



Outcome of the 12th Meeting the Sixth Baltic Sea Pollution Load Compilation Project (PLC-6) Project Group (PLC 6 12-2016)

Table of contents

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|--|----|
| Outcome of the Twelfth Meeting the Sixth Baltic Sea Pollution Load Compilation Project (PLC-6) Project Group (PLC 6 12-2016)..... | 2 |
| Introduction | 2 |
| Agenda Item 1 Adoption of the Agenda | 2 |
| Agenda Item 2 Information from the Project Manager, Secretariat and Contracting Parties | 2 |
| Agenda Item 3 Results of annual and periodic reporting of the inputs of nutrients and selected heavy metals to the Baltic Sea and the results of using the reporting WEB application | 3 |
| Agenda Item 4 Elaboration of the details of the contents of the PLC-6 report..... | 7 |
| Agenda Item 5 PLC-7 project proposal | 9 |
| Agenda Item 6 Revision of PLC guidelines | 9 |
| Agenda Item 7 Future work | 9 |
| Agenda Item 8 Any other business | 9 |
| Agenda Item 9 Closing of the Meeting | 9 |
| Annex 1 List of Participants | 10 |
| Annex 2 List of nominated PLC-6 Project Members..... | 11 |
| Annex 3 Proposed structure for PLC-6 assessment: Chapter 3. Catchment characteristics | 12 |
| Annex 4 List of methodologies to be included into an overview..... | 14 |
| Annex 5 Revision of PLC Guidelines | 16 |
| Annex 6 Roadmap for implementation of HELCOM PLC-6 project (updated 16.09.2016)..... | 21 |

Outcome of the Twelfth Meeting the Sixth Baltic Sea Pollution Load Compilation Project (PLC-6) Project Group (PLC 6 12-2016)

Introduction

0.1 With reference to the decisions of the Eleventh meeting of the HELCOM project Sixth Baltic Sea Pollution Load Compilation (Outcome of PLC-6 11-2016), the Twelfth meeting of the Sixth Baltic Sea Pollution Load Compilation (PLC-6) project group (PLC-6 12-2016) was held at the premises of the HELCOM Secretariat in Helsinki, Finland, on 14-16 September 2016.

0.2 The Meeting was attended by representatives from all the Contracting Parties, except European Union and Latvia. Representatives of the data consultants SYKE, Finland and EMEP, Norway also attended. The List of Participants is contained in **Annex 1**. The List of nominated PLC-6 Project Members is contained in **Annex 2**.

0.3 The primary aims of the Meeting were to:

- discuss the results of reporting of annual and periodic data on nutrient inputs to the Baltic Sea and selected hazardous substances as well as the preparedness of the dataset for the assessment; how to finalize data reporting/validation and how to proceed with establishing an assessment dataset;
- discuss the results of collection of background information and data for the PLC assessment and how to collect missing information;
- finalize the outline for the PLC-6 assessment and identify the deadlines for the draft assessment products;
- discuss issues related to PLC-7 project including necessary adjustment to the PLC guidelines regarding data collection;
- follow up the development of the PLC database user tools and assessment tools by MAI-CART OPER project.

0.4 The Meeting was chaired by the PLC-6 Project Manager, Mr. Lars M. Svendsen, Denmark and Mr. Dmitry Frank-Kamenetsky, HELCOM Secretariat, acted as Secretary.

Agenda Item 1 Adoption of the Agenda

Documents: 1-1

1.1 The Meeting adopted the Agenda of the Meeting as contained in document 1-1.

Agenda Item 2 Information from the Project Manager, Secretariat and Contracting Parties

2.1 The Project Manager and the Secretariat informed the Meeting of relevant outcomes from recent HELCOM meetings (HOD 50-2016, RedCore DG 13-2016, etc.).

2.2 The Meeting was informed by Germany that the periodic data 2014 (diffuse sources for monitored and unmonitored areas, retention yet to be estimated) will be reported for the PLC-6 assessment.

2.3 Estonia informed that the data on the river Narva are in the national database but they might be obtained by estimation, due to restriction of measurements across the river.

2.4 The Meeting was informed that Rasmus Kaspersson who represented Sweden in the PLC project changed his position and will not take part in the PLC work anymore. The Meeting thanked Rasmus for the fruitful cooperation and for the contribution to HELCOM work.

2.5 The Meeting took note of the information on national consultation in Denmark regarding implementation of HELCOM nutrients input reduction requirements and effectiveness of measures as well as new permits for agriculture on higher application of fertilizers as a part of a new “Growth Plan for agriculture and aquaculture”. This plan will enable higher agriculture and aquaculture production and implementation of regional targeted measures to compensate the increased fertilization and aquaculture nitrogen losses. Contemporary about 200 new Danish river monitoring stations are planned to be installed in 2016.

Agenda Item 3 Results of annual and periodic reporting of the inputs of nutrients and selected heavy metals to the Baltic Sea and the results of using the reporting WEB application

Annual reporting

Documents: 3-1, 3-2

3.1 The Meeting took note of the information by the Data Manager on the result of the annual data 2013 and 2014 reporting, which include data on total N and P, their fractions and flows from monitored, unmonitored areas and direct sources as well as heavy metals from rivers and point sources.

3.2 The Meeting noted that the annual data 2013 were reported by all countries but verification is in progress. The completeness of the reporting by countries at the end of August 2016 was the following:

- **Denmark** – reported all data on nutrients but the data on heavy metals are not reported. The data on heavy metals from 4 rivers for 3-4 years including 2013/2014 and direct inputs will be reported by 28 September. There is a need for some minor fine-tuning of the national data. Denmark will not report data on N and P fractions from MWWTP;
- **Estonia** – data on total P and N, flows and heavy metals are reported. Data on direct MWWTP also reported except heavy metals;
- **Finland** – the report is almost complete but some data are still missing mainly for industrial sources;
- **Germany** – the report is complete. Data on PP04 are not available for all direct MWWTPs;
- **Latvia** –the dataset is incomplete. Mainly data on national share of the load and some flows by transboundary rivers are missing. Also flow data on unmonitored areas are missing. Heavy metals input from MWWTP and industry are scarcely reported, due to data availability;
- **Lithuania** – the report is almost complete. The only reporting data on transboundary catchments are not complete;
- **Poland** – data are reported except industrial sources. The data on industrial sources are not available. The data on the MWWTP-MPL0429 [should be deleted from the PLC database](#);
- **Russia** – data on unmonitored areas are not available, and for Pregolya river only the dissolved fractions will be reported. All the other data are reported. Data on some MWWTP are reported as aggregated sources;
- **Sweden** – data are reported but some rivers which are included into the unmonitored areas should be removed from the database. The Data Manager is requested to remove the erroneous data from the database on basis of information that will be provided by Sweden. No data on heavy metals where available from industrial sources.

