

# Report on TFRN-8 by the Co-Chairs of the Task Force on Reactive Nitrogen

## I. INTRODUCTORY REMARKS

This report, details activities undertaken by the Task Force on Reactive Nitrogen, since the last co-chairs report, which was submitted to the fifty-first session of the Working Group on Strategies and Review, May 2013, as a formal document, ECE/EB.AIR/WG.5/2013/3.

Background documents can be accessed at: [www.clrtap-tfrn.org](http://www.clrtap-tfrn.org). This report summarizes the presentations and discussions of the Eighth meeting of the Task Force on Reactive Nitrogen, held in Copenhagen, from the 25<sup>th</sup> -26<sup>th</sup> April, 2013.

### A. Attendance

The overall meeting was attended by 69 participants from 16 countries, including those joining the workshop on Greening Agriculture. A meeting of the Task Force on Integrated Assessment Modelling also took place earlier in the week. Present during the meetings were representatives from the Task Force on Integrated Assessment Modelling, the EMEP Centre for Integrated Assessment Modelling (CIAM) at the International Institute for Applied Systems Analysis (IIASA), the Network of Experts on Benefits and Economic Instruments (NEBEI), and the ICP Vegetation.

### B. Organisation of work

The Task Force was co-chaired by Mr. O. Oenema (Netherlands) and Mr. M. Sutton (United Kingdom). It was hosted by Denmark, with support from the Department of Environmental Science of Aarhus University, the Danish Environmental Protection Agency, the UK Department for Environment Food and Rural Affairs, the Netherlands National Institute for Public Health and the Environment (RIVM), and the Swedish Environmental Research Institute (IVL).

The meeting was opened by Ms. Hanne Bach, director of the Danish Centre for Environment and Energy, Aarhus University, and was held in plenary, with simultaneous translation between Russian and English. The meeting included updates from the UNECE LRTAP Convention secretariat, expert panels, national reports and information on the Greening Agriculture meeting held earlier in the week.

### C. Report from the UNECE LRTAP Convention Secretariat

A member of the LRTAP Convention secretariat provided an update on convention activities, including highlighting the main changes to the Gothenburg Protocol, following its recent revision, and providing an overview of the Long Term Strategy and its links to the future work of the Task Force. This includes a new article on public awareness, which outlines that information should be provided to the public about issues relevant to the Gothenburg Protocol, such as agricultural measures and their impacts and also encourages collaboration with other parts of the UNECE Convention, such as the Water Convention.

The representative of the secretariat also outlined some of the work under the Water Convention, regarding the water, food, energy, ecosystem nexus – a topical assessment which will then contribute to larger assessments every 8 years. A representative of the Task Force attended one of their preliminary meetings to gain further information and exchange notes with TFRN.

The representative from the Convention discussed the new format for Task Force workplans, from 2014 onwards, which will include more specific information regarding outputs and also outline resources which are committed or would be necessary if work was to be undertaken.

The co-chair of the Task Force asked for clarification regarding the status of the amendments to Annex IX – to inform the Task Force. It was noted that there was an obligation to review Annex IX upon ratification of the updated Gothenburg Protocol revision, which will likely be within 2-3 years time. It was agreed that the Task Force should bear this in mind when developing their workplan, to allow the Task Force to react in a timely manner if the Convention requests updates to be made to Annex IX.

## **II. REPORTS FROM EXPERT PANELS AND EXPERT WORKSHOPS**

### **A. Expert Panel on Mitigation of Agricultural Nitrogen**

The co-chair of the Expert Panel on Mitigation of Agricultural Nitrogen reported on the work of the panel in the past year. The panel met in Berlin last September to discuss the development of the UNECE Framework Code for Good Agricultural Practice for Reducing Ammonia, where they agreed that the new framework code would be a succinct document of 20-30 pages, which would also link closely to the structure and content of the Ammonia Guidance Document. However, they also agreed that a second extended document, which would include more detailed information, including diagrams and images would also be developed, to improve the communication and implementation of techniques. This document would also be web-based and a 'living document', which can be updated as new technology and information becomes available. The Task Force agreed with these suggestions regarding the Framework Code.

