

CONVENTION ON LONG-RANGE TRANSBOUNDARY AIR POLLUTION

Working Group on Effects

**International Cooperative Programme
on Assessment and Monitoring of the Effects of Air Pollution on Rivers and Lakes**

MINUTES

**of the 33rd meeting of the Programme Task Force
the Joint ICP IM and ICP Waters TF meeting in Uppsala 9-11 May 2017**

KEY MESSAGES OF ICP WATERS 2017 TASK FORCE MEETING

Policy developments regarding air pollution: The EU NEC Directive

In the updated EU National Emission Ceilings (NEC) Directive, monitoring effects of air pollution on freshwaters, semi-natural habitats and forest ecosystems is made mandatory (Article 9). Bodies under the WGE have been contacted by the European Commission to contribute to implementation of the NEC Directive, because of the suitability of existing monitoring networks under the LRTAP Convention. National focal centres that currently contribute to ICP Waters are advised to make themselves acquainted with national activities for implementation of the NEC Directive. ICP Waters will contribute to preparation of guidelines for monitoring effects on surface waters under the NEC Directive and will highlight the relevance and value of the ICP Waters network and expertise developed since the 1980s.

Mercury

Emissions of the pollutant mercury (Hg) are regulated and included in old and new international conventions and agreements (e.g. Minamata convention on mercury, WFD, Arctic Council). Documentation of spatial patterns and temporal trends in Hg levels in ecosystems is therefore highly opportune. The database on Hg in fish in Finland, Sweden and Norway, with some data from the Kola Peninsula, consists of over 50 000 observations of Hg in fish covering the period 1965 to 2015. The database is the most extensive database of its kind. Lakes with known local pollution sources and lakes with only air pollution as source of Hg were treated separately. More than 40% of the almost 2800 lakes in the database have fish Hg levels that exceed 0.5 mg/kg, which is often used as a criteria to classify the suitability of fish for human consumption. There were no uniform changes observed for temporal trends in fish Hg concentrations from lakes with sufficient historical records (> 5 years of data). The report will be delivered by September 2017.

Climate change: Melting permafrost affects recovery from acidification

A study of high altitude lakes in the southern Alps in Switzerland demonstrated that water chemistry (sulfate, nitrate) in most lakes reflects precipitation chemistry and show strong signs of chemical recovery. However, there were deviating patterns in the lakes at highest elevation. Release of sulphur and base cations from melting permafrost appeared to be the best explanation for the deviating patterns. Similar observations have been done in high altitude lakes in North America, which were also explained by melting permafrost. High altitude lakes in permafrost areas function as early warning systems for ecosystem impacts of climate change.

Current status of ICP Waters Monitoring network

The ICP Waters Monitoring network is tailored to document responses in water chemistry to changes in atmospheric loads of air pollution. New countries start to contribute (Moldova, EECCA country) while several countries re-initiate their participation (Poland, Spain, Ireland). Collaboration within the Convention has intensified through organization of joint meetings with ICP Integrating Monitoring. Reports and results that are delivered continue to be of relevance under the LTRAP Convention, and outside, for instance for the Minamata Convention on Mercury, and for the EU NEC Directive.

1. The meeting of the International Cooperative Programme on Assessment and Monitoring of the Effects of Air Pollution on Rivers and Lakes (ICP Waters) organized jointly with International Cooperative Programme on Assessment and Monitoring of the Effects of Air Pollution Ecosystems (ICP Integrated Monitoring) was attended by 50 experts from the following 16 Parties to the Convention on Long-range Transboundary Air Pollution (CLRTAP): Armenia, Austria, Canada, the Czech Republic, Finland, Germany, Ireland Italy, Moldova, the Norway, Poland, Russia, Spain, Sweden, Switzerland, and the United States of America. In addition, the Chair of the Executive Body of the Convention and the Chair of the Working Group of Effects (WGE) of the Convention attended. A representative from South Africa also attended. A complete list of participants can be found **Annex I**.

Introductions

2. Mr. Lars Lundin, Chair of ICP IM, opened the meeting.
3. Mr. Kevin Bishop, Pro Vice-Chancellor at the Agricultural University in Uppsala (SLU), welcomed the parties to SLU. He gave a brief introduction to the history of the institution and emphasized its special dual role as a university and as an institute for monitoring and assessment. He went on to describe the CLRTAP as a success story of how interplay between science and policy can provide a better environment.
4. Mr. Björn Risinger, Director General of the Swedish Environmental Protection Agency (EPA), welcomed all participants to Sweden and spoke about the long tradition in monitoring of ecosystems and surface waters in Sweden. He announced that 2017 was a year to celebrate. It is now 50 years since Svante Odén's famous paper "The Acidification of Air and Precipitation and its Consequences", which recognized the need for larger scale monitoring. Year 2017 is also the 50th anniversary of the Swedish EPA. He suggested that this makes it the oldest EPA in the world. He went on to describe monitoring in Sweden and its importance for decision making. He described objectives of Swedish environmental regulation and Sweden's role in ICP IM and ICP Waters. Air pollution is still a threat, but solutions are available. He ended by wishing the attendants a successful meeting.
5. Mr. Lars Lundin (Chair ICP IM) thanked the speakers for their welcoming speeches. The agenda was adopted (**Annex II**).
6. Mr. Jens Fölster (Sweden), the local organizer, provided general information about the meeting and the excursion.
7. Ms. Isaura Rábago (Chair WGE) presented information on common issues and reporting from the WGE. She provided news from CLRTAP, emphasizing the launch of the scientific assessment report "Towards cleaner air". The EB and the Working Group on Strategy and Review (WGSR) recommend further integration of activities

under EMEP and WGE. An issue of concern is the funding situation of the Coordination Centre for Effects (CCE), as the Netherlands have announced to finish their financial support for the CCE in 2017. A solution is yet to be found. She reminded the Task Force that activities under the CLTRAP are policy relevant and that products and data produced have high visibility. The Policy Review Group (PRG) recommends enhanced efforts to combine (or connect) effects and concentration/deposition monitoring, increase cooperation between EMEP and WGE groups. Ms. Rábago also mentioned the annual reporting routines to the WGE and the update of the mandates of the bodies under the WGE, which will focus on main objectives and activities rather than activities that are repeated annually. She then moved on to the EU National Emission Ceilings (NEC) Directive, specifically Article 9 and Annex V. Article 9 is the legal basis for monitoring of negative impacts of air pollution, based on a network of monitoring sites. Annex V describes optional indicators for monitoring air pollution impacts. The bodies under the WGE are now involved in NEC Directive work, as the monitoring under the LTRAP Convention is tailored to assess effects of air pollution. The EU prefers a cost-effective approach for the monitoring reporting under the NEC Directive, and here using existing expertise will be very important.