3.3 The Meeting requested the Data Manager or the application software administrator to make names of monitoring stations in the database available in the Web-application.

3.4 The Meeting concluded that the annual data 2013 have been almost completely reported by all the countries and requested national data assurers to *verify* data and *approve* national data in the PLC

database (quality level 3) before the **1 October 2016**. The Contracting Parties were invited to check all the data manually, in order to avoid erroneous data being accepted.

3.5 The Meeting noted that the annual data 2014 were reported by all countries but verification is in progress. The completeness of the reporting by countries at the end of August 2016 was the following:

- **Denmark** – reported all data on nutrients but the data on heavy metals are not reported. The data on heavy metals from 5 rivers and direct inputs will be reported by 28 September;
- **Estonia** – almost all the data are reported, except data on Narva;
- **Finland** – report is almost complete, but some data are still missing mainly on industrial sources. Fractions of N and P are not reported and will not be reported as the data are unavailable;
- **Germany** – report is complete;
- **Latvia** - the dataset is incomplete. Mainly data on national share of the load by transboundary rivers are missing. Also data on unmonitored areas are missing. Heavy metal inputs from MWWTP and industry are scarcely reported due to data availability;
- **Lithuania** – report is almost complete except the data on transboundary inputs. Also data on direct inputs from industries and MWWTP are incomplete. The national reporter is invited to validate whether the missing data are essential for the assessment and whether the parameters could be estimated based on the data reported in other years;
- **Poland** – the reporting is complete regarding sub catchments. Some transboundary data are partly included into the dataset by Russia or will be estimated at the stage of elaboration of the assessment dataset. There are no data on direct industry available. The data on the MWWTP-MPL0429 *should be deleted from the PLC database*;
- **Russia** - data on unmonitored areas are not available. All the other data are reported. Data on MWWTP are reported as aggregated sources;
- **Sweden** – the report is completed, except Cd inputs from MWWTs. Sweden will report these data no later than 1 October.

3.6 The Meeting noted that only three Contracting Parties (Denmark, Finland and Germany) reports inputs of nitrogen and phosphorus from marine fish farms, and requested the other Contracting Parties to check if they have marine fish farms and report inputs from these accordingly.

3.7 The Meeting concluded that the annual data 2014 have been almost completely reported by all the countries and requested national data assurers to *verify* data and *approve* national data (quality level 3) in the PLC database before the **1 October 2016**. The Contracting Parties were invited to check all the data manually in order to correct errors revealed.

3.8 The Meeting requested the Data Manager to make summaries roughly of total inputs of nitrogen and phosphorus from monitored, unmonitored areas and direct sources country by basins.

3.9 The Meeting also noted that the verification of the assessment data set on total phosphorus and nitrogen as well as flows from monitored, unmonitored areas and direct sources, including filling in data gaps/missing data has to be complete by **15 November 2016**, and the Contracting Parties then have three weeks until **7 December 2016** to approve the assessment data set.

Reporting of data on transboundary input

3.10 The Meeting scrutinized the reported annual data on transboundary inputs in the recently updated table presented by the Data Manager ([TRANDBOUBDARY LIST 09 2016](#)), placed in the PLC-6 Workspace in the HELCOM Meeting Portal.

3.11 The Meeting took note of the information by Poland that the data on transboundary input in 2012 from Ukraine, Czech Republic and Belarus are available and the reporting is in progress. It is not certain at the moment whether the data on loads from Slovakia will be available. The Meeting also noted that the data on river Oder is also from 2012.

3.12 The Meeting took note that the total load data on Pregolya river (2014) are obtained from the screening exercises by BASE project.

3.13 The Meeting noted that the Selesnevka river, which is new in the list of transboundary rivers, is of high importance for the assessment as some remarkable sources are located at this river.

3.14 The Meeting discussed the discrepancy in data on the river Narva obtained by Russian and Estonian parts. The Meeting invited national experts from Russia and Estonia to reach an agreement on the data to be included into the PLC database. The Meeting also noted the extremely low concentrations of P and consequently total load by the river Narva reported for the year 2014 by Estonia. The Meeting invited national experts to thoroughly investigate possible reasons of the variation in P concentration in order to avoid influence of analytical errors. The Meeting requested national experts from Estonia and Russia to find a common solution regarding the use of the data on flows and concentrations measures in the river Narva and inform the project manager and the Secretariat by 28th September.

3.15 The Meeting invited the national experts to verify national data in the PLC database using the compiled table ([TRANDBOUBDARY LIST 09 2016](#)) by **28 September**. The experts are also invited to check conflicts in the data on transboundary inputs and resolve them bilaterally.

Periodic reporting

3.16 The Meeting took note of the information by the Data Manager on the status of the periodic data 2014 (2012 for Germany and Poland) reporting at September 2016. The Meeting scrutinized the reported annual data and concluded on the status of reporting as following:

- **Denmark** – report is rather complete. There are minor gaps in data on indirect industrial sources;
- **Estonia** – only retention, indirect MWWTP and industrial sources reported. The data on diffuse sources were reported but not reflected in the database. The Meeting requested Estonian expert and the data manager to finalize reporting by 28 October;
- **Finland** – the report is complete. Very few data are missing;
- **Germany** – will report periodic data for 2014 (diffuse sources for monitored and unmonitored areas, retention yet to be estimated) by 28 October;
- **Latvia** - the report is incomplete. Aggregated data on aquaculture plants are reported;
- **Lithuania** – the report is almost complete except indirect point sources;
- **Poland** – the data are available. All the data will be uploaded and inserted into the database by 28 October;
- **Russia** –the report has been recently completed but some data have not been inserted into the database. Russia will clarify the issue with Data Manager by 28 October;
- **Sweden** - the report is almost complete. Indirect point sources are reported in aggregated form. Minor fine tuning of the data is still required. Some data on industrial sources can't be provided due to lack of relevant national reporting.

