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Task Force on Reactive Nitrogen

Under the Working Group on Strategies and
Review of the UNECE Convention on Long-range
Transboundary Air Pollution

EB decision 2007, revised EB decision 2018/6

Co-chairs: Tommy Dalgaard, Cláudia Marques dos Santos Cordovil,
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Lead country: Denmark

WGSR 60, Geneva 11–14 April 2022

<https://zoom.us/j/97471766572?pwd=cWR6ZEJrQTR2L2oyY1hnaGcxME1hZz09>

TFRN Status

<https://unece.org/environmental-policy/events/working-group-strategies-and-review-sixtieth-session>

- **Next TFRN meeting in Madrid October 2022**
- **The four TFRN expert panels**
 - EPMAN - Expert Panel on **Mitigating Agricultural Nitrogen**
 - EPNB - Expert Panel on Nitrogen **Budgets**
 - EPNF - Expert Panel on Nitrogen and **Food**
 - EPN-EECCA - Expert Panel on Nitrogen in **EECCA countries**
- **Progress report 2022-2023 and further TFRN activities and contributions, incl. GP annex 9 updates etc.**

EPMAN – ammonia guidance

- Co-chairs Shabtai Bittman (Agriculture & Ag Food Canada), and Barbara Amon (ATB-DE)



Start revision process at meeting in Madrid

(proposed 2 yr process for discussion)

Alberto Sanz-Cobena on board



National Ammonia Codes

- Comprehensive questionnaire sent in Dec 2021
- 3 groups of Parties

A. For Parties to the Convention who are also Parties to the Gothenburg Protocol:

1. What actions have been taken to reduce losses from the whole nitrogen cycle?
2. Has an advisory code of good agricultural practice to control ammonia emissions been established, published and disseminated?
3. What actions have been taken to limit ammonia emissions from urea-based and other fertilizers?

4. What actions have been taken to ensure that low-emission slurry application techniques are used that reduce ammonia emissions by at least 30% compared with the reference?
5. What actions have been taken to ensure that solid manure is incorporated into soil within 24 hours of spreading?
6. What actions have been taken to ensure that new and existing slurry stores on large pig and poultry farms use systems that reduce emission by at least 40% compared with the reference?
7. What actions have been taken to ensure that new animal housing on large pig and poultry farms use systems that reduce emission by at least 20% compared with the reference?

B. For Parties to the Convention who are not parties to the Gothenburg Protocol or where Annex IX does not apply:

8. What measures for ammonia are currently implemented or planned to be implemented?

C. For all Parties to the Convention:

9. What do you see as the main barriers and opportunities associated with reducing ammonia emissions (including in relation to Annex IX)?

11 Answers

- Austria
- Canada
- Cyprus
- Finland
- France
- Ireland
- Italy
- Sweden
- Switzerland
- UK
- US

EPNB – Nitrogen Budgets

- Co-chairs Wilfried Winiwarter IIASA-AUS, and Markus Geupel, UBA-DE
- Guidance document (UN-ECE) as a framework exists (see www.clrtap-tfrn.org) incl. detailed instructions (annexes)
- Successful application to Germany and other countries (with identified potentials)
- A new national N budget visualization tool has been developed, to be hosted at the INMS website as a budget repository
- Next EPNB workshop planned 31st May 2022 in hybrid, linked also to the UNCNET project on urban nitrogen cycles.
- Further country support is essential to proceed further

EPNF – Nitrogen and Food

- Co-chairs Adrian Leip, EC-JRC, and Susanna Kugelberg, UN-WHO, Copenhagen
- Food system approach (from a nitrogen perspective) with focus on:
 - Food production technological efficiencies and mitigation options
 - Food chain losses/waste and opportunities for improvement
 - Consumption (health) issues and way forward
- Special issue **COMPLETED** since last reporting
(Managing Nutrients: The key to achieve sustainable food systems for healthy diets. Leip, Kugelberg and Bodirsky, eds.)
- **Appetite for change** report still to be finalized

EPN-EECCA

Expert Panel on Nitrogen in Eastern Europe, the Caucasus and Central Asia

Report sent by Gabriele Borghardt on behalf of the co-chairs:

- International online seminar “Challenges and opportunities for N management in agriculture”: <https://www.youtube.com/watch?v=T4XsKgfaLY8>
- Training webinars on "Air emissions reporting under the UNECE Convention on Long-range Transboundary Air Pollution" (Moldova, Kyrgyz Republic, Kazakhstan, 2021)
- Expert contributions to the “The International N Assessment”, Chapter 23. Assessment of nitrogen flows, impacts and solutions in East Europe (Lead Authors: S Medinets & L Moklyachuk)
- Contributions to www.INI2021.com and other scientific conferences and events

