Baltic Marine Environment Protection Commission

Ninth Meeting of the Working Group on Reduction of
Pressures from the Baltic Sea Catchment Area

PRESSURE 9-2018

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Background

HOD 51-2017 approved the PLC-7 project proposal. The project formally started 1 January 2017 and runs until 2021.

This document includes a progress report of the project, including accomplished tasks and status of current activities.

The remaining activities of the PLC-6 project are being finalized under the PLC-7 project in cooperation with the RedCore DG team. Most of the PLC-6 activities are already accomplished and a few are to be finalized.

The fifth PLC-7 project meeting (PLC-7 IG 5-2018) will take place on 17-19 December 2018 in Helsinki at the premises of the Secretariat.

Action requested

The Meeting is invited to take note of the progress of the PLC-7 project and of the foreseen deadlines.

Progress with the Seventh Baltic Sea Load Compilation (PLC-7)

HOD 51-2017 approved the PLC-7 project proposal. The project formally started 1. January 2017 and runs until 2021.

Expected results and organisation

The expected results are:
1. The PLC assessment data set based on annual and periodic reports of water- and airborne inputs of nutrients and selected hazardous substances from 1995 to 2017 (periodic for 2017);
2. The updated HELCOM Core Pressure Indicator on nutrient inputs (update of MAI fulfilment follow-up) covering data from 1995 to 2017;
3. Updated scientific report on follow up progress toward national reduction targets for nutrients, CART follow-up assessment, covering data from 1995 to 2017;
4. A thematic report on sources of nutrients;
5. A thematic report on effectiveness of measures to reduce nutrients inputs to the Baltic Sea;
6. A thematic report on input of hazardous substances;
7. Executive summary of Seventh Baltic Sea Pollution Load Compilation (PLC-7) including policy messages (also on CART);
8. A report on intercalibration on heavy metals and nutrients between at least 1-2 laboratories from each Contracting Party conducting chemical analysis;
9. Updated PLC guidelines on nutrients and selected heavy metals, including updated statistical methodologies used for PLC and MAI/CART assessments.

The PLC-7 project will be based on annual water- and airborne data on nitrogen, phosphorus and selected heavy metals from 1995-2017, periodical data from 2017 supplied with former reported periodical data from e.g. 2006 and 2014. Further data on measures taken and planned measures will be collected from the countries.

The assessment will use the new PLC database (produced by HELCOM PLUS project) for reporting and quality assuring data. The tools developed by the HELCOM MAI-CART OPER project will be used to complete the assessment data set, make normalizations, trend and other statistical analysis and the evaluation of fulfilment of MAI and CART.

Further, PLC-7 project assisted by RedCore DG has taken over the responsibility to finalize the remaining planned products off the PLC-6 project. Some of the PLC-6 project are forwarded as separate documents for PRESSURE 10/2018.

The project is organized in tasks reflective the objectives, and grouped in three working packages:

1. ESTABLISHING DATASETS AND UPDATE OF MAI AND CART
   • Monitoring and reporting of national annual/periodical data
   • Updating PLC-Water database and data on atmospheric inputs (PLC-Air)
   • Establishing the periodic assessment data set

2. PERIODIC ASSESSMENT
   • Assessment of sources of nutrients
   • Assessment of the effectiveness of measures
   • Assessment of inputs of selected hazardous substances
   • Compilation of the executive summary including policy messages

3. METHODOLOGIES
- Updating guidelines and a statistical methodology report
- Intercalibration on heavy metals and nutrients

Progress for the PLC-7 project

Status of progress is given in the same order as shown in table 1 in the "Overall timetable for the PLC-7 project".

Table 1: Overview of the main tasks and the planned start and end for each task. "1/2017" indicates first quarter of 2017. The right column indicates "Revised end of task". Where the deadlines foreseen to change from the planned PLC-7 project it is marked with italic. Task 12-16 are extra tasks added to the PLC-7 project.

PLC- 7 task	Start	End	New end
1. Project management (including about 12 project team meetings)	1/2017	4/2020	4/2020
2. Workshops (2 workshops are planned)	1/2017	4/2019	4/2019
3. Monitoring and compilation of national annual/periodical data	1/2017	4/2017	4/2017
4. Reporting of quality assured national annual/periodic data	3/2018	3/2019	3/2019
5. Establishing the periodic assessment data set 1995-2017	2/2019	4/2019	4/2019
6. Assessment of sources of nutrients	4/2019	1/2020	1/2020
7. Assessment of the effectiveness of measures	1/2019	1/2020	1/2020
8. Assessment of inputs of selected hazardous substances	3/2019	2/2020	2/2020
9. Compilation of the executive summary and policy messages	3/2020	4/2020	4/2020
10. Updating guidelines and statistical methodology report	1/2017	1/2018	*4/2018*
11. Intercalibration on heavy metals and nutrients	3/2017	2/2018	*3/2018*
12. Finalizing PLC-6 assessment products	*1/2017*	*2/2018*	*1/2019*
13. Update Core indicator on nutrient inputs 1995-2015	*1/2017*	*1/2018*	*2/2018*
14. Update Core indicator on nutrient inputs 1995-2016	*1/2018*	*4/2018*	*4/2018*
15. Update Core indicator on nutrient inputs 1995-2017	*4/2019*	*1/2020*	*4/2019*
16. Update scientific report on progress towards CART 1995-2017	*4/2019*	*3/2020*	*3/2020*