3.17 The Meeting concluded that most countries have completed the reporting of periodic data. The remaining data will be reported **by 28 October** as well as all required clarifications will be made by the same date.

3.18 The Meeting also requested national data assurers to verify data in the database (to quality level 3) by **28 October** and requested the Data Manager to assist the countries in the procedure, especially in case of reporting thousands point sources which require grouping records in the database for acceptance.

3.19 The Meeting also discussed the obstacles for re-reporting old data. The Meeting emphasized that the whole revision has to be done as soon as possible. The Meeting noted that there were no progress achieved in updating the Danish data since the last PLC-6 meeting in May 2016, despite an effort undertaken by Danish national data reporter. Nonetheless, the procedure of the data re-reporting was clarified and the first trial with the data 1995 was made. The Meeting noted that all the data for the update are available and requested the Data Manager to pay special attention on assisting Denmark in updating national dataset.

Reporting annual data 2015

3.20 The Meeting took note that the deadlines for the annual reporting 2015 have to be postponed, due to priority falls on completion of the reporting PLC6 data.

3.21 The Meeting agreed that the templates will be sent out by the Data Manager by **15 October** and with the reporting deadline **15 December 2016**.

3.22 The Meeting invited the Data Manager to report the progress in 2015 reporting procedure to RedCore DG 14-2016.

Reporting of data on input of selected hazardous substances

3.23 The Meeting took note that most of the countries have reported data on heavy metals. The Meeting also took note that the PLC-6 will serve as a background for the following years when more reliable data would be collected. A more detailed assessment of the input of hazardous substances might be done by the PLC-7 project.

3.24 The Meeting took note of the information by Sweden regarding the content of the chapter on hazardous substances and agreed that the draft will be submitted before PLC-6 13-2016 taking also into account the discussion at PRESSURE 5-2016.

3.25 The Meeting also agreed on the further steps to compile the data on the input of hazardous substances as following:

- Clarifying discussions on what can be reported by the Contracting Parties to PRESSURE 5-2016 (October 2016);
- Preparation of a reporting template (this data request will not be included in the ordinary PLC reporting, as the necessary infrastructure is not in place, and as this is a test which will be for future consideration if the reporting continued on a more regular basis). Reporting data/information late 2017 or early 2018;
- Data reporting (for waterborne and WWTP effluents. Airborne deposited PFAS/PFOS will be provided by EMEP in a test, atmospheric deposition is not considered to be a significant source for inputs of nonyl- and octylphenols). Reporting 2018;
- Data compilation and assessment. Late 2018 or early 2019.

3.26 The Meeting took note of the information by Finland that the screening campaign aimed at PFAS has been recently launched and by Sweden that a report on PFASs in ground and surface waters has been recently published.

EMEP report on airborne input of pollutants into the Baltic Sea

3.27 The Meeting considered the draft report by EMEP on nitrogen and selected hazardous substances deposition on the Baltic Sea (Presentation 1).

3.28 The Meeting requested the Secretariat to clarify with the MSC-E the state of the report on PBDE which was included into the contract.

3.29 The Meeting discussed the results presented by EMEP (presentation) based on a revised chemical model which showed markedly higher deposition of N during 2000-2010. The Meeting emphasized the need to also recalculate N deposition for 1995-2000 and highlighted that the recalculation of the airborne N, based on the new EMEP model will significantly influence the nitrogen inputs to the Baltic Sea in the BSAP reference period (1997-2003) and accordingly the CART's values agreed in the HELCOM nutrient reduction scheme.

3.30 The Meeting noted that the non-normalized data (1995-2014) on deposition of nitrogen to the Baltic Sea sub-basins, including source-receptor matrix for 2014 of the Baltic Sea, will be available for the assessment by 1 October 2016. The Meeting also noted that the part of the dataset regarding contribution

by countries to sub-basins and the normalized annual N-deposition demands much labour to get finalised. These data will be available by 15 November.

3.31 The Meeting took note of the information be EMEP on the structure of the report on a contribution to the N deposition from different sectors (Presentation 2). The Meeting noted that the report will be available on EMEP's website via a password for commenting by the Contracting Parties, and a final report will be delivered to HELCOM by the end of 2016. The Meeting highlighted the importance of these data for the source apportionment objectives of the project.

Using the reporting WEB application

3.32 The Contracting Parties provided feedback regarding the use of the WEB reporting application and identified the following needs for its further improvement. In particular, the Meeting suggested to develop the following user tools:

- a tool enabling data quality assurers to mark a group of data/column for approving procedure (e.g. in quality level 3 after correction of inserted data and marking suspicious data, the remaining could be approved in one procedure)
- a list of rejected and inserted data;
- an update of the user manual published at the PLC WEB application;
- a tool which enables reporters to retrieve from the database information on background data on catchments, stations, point sources for a specific year, etc.;
- a tool which generate an overview of the reported and missing data (such as tables in documents 3-1 and 3-2 i.e., cross table by source and parameter for a specific year on mandatory parameters);
- a tool to follow the status of the reporting, e.g. uploaded, checked, inserted; the show logs should be also saved for each operation;
- a tool to select data by river catchment area as well as the permit for the countries sharing the transboundary river to view all the data along the river;
- the WEB reporting application should enable national data reporters to get an access to correct all the national dataset, not only those which they have uploaded and inserted themselves;
- an extension to view also the periodic data, i.e., diffuse sources, retention and source apportionment;
- a tool to separate the direct and indirect point sources (include the recipient catchment)

Agenda Item 4 Elaboration of the details of the contents of the PLC-6 report

Documents: 4-1

Assessment of effectiveness of measures and potential reduction in nutrient inputs

4.1 The Meeting discussed the results of the questionnaire on measures and agreed on further steps with deadlines to work out the chapter of the PLC-6 report dedicated to the assessment of the effectiveness of measures.

4.2 The Meeting decided to investigate how the document prepared by GEAR group on Programmes of measures for the assessment can be used. The Meeting requested the Secretariat to circulate a link to the document by 23 September.

4.3 The Meeting agreed that Countries, which have not forwarded the questionnaire on measures (German, Latvia, Poland and Russia) or which will updated information already forwarded (Denmark, Finland and Sweden), should provide it by **14 October 2016**.

