A working meeting of the HELCOM EN-Marine Litter was held on 22 September 2016 as an online meeting. The list of participants is contained in Annex 1.

The aim of the Meeting is to discuss how to develop the micro litter indicator report further for its submission to State and Conservation 5-2016 and in the view of the information compiled from the microlitter questionnaire.

Data call on microlitter

The Meeting recalled the data call on monitoring/research on microlitter prepared by Finland, in cooperation with Germany, circulated to HELCOM EN-Marine Litter 6 June to be filled in by 5 August 2016.

The Meeting noted that information has been provided by Denmark, Estonia, Finland, Germany, Poland and Sweden, and that Russia informed that they do not have the necessary data on microlitter for the questionnaire.

The Meeting noted compiled information together with a summary produced by Finland as previously circulated to the Meeting and included in Annex 2. The Meeting noted the Danish comments on the summary as provided in written format and included as references in the Annex 2. The Annex 2 also contains updated information as provided in written format immediately after the Meeting by Poland.

The Meeting agreed on the relevance to include this information on the update of the indicator report.

Further development of the indicator report

The Meeting noted that the main problem for the further development of the microlitter indicator report is the lack of an assessment protocol. The Meeting also noted that more data are envisaged to be available in the next six months, i.a. data from ten samples taken with 100 µm zooplankton nets in Finland, especially relevant for their comparison with very high values previously recorded in the Swedish coast.

The Meeting discussed how to develop the indicator report further for its submission to State and Conservation 5-2016, and agreed as follows:

- the Secretariat will contact Latvian and Lithuanian experts for an update and addition of further information to their on-going research and monitoring of microlitter (available information as extracted from the Annexes II and II of document 5-4, MONAS 20-2014 included in Annex 3);
- Finland (Lead) in cooperation with Denmark and Germany (Co-leads) will draft an update of the report including fill in the missing sections as needed (current version as agreed in STATE & CONSERVATION 22015 updated to the required format included as Annex 4) by 29 September;
- the draft update of the report will be then circulated to the HELCOM EN-Marine Litter for consideration for two weeks (comments to be provided by 6 October);
- Finland (Lead) in cooperation with Denmark and Germany (Co-leads) will consider the feedback received and submit the report to State and Conservation 5-2016 for consideration (by 10 October).
Annex 1 List of participants

<table>
<thead>
<tr>
<th>Name</th>
<th>Organisation</th>
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<tbody>
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Annex 2 Feedback received and summary of the microlitter questionnaire

Compiled HELCOM data on microlitter.xlsx

(See attachment)

Background

A questionnaire on the status of microlitter data gathering among the contracting parties was sent out 6.6.2016. This questionnaire collects information on monitoring and pilot studies on microlitter on the water surface, water column, strandline, sediment and biota. The Excel sheet (=questionnaire) was prepared by the lead (Finland) and co-leads (Denmark and Germany) responsible for the development of the indicator marine microlitter. The contracting parties were kindly invited to fill up the respective information by 5th August. So far 1 Finland, Sweden, Estonia, Germany and Poland have sent their data and Russia has informed that they do not have any information for this purpose.

An overview of the existing data on the distribution of microlitter

Marine litter and especially microlitter is a relatively new parameter to be studied from the marine environment. Data has been collected only for a few years and is being used for testing of both sampling and analytical methods. This sampling includes different environments with different methods and also different size-fractions have been sampled. Analytical methods vary from the mostly used stereo microscopy to the use of Raman and FTIR (only in Germany). Water surface has been sampled by all countries who have replied. Sediment has been sampled by Germany from 2014 2 with a distinct methodology, and later on also Poland and Finland have done pilot sampling of microlitter in sediments. Pilot studies on microlitter in field-collected biota (mostly fish) have been started in Finland 3. Experimental work on microlitter includes studying uptake and transfer (Finland) and also effects (ecotoxicological studies in Sweden). Published data on microlitter distribution in the environment is still limited. Sweden has published a report on the pathways of microplastics to the marine environment based on existing data.

Detailed information on microlitter studies within the HELCOM members 4

Microlitter in the water column

Microlitter in the water column is typically sampled with surface nets/trawls like the manta trawl that usually has a rectangular mouth opening net mesh size of 333µm. Manta also has two wings that keep it in balance and at surface during the tow, letting the mouth sink into desired depth in the water. At the end of the trawl there is a removable collecting bag (“cod end”). Manta trawl from open water areas was used to sample microlitter from the water surface by Finland, Germany, Estonia and Poland. Size fraction collected with manta was either >330 or >500. Germany has also sampled by a Bongo net a smaller fraction >100µm. In

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1 DK has also sent late data that are not fully included in the document. We have therefore inserted a few comments.
2 And by Denmark in 2015.
3 And in Denmark.
4 Poland input: samples have been taken from:
   - water column: 0-10 m depth, WP2 (100 um) net; 4 offshore stations, 2 stations within lagoons.
   - sediment: 4 offshore stations, Nemisto Corer, layer 0-5 cm below bottom surface; 2 stations within lagoons, grab corer.

