Memo of RedCore DG 32-2021

Held online on 24 June 2021

Chair: Lars M. Svendsen (DK)

Participants: Wera Leujak (UBA), Gudrun Schütze (UBA)and Markus Geupel (UBA, CCE), Stefan Åström (IVL), Max Posch and Jens Borken-Kleefeld (IIASA), Michael Gauss (EMEP), Lars Sonesten (SE), Bo Gustafsson (BNI), Juuso Haapaniemi (HELCOM Secretariat).

1. Adoption of the agenda

1.1. The Meeting adopted the Agenda of the Meeting.

2. Consideration of marine eutrophication in the possible revision of the Gothenburg Protocol

2.1. The Meeting took note the presentation "Considering marine eutrophication in the review of the Gothenburg Protocol" by Germany and the Ad-hoc group on Marine Protection (AMP) (Presentation 1).

2.2. The Meeting took note of the comment by EMEP that the ratio between waterborne and airborne contributions to marine eutrophication varies from country to country and this needs to be taken into account in the polluter pays principle, and regarding a reference period, the aim should be to use a more recent period than 1997-2003 because of higher data quality in recent years.

2.3. The Meeting took note of the concern of BNI whether the methods of finding MAI and Critical Loads (CL) are comparable with each other and how to take into account the airborne deposition to freshwater and terrestrial systems that runs to the sea. It would be important to couple critical loads on land to the leakage to the Baltic Sea.

2.4. The Meeting clarified that MAI and CL can be calculated to be comparable with each other, by taking into account the area unit on both methods.

2.5. The Meeting discussed the benefits of integrating the marine eutrophication in the revision of the Gothenburg protocol, and concluded it to be beneficial and that it might lead to better understanding of the cost effectiveness of the riverine versus nitrogen deposition reductions. But further noted that the time to carry out this work within the review process of the Gothenburg Protocol is too short as the modelling work is really complex.

2.6. The Meeting took note of the information that MAI values can be used to calculate the basin-wise airborne share and that NICs can be used to calculate the shares country per Baltic Sea basin. Further it was clarified by EMEP that both per country and per sub-basin information are needed for the work.

2.7. The Meeting took note of the comment that comparing the measures to reduce airborne emissions to measures to reduce waterborne emissions is important as in other cases the airborne reduction costs will become extremely high. As a starting point and motivation one could use the different directives on airborne measures and estimate how largely it would benefit the reduction targets in the HELCOM framework.

2.8. The Meeting took note of the suggestion to use already existing air pollution emission scenarios as input to the EMEP modelling, to estimate the maximum technically feasible reduction (MFTR) of

airborne nitrogen deposition. This would also include ammonia and nitrogen oxides emission from other parts of Europe, to assess how much their contributions to eutrophication of the Baltic Sea could be reduced.

2.9. The Meeting in general supported the proposal and discussed how this could be carried out in practice. The Meeting took note of the comment by EMEP that it could technically implement the modelling but will most likely not have the time to carry out the modelling in the time frame of the review of the Protocol.

2.10. The Meeting also concluded that already existing air pollution emission scenarios do not include information on marine effects through deposition and are not optimized to reduce those effects. The Meeting concluded such future optimizations as beneficial also through illustrating co-benefits of marine-environment induced abatement for health effects.

2.11. The Meeting concluded that it is unlikely that this work could be done in time for the review but could be considered as a more long-term approach. If the review process could be sued to outline necessary future work than this would be an important first step.

2.12. The Meeting recalled that the HELCOM PLC data on riverine inputs is available annually and that it could be provided to CLTRTAP, and that information on the pathways of nutrients (source attribution) is available every 4 to 5 years.

2.13. The Meeting recalled that a map of MAI would be possible to do in the same format and grid as the CL map, and that this should be possible with already existing data. Such data could then be considered in the integrated assessment modelling (IAM).

2.14. The Meeting concluded that basing the calculation of airborne MAI on the polluter pays principle constitutes a very simplified approach. Furthermore, the modelling approach under CLRTAP is much more advanced compared to the HELCOM-approach, since it takes into account cost-benefit considerations.

2.15. The Meeting took note that the analysis of the airborne HELCOM MAI is doable on a short notice, but on other topics, a more concrete request should be addressed to HELCOM PLC or RedCore groups.

2.16. The Meeting took note of the information that Integrated Assessment Modelling (can be carried out by using multiple effects parameters using data on current or predicted future scenarios and get needed reductions as one output of the analysis. This would benefit the analysis on most feasible reduction scenarios.

2.17. The Meeting took note of the suggestion that it might be beneficial to do such an analysis with and without the Baltic Sea, using two separate runs of the model. In this way it would be possible to bring added value to HELCOM work by linking e.g. human health and terrestrial ecosystem effects to the benefits of the reductions.

2.18. The Meeting took note of a suggestions that by using existing information on source-receptor matrices of airborne loads to different HELCOM sub-basins one could provide a good policy message for CLRTAP.

2.19. The Meeting concluded that the discussions in the meeting has been beneficial and should be continued. The Meeting agreed that further information, comments, questions and suggestions on how to carry the work forward should be exchanged by **31 July 2021**, and this will act as a basis for considering the next steps of the work in an upcoming meeting at the end of Summer 2021.

3. Any other business

4. Future work