8. Mr. Gunnar Skotte (Chair ICP Waters) introduced current issues for ICP Waters. He thanked ICP IM and the Focal centre in Sweden for organizing the Task Force meeting. Also, he thanked Mr. Risinger and Mr. Bishop for the warm and welcoming words and mentioned that the ICPs highly appreciate the attendance of Ms. Rábago, Chair of the WGE, and Ms. Engleryd, Chair of the EB, to the meeting. Mr. Skotte mentioned recent ICP Waters reports and the recent assessment report 'Towards clean air' as well as the updated ICP Waters homepage, with the opportunity to explore data. The upcoming mercury report was mentioned as well as its relevance for the Minamata convention. He mentioned the NEC Directive and its potential importance for sustaining effect-related work under the CLRTAP. He encouraged parties to contact their national authorities to inform and be informed. The next thematic report for ICP Waters will be a regional acidification assessment. It is intended as a supplement to maps displaying exceedance of critical loads, i.e. to assess the current extent of acidification. Mr. Skotte concluded that the work of ICP Waters is increasingly relevant also for initiatives outside the convention.

9. Mr. Lars Lundin (Chair ICP IM) presented current issues for ICP IM. Priority work is: Biodiversity indicators. Work on heavy metals baseline, budgets and critical loads. Mass balances of S and N. Collaboration with EU projects. He went through planned ICP IM work and reports. ICP IM emphasizes collaboration with other ICPs and EU projects. He specifically mentioned the elTER project.

Acidification and recovery

10. Mr. Stefan Löfgren, (Sweden) gave a talk entitled "Potential impact of forest biomass harvest on the acidity of Swedish surface waters". He presented monitoring and modelling results comparing conventional harvest and whole tree harvest. Harvesting

appears to have little effect on pH in soil solution, but appreciable effect on calcium. There is apparently little effect on runoff because of restricted amounts of mobile anions. Some effect is seen in certain soil horizons, but little in runoff. The impact of more intensive harvesting was not large enough to prevent recovery from historic acidification. Still, base cation stores were affected.

11. Ms. Sandra Steingruber (Switzerland) presented trends in S and N budgets of Swiss high-altitude mountain lakes. These lakes have been impacted by air pollution from Italian sources. Deposition was modelled for each lake. There are rainwater and lake water decreases in SO_4 , NO_3 and base cations and increase in alkalinity and pH. In some lakes, the outputs of sulphur exceeded inputs and the release of sulphur was increasing, a pattern which appeared to be correlated with release of base cations. A further data exploration showed that this mainly concerned lakes between 2400 and 2700 mas., an elevation range with melting permafrost. Data from the Alpine Permafrost Index supported this hypothesis. With regard to nitrogen, all lake catchment lakes showed considerable retention of N, which was on average circa 60 %, with some variation between lakes. Catchment slope was the best single predictor of relative N retention. It was estimated how much N was retained by the catchments and how much by the lake. Lakes, despite having a relatively small area compared to catchments, are of similar importance as the terrestrial part of catchments for N retention. High altitude lakes are important N buffers and are impacted by climate warming
12. Mr. Stoddard (USA) said that high release of S had also been observed at high altitude lakes in the Rocky Mountains and asked if there was pyrite in the bedrock. Ms. Steingruber answered affirmatively and pointed out that melting of permafrost promote enhanced weathering of such minerals, with likely effects on lake water chemistry.
13. Ms. Natalia Zgircu, (Moldova) presented the Air and Surface Water Quality Monitoring System in Moldova. The State Hydro-meteorological Service is responsible for monitoring. She described the role of this institution. Monitoring of highly polluted water, air and soil has been undertaken since the 1980s. She went through regulation applying to the environment in Moldova (national and international). There are 17 stations in 5 industrial regions for monitoring air pollution. She presented results from ambient air pollution level in Moldova. Radioactivity in air, soil and water is subject to monitoring. The results are reported annually in a bulletin. She went on to describe the surface water quality monitoring of 6 dams, 2 lakes and 29 rivers, and the parameters monitored. She mentioned that Moldova cooperates with Ukraine and Romania on monitoring of transboundary rivers. She presented results for pH, ammonium and nitrates in the two stations proposed for the ICP Waters database.
14. Mr. Rosseland (Norway) asked if there was any monitoring of fish. Ms. Zgircu answered no, but that there might be in the future.

- 15.** Ms. de Wit (ICP Waters Programme Centre) thanked Ms Zgircu for the presentation and commented that the monitoring system in Moldova is extensive and has a good design. While the surface waters do not appear to be acidified, there would be a potential to monitor other air pollution impacts.
- 16.** Ms. Anna Engleryd, (Chair EB) reported on recent developments under the Convention, specifically how the assessment report ‘Towards cleaner air’ will be used. She praised the report and reminded the Task Force that we have a well-functioning science-policy network. She mentioned that an *ad hoc* group who will work on how findings in the assessment report can be translated into future policy, has been created. The group has 4 themes: Science and monitoring gaps, policy gaps, protocol impact, improving cooperation and outreach. This will be further treated at the WGE/EMEP session in September. Examples of follow-up issues are: What is the next generation of policy instruments? New substances to be monitored? Black carbon, mercury? New conventions? Ratification and implementation of protocols: Heavy metals, the protocol on POP, the Gothenburg protocol. All three revised protocols may enter into force in 2018. She then mentioned that there will be a new Saltsjöbaden meeting, which is a workshop on air pollution issues where future air pollution policies and issues are discussed in a structured way but in a more informal setting than in the Geneva meetings. She invited ICPs and Task Force participants to provide feedback on the work of the EB.
- 17.** Ms. de Wit (ICP Waters Programme Centre) thanked for the presentation and mentioned that it would also be useful to get feedback on how ICPs can become (even) more policy relevant.
- 18.** Ms. Anna Engleryd mentioned that the EB Bureau might be a better group than the EB to give feedback on work done under the ICPs, and mentioned that the EB Bureau meetings are open for presentations from ICPs.
- 19.** Ms. Kari Austnes, (ICP Waters Programme Centre) presented work on the upcoming ICP Waters report on regional assessment of surface water acidification. The report is intended as a policy-friendly product which will have supplementary information to maps showing exceedance of critical loads. ICP Waters sites are suitable for temporal trend analysis, but have limited spatial coverage. She went through various data sources on surface water quality and their strengths and weaknesses. The aim is to assess the current extent of surface water acidification with output that is relevant on a nationwide-scale. An enquiry was sent to NFCs, to which 11 NFCs had answered. The following issues were addressed: 1. Identification of acid-sensitive areas. Most NFCs suggest using geological maps and additional information. 2. Which acidification criteria to use? Various methods were suggested. 3. Overlap with WFD reporting. In total 8 NFCs are reporting to the WFD, and WFD data have some potential for this

assessment. Ms. Austnes gave the tentative outline for the report. Call for data June 15, with deadline for contribution on November 1.