The Nitrogen Workshop and next TFRN expert panels meeting



Planned to be hosted back to back with the 24-28 October 2022
“Halving nitrogen waste by 2030”
Nitrogen workshop.
<https://nworkshop.org/>

Progress in the implementation of the 2022-2023 workplan

<https://unece.org/environmental-policy/events/working-group-strategies-and-review-sixtieth-session>

- 2.1.2 Review of the sufficiency and effectiveness of the Gothenburg Protocol as amended
- 2.2.1 Analysis of the interactions between emissions of CH₄ and NH₃ and other N-compounds, and the potential for co-mitigation from agric. sources (with TFTEI etc.)
- 2.2.2 Promotion of guidance document on integrated sustainable N management
- 2.2.3 Development of a guidance document on non-technical and structural measures
- 2.2.4 Promotion of guidance documents, including those recently adopted (top 5 -> top 10 measures etc.)

New guidance document

Item 2.2.3: Guidance document on integrated sustainable nitrogen management

16. The workshop on integrated sustainable nitrogen management had been co-organized by the European Union and the Task Force on Reactive Nitrogen with a view to finalizing the draft guidance document on integrated sustainable nitrogen management, which took into account pollution into air, water and soil in an integrated way. The guidance document included sections on the following issues:

- (a) Principles of integrated sustainable nitrogen management;
- (b) Livestock feeding/housing and manure processing and storage;
- (c) Fertiliser and manure application methods;
- (d) Land use and landscape management.

17. The draft guidance document would be presented to the Working Group on Strategies and Review at its fifty-eighth session. The final draft, incorporating any comments of the Working Group, would be submitted to the Executive Body for adoption at its fortieth session (Geneva, 14–18 December 2020).

Key messages for the Gotenburg Protocol review document

- Key message: Future revision of the GP will need to include NO_x from agricultural soils with opportunities for co-benefits for reducing other forms of N pollution
- Ammonia vs. methane synergies to be explored further
- Yellow marked points from TFRN document:

Issues to consider for nitrogen in relation to review of the Gothenburg Protocol.

Based on Note submitted by the co-chairs of the Task Force on Reactive Nitrogen, 2021

- **Annex IX is over 20 years old and can no-longer be considered up to date.** Based on substantial progress in technical capability, availability of cost-effective measures, and recognition that measures are needed to achieve ammonia emission ceilings, **a comprehensive revision of Annex IX is overdue**
- ... requirements are provided related to the **wider nitrogen cycle**. This can be considered as a critical gap given the last decade of activity in developing joined up-perspectives and solutions across the nitrogen cycle
- **Controlling emissions of NO_x from soils** offers an opportunity to go further in reducing total NO_x emissions, and should be seen as part of strategies to reduce total amounts of wasted nitrogen resources, with co-benefits for climate, stratospheric ozone and water quality (through simultaneous mitigation of nitrous oxide, di-nitrogen, nitrate and other nitrogen losses)
- The report 'Nitrogen on the Table' showed that a halving meat and dairy intake in Europe (demitarian scenario) would **reduce ammonia emissions by around 40% (without any technical measures)**
- **Significant change in political willingness** as Parties realise that implementation of measures is needed to reach committed emission ceilings reduction commitments of the amended Gothenburg Protocol and/or additional EU legislation

Issues to consider for nitrogen in relation to review of the Gothenburg Protocol.

Based on Note submitted by the co-chairs of the Task Force on Reactive Nitrogen, 2021

- Only limited uptake of **National Nitrogen Budgets**, which was introduced as an optional element of the revised Gothenburg Protocol. The main **barriers appear to be the lack of any mandatory requirement**
- **The Protocol.. specifies no measures for ammonia for Parties from in North America.**
- ..emphasis on reducing pollution and developing the **circular economy with innovation opportunities.**
- strategy to **reduce the huge amount of valuable reactive N resource that is wasted.** Activities linked to the International Nitrogen Management System (INMS) have drawn attention..., pointing to the opportunity to “halve N waste” by 2030, saving US\$100 billion per year globally , as embraced as part of national action plans under the Colombo Declaration
- **“Top Five” priority areas for ammonia emission abatement were identified** by TFRN (ECE/EB.AIR/WG.5/2011/16)
- **Dietary change has huge potential** to influence nitrogen losses to the environment, including ammonia, nitrous oxide, nitrogen oxides, nitrate and di-nitrogeation. In Europe, meat and dairy consumption in excess of dietary needs is contributing substantially to pollution and waste of nitrogen resources
- Several **measures are available reduce CH₄ emissions from enteric fermentation.** These measures mostly are related to dietary change of ruminants