As the Framework Code itself and the Guidance Document should not disagree in content, EPMAN suggested the compiling of a list of amendments and comments to both documents to which additions can be made frequently. Appreciating that the Guidance document is already adopted by WGSR (and the Framework Code will be at a later date) this will allow both to be managed as "living documents" for updating in due course.

During the EPMAN session several members indicated some mistakes and inaccuracies in the Guidance Document. It was agreed that these would be taken into account in updating the document. The first draft of updates to the main framework code were developed with support from the German Federal Ministry for the Environment by colleagues in Germany and commented on by a Swiss expert. This draft was presented at the EPMAN-6 meeting on the 25<sup>th</sup> April for discussion by the panel, where it was agreed to circulate any further comments to the document.

Also presented at the meeting was the first exemplar section of the longer more detailed Framework Code document, for discussion. The overall structure was agreed and a request was made for volunteers to develop further sections of this document. It was noted that an overall lead would also be needed for this work, to maintain consistency. The German representatives agreed

to explore further funding resources to take this work on. The Co-chairs of the panel will continue to discuss this document with the relevant experts for contributions, after the meeting.

The co-chairs of the Agriculture and Nature Panel of the Task Force on Emission Inventories and Projections were also present at the EPMAN-6 meeting, to discuss strategies for increased co-operation between the two panels. Topics of discussion included how to ensure consistency between the Emissions Inventory Guidebook, and the recently updated Guidance Document on Ammonia Abatement. It was noted that having a regular section in the EPMAN meeting agendas for Agriculture and Nature Panel items could be beneficial. A first joint meeting has already been held in Berlin in September 2012 where the further steps for a more intensive collaboration between both groups had been decided. It was also suggested and then agreed, that one of the co-chairs of the Agriculture and Nature Panel, also become one of the co-chairs of the EPMAN panel, to increase co-operation. Further strategies will be discussed by all panel co-chairs following the TFRN meeting.

#### B. Report of the Expert Panel on Nitrogen Budgets

The co-chair of the Expert Panel on Nitrogen Budgets (EPNB) provided an update on their activities. There have been two meetings of the panel since the last Task Force meeting, EPNB-6 took place in St Petersburg last February (shortly after TFRN-7) and EPNB-7 occurred electronically. EPNB-8 took place shortly after TFRN-8.

The Guidance Document on Nitrogen budgets has been submitted to and adopted by the Executive Body. However it is now necessary to provide the relevant annexes to this document, to provide parties with more detailed instructions on how to proceed with their nitrogen budgets. A showcase for these annexes was discussed at the EPNB meeting. The co-chair of the Task Force asked the panel to consider how the budgets would be implemented in terms of data exchange – e.g. would there be a role for EMEP for example. The panel co-chair agreed to discuss this within the expert panel and to report back to the Task Force on this at a later date.

The EPNB co-chair informed the Task Force on interactions with other initiatives – such as the co-chair taking on the role of European Chair of the International Nitrogen Initiative and further co-operation with OECD and Eurostat.

During the EPNB-8 meeting, the group discussed the provision of farm nitrogen budgets, what is available currently, their scope and what is necessary for the EPNB to develop and provide. It is clear that further experts will be required to develop this work.

The co-chair explained that there had been good progress on the development of a dynamic tool for nitrogen budgets. It was noted that Switzerland is ready to contribute to the planned work by using its national nitrogen budgets for testing further developed versions of the dynamic tool.

The next EPNB meeting has been scheduled for the autumn, perhaps alongside another meeting or held electronically.

#### C. Report of the Expert Panel on Nitrogen and Food

A representative of the Expert Panel on Nitrogen and Food provided an update on the progress of the ‘Nitrogen on the Table’ report. The draft summary of that report was presented as a background document for TFRN-7. A paper on the relationship between ‘choices for animal-derived food and nitrogen’ has been submitted to the journal *Global Environmental Change* to accompany the final report. The report itself will be launched as a ‘Special Report of the European Nitrogen Assessment’. The intention is to co-ordinate the launch of this report with the publication of the paper.

#### D. Report from the Expert Panel on Nitrogen in Eastern Europe, Caucasus and Central Asia

The co-chair of the Expert Panel on Nitrogen in Eastern Europe, Caucasus and Central Asia provided an update on the work of the past year, and the conclusions of the panel meeting held earlier in the week.

