



Document title Outcome

Outcome

The Meeting was held on 29-30 January 2020.

The Meeting was chaired by Ms. Vivi Fleming

Ms. Laura Hoikkala acted as a secretary of the Meeting.

The list of participants is contained in **Annex 1** to this Outcome.

AI1. Opening of the meeting and adoption of the agenda

1. The Meeting adopted the agenda.

AI2. Information by the Chair, Secretariat and Contracting Parties

2. The Meeting took note of the planning and process of the Third Holistic Assessment of the Baltic Sea Environment (HOLAS III) as presented by the Secretariat (presentation 1).
3. The Meeting took note that Russia has a study reservation on the preliminary plan for HOLAS III and Poland has post HOD 57-2019 lifted the study reservation on the proposed assessment period for HOLAS III (2016-2021).
4. The Meeting discussed that for part of the Contracting Parties reporting 2021 data by the second quartile in 2022, which is suggested in the provisional timeline for the HOLAS III process, is hard to achieve due to nationally set data reporting routines and considered possible solutions for the conflict.
5. The Meeting agreed to make a statement to State & Conservation and GEAR on the concerns of the network regarding the provisional timeline for HOLAS III. The statement is provided in **Annex 2**.
6. The Meeting took note of information from Contracting Parties that the EU has confirmed that there is no conflict in using 2016 data again in the next assessment. The overall assessment needs to be done for 2016-2021, but it is possible to use data from fewer years if necessary.
7. The Meeting took note of the possible small adjustments to the HOLAS III timeline that could be considered to meet the concerns, as indicated by the Secretariat.
8. The Meeting took note that HOD 57-2019 considered the topic specific workplans and associated resource requirements and agreed on the areas of priority where development work is to be carried out for HOLAS III (document 4-20 of that meeting). The Meeting further took note that HOD 57-2019 approved the work outlined in Step 5 of the future work on the HELCOM indicators process, in line with the agreed prioritization and plans outlined under each topic.
9. The Meeting took note that at HOD 57-2019, Germany raised a point that in the work on indicators leading up to HOLAS III, focus should also be put on crosscutting issues and how the indicators function across themes, using the crosscutting workplans developed during the second indicator workshop as a basis.
10. The Meeting took note that Contracting Parties were offered the opportunity to provide comments regarding the indicator work after HOD 57-2019, and that one such relevant comment was from EU

regarding Eutrophication linkages: “Is there a possibility to consider developing outputs (i.e. footprint of impacts) that are directly relevant to assessments of pelagic habitats (D1C6) and benthic habitats (D6)”.

11. The Meeting took note of the state of the update of the Baltic Sea Action Plan (document 2-2).
12. The Meeting took note of the ongoing work on sufficiency of measures (SOM) analyses, and that a webinar on SOM took place on 20 January, and the webinar is available online under the following link <https://helcom.fi/baltic-sea-action-plan/som/>.
13. The Meeting took note of the project proposal “BalticData flows” submitted to CEF-Telecom Public Open data call (CEF-TC-2019-2) as presented by the Secretariat.
14. The Meeting took note of the Horizon proposal FET Proactive – Boosting emerging technologies Call ID: H2020-FETPROACT-2018-2020 <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/fetproact-eic-08-2020>, which might be of interest for Contracting Parties’ institutes carrying out in-situ marine monitoring. The Meeting took note that the proposals are expected to have their main focus on one of the following sub-topics:
 - a. new techniques for creating and using dynamic models of environmental evolution
 - b. radically novel approaches to resilient, reliable and environmentally responsible in-situ monitoring.