Task 1:

The project has conducted four project meetings:
- PLC-7 IG1-2017 8-9 June 2017 at the premises of the Government of Åland in Mariehamn, Åland Islands
- PLC-7 IG2-2017 18-20 December 2018, HELCOM Secretariat in Helsinki, Finland
- PLC-7 IG3-2018 23-25 May 2018 , DCE Aarhus University in Silkeborg, Denmark
- PLC-7 IG4-2018 1-12 September 2018, Swedish Agency for Marine and Water Management (SwAM), in Gothenburg Sweden

The fifth meeting is planned on 17-19 December, HELCOM Secretariat, Helsinki, Finland with the following main agenda items:
- First results of the annual and periodic reporting 2017
- Follow-up of the NutriRed workshop including discussion of a revised draft of scientific CART assessment report
- Final draft of statistical report
- Preparation of the first PLC-7 workshop
- Background information to be collected for the PLC-7 assessment
- Atmospheric phosphorus deposition, natural background losses, and other ongoing PLC-7 project activities

Task 2:

The first workshop will be planned for spring 2019. Some potential items are: Source apportionment methodologies, natural background losses, how can we improve collection on information for the next assessment of effectiveness of measures, atmospheric phosphorus deposition.

Task 3:

Data from 2017 data are basis for the PLC-7 assessment. Contracting Parties has monitored and collected data during 2017 (see item 3 table below). No contracting parties has indicated that the monitoring has failed. Denmark has reported issues with the analysis of (organic) nitrogen and phosphorus in first quarter of 2017.

Task 4:

The annual and periodical templates have been prepared by HELCOM Secretariat and the periodical assessment data manger (SYKE), respectively. National data reporters are invited to verify background information, amend it in the templates, and upload the updated annual templates to the
water reporting portal and inform the HELCOM Secretariat by **21 September 2018**. National data reporter are further invited to review and update the national datasets by **30 November 2018**; upload the updated datasets to the PLC-7 Workspace and inform the Secretariat accordingly.

Deadline for reporting annual PLC data are by **31 October 2018** and the periodical assessment data of PLC-7 (2017 data) by **the end of 2018**.

Tasks 5-9:

These activities are not yet started.

Task 10:

PLC guidelines:

The PLC guidelines have been markedly revised. The revised guidelines are submitted for PRESSURE 9-2018 (document 6-9) for consideration and endorsement.

Statistical methodology report:

A statistical methodology report was elaborated as one product of the PLC-6 project. One PLC-7 task is to elaborate a revised version of the report taking into account the agreed statistical assessment methodologies on evaluating progress towards fulfilling MAI and CART. A draft of the report was submitted and discussed at the PLC-7 IG4/2018 meeting.

The meeting invited Denmark to amend the report and circulate it to the PLC-7 Implementation Group for commenting **by 24 October 2018**. The meeting invited the project group members to comment on the report **by 16 November 2018** with an intention to submit the final version to the PLC-7 IG 5-2018 meeting in December 2018.

Based on the draft statistical report chapter 11 in the PLC guidelines on statistical methods have been updated.

Task 11:

Fifteen laboratories was planned for participating in the intercalibration exercise according to the project description and the budget. 31 laboratories ended up participating, but only 29 send analysis results. Samples were send to laboratories by DCE, Denmark (who carries out the intercalibration) mid-February 2018, and laboratories send back analysis results during March 2018. A first draft of the report on results of the

intercalibration was presented for and discussed by PLC-7 IG3-2018 and after a commenting round a final draft was considered at PLC 7 IG4/2018.

The Meeting took note on the report and agreed on publication of the intercalibration report as a supporting material for the PLC-7 project. The report will be published during autumn 2018. DCE Aarhus University has covered the extra cost due to participation of the double number of laboratories that was allocated funding to in the PLC-7 project budget.

The conclusions and recommendation of the PLC-7 intercalibration are:

Conclusions:
In general, the analytical quality is good and comparable between the laboratories with a few exceptions.

For PO_4-P and P-total in waste water, the relative coefficients of total variation (CV(R)) are high which is due to low concentrations. The corresponding absolute values, reproducibility, S(R), are 0.003 and 0.013 mg/L, which is assessed as acceptable.