- 20.** Ms. De Wit asked if ICP IM sees possibilities to collaborate with ICP Waters on this report. Mr. Lundin answered that this needed further discussion, but that ICP IM does not have a spatially extensive network.
- 21.** Mr. Löfgren (Sweden) expressed surprise over the lack of international agreement on a definition on what acidified water is. Ms. Austnes described various practices from different countries. Mr. Fölster (Sweden) also commented on various options. Mr. Aherne (Canada) asked when it would be clear what data or response were requested and informed that Canada intends to help with the report, depending on capacity.
- 22.** Mr. Jens Fölster (Sweden) gave a talk entitled “A statistical method for detecting artefacts in time series”. Sweden has 50 years of freshwater monitoring and he gave examples of suspected artifacts and how they were identified. Case studies described were a change in method for Tot-N, effect of change in laboratories, and malfunction of equipment for determination of TotP. With Generalized Additive Models, it is possible to test step-changes in environmental time series.
- 23.** Mr. Sample (ICP Waters Programme Centre) asked if it was necessary to define possible break points *a priori*. Mr. Fölster confirmed this.
- 24.** Ms. Heleen de Wit (ICP Waters Programme Centre) gave an update on the work with DOC trends in Europe and North America. Both air pollution and climate change affect DOC trends, but air pollution remains the dominating driver. There are some interesting patterns in levelling out and strengthening of DOC trends in the 2000s, which so far cannot be explained by a single factor.
- 25.** Ms. Anna Engleryd (Chair EB) gave a background on air pollution policy in the EU, and mentioned the thematic strategy on Air pollution and the new NEC Directive 2016/2284. The NEC Directive entered into force in December 2016. Emission reduction commitments for EU 28 for 2005-2030 are considerable: SO₂ by 79%, NO_x by 63%, NMVOC by 40%, NH₃ by 19%, PM_{2.5} by 49%. Interim ceilings are set for 2025. Article 9 states that Member States shall ensure monitoring and shall report by 2018 and every 4th year thereafter. ICPs were invited to a meeting in Brussels in April to inform about their effect-based monitoring and its possible use for the NEC Directive. From this meeting, it appears that MS are positive to using existing networks to perform the monitoring that the NEQ Directive requires. However, it is necessary to develop a guidance document on how to select stations and ensure representativity. It is likely that NFCs can play an active role in each Member State to help implement the NEC Directive on a national basis. With regard to international collaboration, it is possible that the EU will support the existing infrastructures under the CLTRAP, but

this is still open. More cooperation between the ICPs and further presentation of the WGE as a single monitoring network would be helpful.

26. Ms. Engleryd's presentation inspired a lively discussion. Mr. Lundin (Chair ICP IM) asked if an implication of the NEC Directive was that new countries would be included under the ICPs Ms. de Wit (ICP Waters Programme Centre) asked the NFCs if they had heard about the NEC Directive and the possible role for ICPs and national monitoring programmes. The response was that many had heard of the Directive but did not know many details, but certain NFCs were well-informed. Mr. Cummings (Ireland) commented that this was the best news for effect-based monitoring he had heard in a good while.
27. Ms. Engleryd encouraged the Task Force to discuss how we can help the Commission with implementation of the Directive.
28. Ms. Rogora (Italy) asked how non-compliance with the directive would be sanctioned. Ms. Engleryd replied that this would be fines.
29. Ms. Engleryd offered to provide a list of people involved in the various Member States.
30. Ms. Rábago (Chair WGE) explained that the NEC Directive's Article 9 states that monitoring is mandatory, and that its Annex V is not binding.
31. Mr. Tomasz Pecka (Poland) presented the Integrated Monitoring Network in Poland - current status and future perspectives. Poland has more than 20 years of monitoring records. Monitoring is funded for 5 years at a time. He described the location of the 9 proposed IM stations. Atmospheric S deposition is decreasing at most stations, but not all. The nitrate/sulphate ratio in deposition is increasing. Both decreasing and increasing trends of sulphate are observed in runoff. Puszcza Borecka is an IM "super station". Many parameters are determined and used extensively for testing of various models. There are differences between typical ICP IM stations and proposed stations in Poland with respect to catchment sizes, framework rules, methodology, and assessment period.
32. Mr. Pavel Kram (Czech Republic) asked why there was no station in the Southwest, which is very acid-sensitive. Mr. Pecka answered that there is one ICP Waters station, but it is not operational.

Heavy metals and POPs

33. Mr. Staffan Åkerblom (ICP IM) Presented heavy metal (HM) concentrations in terrestrial compartments and runoff across European IM sites, specifically Cd, Pb, Hg, Cu, and Zn. There is spatial variation in HM levels in forest compartments. Levels have decreased, but trends are levelling off. Asia is increasing its emissions of Hg, while they are decreasing in Europe and North America. There is high retention of HM in the terrestrial compartment. He displayed maps showing precipitation, throughfall, runoff and litterfall. He concluded that data are important for evaluating responses to changes

in air pollution. What about POPs? Mr Åkerblom also mentioned a submitted manuscript on air transported PFAS (per- and polyfluoroalkyl substances) in Perch across a gradient of pristine Swedish lakes (Åkerblom et al. STOTen, accepted).

34. Mr. Aherne (Ireland) asked if the data could be compared with those from ICP Vegetation's moss survey. Mr. Åkerblom answered that this was not planned.
35. Ms. de Wit mentioned that the data that were presented were not all data she was familiar with, and suggested that a Call for data would be helpful. Mr. Åkerblom answered that data would be very welcome.
36. Mr. Vuorenmaa (ICP IM Programme centre) mentioned that Finland also had data that could be useful.
37. Mr. Hans Fredrik Veiteberg Braaten, (ICP Waters Programme Centre) presented the report in progress, which considers spatial and temporal trends of mercury in freshwater fish in Fennoscandia. The report will be ready to be presented at the next WGE-EMEP meeting in September. The aim was to collect all data on mercury in fish in Scandinavia in order to assess trends and effects of long-range transported air pollution. Mercury is included in old and new international regulation and agreements (e.g. Minimata convention, WFD) and their effects need to be assessed. Increasing as well as decreasing trends of mercury in fish are reported in the literature. The database used in the present work holds data Hg data on 66 456 fish specimens collected between 1965 and 2015. Age, growth, species and trophic status are important factors affecting mercury levels in fish. The overall level, considering all the data, is apparently declining. Bias owing to spatial representation can, however, not yet be ruled out. Lakes were categorized according to the likelihood that they had been affected by local point sources of mercury. Temporal trends in individual lake records did not show uniform patterns. Long time series from individual lakes that are exclusively affected by air pollution will be given further attention. There is a large potential for further study in the database compiled in this work.