AI 3. Update by Contracting Parties on their latest national development in relation to eutrophication assessment or monitoring

15. The Meeting took note of the following national information in relation to eutrophication assessment or monitoring:
 - Denmark has expanded its monitoring program with new stations and will test satellite observations for chlorophyll-a in 2020 and 2021.
 - Finland is working on the update of the MSFD monitoring program. Finland is ready for hearing, which will continue until summer, and will be followed by MSFD program of measures.
 - Germany is in the process of updating its monitoring handbook for the MSFD monitoring programs. Regarding eutrophication no big changes are expected. In parallel, Germany is already working on an update of the MSFD program of measures. Since this work is parallel to the process of updating the BSAP and in particular to the HELCOM process of identifying new actions it is challenging but there is also the possibility to benefit from synergies. Furthermore, Germany reports on the large progress that was made at an OSPAR meeting on eutrophication (ICG EUT) that took place in January 2002. OSPAR is heading in the same direction as HELCOM and has established a comparable automated assessment tool for eutrophication (COMPEAT). There are synergies from the work on scaling on confidence rating and scaling that are currently led by Germany in OSPAR and HELCOM.
 - IOW has several projects running, including BONUS projects SEAM and FUMARI, which are looking for ways to improve and develop monitoring programs. There is also work ongoing with SYKE, Finland, on Finnline ferrybox measurements focusing on the carbonate system, pH and alkalinity. Spectrophotometric pH measurements to investigate ocean acidification are being developed. Also, the OMAI project is looking into the acidification topic.
 - Latvia is working with indicators, including a project on the oxygen indicator for shallow waters. The intention is to finalize threshold values. There is also work ongoing with satellite data and optical instruments.

- Poland is working on national reports for monitoring programs. Poland plans to have the public consultation of actualization of the monitoring program in March. There are not many changes regarding eutrophication monitoring. Satellite data and possibly also FerryBox data will be included in the monitoring program. Including FerryBox data for chlorophyll-a is also planned.
 - Sweden is working on MSFD Program of Measures. The national report for monitoring programs is on national consultation. The new research vessel R/V Svea is now operational.
 - ICES is currently working on the scaling for the HEAT tool and the confidence assessment. The next step is to include coastal data. ICES aims to place all algorithms on Github for achieving transparency. This would also enable the IN-Eutrophication to maintain the system themselves.
16. The Meeting discussed the use of satellite data for the chlorophyll-a indicator. The Meeting considered that it would be beneficial to include data also from other Contracting Parties than Finland. The Meeting took note that in OSPAR the intention is to use an agency to analyse the satellite data in order to jointly evaluate the new transboundary assessment areas. The Meeting considered that discussions should be started on how to combine data from Contracting Parties in a common system and noted the comment from Finland that SYKE encourages a communication with satellite experts from other countries. The Meeting discussed that one option for a way forward would be to have a meeting with those experts.

AI4. Eutrophication test assessment and confidence assessment

4.1 Test assessment using indicator scaling by applying Eutrophication Quality Ratios (EQRs)

17. The Meeting took note of the results of the test assessment for open-sea areas using indicator scaling by applying Eutrophication Quality Ratios (EQRs), as presented by Birgit Heyden, Germany (document 4-1, presentation 2).
18. The Meeting took note that the classification between EQRs and ERs is predominantly in agreement, but there are some deviations, EQR being most often one class worse than ER, but in some cases the opposite is found, depending on the observed values of the different indicators. The Meeting considered that in the discussion of whether to move to EQRs, not too much weight should be put on the deviations between ERs and EQRs, since the ERs provide a biased picture.
19. The Meeting discussed the problem of border changes, where a small change in concentration changes the status from good to bad status or vice versa. The Meeting discussed that the problem could be handled with decreasing the confidence in near-boundary cases, and by giving more weight to trends. It was also recommended to include the uncertainty of the classification in the confidence assessment, e.g. by applying statistical methods as used for the follow-up of the MAI/CART. The Meeting further discussed that the use of several indicators within the different categories improves confidence of the integrated assessment result also in these situations where the overall assessment result approaches the good/bad boundary.
20. The Meeting discussed that in the integration of the indicators, averaging EQR values instead of ER values affects the overall assessment results. The Meeting took note that it cannot yet be said how much the overall assessment results would be affected. The Meeting considered that averaging scaled values is more meaningful.
21. The Meeting took note that the acceptable deviation has not yet been set for oxygen debt indicator.
22. The Meeting considered that moving to EQRS would improve the comparability with coastal assessments and also between the different indicators used.