Supplementary information for PLC-6 report

- 4.4 The Meeting discussed the state of the background information as presented in document 4-1.
- 4.5 The Meeting concluded on the good availability of the agriculture-related data according to the responds by countries. Late respond received from Denmark informed that the data are to be available in the upcoming weeks. Germany proposed to provide missing background information to the team working on Chapter 3 of the PLC0-6 report next week.
- 4.6 The Meeting agreed that the first detailed overview of the agricultural data will be prepared and submitted to the PLC-6 13-2016 meeting. The overview will include also a suggestion on presentation of the data for the PLC-6 report.
- 4.7 The Meeting further discussed the data on connectivity of the population to WWTPs. The Meeting agreed that the percent of population not connected to the central sewerages could be used as a rough estimation of the population in scattered dwellings for the Contracting Parties not reporting numbers of scattered dwellings.
- 4.8 The Meeting discussed availability of the data on climate parameters and took note of the information by EMEP that the data on precipitation are available in the EMEP grid format. The data on temperature are available at selected the stations for the period 1995 to 2014. The Meeting emphasized that the data required relates to the whole Baltic Sea catchment area but not for the Baltic Sea only.
- 4.9 The Meeting decided that the format of the data will be discussed bilaterally by the PLC-6 Project Manager and EMEP (Jerzy Bartnicki) and the data in the agreed format will be submitted by EMEP **by 15 November**.
- 4.10 The Meeting agreed that the data on population is required in the country by sub-basin-wise format indicating the amount of people dwelling in the catchments areas of the Baltc Sea sub-basins. The Meeting agreed that the Project Manager will prepare the questionnaire on population and circulate it to the countries by **1 October**. The Meeting requested the national representatives to respond to the questionnaire by **15 November 2016**. The Meeting invited Contracting Parties to collect as recent data as possible close to the year 2014.
- 4.11 The Meeting also noted that for the assessment the input by the seven big rivers, there will be a need of information on population in the river basins. The Meeting requested the countries, in which the mouths of the big rivers are located, to collect data on population in the river catchments and report them to the Project Manager and the Secretariat by **15 November**.
- 4.12 The Meeting further discussed spatial data on the distribution of the monitored and unmonitored areas in the Baltic Sea watershed for the PLC-6 report. The Meeting agreed that the data should be updated for the PLC-6 report. The Meeting requested the Secretariat to distribute the spatial data on the monitored and unmonitored areas from the HELCOM database to the Contracting Parties in the ESRI shape file format by **14 October**. The Meeting invited the Contracting Parties to update the national datasets according to the state in 2014 and provide to the Secretariat by **15 November 2016**.
- 4.13 The Meeting agreed on the structure of Chapter 3 as presented in **Annex 3**. The Meeting welcomed the offer by Finland and Russia to compile data and present an outline for graphs and tables which could be used in Chapter 3 to PLC-6 13-2016. The Meeting also invited Poland and Sweden to assist in this work, if recourses are available.

Description of applied national methods

- 4.14 The Meeting discussed the availability of information on national methods and models used in different countries for the reported PLC-6 data and concluded on the content of the overview which is to be included into the PLC-6 report.
- 4.15 The Meeting agreed that the deadline for the reporting on national methodologies is **1 November 2016**. The Meeting also noted that the description is to be done in accordance with **Annex 4**.

4.16 The Meeting agreed that the Swedish report on uncertainties in flows and loads will be included into the agenda for PLC-6 13-2016.

Agenda Item 5 PLC-7 project proposal

No documents

5.1 The Meeting considered a draft project proposal prepared by the RedCore DG including the roadmap for PLC-7, presented by the Project Manager.

5.2 The Meeting discussed the work packages, their results and timeframes and in general agreed on the suggested draft project proposal. The Meeting also agreed that a project implementation group will be established in which all the Contracting Parties are represented.

5.3 The Meeting agreed that the final draft will be prepared by the PLC-6 Project Manager with assistance by the Secretariat by 23 September and then circulated to the PRESSURE working group by 1 October for final approval by HOD 51-2016.

Agenda Item 6 Revision of PLC guidelines

6.1 The Meeting took note of the suggestion on the parts of the PLC Guidelines to be updated, as well as on the timeframe for that update presented by the Project Manager.

6.2 The Meeting agreed on the list of the chapters requiring revision, timeframe for the revision and sharing of the responsibilities as indicated in **Annex 5**.

6.3 The Meeting agreed that the minor changes scheduled for 2016 should be presented for discussion at the PLC-6 13-2016 meeting. The major changes in the guidelines will be included as a work package in the PLC-7 project proposal (cf. para 5.3).

6.4 The Meeting invited all participants to consider which parts of the guidelines they might be willing to update under the PLC-7 project and inform the PLC-6 13-2016 meeting.

Agenda Item 7 Future work

No documents

7.1 The Meeting reviewed the list of project contacts and updated it (Annex 2).

7.2 The Meeting decided that the 13th PLC-6 project meeting will be held on from 30 November to 2 December 2016 at the Secretariat premises (in Helsinki, Finland).

7.3 The Meeting discussed and agreed on the updates of the PLC-6 Roadmap (**Annex 6**). The Meeting emphasized that the assessment data will not be available earlier than 10 February 2017, due to late reporting of the national data. Therefore, the MAI/CART workshop can *not* be arranged in February 2017 (winter holidays second half of February) and should be postponed to the first week of March 2017. The Meeting suggested to arrange a one and a half day workshop **6-7 March 2017**, hosted by BNI in Stockholm, Sweden.

Agenda Item 8 Any other business

8.1 No items were raised under this agenda item.

Agenda Item 9 Closing of the Meeting

Documents: 9-1

9.1 The Meeting adopted the draft Outcome of PLC-6 11-2016 Meeting. The Outcome will be made available in the HELCOM Meeting Portal, together with the documents considered at the Meeting.

Annex 1 List of Participants

| Name | Representing | Organization | E-mail |
|----------------------------|--------------|---|-----------------------------------|
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Annex 2 List of nominated PLC-6 Project Members

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Annex 3 Proposed structure for PLC-6 assessment: Chapter 3. Catchment characteristics

1. Division of the Baltic Sea Catchment area

2. Catchment characteristics

- a. Climate
 - i. Temperature
 - ii. Precipitation
 - iii. Run-off
 - iv. ...
- b. Catchment properties
 - i. % Lakes/streams
 - ii. Cultivated area
 - iii. Urban area
 - iv. Soil type
 - v. ...