The samples are to be analyzed until the end of the year.
Sweden data has been collected from the shore by a submersible pump (10 and 300µm mesh size filters). Earliest samples are from Sweden (2011). Most of the countries have started sampling even more recently by testing methodologies. No country is using the data as a part of the MSFD monitoring in their program of measures yet (PoM5). Finland has been conducting pilot monitoring but the methods used do not reliably discriminate different litter types (synthetic/non synthetic). Altogether sampling has been carried out in

**Microlitter in sediment**

Sampling and analysis of microlitter in sediments are most advanced in Denmark, Germany and Sweden. Denmark has carried out bot research by sampling with box corer and collected three different size fractions, carried out multistep digestion and light microscopy with some FTIR. Monitoring in inner Danish waters (thus this may serve as good reference work when methods are discussed, but does not produce data for Baltic assessment) has been most detailed with 5 size fractions described (box corer, light microscopy). In Germany a box corer or a Van Veen grab is used for sampling (“Danish seas”, Central Baltic, Gulf of Riga, Gulf of Finland, Gulf of Bothnia, Rostock), and samples are divided into several size fractions (63-300, 300-630, 630-1000, 1000-5000 µm). Density separation method has been used (MPSS and sodium polytungstate) with additional digestion (H2O2 and different enzymes), or a multi-step provisional H2O2 over 7d, with NaClO, and enzymatic digestion. Also material characterization to separate synthetic and non-synthetic microlitter has been done with FTIR. Results not yet available (expected in 2016-2017). Sweden has carried out studies on MPs in sediment mostly in the North Sea area, Skagerrak, and taken samples with several corers and studied different size fractions. In a thesis also fecal pellets have been studied. Finland has taken some sediment core samples from the Bay of Bothnia and Gulf of Finland, but samples are still unanalyzed, and Poland has sampled with Nemisto corer, but no results yet. Neither of these countries has agreed on any method so far. Finland has been carrying out tests on NaCl-extraction. A master’s thesis in Finland (at the moment available only in Finnish) has focused on the role of bioturbation in the vertical transfer of MPs in the sediment.

**Microlitter on strandline**

Only Germany has provided information on microlitter sampling on strandline. The areas studied include the isle of Rugen, several beaches along the German Baltic coast in the greater area of Rostock as well as beaches in Lithuania. Naked eye was used to identify >2mm particles (2mm mesh) collected from an area of 9m². No results are yet available.

**Microlitter in the water column, other than surface**

Denmark is carrying out a study based on historical data. there the ingestion of microlitter ingestion by pelagic fish (sprat and herring) is done based on old data of fish and corresponding plankton samples (>150µm) from Bornholm basin. Sweden (Gorokhova 2015) has already published a work on microplastics in historical zooplankton net samples at two stations on the Swedish coast. Results reveal concentrations several magnitudes higher than what has been found previously in manta net samples. Sweden has also carried out some vertical net sampling but no detailed information is available. Finland has recently collected 100µm net samples from water column below thermocline and halocline in the Gulf of Finland, and also done comparative sampling with 30L sampler (>100µm size fraction).

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5 Danish proposal: Monitoring programme instead?
6 Danish input: Draft GES “Microlitter shall be monitored in the surface layer of the water column and in the seabed sediment and may additionally be monitored on the coastline”, therefore microlitter on strandline/coastline should not have highest priority.
Microlitter in biota

Finland: samples for assessing the amount of microplastics in small fish (Herring, roach etc.) have been collected from the coast of Helsinki and from the river Vantaanjoki in the southern part of Finland. Herring for MP analysis have also been collected during a monitoring cruise in open water areas in 2015 in Bothnian Sea and Archipelago Sea. A digestion method is also being developed. So far no results are available.

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7 Also Danish published data for microlitter in fish. DTU Aqua finds that the digestion mixture recommended in the ICES guideline is too “harsh”.

Annex 3 Available information as extracted from the Annexes II and II of document 5-4, MONAS 20-2014

(See attachment)
Annex 4 Microlitter in the watercolumn - HELCOM candidate core indicator report

(See attachment)