23. The Meeting concluded that all Contracting Parties present at the meeting are for moving to EQR values and agreed to propose the change to State and Conservation.
24. The Meeting took note of a comment from Latvia, that the original concentrations would be good to include in the supplementary report.

4.2 Confidence assessment

25. The Meeting took note of the proposal to improve the confidence assessment methodology of the HELCOM Eutrophication Assessment Tool (HEAT 3.0), as presented by Birgit Heyden, Germany (document 4-2).
26. The Meeting discussed the proposal for general and specific spatial confidence.
27. The Meeting discussed the use of 20K and 60K grid cells in the spatial confidence. The Meeting took note of a comment from Denmark, that the arbitrary choice of 20K or 60K grid affects the confidence result, and discussed whether using the whole sub-basin area (e.g. by 1 km² grids) would be a better option. The Meeting took note of a comment from Germany that 20K and 60K grids were used for practical purposes, and that the effect of the choice of grid size can be smoothed down with sub-basin specific class boundaries. It was also pointed out that the use of the 60k grid cells is only recommended for selected areas above a certain size, as described in document 4-2 of the Meeting. The Meeting considered that one grid size could be used for all assessment units.
28. The Meeting discussed that it needs to be carefully considered what is sufficient monitoring, including how large share of grid cells can be empty in order to gain moderate or high specific spatial confidence for each sub-basin.
29. The Meeting discussed the problems arising from the non-homogenous assessment areas. The Meeting discussed that higher variabilities in the small coastal units than in the large open-sea units need to be taken into account. This can be partly reflected by different data requirements in the definition of the confidence class boundaries of coastal and open-sea areas.
30. The Meeting took note of a comment from Finland that it would be good to take into account also spatial gradients (even distribution of the sampling points) in the spatial confidence assessment.
31. The Meeting discussed the pros and cons of making the general spatial confidence assessment by grid cell and considered that it is not currently a realistic option.
32. The Meeting discussed how to assess confidence for oxygen debt and considered that one solution could be to use the number of observations behind the assessment result.
33. The Meeting discussed that a separate solution is needed for spatial confidence of satellite and FerryBox data. The class boundaries should be adapted to different data types.
34. The Meeting agreed that the spatial confidence should be based on the specific confidence and that the general spatial confidence, which is a mixture of spatial and temporal confidence, should not be included.
35. The Meeting discussed the general and specific temporal confidence. The Meeting discussed that the general temporal confidence describes the evenness between assessment years.
36. The Meeting discussed the definitions for winter and growing seasons which vary spatially and between years.
37. The Meeting in principle agreed that both general and temporal confidence parts should be included in the confidence assessment. The Meeting took note that Latvia will confirm its position on the issue.

38. The Meeting discussed how to aggregate the confidence for the integrated assessment. The Meeting discussed that this could follow the aggregation rules applied in BEAT. The Meeting discussed that the number of indicators in each class should affect the confidence, and discussed applying weighting/ ranking.
39. The Meeting agreed that as a next step ICES will implement the test confidence assessment in cooperation with Germany and that Germany would work further on the aggregation of the individual indicator confidence to an overall confidence assessment.