Biology responses to air pollution

38. Mr. Andreas Bruder (Switzerland) presented environmental drivers of leaf litter decomposition in streams. He described the food web of forested streams. The main decomposers are fungi and shredders who break litter down to smaller fractions. Decomposition depends on several biotic and abiotic factors such as temperature, chemicals, pollution, flow velocity, litter characteristics, biodiversity community composition, and also pH He concluded that litter decomposition is sensitive to environmental conditions, and that part of ecological variation could be reduced using standardized substrate.

39. Ms. Londiwe M Khuzwayo (South Africa) gave a presentation entitled species sensitivity to acidification in highly endemic regions of South Africa. South Africa is building new coal power stations, and in certain regions there is high deposition of S and N with potential effects on aquatic biota. It was difficult to find suitable EPT indicator species because the species are highly endemic. She found indications that *Baetida spp* in the region with highest deposition had changed since the 60s, but waters were not acid sensitive. Water chemistry data were still being analysed.
40. Ms. Ika Djukic, (Austria) gave a presentation entitled “Nitrogen deposition impacts in the Austrian IM site Zöbelboden – long-term observations and future research directions”. Highest deposition is found in the northern limestone alps, exceeding critical loads. Negative effects on biodiversity are observed in the lichen community. Climate events drive nitrate loss to groundwater, not average conditions. Forest disturbance (e.g. insect attack) strongly reduces N retention. She suggested that future reduction in N deposition and climate change will cause higher N retention.
41. Mr. Gaute Velle (ICP Waters Programme Sub-centre) gave a presentation entitled “Gas supersaturation may cause effects on the biota comparable to acidification”. Gas supersaturation occurs both naturally and as a man-made phenomenon caused by hydropower plants. He presented a study from the River Otra. Effects can be traced up to 30 km from the outlet of a not optimally designed power plant. He presented findings suggesting that gas supersaturation has a strong effect on invertebrates and fish for a stretch of up to 30 km of the river. The effects are such that they could be mistaken for acidification effects.
42. The presentation inspired the following questions and comments. Mr. Rosseland (Norway) commented that gas supersaturation is a major problem in aquaculture. Mr. Bruder asked whether it is possible to find a specific indicator for gas super saturation. Mr. Velle answered that this would be useful. Ms. de Wit asked whether the ICP Waters data could be affected by such problems. Mr. Velle did not suspect that it was a major problem.
43. Ms. Ekaterina Pozdnyakova (Russia) gave a presentation entitled “Co-analysis of coniferous forest state parameters and atmospheric deposition data series obtained by ICP IM and EMEP at the European part of Russia”. Trends were observed at two stations. Correlations with deposition of SO₄, NO₃, NH₄, Na, Mg, Ca, Cl and K were observed. It was suggested that the effect was due to fertilization. Coniferous forests in the north were found to be more sensitive. The results could be used for testing models.
44. Mr. Lundin asked whether climate change effects like droughts were considered. Ms. Pozdnyakova answered that this had not yet been done, but hopefully in the future. Mr. Lundin mentioned that insects and fungi also could affect forest.
45. Mr. Jakub Hruška (Czech Republic) gave a presentation entitled “Recovery of benthic algal assemblages from acidification: how long does it take, and is there a link to eutrophication?”. He started by showing a map indicating the acidified areas of Czech Republic. Only about 5 % of the area affected. He showed trends of acidification

parameters. He concluded that episodic low pH appears to be an important pressure for the community. Acidification is a more important driver than eutrophication in these areas. Episodes are more important than means.

Critical loads/Dynamic modelling

46. Ms. Maria Holmberg, (ICP IM Programme Centre) gave a talk entitled “Soil modelling study VSD+”. The aim was to study impacts of N deposition and climate change on vegetation. The simulated responses with respect to carbon/nitrogen ratios were very variable. The next step is going to be the use of the vegetation module of the model.

47. Ms. Tatyana Moiseenko (Russia) gave a presentation entitled “Acidification and Critical Loads of Surface Waters: European Territory of Russia and Western Siberia”. Monitoring has traditionally been focused on large water bodies and not acid sensitive waters. She presented results from investigations of about 270 lakes in transects in the European part Russia and about the same number of lakes in Siberian Russia. There are different types of emissions in the two areas and a strong north south gradient in deposition. European lakes were more acid sensitive than Siberian lakes. She asked the audience about how one should include organic acids in the assessment of acidification. CL was set to $ANC = 50 \mu\text{Eq/L}$. She showed a map with future scenarios in the Kola peninsula, displaying mixed responses.
48. Ms. de Wit asked about expectations for future extraction of oil and gas in Western Siberia. Ms. Moiseenko answered that increases are expected, but she did not have data on this.
49. Mr. Jussi Vuorenmaa (ICP IM Programme Centre) gave a presentation entitled “Relationships between critical load exceedances and empirical impact indicators - Update of N assessment”. Previous work indicated good agreement between CL calculations and empirical indicators. The conclusion holds also for this new investigation. Improvement is visible. There is a shift towards less exceedance. There are plans to extend empirical indicators to include vegetation.
50. Mr Löfgren commented that two of the sites with very high concentrations were in karst areas. It was suggested that agricultural influence could be a factor. Mr. Löfgren questioned the representativity of these two sites. Mr. Vuorenmaa said that the sites might be excluded from the analysis.
51. Ms. de Wit asked how the exceedance was calculated, e.g. biological background. Mr. Vuorenmaa answered that the critical loads were calculated from mass balance.
52. Mr. Lundin asked what happens with the organic nitrogen. Mr. Vuorenmaa commented that only the inorganic N was considered in this exercise.

Issues common for both ICPs

53. Mr. Øyvind Garmo (ICP Waters Programme Centre) gave a presentation on the annual chemical intercomparison. The work is done by his colleague Carlos Escudero. 35 laboratories from 20 countries participated. The report is published and can be obtained from the ICP Waters web page. Mr. Garmo described how the test was done, described the samples and outlined the results. pH and alkalinity are typically the parameters with the worst performance. This is partly because laboratories have different ways of measuring pH (stirring, non-stirring, etc) and alkalinity (different types of titrations). This year total concentration of phosphorous will be included as a parameter. Contact carlos.escudero@niva.no before May 24 if you are interested in participation.
54. Mr. Löfgren suggested adding 'air-equilibrated pH' as a parameter (diurnal variation in CO₂ might affect pH). It was stated that results for pH would improve if one used more acidic samples. However, this would have the opposite effect on alkalinity. Moreover, the acidity should reflect the waters that we monitor in ICP Waters. HM levels in the test samples should be lowered somewhat.
55. Mr. Lundin, Mr. Skotte and Ms. de Wit described the plan for the separate sessions of the ICPs.