3. Pressures

- a. Population density
- b. Point sources
 - i. Industrial plants
 - 1. Location (difficult for Russia, what about other countries?)
 - 2. Categorization (Size and Type) (is it possible to get from all countries?).
Can we obtain the proportion of different industrial categories?
 - ii. Wastewater treatment plants
 - 1. Location (difficult for Russia, what about other countries?)
 - 2. Categorization (Size and Type)
 - 3. Connectivity
 - 4. Removal % of BOD, N and P
 - iii. Aquaculture
 - 1. Location
 - 2. Production
 - iv. Other (e.g. shipping)
- c. Diffuse sources
 - i. Agriculture
 - 1. Fertilizer
 - 2. Livestock
 - 3. Nutrient surplus (?)
 - ii. Scattered dwellings
 - iii. Storm-water overflows
 - iv. Other (e.g. forestry)
- d. Atmospheric emissions

4. Monitoring

- a. Hydrological monitoring stations
 - i. % coverage
 - ii. Sampling frequency
- b. Chemical monitoring stations
 - i. % coverage

Parameters and sampling frequency

Annex 4 List of methodologies to be included into an overview

In accordance with the decision by PRESSURE 4-2016, the PLC-6 report will include an overview of the methodologies used in the countries in order to assure data transparency and compatibility.

Contracting Parties should provide information regarding which methodology have been used regarding:

- Calculation of loads (rivers, point sources)
- Loads from unmonitored areas
- Source apportionment (load and source oriented approach)
- Retention
- Transboundary inputs
- Uncertainty on inputs and sources.

It is important to make a summary for each applied methodology, that allow for making it possible to evaluate the applied methodologies include if and how data can be compared with corresponding data from other CP's. It is not enough to make a link to a scientific publication. Links could be provided in the reference list to the methodology summaries.

If the methodology applied it described in the PLC guidelines is sufficient to indicate which methodology is used.

Deadline for sending information on methodology is **15 October 2016**.

Please send the descriptions to the PLC 6 Project Manager Lars M. Svendsen, lms@dce.au.dk.

Applied methodology for the PLC 6 assessment from: _____ (country)

Descriptions filled in by (name): _____, E-mail:

When describing the method just insert further lines.

Calculation of flow and loads (rivers, direct point sources):

Inputs from unmonitored areas:

Source apportionment (load and source oriented approach):

Retention:

Transboundary inputs:

Uncertainty on flow, loads, unmonitored and total inputs and on sources:

Annex 5 Revision of PLC Guidelines

| Chapter | Title | Needed revision | When revise?/ Who? |
|----------------|--|---|---|
| | | <p>We need more guidance related to HZS, on background information to collect, evaluation on measures, further elaborate on statistical methods, include more guidance related to how to determine uncertainty on inputs, sources etc., more guidance related to sources apportionment, retention, quantifying inputs from diffuse sources, evaluations of fulfilling MAI and CART. Further consider what parameters to monitor. Consider if we want to include more related to air-deposition. Any needs to specify issues related to big rivers</p> | <p>We want to identify what should be updated/inserted related to monitoring/analyzing I 2017 – t be updated in 2016 under the PLC6 project, and what should be elaborated in 2017 under the PLC-7 assessment</p> |
| 1 | Introduction | | |
| 1.1 | Aim of PLC assessments | Update reflecting PLC strategy | 2016/LMS |
| 1.2 | Aims of the PLC guidelines | Proof | 2017/ |
| 1.3 | PLC data reporting requirements | Update tables 1.1 and 1.2 regarding which parameters to monitor. Refer to revised recommendations | 2016/LMS |
| 2 | Framework and approach of waterborne pollution load compilation | | |
| 2.1 | Overall framework | Adjust to reflect changes in the guidelines, e.g. chapter on which information to provide regarding measures and other background information | 2017/ |
| 2.2 | Quantification of total inputs to the Baltic Sea | Need to consider any additions related to HZS | 2017/ |
| 2.3 | Quantifying sources of waterborne nutrient inputs to the Baltic Sea | Need to consider any additions related to HZS – as we can't expect to make as detailed source quantification as for nutrients | 2017/ |

| Chapter | Title | Needed revision | When revise?/ Who? |
|----------------|---|---|---------------------------|
| 2.4 | Supporting tools | Update if any changes | 2017/ |
| 2.5 | Basic definitions | Proof checking | 2016/LMS |
| 2.6 | Division of the Baltic Sea catchment area | Proof checking | 2016/LMS |
| 3 | Guidance on monitoring | | |
| 3.1 | Flow measurements | Proof checking | 2016/LMS |
| 3.2 | Sampling strategy for water samples: site selection and sampling frequency | Any need for adding text related to special needs for HZS | 2016/LSo |
| 4 | Quantification of load from monitored rives | | |
| 4.1 | Method for calculation of the load from monitored rivers | Proof checking (flow) Any need for adding text related to special needs for HZS | 2016/LMS 2017/ |
| 4.2 | Methods for estimating the water flow for rivers where chemical and hydrological stations are not located at the same place | Any need for adding text related to special needs for HZS | 2017/ |
| 5 | Quantification of load from point sources | | |
| 5.1 | Municipal Wastewater Treatment Plants (WWTP) | Any need for adding text related to special needs for HZS | 2017/ |
| 5.2 | Industrial Plants (INDUSTRY) | Any need for adding text related to special needs for HZS | 2017/ |
| 5.3 | Aquaculture | Needs for updates due to revised recommendations? | 2017/ |
| 6 | Quantifying diffuse losses of nutrients | | |
| 6.1 | Quantification of the natural background nutrient losses | Update table 6.1 – consider further guidance – background losses HZS? | 2017/ |
| 6.2 | Quantification of nutrient losses from diffuse anthropogenic sources | Update methodology overview – more guidance, examples with experienced results from PLC6. Any issues for HZS? | 2017/ |
| 7 | Methods for estimation of inputs from unmonitored areas | Provide more guidance, more examples on methodology and examples of results from PLC 6. Any issues for HZS? | 2017/ |
| 8 | Transboundary rivers | Relevant for HZS??? | 2017/ |
| 8.1 | Introduction | Proof readings | 2016/LMS |
| 8.2 | Definitions | Proof readings | 2016/LMS |