The expert panel has two chairs, Ms Natalia Kozlova of SZNIIMESH (North-West Research Institute of Agricultural Engineering and Electrification of the Russian Academy of Agricultural Sciences) and Mr Sergey Lukin, of GNU VNIIOU Rosselkhozacademii (the All-Russian Research Institute for Organic Fertilizers and Peat) and two special advisors, Mr Klaas van der Hoek of the Netherlands National Institute for Public Health and the Environment (RIVM), and Mr Markus Geupel of the Federal Environment Agency, Germany (Umweltbundesamt). Since its establishment in 2012 the Expert Panel has worked on the translation of the Guidance Document on Ammonia Abatement into Russian, organised proceedings from the workshop, 'Abating ammonia emissions in the UNECE and EECCA region in the context of the nitrogen cycle' in St Petersburg, February 2012 (in Russian and English) and has organised official letters to the Russian Academy of Agricultural Sciences and to the Russian Ministry of Natural Resources and Environment in order to facilitate the implementation of the Expert Panel in EECCA countries.

During the latest expert panel meeting, representatives of the Ukraine, Belarus and Russia were present. The panel have developed a list of important topics for international projects, which includes the need for initial data and emissions assessment from agricultural sources, nitrogen budgets on various levels and translation into Russian of Task Force relevant documents. They also agreed that there was an urgent need to adapt Guidance Documents which are provided by the Task Force, such as the Framework Code of Good Agricultural Practice (currently under revision) to the issues faced by EECCA countries and to explore the most effective ways for national implementation.

Regarding future workshops, there will be an International Agroenvironmental Forum meeting, 21-23 May, 2013, in St-Petersburg, the Russian Federation, during which there will be a round table discussion "Mitigation of Adverse Environmental Effect of Reactive Nitrogen in Farming". The panel also discussed a longer term plan; there will be a follow-up workshop to the previous meeting in St Petersburg on 'Abating ammonia emissions in the UNECE and EECCA region in the context of the nitrogen cycle' within two years.

#### E. Workshop on Greening Agriculture

The chair of the Task Force on Integrated Assessment Modelling (TFIAM), provided a short report on the Green Growth and Agriculture workshop which was held on the 24<sup>th</sup> and 25<sup>th</sup> April, in Copenhagen (just prior to the TFRN meeting). All background documents, presentations and minutes from the workshop will be provided on the web by the hosts, Aarhus University, and a link to this page is available on the Task Force website. The co-chair of TFIAM also presented the outcomes of the workshop to the Fifty-first session of the Working Group on Strategies and Review.

The workshop included a discussion on the best terminology to be used to discuss the topic and it was decided that 'Green Economy' was the best option. Three issues/areas were concluded to be of key importance to achieving steps towards a 'Green economy', these were; Innovation, communication and shifting towards a bio-based economy.

Innovation was deemed important, across research and development, the financial sector, with respect to technological and behavioural change and integrating the issues not just within the

nitrogen cycle, but also for climate, land and water-use. Communication was listed as needed to address the lack of information and awareness at the level of farmers, retailers and consumers. Farmers need increased information on green production methods, retailers should focus on reducing food waste in the production chain and consumers should receive information on greening diets and the links with health benefits. Finally, it was suggested that a transition to a (bio)fuel based economy is necessary, but that life cycle analyses were important to assess the wider impacts of such schemes. This was reinforced by a comment from a Task Force member that the competition between food, feed and (bio)fuel should be considered in future analyses.

### **III. INTERNATIONAL DISSEMINATION ACTIVITIES AND LINKS**

#### **A. International Nitrogen Initiative (INI)**

A short report was given on relevant activities of the International Nitrogen Initiative, a global organisation, which also has regional centres (Europe, North America, South Asia, East Asia, Africa, South America, India). The UK co-chair of the Task Force is also the Global chair of INI, while the co-chair of the Expert Panel on Nitrogen Budgets has recently taken up the role of European INI Chair. The INI is a scientific partnership and joint project of the Scientific Committee on Problems of the Environment (SCOPE) and the International Geosphere-Biosphere Program (IGBP), which both sit within the International Committee for Science (ICSU).