Separate ICP Waters TF meetings

56. Ms. Kari Austnes (ICP Waters Programme Centre) provided more detail about the regional assessment on surface water acidification status. Major discussion points were: How to produce consistent overview and how to distribute work between the Programme centre and Focal centres. Different countries have different methods for assessing acid-sensitivity. National maps can be provided in individual chapters but one map for the ECE countries, made with consistent data, would also be useful. It was commented that geological nomenclature is not uniform in all regions, which might pose challenges for using only one data source. It was highlighted that such maps would be very useful given the recent needs of implementation of monitoring networks for the NEC Directive, to document where stations are lacking. Ms. Austnes asked about the availability of maps for N America. Mr. Stoddard (USA) replied that US and Canada have separate maps but they could be used together. Ms. de Wit (ICP Waters Programme Centre) suggested that the work with these maps will have a high priority. Ms. Engleryd (Chair EB) informed that the EU commission suggests a kick off meeting to prepare for the NEC Directive already before the summer, and that follow-up meetings in the autumn must be expected. The NEC Directive needs guidance documents and first versions should be produced, which can be revised later. The monitoring site selection must be ready by July 1, 2018. Ms. de Wit suggested that the ICPs are likely to have the best information on the location of such stations and all NFCs should consider how to start the work with this topic.

- 57.** Mr. Skotte (Chair ICP Waters) added that it would also be good to produce maps (geology) for EECCA countries in addition to Europe and North America. This will give useful information in order to identify the most relevant EECCA countries to include in the ICP Waters monitoring network.
- 58.** Ms. Austnes presented different sources of information on surface water acidification status, such as critical load maps and data reported under the WFD. It was pointed out that definition of water body types (with regard to size) could lead to underestimation of the extent of acidification, and that this should be clear in the report. Also, it was pointed out that the WFD data suggested that certain countries do not have acidification issues, which is wrong. The question was raised how information would be obtained from countries that are not involved in ICP Waters. The NEC Directive presents an obligation for all member states, and it is possible that more countries will participate.
- 59.** Ms. Austnes moved on to present the reported data availability from the NFCs that have responded and various methods for spatial extrapolation of limited datasets to the country-level, or the level of acid-sensitive regions. Ms. Austnes identified the challenge of consistency between countries. Mr. Stoddard commented that uncertainty will vary from country to country, but that this is not unusual and that there are methods, for instance from IPCC, to show how the uncertainty varies. Also, it was pointed out that relevant dataserries, which can be sent to ICP Waters, are not necessarily time series and thus do not require extensive quality assurance. Ms. de Wit asked if it is an aim to calculate the proportion of lakes or rivers that are acidified, or if the absolute number can be estimated. Ms. Rogora (Italy), Ms. Steingruber (Switzerland) and Mr. Ułańczyk (Poland) answered that sensitive areas in their countries were small and the selection of lakes was representative of these areas. Ms. Moiseenko and Ms. Dinu (Russian Federation) commented that it would be difficult to cover the whole of Russia.
- 60.** Ms. Austnes raised the next issue, i.e. How to define what constitutes acidified waters? Several NFCs explained their national approaches. Mr. Stoddard said that in US they used DOC to define whether a lake was naturally acidic or acidified. Mr. Stoddard commented that for the global overview it was important to use consistent methods (e.g. ANCOrg). In the national chapter it could be described how it is actually done.
- 61.** Ms. de Wit complimented Ms. Austnes with the work done so far and said that the report will be very relevant, also with regard to the current developments of the NEC Directive.
- 62.** A reference group for the regional acidification report is needed, which will be established in 2017.
- 63.** Mr. Sample (ICP Waters Programme Centre) gave an update on the status of the database. The quality of site meta data has been improved. The biggest remaining challenge is duplication of sites. He described what he would like to do before uploading the most recent data. He gave a short description of the new web page. Ms de Wit asked if it was OK to show raw data instead of annual means, and there were no

objections. Ms. de Wit asked what the NFCs thought about rendering their data open access on the ICP Waters site. Mr. Fölster replied that it would be advisable to refer people to the original database because the original data providers will always be able to provide the latest quality-assured data. Ms. De Wit said that the tendency in society in general is moving towards open access. Mr. Sample rounded off by encouraging the NFC to send him references to reports and publications.

64. Mr. Godtfred Anker Halvorsen (ICP Waters Programme Sub-centre) presented the ICP Waters Biological Intercalibration 2016. The aim is to promote international harmonization of monitoring practices and evaluate quality of taxonomic work. Mr. Anker described how the samples are produced, and how the quality of the work is assessed. The results were good, but just two labs, one from Norway and one from Sweden, participated. There will be more participants in the coming Intercalibrations. UK has unfortunately lost funding and finished monitoring invertebrates in 2015.
65. Ms. de Wit (ICP Waters Programme Centre) presented the status of the participation in various activities under ICP Waters (**Annex III**) and went through the workplan for 2017-2019 (**Annex IV**). She repeated the recommendations of the ICP review, as well as past and current reports since 2010. Two potential topics for the 2019 report was presented. Ms. de Wit suggested to take up nitrogen again, and evaluate how nitrogen species have changed, specifically with compared to phosphorous. This might be interesting for a number of issues, including productivity. Mr. Gaute Velle (ICP Waters Programme Sub-centre) presented an idea considering the functional diversity of macro invertebrates in relation to air pollution. The different options were discussed and both received support. With regard to the nitrogen topic, it was highlighted that nitrogen is an issue not just for the CLRTAP but also for marine eutrophication, where contribution from nitrogen deposition is not well understood. Also, the issue is relevant for the WFD. In addition, it presents possibilities to collaborate with ICP IM. With regard to functional diversity, the question of policy-relevance was raised. Ms. de Wit concluded that there seemed to be most interest in the nitrogen topic, and we will explore this further.
66. Ms. de Wit asked about the experience with joint meetings with ICP IM. Most NFCs were positive. The topic of having a full day excursion before the meeting instead of half a day during the meeting came up. Mr Lundin said that this the host organization should be involved in that decision.
67. Mr. Ułańczyk and Mr Pecka announced that they on behalf of the Polish Ministry of Environment invited us to Warszawa for the 2018 joint TF meeting. This was very well received by the attendants.