AI5. Further work on Indicators and assessments

5.1 Shallow water oxygen indicator

40. The Meeting took note of the detailed results of investigations on assessing near-bottom oxygen in shallow waters based on the currently available data from selected sampling stations as presented by Joachim Kuss, Germany (document 5-2, presentation 4). The challenge of an adequate characterization of the oxygen situation of near-bottom waters in open sea areas of the Baltic Sea was shown. Data obtained by CTD/oxygen-sensor casts, water sampling near the bottom with oxygen measurements by the Winkler method during shipborne station work as well as by moored stations with continuous recording of oxygen at near bottom level, respectively, revealed either vertical gradients or strong temporal fluctuations that both require a clear definition of the indicator settings. Moreover, it is suggested that beside temporal also spatial extension of hypoxia need to be included for a meaningful indicator. Therefore, a support of measurements by coupled hydrographic-biogeochemical modelling might be considered. Further on an agreement on threshold values of for example, minimum values of at least 2, 4 or 6 mg/L or an average of the lowest quartile of 5 mg/L is required. The precondition for an agreement in HELCOM appears to be a flexible way of data origination but finally, an adequate characterization of the temporal and spatial threat of certain regions by hypoxia is necessary to indicate its status.
41. The Meeting took note that a literature review on oxygen indicators for assessing eutrophication in marine waters was submitted to the Meeting by Sweden.
42. The Meeting took note of the testing on the near-bottom oxygen indicator for shallow waters in Finland as presented by Vivi Fleming (presentation 5 not available online). The Meeting took note that the issue is important for Finland as there is currently no oxygen indicator that is applicable for the Gulf of Bothnia. The Meeting further noted that although the Gulf of Finland was assessed using the oxygen debt indicator in HOLAS II, it is not applicable for the eastern part, which should be assessed separately with a shallow water indicator.
43. The Meeting discussed that the emphasis of the work should be on developing a common indicator combining the approaches for shallow open-sea waters from all Contracting Parties. The Meeting further discussed that harmonizing the technical differences and different setups would be a long path and could lead to loss of long time series. Also, some of the approaches, especially the Swedish approach, are highly data demanding and the approach can therefore only be applied to few monitoring stations.
44. The Meeting discussed the fact that oxygen minima are not necessarily recorded in the monitoring, which should be considered when developing the indicator and threshold values.
45. The Meeting discussed that definitions for shallow water and near-bottom water, as well as optimal sampling frequency should be agreed on. The Meeting took note of a comment from IOW, that the correct unit for oxygen is $\mu\text{mol kg}^{-1}$.
46. The Meeting discussed that for most of the Contracting Parties it is not currently possible to provide high frequency data.

47. The Meeting discussed that for HOLAS III, the group needs to work with the current monitoring data, and classify as many stations as possible with an approach that is suitable for the current monitoring data.
48. The Meeting took note of a proposal by Denmark to develop two oxygen indicators to reflect the two different effects of anoxia: 1) The effect of oxygen conditions to nutrient fluxes from the sediment and 2) The specific effects of anoxia to bottom fauna and subsequently on the food web. The first indicator would assess the trend in oxygen concentrations and could use any kind of oxygen data. The second indicator would assess absolute minimum values observed as the bottom fauna can be lost by short periods (1-days) of oxygen deficiency.
49. The Meeting took note that Finland and Sweden support the trend approach and consider it especially useful for the Bothnian Bay and Bothnian Sea, where there are negative oxygen trends though oxygen deficiency does not occur.
50. The Meeting took note that thresholds can be applied also for trend-based indicators, as is done for some biodiversity indicators.
51. The Meeting discussed that it needs to be checked which basins are wholly covered by the oxygen debt indicator and for which basins either part or whole area needs to be assessed with the shallow water oxygen indicator.
52. The Meeting took note that Germany supports taking a precautionary approach, and getting started by using minimum concentrations without estimating the natural part of hypoxia. Thresholds could be set to 4 mg/L for permanently or long lastingly stratified areas and 6 mg/L for well-mixed areas. Germany also proposes to test using the mean of the lowest quartile for bottom water oxygen concentrations since otherwise the minimum would depend on only one value.
53. The Meeting discussed classifying the stations into stratified and mixed. The classification could be automated in COMPEAT. The Meeting took note of a comment by ICES that as a first step the algorithm used for the oxygen debt indicator could be investigated since it is also looking at stratification.
54. The Meeting discussed that as a next step, a test assessment using data in HEAT could be implemented with a station-based approach.
55. The Meeting took note that Finland needs to first finish national testing and cannot yet agree on the selection and classification of stations.
56. The Meeting agreed that the work should be proceeded within the year 2020, and that Germany will coordinate the work and all Contracting Parties will be kept informed.
57. The Meeting agreed that an online meeting should be arranged for the experts that are truly working with the shallow water oxygen indicator in the Contracting Parties. The Meeting agreed that Germany will come up with a proposal for the online meeting and that an invitation to the online meeting should be sent to the entire group.