Recent and future activities include regional assessments, several of which have been completed (the European Nitrogen Assessment and an Assessment in the United States) and several are planned or underway (including in India and China). The organisation also holds a global conference every three years to highlight and integrate knowledge on the Nitrogen issue, the next conference will be held in Kampala, Uganda in November of this year. Registration is now open and the co-chair extended an invitation to all Task Force members to consider attending <http://n2013.org/>.

#### **B. ‘Our Nutrient world’**

The co-chair outlined the recent UNEP commissioned report ‘Our Nutrient World: The challenge to produce more food and energy with less pollution’, which was launched in February of this year with input from TFRN. The report has global scope and covers nitrogen and other nutrients, highlighting the need for nutrients in relation to food security, the environmental consequences of using them, the global inequity in their usage and suggesting key actions and targets which governments and other stakeholders should consider. This includes the target of improving nutrient use efficiency by 20%, by the year 2020, which would provide a saving in annual fertiliser nitrogen of 20 million tonnes. They call this goal “20:20 for 2020”. The report is available for purchase in hardcopy, or available to download for free electronically, for further information please visit <http://initrogen.org/index.php/publications/our-nutrient-world/>.

#### **C. ‘International Nitrogen Management System’, proposal to the Global Environmental Facility**

The co-chair outlined a recent pre-proposal which has been submitted to the Global Environmental Facility. The proposal is for the development of an ‘International Nitrogen Management System’, which is an environmental assessment and policy interaction on how to

approach the problem, building a science-technical support process on the global N cycle. It would also involve a number of case studies, which may include the Mediterranean, Baltic, Black Sea and Central Asia regions, subject to further discussion.

The first stage of the bid has been submitted, however, if this is successful there will be further stages where the details of co-funding, funding, roles, deliverables and case studies will be outlined. The co-chair of the Task Force asked any TFRN members who were interested in this initiative to come forward and discuss their potential input to the project, by contacting the TFRN secretariat [tfrn@ceh.ac.uk](mailto:tfrn@ceh.ac.uk).

#### D. UNEP Report - The forgotten pollutant: nitrous oxide and the disruption of climate and the ozone layer

The co-chair is leading one of two sections of a fast report on N<sub>2</sub>O, the forgotten pollutant, for UNEP. It is an example of the links which are now being developed between organisations within the nitrogen science-policy community.

#### E. International activities and the work of the Task Force

After the report from the co-chair on the international activities which are currently taking place, he invited the Task Force to become involved in these activities. The Task Force agreed that such activities should take place with the co-operation of the Task Force.

A representative of the Task Force enquired about the process regarding the European Nitrogen Assessment (which was presented to the Task Force in 2011) after its launch in April 2011, and its potential impact. The co-chair explained that the ENA had been presented to the Executive Body of the LRTAP Convention, who accepted the 'Summary for Policymakers'. Also, the cost benefit analysis from the assessment was appreciated by the Executive Body and other stakeholders. The assessment also provided a useful vehicle to disseminate information about the nitrogen issue to the general public, who are aware of carbon issues, but not nitrogen.

## IV. NATIONAL REPORTS

Several national reports and initiatives were presented to the Task Force.

#### A. Switzerland

A report was given from a representative of Switzerland on incentives for the efficient use of natural resources, as laid out in the new Swiss Agricultural Policy. The policy included a direct payment program with a strong focus on reduced environmental impact and animal welfare. Thanks to this program the use of mineral fertilizer was reduced by 25% for N and by approx. 70% for P. Also the amount of nutrients in manure went back by 5% and 20% for N and P respectively, there was no reduction in yields. Thus the nutrient use efficiency clearly improved. Further benefits of the policy are a greater awareness by farmers of good manure management. There is a requirement to report in a computing tool, which is locally checked. Manure movements also have to be reported and it is considered that a high level of compliance is being achieved. Since 2008 additional voluntary "resource programs" also support the use of the use of low manure emission spreading techniques with payments per hectare (not valid during the winter months).