Common Task Force meeting

68. Outcome of relevant discussions at the separate meetings were summarized.
69. Mr. Lundin said that ICP IM had questions regarding the acidification report. He said that ICP IM were interested in contributing if this was considered useful. Ms. de Wit

proposed that ICP IM could contribute by having representatives in the reference group for the report. Mr. Lundin passed the message to Mr. Vuorenmaa who would take it back to the Programme Centre of ICP IM.

70. Mr. Lundin asked whether ICP Waters is going to continue working with mercury. Ms. de Wit said that a scientific paper would be written in the wake of the report.

71. Next, the NEC Directive. Mr. Lundin said that all ICP IM feedback would be going through Ms. Rábago. Ms de Wit said that ICP Waters in addition would emphasize contact between NFCs and local representatives involved in the NEC Directive.

72. Mr. Lundin thanked for a fruitful meeting and announced that he would retire as Chair of ICP IM. New Chair is Mr Grandin with co-chair Mr. Valinia will take over.

73. Mr. Skotte thanked Mr. Lundin for his efforts and service, and wished him good luck in the future.

74. Mr. Fölster thanked Naturvårdsverket and SLU for financially supporting the meeting.

75. Closing of the meeting.

Participants at the Joint ICP IM and ICP Waters TF meeting in Uppsala 9-11 May 2017

Armenia

Marine Nalbandyan
 Institute of Geological Sciences of NAS of Armenia
 24A, Marshall Baghramian Avenue, Yerevan 0019,
 Republic of Armenia
marinen3@yahoo.com

Austria

Ika Djukic
 Representative of the Austrian ICP IM National Focal Centre
 Environment Agency Austria,
 Ecosystem Research & Environmental Information Management
 Spittelauer Lände 5
 1090 Wien, Austria
ika.djukic@umweltbundesamt.at

Canada

Represented by Julian Aherne (see Ireland).

Czech Republic

Jakub Hruška
 Czech Geological Survey
 Klarov 3
 118 21 Prague 1, CZ
 Czech Republic
Jakub.hruska@geology.cz

Milan Vana
 Czech Hydrometeorological Institute
 393 01 Kosetice,
 Czech Republic
milan.vana@chmi.cz

Pavel Krám
 Czech Geological Survey
 Department of Geochemistry
 Klarov 3
 CZ-118 21 Prague 1
 CZECH REPUBLIC
pavel.kram@geology.cz

Finland

Jussi Vuorenmaa
 Finnish Environment Institute (SYKE)
 P.O. Box 140
 FIN-00251 Helsinki, Finland
jussi.vuorenmaa@ymparisto.fi

Sirpa Kleemola
 Finnish Environment Institute (SYKE)
 P.O. Box 140
 FIN-00251 Helsinki, Finland
sirpa.kleemola@ymparisto.fi

Maria Holmberg
 Finnish Environment Institute (SYKE)
 P.O. Box 140
 FIN-00251 Helsinki, Finland
maria.holmberg@ymparisto.fi

Germany

Hubert Schulte-Bisping
 University Göttingen
 Büsgenweg 2
 D-37077 Göttingen, Germany
hschult1@gwdg.de

Thomas Scheuschner
 German Federal Environmental Agency
 Wörlitzer Platz 1
 06844 Dessau-Roßlau, Germany
thomas.scheuschner@uba.de

Ireland

Thomas Cummins
 University College Dublin
 Belfield, Dublin 4, Ireland
thomas.cummins@ucd.ie

Julian Aherne
 Irish Environmental Protection Agency
 (collaborating institute)
 Environment and Climate Change Canada
 (collaborating institute)
 School of the Environment, Trent University
 1600 West Bank Drive, Peterborough,
 Ontario, Canada K9J 4R8
Jaherne@trentu.ca

Italy

Michela Rogora
 CNR Institute of Ecosystem Study
 Largo Tonolli 50
 I-28922 Verbania Pallanza (VB), Italy
m.rogora@ise.cnr.it

Moldova

Natalia Zgircu
 State Hydrometeorological Service
 Environmental Quality Monitoring Department
 Surface Water Quality Monitoring Center
 str. Grenoble, 134, MD-2072, Chişinău, Republic of Moldova
nataliaracovet1901@yahoo.com

Norway

Bjørn Olav Rosseland
 Norwegian Institute of Water Research (NIVA)
 Gaustadalléen 21 N-0349 Oslo, Norway
bjorn.rosseland@umb.no

Hans Fredrik Veiteberg Braaten
 Norwegian Institute of Water Research (NIVA)
 Gaustadalléen 21, N-0349 Oslo, Norway
HansFredrik.VeitebergBraaten@niva.no

Brit Lisa Skjelkvåle
 University of Oslo
 Postboks 1047 Blindern
 N-0316 Oslo, Norway
b.l.skjelkvale@geo.uio.no

Heleen de Wit
 Norwegian Institute of Water Research (NIVA)
 Gaustadalléen 21 N-0349 Oslo, Norway
heleen.de.wit@niva.no

Gaute Velle
 Uni Research Environment
 Nygårdsgaten 112, Blokk D
 5006 Bergen
gaute.velle@uni.no

James Sample
 Norwegian Institute of Water Research (NIVA)
 Gaustadalléen 21
 N-0349 Oslo, Norway
james.sample@niva.no

Godtfred Anker Halvorsen
 Uni Research Environment
 Nygårdsgaten 112, Blokk D
 5006 Bergen, Norway
Godtfred.Halvorsen@uni.no

Kari Austnes
 Norwegian Institute of Water Research (NIVA)
 Gaustadalléen 21
 N-0349 Oslo, Norway
kari.austnes@niva.no

Gunnar Skotte
 Norwegian Environment Agency
 Strømsveien 96
 0663 Oslo, Norway
gunnar.skotte@miljodir.no

Øyvind Garmo
 Norwegian Institute for Water Research (NIVA)
 Sandvikavegen 59
 NO-2312 Ottestad
oyvind.garmo@niva.no

Poland

Agnieszka Pasztaleniec
 Institute of Environmental Protection
 National Research Institute
 ul. Krucza 5/11d, 00-548 Warsaw, Poland
paszta@ios.edu.pl

Tomasz Pecka
 Institute of Environmental Protection
 National Research Institute
 ul. Krucza 5/11d, 00-548 Warsaw, Poland
tomasz.pecka@ios.edu.pl

Rafał Ulańczyk
 Institute of Environmental Protection
 National Research Institute
 ul. Krucza 5/11d, 00-548 Warszawa, Poland
rafal.ulanczyk@ios.edu.pl

Russia

Ekaterina Pozdnyakova
 Institute of Global Climate and Ecology of
 Roshydromet and Russian Academy of Sciences
KateMukudori@mail.ru