| | | | |
|-----------|---|--|---------------------------------------|
| 8.3 | Estimates of actual and net transboundary inputs used in the 2013 Copenhagen HELCOM Ministerial Declaration | Consider rewriting based on PLC 6 results | 2016/LMS |
| 8.4 | Necessary information for quantifying transboundary input | Proof readings | 2016/LMS |
| 8.5 | Overview of transboundary rivers to take into account in annual reporting | Correct/update table | 2016/Pekka |
| 9 | Quantification of nutrient retention | Update chapter based on results from PLC6 – and new knowledge | 2017/ |
| 9.1 | Introduction | | |
| 9.2 | Quantification | | |
| 9.3 | Available retention data | | |
| 10 | Quantification of sources of waterborne inputs to inland waters and to the sea | Provide more guidance, more examples on methodology and examples of results from PLC 6. Any issues for HZS? Under PLC7 compare methodologies Major revision for PLC8 – separate project for evaluating to make one common methodology? | 2017/ 2017-2018/ 2018-2020/ |
| 10.1 | Source oriented approach: Quantification of sources of waterborne inputs into inland surface waters | | |
| 10.2 | Load oriented approach: Quantification on sources of waterborne inputs to the sea | | |
| 11 | Statistical methods and data validation | | |
| 11.1 | Introduction | Update | 2017/ |
| 11.2 | Data gaps | More guidance e.g. also related to HZS? | 2017/ |
| 11.3 | Outliers | More guidance e.g. also related to HZS? | 2017/ |
| 11.4 | Uncertainty of inputs (yearly input from a specific country or area) | More methods, guidance and examples on uncertainty on monitoring data, total inputs pr. Catchment, total for CP, on averages, individual point sources, source apportionment, model estimateds etc. | 2017/ |
| 11.5 | Hydrological normalization of riverine inputs | Need for updating/expanding methodology? | 2017/ |

| | | | |
|------------|--|---|-----------------|
| 11.6 | Trend analysis and the estimations of change | Including breakpoint analysis and including non-linear trend test and estimation of changes | 2017/ |
| 11.7 | Testing fulfilment of BSAP reduction targets | In changes decided e.g. workshop 2017 update in guidelines | 2017/ |
| 11.8 | Mathematical description of the Mann-Kendall trend test | Proof checking | 2017/ |
| 12 | Quality assurance on water chemical analysis | | |
| 12.1 | Specific aspects of quality assurance | Proof checking | 2017/ |
| 12.2 | Minimum quality assurance by the Contracting Parties | Any need for updating | 2017/ |
| 12.3 | Inter-laboratory comparison test on chemical analysis | Revised and extended after next intercalibration | 2018/ |
| 12.4 | The PLC-6 inter-laboratory comparison test on chemical analysis | Extended with PLC 7 results and also comparing with PLC 6 results | 2018/ |
| 12.5 | Validation of PLC-water chemical data | Update needed? | 2017/ |
| 12.6 | Recommended limits of quantification (LOQ) | Update needed? | 2017/ |
| 12.7 | Values under the limit of quantification | Update needed? | 2017/ |
| 12.8 | Technical notes on the determination of variables in rivers and wastewater | Update needed? | 2017/ |
| New | Background information and information on measures | New chapter to be developed | 2017/ |
| NEW | Introduce how to report using PLC WEB-application | | 2017/consultant |
| 13 | Annual PLC reporting requirements | Update reflecting changes in former chapters related to new parameters to monitored, data to collect data and information to report | 2017/ |
| 13.1 | Reporting of the inputs from monitored rivers | | |
| 13.2 | Reporting of the inputs from unmonitored rivers | | |
| 13.3 | Reporting of the inputs from direct point sources | | |
| 13.4 | Reporting of quality assurance | | |
| 13.5 | Reporting of the inputs from direct sources | | |

| | | | |
|----------------|---|---|------------|
| 14 | Periodic PLC reporting requirements | Update reflecting changes in former chapters related to new parameters to monitored, data to collect data and information to report | 2017/ |
| 14.1 | Source-orientated approach: Methodology for quantifying sources of waterborne inputs to inland waters | | |
| 14.2 | Load-oriented approach - reporting riverine load apportionment | | |
| 14.3 | Reporting on uncertainty on national data sets | | |
| 15 | References | Update | 2016-2017/ |
| Annex 1 | List of definitions and acronyms | Update | 2016-2017/ |
| Annex 2 | Annual reporting formats | Update reflecting changes in former chapters related to new parameters to monitored, data to collect data and information to report | 2017/Pekka |
| Annex 3 | Periodic reporting formats | Update reflecting changes in former chapters related to new parameters to monitored, data to collect data and information to report | 2017/Pekka |
| Annex 4 | Examples of instructions to personnel carrying out the sampling | Need for update – issues related to HZS | 2016/LSo |
| Annex 5 | Examples on measurement uncertainty estimations | Title confusing –it is uncertainty due to chemical analysis – need updating? | 2017-2018/ |
| Annex 6 | Examples on reporting industrial point sources with references to IE Directive and PRTR Regulation | Proof reading | 2017/ |
| Annex 7 | EMEP assessment of atmospheric nitrogen and heavy metal deposition on the Baltic Sea | Updates with change methodologies/approaches etc.? | 2017/ |
| Annex 8 | List of HELCOM PLC contacts | Remove it | |

