland |

| | | | | | | | | | | |
|----------|--------------|-----------------------------------|--------------------|----------|--|--------------|---|---------------|------|--------|
| National | Beach litter | Quantity and type of litter items | MARLIN methodology | National | Other (specify) 3 surveys a year (Spring, Summer, Autumn) | 10 beaches - | Properties and quantities of ML do not cause harm to the coastal and marine environment | Coastal areas | 2012 | Sweden |
|----------|--------------|-----------------------------------|--------------------|----------|--|--------------|---|---------------|------|--------|

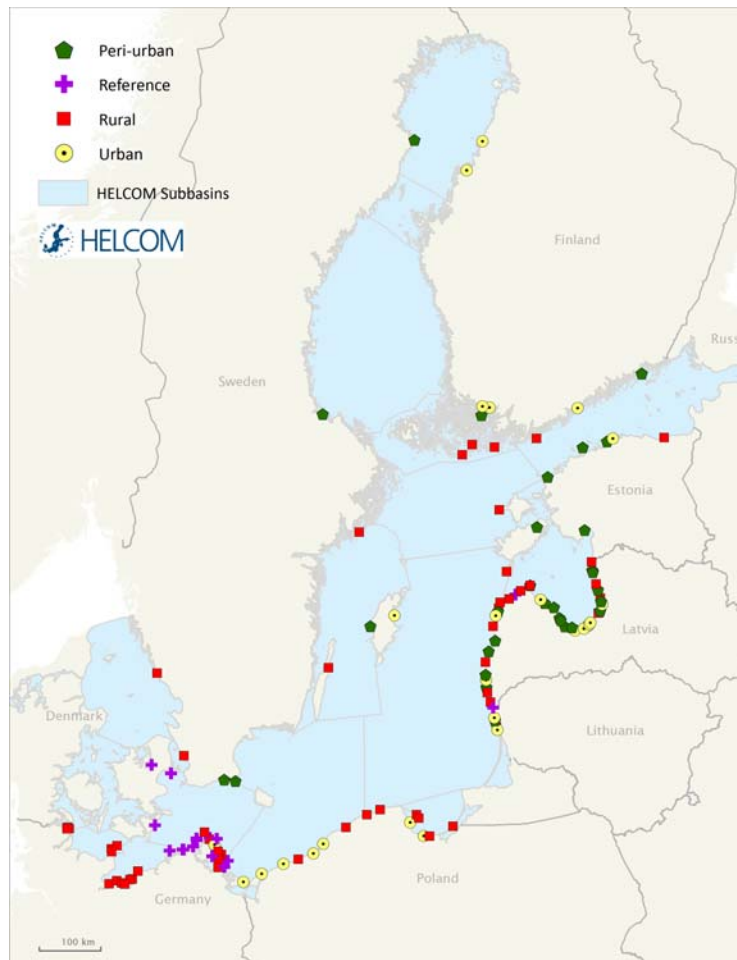


Figure 1 - Map containing beach litter monitoring stations by type of beaches.

Brief description of monitoring

| Element / parameter | Beach litter/Quantity and type of litter items |
|---------------------|--|
| Method | <p>The length of the segment of the coastline to be sampled should be 100 m with the possibility of conducting subsampling for cigarette butts and snuff, paraffin, pellets, all visible fragments, as well as other items if needed. If such subsampling is conducted 10 m stretch is to be monitored (see MARLIN, 2013). Before data analysis, all data must be standardized to a 100m stretch of beach. This means that the results for sub-samples of beach (i.e. 10m) must be extrapolated and, with the results of surveys on more than 100m of beach, the average number of items for 100m should be calculated and used for analysis (i.e. number of items recorded on 300 m of beach should be divided by 3 to give the average number of items per 100m).</p> <p>The width of the beach (from the waterline to back of the beach, e.g. the foot of dunes or high vegetation behind) is also to be reported. The area should preferably also include the highest waterline with litter deposited also under more extreme high water conditions.</p> <p>Litter items, visible to the naked eye (lower size limit at about 0.5cm), are to be counted and recorded by type of material (“artificial polymer materials”, “rubber”, “cloth/textile”, “paper/cardboard”, “processed/worked wood”, “metal”, “glass/ceramics” and “undefined”). The amount of litter per type of material in number of items is to be determined.</p> <p>Litter items should be identified using different coding list (the updated JRC 2013, OSPAR 2010 or MARLIN 2013). For further specifications see HELCOM Guidelines for beach litter monitoring.</p> |
| QA/QC | DE, DK, EE, FI, LT, LV, PL and SE: National |