Tatyana Moiseenko
 Vernadsky Institute of Geochemistry and Analytical
 Chemistry of Russian Academy of Sciences
 Kosygin Street 19, 119991 Moscow, Russia
moiseenko.ti@gmail.com

Marina Dinu
 Vernadsky Institute of Geochemistry and Analytical
 Chemistry of Russian Academy of Sciences
 Kosygin Street 19, 119991 Moscow, Russia
marinadinu999@gmail.com

South Africa

Londiwe M Khuzwayo
 University of the Witwatersrand
 1 Jan Smuts Avenue
 Braamfontein 2000 Johannesburg, South Africa
londi.mandisa@gmail.com

Spain

David Elustondo
 Universidad de Navarra
 Irunlarrea 1
 31080 Pamplona, Spain
delusto@unav.es

Isaura Rábago
 CIEMAT, Modelling and Ecotoxicology of Air
 Pollution, Environmental Department
 Avenida Complutense 40
 28040 Madrid, SPAIN
isaura.rabago@ciemat.es

Sweden

Anna Engleryd
 Swedish Environmental Protection Agency
 106 48 Stockholm
 Sweden
anna.engleryd@naturvardsverket.se

Magda-Lena Wiklund-McKie
 Swedish University of Agricultural Sciences (SLU)
 P.O box 7050
 75007 Uppsala, Sweden
magda-lena.wiklund@slu.se

James Weldon
 Swedish University of Agricultural Sciences (SLU)
 P.O box 7050
 75007 Uppsala, Sweden
james.weldon@slu.se

Pernilla Rönnback
 Swedish University of Agricultural Sciences (SLU)
 P.O box 7050
 75007 Uppsala, Sweden
pernilla.ronnback@slu.se

Jens Fölster
 Swedish University of Agricultural Sciences (SLU)
 P.O box 7050
 75007 Uppsala, Sweden
Jens.Folster@slu.se

Salar Valinia
 Swedish Environmental Protection Agency
 106 48 Stockholm
 Sweden
salar.valinia@naturvardsverket.se

Kajsa Bovin
 Geological Survey of Sweden
 Box 670, SE-751 28 Uppsala
 Sweden
kajsa.bovin@sgu.se

Staffan Åkerblom
 Swedish University of Agricultural Sciences (SLU)
 P.O box 7050
 75007 Uppsala, Sweden
Staffan.akerblom@slu.se

Karin Wallman
 Swedish University of Agricultural Sciences (SLU)
 Institutionen för vatten och miljö
 P.O box 7050
 75007 Uppsala, Sweden
karin.wallman@slu.se

Stefan Löfgren
 Swedish University of Agricultural Sciences (SLU)
 P.O box 7050
 75007 Uppsala, Sweden
Stefan.Lofgren@slu.se

Lars Lundin
 Swedish University of Agricultural Sciences (SLU)
 P.O box 7050
 75007 Uppsala, Sweden
Lars.Lundin@slu.se

Ulf Grandin
 Swedish University of Agricultural Sciences (SLU)
 P.O box 7050
 75007 Uppsala, Sweden
ulf.grandin@slu.se

Lena Maxe
 Geological Survey of Sweden
 Box 670, SE-751 28 Uppsala
 Sweden
lena.maxe@sgu.se

Karin Almlöf
 Swedish University of Agricultural Sciences (SLU)
 P.O box 7050
 75007 Uppsala, Sweden
karin.almlof@slu.se

Switzerland

Andreas Bruder
University of Applied Sciences of Southern
Switzerland
Trevano - Blocco C
Via Trevano, 6952 Canobbio
Switzerland
andreas.bruder@supsi.ch

Sandra Steingruber
Ufficio protezione aria, Sezione protezione aria,
acqua e suolo
Via S. Salvioni 2A
6500 Bellinzona, Switzerland
sandra.steingruber@ti.ch

Luca Colombo
University of Applied Sciences of Southern
Switzerland
Trevano - Blocco C
Via Trevano, 6952 Canobbio
Switzerland
luca.colombo@supsi.ch

USA

John Stoddard
U.S. Environmental Protection Agency
Environmental Research Laboratory
200 SW 35th Street
Corvallis, OR 97333, USA
Stoddard.John@epamail.epa.gov

Annex II: Agenda for the joint ICP IM and ICP Waters Task Force meeting in Uppsala 9-11 May 2017

Venue: Ulltuna, Uppsala, Sweden

• Introductions

- Opening words, *Lars Lundin, Chair ICP IM*
- Welcome to SLU, *Kevin Bishop, Pro Vice-Chancellor at SLU*
- Ecosystem and water environments in Sweden: *Björn Risinger, Director General of the Swedish EPA*
- Adoption of the agenda, *Lars Lundin, Chair ICP IM*
- General information about the meeting and excursion, *Jens Fölster, local host*
- WGE Common issues and reporting, *Isaura Rábago, Chair WGE*
- Current issues ICP Waters, *Gunnar Skotte, Chair ICP Waters*
- Current issues ICP IM, *Lars Lundin, Sweden, Chair ICP IM*

• Acidification and recovery

- Potential impact of forest biomass harvest on the acidity of Swedish surface waters. *Stefan Löfgren, Sweden*
- Trends in S and N budgets of Swiss high-altitude mountain lakes. *Steingruber Sandra, Switzerland*
- Air and Surface Water Quality Monitoring System in Moldova. *Natalia Zgircu, Moldova.*
- Report on activities in CLRTAP, *Anna Engleryd, Chair EB*
- The regional assessment on surface water acidification status. *Kari Austnes, ICP Waters Programme Centre*
- A statistical method for detecting artefacts in time series. *Jens Fölster, Sweden*
- DOC trends in Europe and North America, *Heleen de Wit, ICP Waters Programme Centre*
- NEC directive - information and discussion on implication for national monitoring and international cooperation. *Anna Engleryd, Chair EB*
- Integrated Monitoring Network in Poland - current status and future perspectives. *Tomasz Pecka, Poland.*

• Heavy metals

- Heavy metal concentrations in terrestrial compartments and runoff across European IM sites. *Staffan Åkerblom, Sweden*
- Spatial and temporal trends of mercury in freshwater fish in Fennoscandia. *Hans Fredrik Veiteberg Braaten, ICP Waters Programme Centre*

- **Biology responses to air pollution**

- Environmental drivers of leaf litter decomposition in streams, *Andreas Bruder and Julien Cornut, Switzerland*
- Species sensitivity to acidification in highly endemic regions of South Africa. *Londiwe M Khuzwayo, South Africa.*
- Nitrogen deposition impacts in the Austrian IM site Zöbelboden – long-term observations and future research directions. *Ika Djukic, Austria.*
- Gas supersaturation may cause effects on the biota comparable to acidification. *Gaute Velle, ICP Waters Programme Sub-centre*
- Co-analysis of coniferous forest state parameters and atmospheric deposition data series obtained by ICP IM and EMEP at European part of Russia. *Ekaterina Pozdnyakova, Russia*
- Recovery of benthic algal assemblages from acidification: how long does it take, and is there a link to eutrophication? *Jakub Hruška, Czech Republic*