Annex 6 Roadmap for implementation of HELCOM PLC-6 project (updated 16.09.2016)

| Task | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|--|--|---|---|------|------|------|
| 1. Development of standardized methodology to calculate uncertainties in national datasets, including methodology for filling in data gaps and missing data | <u>3rd-4th quarter:</u> Statistician to elaborate proposals for common methodology to calculate uncertainties and for filling data gaps and methods for testing fulfilment of reduction targets including discussing principles on 1. workshop | <u>1st Quarter:</u> Draft report on statistical methodologies discussed at PLC-6 2/2013 <u>LOAD 5:</u> Consider and discuss a further developed report on statistical methodology <u>PLC-6 3/2013:</u> discuss the final draft of the report and agree on how to include it in the PLC-6 guidelines <u>LOAD 6:</u> endorse statistical methodology report for publication on the HELCOM website as a technical (project) document. Also a summary chapter on statistical methods for inclusion in the PLC-6 guidelines will be presented to the meeting for approval. <u>PLC-6 4/2013:</u> approved the publication of the final statistical report on the HELCOM website. <u>MONAS:</u> take note and make use of the statistical methodology report Final report published and available online. | <u>HOD (September):</u> adopted the methodology to calculate uncertainties in national datasets, including methodology for filling in data gaps and missing data when approving the PLC-guidelines | | | |
| 2. Quality assurance (QA) issues, including Intercalibration/ | <u>May-June:</u> Contracting Parties to reply (by 12.6.) to questionnaire on QA issues | <u>February/April 2013:</u> Intercalibration/ intercomparison activity (led by Denmark) carried out | Revised final report published, including an addendum with the results of one lab which | | | |

| Task | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|--------------------------------------|--|--|---|---|------|------|
| intercomparison activity and | that was submitted on 10.5.12. | <p><u>LOAD 5</u>: informed of progress of the activity</p> <p><u>MONAS 18</u>: Draft report with results of intercalibration activity submitted as information</p> <p><u>PLC-6 3/2013</u>: evaluate the draft results of the intercalibration /intercomparison activity and discuss other quality assurance issues. Results and methodologies to be included in the revised PLC guidelines</p> <p><u>LOAD 6</u>: endorsed the publication of the final report of the intercalibration /intercomparison activity.</p> <p><u>PLC-6 4/2013</u>: finalize the chapter on QA issues in the PLC-6 guidelines. The final report was published and available online.</p> | were not included in the main report due to late data submission | | | |
| 3. Revision of PLC guidelines | <p><u>LOAD3 and MONAS 16</u>: Identify topics to revise/ include in guidelines. Accept roadmap, including clarifying need of a project.</p> <p><u>HOD37</u>: Accept roadmap and if decided a revision project</p> <p><u>August</u>: Start revision of guidelines, reporting status</p> | <p><u>1. Quarter</u>: Revision continued.</p> <p><u>PLC-6 2/2013</u>: revise guidelines (taking into account also input from PLC-5.5 and PLUS)</p> <p><u>LOAD5</u>: informed of progress with revising the guidelines.</p> <p><u>PLC-6 3/2013</u>: Further revision of guidelines, statistical</p> | <p><u>PLC-6 5/2014</u>: further elaborated the guidelines.</p> <p><u>PLC-6 6-2014</u>: to finalize the draft guidelines</p> <p><u>HOD (September)</u>: Endorsed revised PLC guidelines, with the understanding that the reporting formats</p> | <p><u>First, second and third quarters</u>:</p> <p><u>PLUS 8-2015</u>: finalized the annual reporting templates and provided final feedback for the periodic reporting template</p> <p><u>PLC6 8-2015 and REDCORE DG</u>: finalized</p> | | |

| Task | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|--|--|---|---|--|------|------|
| | to LOAD4, MONAS17, GEAR2 and HOD. <u>October, PLC-6 1:</u> Start revision of guidelines, including starting development of methodology for estimation of uncertainty of national dataset, filling in gaps and missing data | methods report, QA issues and reporting formats <u>2. and 3. Quarter:</u> Final draft with revised guidelines Workshop on how methodology in and how to use guidelines and coordinate monitoring and modelling efforts <u>LOAD 6/2013:</u> provided final comments on chapters 1-3 and chapters on QA and statistical methods. <u>PLC-6 4/2013:</u> finalize chapters 1-2, Chapter 3 of the guidelines on source-oriented apportionment, new chapter 4 on periodic PLC data reporting requirements; annexes with reporting formats, questions raised by PLUS project <u>MONAS19:</u> Informed of status of updating the PLC guidelines | contained in the Annex may still be modified <u>PLC-6 7-2014:</u> to provide final comments to the annual reporting template and further elaborate the periodic reporting templates and solve the questions/proposals raised during the hearing of the draft PLC6 guidelines | the PLC6 guidelines, publication of guidelines early 2016 | | |
| 4. National data collection and quality assurance | Poland and Germany monitor data in rivers, point sources | <u>1. and 2. Quarter:</u> Poland and Germany make data collection of 2012 data and data compilation, quality assurance. Follow up on data quality, missing data | <u>01.01-31.12:</u> Countries* monitor data in rivers, point sources etc. according to the revised Guidelines. Collection of other necessary data for fulfilling PLC requirements. | <u>1. Quarter:</u> uploading of 2013 data via the new PLUS uploading interface as a test case. <u>1. and 2. Quarter:</u> National data collection of 2014 data and data compilation, quality assurance. Follow up on data quality, missing data | | |

| Task | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|-----------------------------------|------|------|------|--|--|------|
| 5. National data reporting | | | | <p><u>2. and 3. Quarter:</u> National modelling, aggregation data, making source apportionment in all Contracting Parties.</p> <p><u>10.12:</u> Reporting on applied methodologies, background information on population, point sources, land use etc. and preparing data submission</p> <p><u>10.11:</u> Reporting of monitored 2014 data</p> <p><u>31.12:</u> Reporting of calculated 2014 loads (e.g. source apportionment)</p> | <p><u>01.06.2016:</u> Remaining 2014 data reported (with exception of some source apportionment data. The few remaining data uploaded, inserted and all data QA to level three by 01.10.2016</p> <p><u>29.02.2016:</u> Remaining 2013 data reported (uploaded and inserted in the database)- the very latest data uploaded, inserted and all data QA to level 3 by 01.10.2016</p> <p><u>01.10.2016:</u> Re-reporting of older PLC data finalized incl. QA to level 3</p> <p><u>01/1-30/06:</u> All countries following up on questions and missing information raised by data manager/PLC6 project</p> | |

| Task | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|----------------------------------|---|---|---|--|--|------|
| | | | | | <p><u>01.11.2016:</u> Reporting on applied methodologies</p> <p><u>15.11.2016</u> background information on population, point sources, land use etc. and preparing data submission</p> <p><u>28.10.2016</u> Remaining source apportionment data reported (periodical data) and all data QA to level 3</p> <p><u>01.06-01.10.2016:</u> All countries following up on questions and missing information raised by data manager/PLC6 project</p> <p><u>01/03-14/10.2016:</u> Providing information on effects of measures</p> | |
| 6. PLC data manager tasks | <u>LOAD3 and MONAS 16:</u> Recommended a | HELCOM 34: adopted HELCOM PLUS project. | Quality check migrated PLC 1994-2012 data | <u>01/03-30/06:</u> Updating and quality check on PLC 1994-2013 data | <u>16/01-30.09:</u> Quality check and verify | |