5.2 Total nutrient indicators in the Western Baltic Sea and Eastern Gotland Basin

58. The Meeting took note of the comparison of German national targets and Targrev targets for total nitrogen and phosphorus in the Western Baltic Sea (document 5-3).
59. The Meeting took note that the German and Targrev target values are relatively similar for Arkona and Bornholm Basins, whereas for Kiel and Mecklenburg Bay the German targets are much more ambitious.

60. The Meeting took note that Germany cannot accept the Targrev values for Kiel and Mecklenburg Bay. The Meeting further took note that accepting the high Targrev targets for TN and TP for these basins would also create contradictions in the assessment.
61. The Meeting took note that for Bornholm Basin and Arkona Basin, the Targrev targets are more acceptable, but Germany is not in a position to accept the Targrev targets for these sub-basins either due to the fact that the national target values are harmonized with the WFD and Germany prefers using target values for coastal waters and the open sea that are based on a common approach.
62. The Meeting took note of the comment from Germany that regarding Bornholm Basin, the issue could be in part solved by splitting the Odra influence area off from this Basin in a way that Germany would not have a share in Bornholm Basin anymore.
63. The Meeting took note that Polish targets are similar to Targrev targets for Bornholm Basin and that Poland could possibly adjust to German values if they are based on data from all relevant parties.
64. The Meeting took note that the priority of Denmark is to keep a coherent basis for target setting for all areas. The Meeting further took note that modelling is being done in Denmark with a similar approach to that used in Germany. The Meeting agreed to postpone the discussion on TN and TP targets for these areas until the Danish modelling has been completed in early autumn 2020.
65. The Meeting took note that Sweden could accept the German proposals for Kiel Bay and Mecklenburg Bay, but supports Targrev values for Bornholm and Arkona basins.
66. The Meeting agreed that it is not plausible that the TARGREV values are much higher for the more westerly basins Kiel and Mecklenburg Bay compared to Arkona and Bornholm basin.
67. The Meeting concluded that no common agreement on the target values can yet be achieved.
68. The Meeting took note that Poland could probably adjust to Targrev target for the Eastern Gotland Basin, but has to confirm this nationally and come back to the issue.

5.3 Spring chlorophyll-a indicator

69. The Meeting took note that there are no recent developments concerning the spring chlorophyll-a indicator.

5.4 Developing the aggregation rules of HEAT 3.0

70. The Meeting took note of the proposals from Denmark regarding developing the aggregation of the indicators in the assessment procedure to be more ecologically relevant (document 5-4, presentation 4).
71. The Meeting discussed the pros and cons of splitting the nutrient levels into nitrogen and phosphorus on the first aggregation level. The Meeting took note that most of the Contracting Parties were willing to split or consider splitting the nutrient levels to nitrogen and phosphorus.
72. The Meeting took note that Finland is not willing to split the nutrient levels into N and P, as with the current one out all out principle of the assessment this could lead to not good status in situations where only the non-limiting nutrient has elevated levels without any eutrophication symptoms and the flexibility achieved by weighing would be lost.
73. The Meeting took note that in OSPAR, the nutrient levels are not included in the overall eutrophication status assessment.
74. The Meeting discussed moving the Secchi depth indicator from direct to indirect effects. The Meeting discussed the roles of CDOM, chlorophyll-a and particles in light attenuation.