## B. France

A representative from France provided a report on nitrogen research which has been undertaken in France. Two studies were discussed, firstly one on actions to improve the inventory of N<sub>2</sub>O in France and the second described a recent scientific assessment on livestock and nitrogen. The N<sub>2</sub>O project promotes a global approach to looking at nitrogen in field crop systems, looking at the trade-offs between nitrate, ammonia and N<sub>2</sub>O. The project involves the Ministry of Agriculture and several applied research institutes. The scientific assessment looked at N flows in livestock farming systems, providing a synthesis of the scientific knowledge, gained from the literature and reports. It addressed various different scales, but retained a focus on farm nitrogen. The study was also having the benefit of raising public awareness of ammonia issues, especially in livestock farming and the need for a global approach. The documents for these projects are available on the web (<http://www6.paris.inra.fr/depe/Projets/Elevage-et-Azote>), mostly in French, but some of the summaries will be available in English.

## C. Denmark

A presentation was given on ammonia abatement, by a representative of Denmark. Denmark has a large pig industry while nitrate leaching to lakes and coastal waters is considered to be a large problem. In addition, there is a growing concern for biodiversity and odour issues. To combat these concerns a number of action plans have been implemented. Since 1985 there have been decreases in the amount of synthetic fertiliser use, due to improved use of animal manure. One improvement has been an increased use of animal manure in spring, which increases their nutrient use efficiency. To make this a practical solution, increasing the capacity for low emission storage was very important, and this proved to be a key factor combined with a ban on broad spreading and demands on slurry injection on black soils. When new farms are established or older farms are renovated, there is a requirement for a reduction in the ammonia emissions by 30%. The reduction required is based on the normative nitrogen excretion values of the day of application for making improvements.

## D. Germany

National guidance and approaches for abating ammonia and NO<sub>x</sub> in Germany were presented by a representative of Germany. Ammonia emissions decreased only slightly during past decades. The NO<sub>x</sub> emissions have decreased more strongly, but in the case of both pollutants, targets of the Gothenburg Protocol have not been reached. The representative outlined some of the national guidance documents which have been produced, but noted that integrated nitrogen management approaches, including cross-sectoral approaches, were not yet taken on board by the German Federal Ministry for the Environment. The German national nitrogen budget is currently being updated, and this will be used to bring the issue back to the attention of the Ministry, to continue discussions on more efficient and integrated measures. Agricultural nitrogen balances at different levels and the related legislative potential for improving them were presented. A German version of the 'N-print' (<http://www.umweltbundesamt.de/luft/stickstoff/faq-stickstoff.htm>) nitrogen footprint tool, has been developed to help consumers understand their role in nitrogen losses to the environment. Other activities include ongoing research at the Federal Environment Agency, Germany (Umweltbundesamt) on sustainable national nitrogen management in agriculture, with the objective that it will improve the evaluation of nitrogen emissions in the production chain. A website (<http://www.umweltbundesamt.de/luft-e/stickstoff/index.htm>) has also been developed recently to improve public relations on the topic, it informs the public about reactive nitrogen work and this links with the site on personal nitrogen footprints.

## E. Spain

A representative of Spain explained the trends on N emissions showing that NO<sub>x</sub> emissions have dropped 23% in recent years although the target level has not been reached yet. In the case of ammonia, it was indicated that emissions had slightly increased during the last two decades, due to increments in livestock and in the use of fertilisers within the country. However, the current Spanish National Programme AIRE includes the implementation of the Gothenburg Protocol measures to mitigate the emissions from agricultural sources.

Work on effects and critical loads was presented, pointing out that even though the maps of critical loads for nutrient nitrogen are a good tool for both, assessment and communication, some improvements are still needed through further optimization of the critical loads modelling which should include Mediterranean conditions (i.e. strong seasonality, high temperature, drought stress). In addition, ongoing work with atmospheric modellers involves further improvements for better estimations of dry deposition in Mediterranean climate, since differences between models outputs and field measurements have been identified.

## F. Italy

The representative from Italy outlined two of the models which they use for estimating the impact of mitigation measures (NitroFlussi and the GAINS model) as well as presenting the reductions which have been made in NH<sub>3</sub> and NO<sub>x</sub> in Italy, as compared to that across the whole of Europe. Improvements in resolution have also been made with the GAINS model applied on the Italian scale allowing regional assessments to be made.