Pb showed low recovery and is the only parameter with two outliers in both freshwater and waste water. Further three laboratories were determined as stragglers for Pb in waste water, see outlier tables page 69 and 85. However, one laboratory was determined as outlier in both matrices. The PLC-6 intercalibration from 2012 did not show the same deviation for Pb concerning outliers and recovery.

In freshwater sample C, NO_2-N has low relative recovery. However, the main reason is likely to be due to very low concentration of NO_2-N. The calculated spike value was 0.01 and the measured spike value was 0.006.

Comparing intercalibration under PLC-7 project (2018) with the corresponding activity under PLC-6 project (20132, in general, the analytical quality for most parameters has approved to some extent. For PO_4-P and P-total in waste water the higher CV(R) % in PLC-7 can be explained by very low concentrations. For Pb in both freshwater and waste water the analytical quality seem to have been reduced in 2018, most significant in waste water. There are no obvious explanation for these results.

In PLC-6 Hg in freshwater has a high deviation for sample A/B and low recovery in sample C (77%). It was suggested that this could partly be due to bottling in PE bottles. In PLC-7 glass bottles were used for Hg in both freshwater and waste water. In PLC-7 there was a reduced deviation and the recovery of sample C increased to some extent (85%). In general, analysis of Hg can be challenging.

Recommendations for future intercalibration

It is not clear whether the laboratories have used limit of quantification, LQ, or limit of detection, LD. There are different tradition for this in the different countries. In the instruction letter from DCE, it was asked for LD. However, it is known that some laboratories reported LQ. A request to the laboratories to send information if they have used LQ or LD gave only very few replies. This should be much clearer explained in a next intercalibration.

Spike level nutrients: The freshwater samples were spiked with nutrients to a higher level but the waste water was not, which gave very low concentrations for some nutrients and therefore high relative deviation. In a next intercalibration, the waste water should also be spiked with nutrients in order to generate data that are more robust.

Spike level metals: In order to secure, that most laboratories could detect the parameters the spike level was quite high. It has been debated that the levels where unrealistic high for some of the metals. In a next intercalibration, the spike level should be lowered.

Freshwater samples for metal were not conserved with acid. That should be done next time in order to improve stability.

The waste water were autoclaved in order to secure stability. It could be considered to do the same with fresh water next time.

Chapter 12 in the PLC guidelines (Quality assurance of chemical analysis) has been updated based on the results from the PLC-7 intercalibration exercise.

Task 12:

PLC-7 project assisted by RedCore DG have worked with finalizing the following PLC-6 assessment products since January 2018:

- Assessment of inputs of hazardous substances (finalized and published 2018)
- Input from 7 big rivers (finalized and published 2018)
- Evaluation of the effectiveness of measures including source quantification based on source oriented source apportionment (report to PRESSURE 9/2018)
- Report on PLC-6 background information (report to PRESSURE 9/2019)
- Report on overview of methods applied in PLC-6 (report to PRESSURE 9/2019)
- Executive Summary of the PLC-6 project (document 6-7 PRESSURE 9/2018)
- Scientific CART assessment report (document to be presented and discussed on NutriRed Workshop 12-13 November 2018)

A draft of the scientific CART assessment report will be send to PRESSURE contacts and participants to the NutriRed workshop (12-13 November 2018, hosted by BNI Stockholm University) approx. 3 weeks before the workshop. Based on discussion and comments from the workshop and received written comments a revised draft of the report will be submitted to the PLC-7 IG5 meeting on 17-19 December 2018. A final report will be finalized and published in the first quarter of 2020.

Task 13:

The "Core Pressure indicator on nutrients inputs (MAI follow-up)" has been updated to include annual nutrient input data for 1995-2015. The updated indicator was adopted by HOD-54/2018 and published in august 2018 on HELCOM web-site:

http://www.helcom.fi/Core%20Indicators/Inputs%20of%20nutrients%20to%20the%20subbasins%20HELCOM%20core%20indicator%202018.pdf

The assessment dataset for the indicator is also available on the HECOM web-site:

http://www.helcom.fi/baltic-sea-action-plan/nutrient-reduction-scheme/progress-towards-maximum-allowable-inputs/

Task 14:

A new update of the "Core Pressure indicator on nutrients inputs (MAI follow-up)" with annual input data covering 1995-2016 are to be prepared for PRESSURE 9/2018. Waterborne data for the indicator was finalized during the PLC-7 IG4-2018 meeting in September, and data on atmospheric deposition was received by 18 September leaving only short time for assessing data and making the statistical assessments.

After commenting and approval by PRESSURE 9/2018 the updated indicator will be submitted to HOD 5/2018 for adoption, and its publication is expected in January 2018.

Task 15-16:

These activities are not yet started.