- **Critical loads/Dynamic modelling**

- Soil modelling study VSD+. *Maria Holmberg, ICP IM Programme Centre*
- Acidification and Critical Loads of Surface Waters: European Territory of Russia and Western Siberia. *Marina Dinu/ Tatyana Moiseenko, Russia.*
- Relationships between critical load exceedances and empirical impact indicators - Update of N assessment. *Jussi Vuorenmaa, ICP IM Programme Centre*

- **Common Task Force meeting for both ICPs**

- Chemical intercomparison, Øyvind Garmo, Norway, ICP Waters Programme Centre

- **Separate ICP Waters and ICP IM Task Force Meetings**

- ICP Waters
 - The regional assessment on surface water acidification status – *Kari Austnes, ICP Waters Programme Centre*
 - ICP Waters Biological Intercalibration 2016. *Godtfred Anker Halvorsen, ICP Waters Programme Sub-centre*
 - Workplan
- ICP IM
 - Common WGE issues, database, Workplan

- **Common Task Force meeting**

- Conclusions and closing of meeting

Annex III: Status participation in the ICP Waters programme as of May 2017

	Chemical data	Biological data	Participation in TF meetings 2013-2017	Participation in chemical intercomparison 2014-2016	Participation in biological intercalibration 2014-2016
Armenia	2012		•		
Austria	2015		•	•	
Belarus	2015				
Belgium				•	
Canada	2015			•	
Croatia					
Czech Rep.	2016	2011	•	•	
Estonia	2016		•	•	•
Finland	2016		•	•	
France				•	
Germany	2016	2015	•	•	•
Ireland	2012		•	•	
Italy	2016		•	•	
Latvia	2016	2014		•	•
Lithuania				•	
Moldova	2016		•		
Montenegro	2012				
Netherlands	2016		•	•	
Norway	2016	2015	•	•	•
Poland	2013		•	•	
Russia	2016		•	•	
Serbia				•	
South Africa			•		
Spain	2014		•	•	
Sweden	2016	2014	•	•	•
Switzerland	2016	2015	•	•	•
UK	2015	2013	•	•	•
USA	2016		•	•	
Total	21	7	18	22	7

Annex IV: ICP Waters workplan for 2017–2019

2017

- Arrange thirty-third meeting of the Programme Task Force in spring of 2017, joint with ICP Integrated Monitoring, scheduled to be held in Uppsala, Sweden, May 8 to 10.
- Prepare proceedings from the 33rd Task Force meeting
 - abstracts (2-6 pages) by **Aug 1 2017** to oyvind.garmo@niva.no
 - Report delivered in **September 2017**
- Finalize mercury report
 - The draft report will be ready for review by **June 23 2017**
 - Comments to draft report are expected by **August 16 2017**
 - Special reviewers are Staffan Åkerblom, Matti Rask, Heleen de Wit
 - The report will be finalized by **September 1 2017**
- Write draft report on regional assessment of surface water acidification, with possible contributions from ICP M&M and ICP IM, and with a timeline that will make the report relevant for the implementation of the EU NEC Directive
 - Results from an enquiry to NFCs on data availability will be presented at the Task Force meeting in **May 2017**
 - A second call for contributions from NFCs will be sent by **June 15**, with deadline on **November 1st**.
 - An outline of the report will be presented on the WGE meeting in **September 2017**
 - Final report in print and to be presented at the **Task Force meeting 2018**
- Arrange and report chemical intercomparison 1731
 - in collaboration with all participating ICPs
 - Invitations will be sent in **March 2017**
 - Samples will be sent by **May 20 2017**
 - Report delivered in **September 2017**
 - Responsible person: Carlos Escudero
 - Laboratories that analyse samples for national monitoring programs and laboratories in EECCA countries will not pay a fee
- Arrange and report biological intercalibration 2017
 - in collaboration with participating ICPs
 - Send out invitations by **1 May 2017**
 - Report delivered in **November 2017**
 - Responsible person: Godtfred Anker Halvorsen
- Contribute to a DOC trend analyses, resulting in a submitted manuscript in **2017**
- Run the Programme Centre in Oslo and the Subcentre in Bergen, including:
 - maintenance of web-pages
 - Increase visibility of databases on the web-page
 - maintenance of database of chemical and biological data
 - Report to UNECE
- Submission of data to the Programme Centre by all Focal centres.
 - Responsible: James Sample
 - Call for data: **June 15 2017**
 - Submission by **August 15 2017**
- Participation in meetings of relevance for the ICP Waters programme
 - Contribute to implementation of NEC Directive, together with other bodies under WGE
 - Cooperation with other bodies within and outside the Convention

- Consider availability other water databases and cooperation with other water monitoring programmes (UNEP, GEMS, EEA, WFD)
- Cooperation with EECCA countries (Eastern Europe, Caucasus and Central Asian countries)

2018

- Arrange thirty-fourth meeting of the Programme Task Force in spring of 2018
- Prepare proceedings from the 34th Task Force meeting
- Finalize report on regional assessment of surface water acidification, with possible contributions from ICP M&M and ICP IM at the Task Force meeting in **spring 2018**
- Arrange and report chemical intercomparison 1832
- Arrange and report biological intercalibration 2218
- Prepare new thematic report for 2019 (suggested topic, to be decided on 2018 TF meeting: retention and effects of reactive nitrogen in surface waters), with possible contributions from other bodies under the Convention
- Run the Programme Centre in Oslo and the Subcentre in Bergen, including:
 - maintenance of web-pages
 - An overview of the layout and functioning of the web page, including publication list
 - Increase visibility of activity of Focal Centres on the web-page
 - maintenance of database of chemical and biological data
 - Report to UNECE
- Submission of data to the Programme Centre by all Focal centres.
- Participation in meetings of relevance for the ICP Waters programme Contribute to implementation of NEC Directive, together with other bodies under WGE
- Cooperation with other bodies within and outside the Convention
- Consider availability other water databases and cooperation with other water monitoring programmes (UNEP, GEMS, EEA)
- Cooperation with EECCA countries (East Central Caucasus and Central Asian countries)

2019

- Arrange thirty-fifth meeting of the Programme Task Force in spring of 2019
- Write new thematic report (proposed topic: reactive nitrogen, to be discussed at the 2018 Task Force meeting)