Looking more specifically at reductions in NH<sub>3</sub> emissions, there is a marked reduction in emissions during 2010—driven by the economic crisis rather than legislation. The representative of Italy also presented the mitigation impacts of low nitrogen feeding strategies in livestock production, and the impacts of changes in human diets. Scenarios which looked at potential changes in human diet change were shown to be the most effective in reducing N emissions to air (i.e. impacts on NH<sub>3</sub> emissions), even when compared to scenarios with changes in animal diet (low nitrogen feeding).

## G. UK

Research related to integrated nitrogen management in the UK was presented, including the issue of slurry applications to cracking clay soils, which can provide channels for water pollution within the soil. The interactions between pollutant losses to water and atmospheric emissions was investigated for different slurry application timings. Autumn applications provide the greatest risk of nitrate pollution, but spring and summer applications can result in significant transfer of other pollutants and, particularly, an increased risk of atmospheric emissions (ammonia and nitrous oxide). The soil condition prior to and just after slurry application is a key factor. A risk matrix was developed, indicating potential risk associated with slurry application timing for a range of water and air pollutants.

The second topic presented was the recently launched guide for the mitigation of diffuse pollution. It covers 83 different mitigation options, assessing their impacts on a range of pollutants, across 10 standardised farm types. Rather than providing specific numbers for each of the techniques, a direction (increase, decrease) and magnitude (1, 2 or 3) of change is given.



Thirdly, the representative of the UK discussed the GHG Platform of projects, which are designed to improve the detail of the agriculture GHG inventories in the UK, in particular reflecting the uptake of any changes in management practices and implementation of mitigation methods within the agricultural sector. An important part of this is scoping out how to improve activity data.

Current UK policy in terms of implementing control measures in the agricultural sector relies largely on an industry-led voluntary action plan for GHG, with defined priorities for action. While implementation of suggested methods is predicted to lead to a modest decrease in GHG emissions (c. 5%), associated estimated reductions in ammonia emission and nitrate leaching were significant (14 and 5%, respectively).

The co-chair commented that the scope and effectiveness of voluntary measures would be an interesting topic to focus on in a future meeting.

## V. UPDATING OF THE WORKPLAN AND CLOSING REMARKS

The secretariat of the UNECE LRTAP Convention outlined the workplan for 2014-2015 in the newly proposed format, which provides clearer information on outputs and asks for information regarding resources. This format contains the following headings:

- Activity description
- Deliverable(s) and planned completion date
- Reference to Long Term Strategy (LTS) of the Convention,
- Action Plan to LTS, (Executive Body) EB decision
- Funding source: trust fund, donation, in-kind contribution\*
- Estimated resources in thousands of US\$\*
- Additional resource needs\*
- Main responsible body

It was agreed that the headings marked with an \* will not be available in the first draft, but that these would be estimated as a future task.

Activity description	Deliverable(s) and planned completion date	Reference to LTS, Action Plan to LTS, EB decision	Main responsible body
Continue the work on nitrogen emission abatement from agricultural sources, develop technical and scientific information on an integrated approach to mitigation of	Publish by 2014 and disseminate the Guidance Document on Preventing and Abating Ammonia Emissions from Agricultural Sources (ECE/EB.AIR/120)	V, 17a	TFRN