| | |
|---------------------------|---|
| Frequency | Three or four times a year if sampling in winter is possible, depending on the country. One country conducts monitoring yearly. |
| Spatial Scope | Monitoring is performed by HELCOM countries covering all coastal areas of the Baltic Sea. |
| Spatial resolution | The number of beaches monitored depends on the country: DK: 3, EE: 10, FI: 13, DE: 32, LV: 42, LI: 4, PL: 15 and SE: 10. |

ASSESSMENT REQUIREMENTS

Monitoring requirements and gaps

Monitoring is to be carried out to fulfill assessment requirements of HELCOM ecological objectives that are specified through HELCOM core indicators. The requirements on monitoring can include number of stations, the sampling frequency and replication.

Monitoring requirements

In order to assess the pre-core indicator 'Beach litter' (STATE & CONSERVATION 5-2016, [document 4J-27](#)), three sampling campaigns during the year have to be organised; preferably during the same survey periods used in other international established monitoring programmes. If it is possible, according to national climatological conditions, a fourth campaign is to be conducted during winter time. Information from this fourth campaign, when available, will be included separately in the assessment (i.e. different colours on map representations).

Beach litter is to be monitored by all HELCOM Contracting Parties, covering all coastal areas of the Baltic Sea. The number of beaches to monitor per country is to be determined nationally, aiming to ensure a representative coverage of their respective coastal area as well as, if feasible, an equally well representation of all beach categories. Beaches are to be classified as "urban", "rural" and "peri-urban". Choosing a mix of urban, rural and peri-urban beaches will provide knowledge on different types of sources of litter. Litter on rural beaches is more likely to indicate sea based sources and the litter situation at sea (background values for litter pollution level) - since very little littering is expected from visitors. Urban and peri-urban beaches would more reflect the contribution of land based activities on and nearby the beach. Criteria to follow to select beaches to sample as well as definitions of types of beaches are specified in the [HELCOM guidelines for monitoring beach litter](#) (section 2.4.2).

Data from national monitoring should be analysed aiming at identifying the number of litter items per type of material and most frequent litter items (top beach litter items) standardized to a 100m stretch of beach.

Types of material to consider are: "artificial polymer materials", "rubber", "cloth/textile", "paper/cardboard", "processed/worked wood", "metal", "glass/ceramics" and "undefined".

Top beach litter items are to be determined for the different types of beaches (urban, peri-urban and rural beaches) following the rank method. Top 10-20 item lists of marine litter items occurring on beaches should preferably be derived so data from each survey are weighted equally within one station and also weighted equally between stations instead of only making top 10 lists of total sum of all litter items. Thereby will the weight of surveys/seasons and stations which most litter items registered be reduced.

The HELCOM EN-Marine Litter considered the assessment unit to be used for the assessment of the beach litter indicator, and considered the appropriateness of using Scale 2 or Scale 3 of the HELCOM sub-divisions of the Baltic Sea for regional monitoring and assessment purposes (see attachment 4 of the HELCOM Monitoring and Assessment Strategy). The Scale 3 may be used even if the indicator is not applicable to off-shore areas due to lack of data as the monitoring is based on beach sampling. The data is primarily representative of beaches located in a certain Scale 2 or scale 3 sub-division. The experts of HELCOM EN-Marine Litter agreed to postpone the decision on the scale of the assessment pending on further discussion to take place as part of the finalisation of the pre-core indicator report.