75. The Meeting took note that Finland, Germany and Sweden supported the approach suggested by Denmark to move Secchi depth to indirect effects (organic matter accumulation). Germany stated that this might require a basin-specific decision, depending on the respective roles of organic matter and chlorophyll-a in light attenuation.
76. The Meeting took note of the Danish proposal to add a fourth aggregation group on ecosystem functioning to the assessment including benthic plants index, condition of benthic fauna index and presence of a productive phytoplankton community in the pycnocline production index (DCM).
77. The Meeting discussed that including the fourth aggregation group is an issue for the future as there are currently no indicators for this. The Meeting considered that the issue needs further thinking. Germany proposed to also await the processes on EU level, since the MSFD Commission Decision requires the assessment of eutrophication effects on benthic and pelagic habitats and it is expected that further guidance will become available on how to achieve this.
78. The Meeting discussed that alternatives to the one out all out principle of HEAT and possibilities to use other aggregation rules should be kept in mind.

5.5 Area division of the Gulf of Finland and the Bornholm Basin

79. The Meeting took note that the subdivision of Gulf of Finland to 2-3 separate assessment units has not notably progressed.
80. The Meeting decided due to time constraints to postpone the discussion on the subdivision of Bornholm Basin to the next meeting.
81. The Meeting decided due to time constraints not to discuss FEAP-document 5.1 on subdivision of Danish Straits. FEAP stated that the reason for sending the document is that other subdivisions were to be discussed at the meeting under agenda point 5.5. FEAP finds that it therefore is very relevant to discuss subdivision of Danish Straits, and FEAP will raise the action in coming HELCOM-meetings, e.g. the Commission-meeting.

A16. Any other business

80. The Meeting recalled that IN EUTROPHICATION 15-2019 agreed to propose to State & Conservation changing the name of the group to HELCOM Expert Network on Eutrophication to better reflect the mode and scope of the work. The Meeting took note that the name can be changed when next updating the Terms of Reference (ToRs) for the group, which are valid for 2019 – 2021. The Meeting agreed to propose changing the name when the ToRs need to be updated.
81. The Meeting agreed to have the next meeting of the group as an online meeting in late May or early June. The secretariat will organize a Doodle poll for finding a date for the meeting.
82. The Meeting agreed that the next meeting would focus on the confidence assessment.
83. The Meeting took note that Germany hopes that for workload purposes the next face to face meeting of the network would be organized in February or March instead of January since the OSPAR ICG EUT meeting is already scheduled for January 2021.

Annex 1. Meeting participants

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* Chair

[Annex 2. Statement from HELCOM Expert Network on Eutrophication to State and Conservation regarding the provisional timeline for HOLAS III](#)

HELCOM Expert Network on Eutrophication wishes to bring into attention of State and Conservation and GEAR that for part of the Contracting Parties reporting of data for the year 2021 completely by the second quartile of 2022, which is suggested in the provisional timeline for HOLAS III process, is hard to achieve due to nationally set data reporting routines.

The network points out that 2021 eutrophication data is scheduled to be reported by 1 September 2022, following the set ICES reporting deadline. However, the network stresses that if HELCOM would make a clear statement of an earlier reporting deadline for the year 2021 data at an early stage, this could be brought forward nationally in order to change the reporting time for 2021 data in order to achieve earlier data submissions. The network proposes deadline 31 March for reporting eutrophication data, specifically for year 2022 in order to reach HOLAS III deadlines.

The network asks if updating the indicator reports could be slightly delayed to early 2023 in order to avoid overloading of national experts during last half of 2022.

The network points out that if no solution for the conflict in dataflow timelines for 2021 is found, this could lead to eutrophication assessment covering only years 2016-2020.