agricultural nitrogen emissions with particular reference to the recent revision of the Gothenburg Protocol	Continue to liaise with the Centre for Integrated Assessment Modelling to examine the costs and benefits of ammonia emissions abatement measures to improve the understanding of health climate and environment related linkages for nitrogen: Provision of cost data on the effectiveness of ammonia emission abatement measures by 2015	V, 17a	TFRN
	Work on updating the ECE Framework Code for Good Agricultural Practice for Reducing Ammonia, including taking account of the relevant BREF documents: Executive Summary with key messages and update in 2014, extended version of publication in 2015	V, 17a	TFRN
	Continue exchange of information for effective measures to abate emissions in preparation of a future update of Annex IX to the amended Gothenburg and related policies by its Parties		
	Develop multi-pollutant approaches reflected in a draft report on integrated approaches for nitrogen emission abatement policy to be prepared by 2015	V, 17b	TFRN
Continue providing technical information on making and using nitrogen budgets and estimating nitrogen emissions: (i) At the national scale and for various system boundaries; (ii) Looking specifically at the farm scale	Publish by 2015 and disseminate the new Guidance Document on national nitrogen budgets with its annexes (ECE/EB.AIR/119)	V, 17a	TFRN
	Development of draft indicators by 2015 through the use of nitrogen budget approaches and linkages between nitrogen and climate, in cooperation with other bodies such as the OECD and Eurostat	V, 17a	TFRN
	Provision of framework for establishing nitrogen budgets to EMEP to enable its provision to the Executive Body of nitrogen budgets, nitrogen compounds and nitrogen use efficiency (Article 7 of amended Gothenburg Protocol)	V, 17a	TFRN
	Organization of a workshop to improve awareness and understanding of the Guidance document on National Nitrogen Budgets and its annexes to be held by 2015	V, 17a	TFRN

<p>Continue developing and providing technical and scientific information to the Executive Body and to the Working Group on Strategies and Review in the light of the implementation of the provisions of the recently revised Gothenburg Protocol in relation to the whole nitrogen cycle</p>	<p>Provision of information and presentations by the Chair of TFRN at meetings of WGSR in 2014 and 2015 and to the Executive Body, as appropriate</p>	<p>V, 17a</p>	<p>TFRN</p>
<p>Continue collecting and assessing information from the national focal points regarding their experiences, including any difficulties that they have in developing and implementing an integrated approach</p>	<p>Task Force meetings in 2014 and 2015, Workshop(s) to be organized to exchange experience on implementation of Gothenburg Protocol, in partnership with other regional nitrogen organizations, as needs arise</p>	<p>V, 17a</p>	<p>TFRN</p>
<p>Provide technical information on the effects of human diets on nitrogen use and emissions</p>	<p>Report on the relationship of human diet, the nitrogen cycle and environmental impacts in 2014 (European Nitrogen Assessment special report)</p>	<p>V, 17a V, 17b</p>	<p>TFRN</p>
<p>Outreach to other regions and cooperation with other organizations:</p> <ul style="list-style-type: none"> <li>- To engage with the CBD on the development and application of indicators of biodiversity targets;</li> <li>- To liaise with the UNEP Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA) and the Global Partnership on Nutrient Management in the development of nitrogen indicators and mitigation techniques (in the context of sustainable production) and understanding of the linkages of air, water, climate and biodiversity targets;</li> <li>- Provision of nitrogen-use indicators (e.g. nitrogen use efficiency) related to multiple indicators of environmental quality including water quality</li> </ul>	<p>Provision of nitrogen indicators in relation to biodiversity to the CBD for inclusion in Aichi target monitoring process, in collaboration with the International Nitrogen Initiative (timing tbc)</p>	<p>V, 14b</p>	<p>TFRN</p>
	<p>Development of a global research programme of the global nitrogen cycle, in cooperation with the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA), setting UNECE analysis into the global context</p>	<p>V, 17b</p>	<p>TFRN</p>
	<p>Provision of nitrogen use indicators for selected transboundary water basins, as a contribution to the study on the water-food-energy-ecosystem nexus prepared in framework of ECE Water Convention by 2015</p>	<p>V, 17b</p>	<p>TFRN</p>

<p>Liaise with countries in Eastern Europe, the Caucasus and Central Asia in the development of approaches for managing reactive nitrogen in industry and agriculture in order to:</p> <p>(i) Investigate the barriers to implementation of the Gothenburg Protocol;</p> <p>(ii) Improve collaboration with the Coordinating Group on the promotion of actions towards implementation of the Convention for Eastern Europe, the Caucasus and Central Asia, through the new Expert Panel of the Task Force</p>	<p>Workshop for the countries in Eastern Europe, the Caucasus and Central Asia planned by 2015 on application of low emission approaches in the context of conditions in the EECCA region; Ensure participation of countries in Eastern Europe, the Caucasus and Central Asia in the meetings of TFRN</p>	<p>V, 17a</p>	<p>TFRN</p>
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