Given the variability of litter data, which is influenced greatly by season, weather conditions and water currents, a 6-year running mean in line with the requirements of the Marine Strategy Framework Directive (MSFD, 2008) is considered appropriate to provide a baseline predict for trends in terms of an average level of pollution. Once the baseline is set, operational targets for the reduction of relevant (top) findings on beaches need to be defined in order to be judged against the baseline. As a midterm target, a downward trend in input of plastics should be achieved.

Gaps

The monitoring of beach litter started for most HELCOM countries in 2012, and has continued regularly since then. However, monitoring is not nationally coordinated in one country and is only seasonally conducted in another one. Furthermore, in one country monitoring is based on scientific projects data only and not yet conducted continuously. The network of monitoring stations has expanded since 2015, which together with the suggested coordinated monitoring program will provide a more complete and coherent image of the extent of beach litter items found in the different sub-regions. The monitoring program will also allow for a reliable input of monitoring data resulting in scientific conclusions based on a solid knowledgebase and as a consequence, the assessment of the pressure will be done with more certainty.

Adequacy for assessment of GES ([Q5d](#))

Monitoring should provide adequate data and information to enable the periodic assessment of environmental status, and distance from and progress towards GES as required by MSFD under Article 9 and 11.

| | |
|-----------------------|-----|
| Adequate data? | Yes |
|-----------------------|-----|

| | |
|--|----|
| Established methods for assessment? | No |
| Adequate understanding of GES? | No |
| Adequate capacity to perform assessments? | No |

Assessment of natural variability (Q5e)

Expert opinion.

DATA PROVIDERS AND ACCESS

| | |
|---|--|
| Data access point | National databases |
| Data type (Q10c) | Processed data sets |
| Data availability (Q10c) | Raw data are stored nationally and it is foreseen that processed data is available in a regional database or international data centre (e.g. OSPAR beach litter database, MARLINN, EMODnet). |
| Data access (Q10c) | - |
| INSPIRE standard (Q10c) | - |
| When will data become available? (Q10c) | To be decided |
| Data update frequency (Q10c) | Yearly |
| Describe how the data and information from the programme will be made accessible to the EC/EEA | Processed data will be available. Danish data is reported to EEAs database Marine Litter Watch and thereby available to EEA. |
| Contact points in the Contracting parties | HELCOM EN-Marine Litter, in particular in (i) Denmark, the Danish Centre for Environment and Energy (DCE); (ii) Finland for beach litter: Sanna Suikkanen (SYKE) and Hanna Haaksi (KAT) and for microlitter: Outi Setälä (SYKE); and (iii) Sweden: Eva Blidberg, Keep Sweden Tidy (eva.blidberg@hsr.se). |
| Has the data been used in HELCOM assessments? | Yes |

REFERENCES

[HELCOM \(2018\) HELCOM Guidelines for monitoring beach litter.](#)

[HELCOM \(2016\) HELCOM Pre-core indicator on 'Beach litter', document 4J-27 to STATE & CONSERVATION 5-2016](#)

[HELCOM \(2018\) SPICE report: Task 2.1.3 Development of baselines of marine litter – Report on the analysis of compiled data on microlitter in the Baltic Sea](#)

[HELCOM \(2018\) State of the Baltic Sea – Second HELCOM holistic assessment 2011-2016. Baltic Sea Environment Proceedings 155](#)

[HELCOM \(2018\) SPICE report: Task 2.1.1 Development of baselines of marine litter – Identification of top litter items in the Baltic Sea region](#)

Commission Decision (EU) 2017/848 of 17 May 2017 laying down criteria and methodological standards on good environmental status of marine waters and specifications and standardised methods for monitoring and assessment, and repealing Decision 2010/477/EU

Addamo, A. M., Laroche, P., Hanke, G. (2017): Top Marine Beach Litter Items in Europe. - EUR 29249 EN, Publications Office of the European Union, Luxembourg

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