| Task | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|----------------------|---|--|--|---|--|------|
| | <p>modernization project for the PLC database (PLUS) HOD 37: Adopted WPO of PLC database modernization project (PLUS) <u>1.7-31.12:</u> Requirements for a new PLC database and web application/start of modernization project.</p> | <p>Work with database expert to develop a new PLC data model and functional specifications</p> | <p>Develop reporting formats in collaboration with PLUS database expert Support web application developer with development of an interface for a new data entry system under PLUS Implementation of the database web application. Updating and quality check on PLC 1994-2012 data</p> | <p>Testing and fine tuning data entry system and reporting formats <u>By 30/09.2015:</u> Data manger forwarding prefilled reporting formats (annual and periodical) for CP's to check, correct and update, and data manager to return the updated prefilled reporting formats <u>01/11.2015-15/01-2016:</u> Quality check of reported annual data, make request to countries for missing data, make quality assurance on received data and overviews to REDCORE DG and PLC-6 project on status of received data Inform of data reporting status to PRESSURE/[RedCore]</p> | <p>reported annual data. <u>15.05-15.10.2016:</u> Draft data and selected products for the PLC-6 report. <u>01.09-31.10.2016:</u> Quality check and verify reported periodical data. <u>15/06-15/11.2016:</u> Figures, tables maps and other final data products data assessments to the PLC-6 project <u>15/11-15/12.2016:</u> Correcting and/or providing additional tables or figures for the PLC-6 report as necessary Assist PLC-6 project and REDCORE DG as requested</p> | |
| 7. EMEP tasks | | | | | <p><u>Latest by 30 September:</u> emissions and depositions of nitrogen for 1995 -</p> | |

| Task | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|------|------|---|---|---|---|
| | | | | | <p>2014 and source receptor matrixes for 2014</p> <p><u>Latest by 15. November:</u> country pr. basins inputs and normalized deposition data'</p> | |
| 8. PLC-6 report: elaboration and publication | | | <p>4. PLC-6 7-2014: 1. Initial discussion of the main contents of the PLC-6 report including specification user needs and possible format (i.e. ebook)</p> | <p>1. to 3. Quarter: PLC project to follow up on intercalibration results, new data entry system/reporting formats (PLUS project), prepare an extended outline of PLC report, define data products to be developed by data manager. Start collecting background data/metadata</p> <p>PLC-6 8-2015: draft of the main outline of the PLC-6 report including specification of expected key graphs and tables and necessary background information/metadata to collect from CP's</p> | <p>1 and 2 quarter: PLC 6 10/2016 (February 2016) final discussion of structure and form of the report and divide working tasks. Further discussions and details during PLC 11-2016 in May 2016. Further discussion at PLC 12 2016 in September</p> <p>01/03-15/11.2016: Collecting background information (climate, landuse, agricultural practices tec.).</p> <p>01/09-15/11.2016 <u>Finalize</u> chapters on methodology, quality</p> | <p>February-April 2017 : <u>Finalizing updating MAI and CART assessment (scientific part).</u></p> <p><u>March- may 2017:</u> <u>Drafting chapter on effect of measures</u></p> <p><u>Mid April: Submission of draft of MAI and CART and preliminary results of PLC6.</u></p> <p><u>April-June:</u> Finalizing chapters on heavy metal inputs, source apportionment and evaluation of measures including tables and figures.</p> <p>3. Quarter: Completion of the report including</p> |

| Task | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|------|------|------|------|---|--|---|
| | | | | <p>PLC6 9-2015 (October 2015) meeting further to elaborate the outline of the assessment and divided topic between project members</p> <p>4. Quarter: Checking old PLC data (1994-2013) follow up status reporting 2014 PLC data. Drafting on chapters on methodology, quality assurance, background information on catchments, fertilizer consumption, livestock, land use, population density, climate, point sources (number, size, degree of purification, connectivity) etc.</p> | <p>assurance, background information on catchments, fertilizer consumption, livestock, land use, population density, climate, point sources (number, size, degree of purification, connectivity) etc.</p> <p>01.10-/15.11.2016: REDCORE DG to assess data, filled in data gaps, follow-up on suspicious data and make short report to CP's</p> <p>15.11.2016-07.12.2016: CP's to approve a filled in and complete assessment dataset, but if data from a CP are ready before 15.11.2016, it will be send out before for approval (3 weeks) by 08.12.2016</p> <p>20.12.2016: Assessment dataset for HOLASII</p> | <p>corrections to figures and table and text in all chapters including source apportionment, evaluations on effectiveness of measures and evaluation off fulfilment of reduction targets. Completed report submitted for final commenting and approval of REDCORE DG, PRESSURE and submission for acceptance by HOD.</p> <p>3.-4. Quarter: Language check, editing, layout, printing and publishing</p> <p>2- mid 4. Quarter: Development of executive summary of PLC 6 report for adoption for publication by HOD. Published 1. quarter 2018</p> |

| Task | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|------|------|------|------|------|--|------|
| | | | | | <p><u>08/12-10.02.2017</u>: 1st Normalization and statistical analysis including trend analysis draft of the report including draft of all figures including airborne inputs, maps and graphs Status to REDCORE DG, PRESSURE and GEAR, Including draft figures and tables for updating MAI and scientific part of CART.</p> <p>Late or February 2017 (pending on progress): Workshop discussing MAI/CART assessment methodologies based on the new assessment results</p> <p><u>February 2017-April 2017</u>: Finalized statistical analysis in relation to follow-up nutrient reduction scheme based on data 1995-2014 (as</p> | |

| Task | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|------|------|------|------|------|--|------|
| | | | | | <p>part of the MAI-CART follow-up assessment) and based on discussion at the MAI-CART workshop</p> <p>Further, elaboration of the report with updated and corrected figures, tables and graphs as well as draft text on total inputs and overall trends.</p> <p><u>December 2016 - April 2017:</u> Drafting chapters on heavy metals inputs, further, assessing source apportionment data and drafting chapter, and assessing evaluation of measures taken</p> | |