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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, Mark Sutton
Lead country: Denmark

WGSR extended bureau meeting, Geneva 27-31 May 2024

https://unece.org/environmental-policy/events/working-group-strategies-and-review-sixty-second-session

TFRN Status

https://unece.org/sites/default/files/2024-04/Agenda%20item%20%282%29%20Report%20TFRN.pdf

- **General status**
  - UNECE Ammonia Guidance Document revision workshop 16-17 Nov 2023 in Aarhus, Denmark / hybrid format (51 participants from 20 countries and international organizations, hosted by the Land-CRAFT.dk Center for Landscape Research in Sustainable Agricultural Futures).
  - TFRN-18 meeting, 18-19 June 2024 Aarhus DK and hybrid (75 experts registered from 23 countries, incl. from the FICAP Forum for International Cooperation on Air Pollution), kindly sponsored by DK
- **The four TFRN expert panels**
  - EPMAN - Expert Panel on **Mitigating Agricultural Nitrogen**
    - **Ammonia Guidance Document update process**
  - EPNB - Expert Panel on Nitrogen **Budgets**
  - EPNF - Expert Panel on Nitrogen and **Food**
  - EPN-EECCA - Expert Panel on Nitrogen in **EECCA countries**
- **Further TFRN activities and contributions, incl. collaboration with TFTEI and other bodies**

UNECE Task Force on Reactive Nitrogen

Working Group on Strategies and Review

Sixty-second session
Geneva, 27–31 May 2024
Item 2 of the provisional agenda
Progress in the implementation of the 2024–2025 workplan

Report of the Task Force on Reactive Nitrogen

Summary

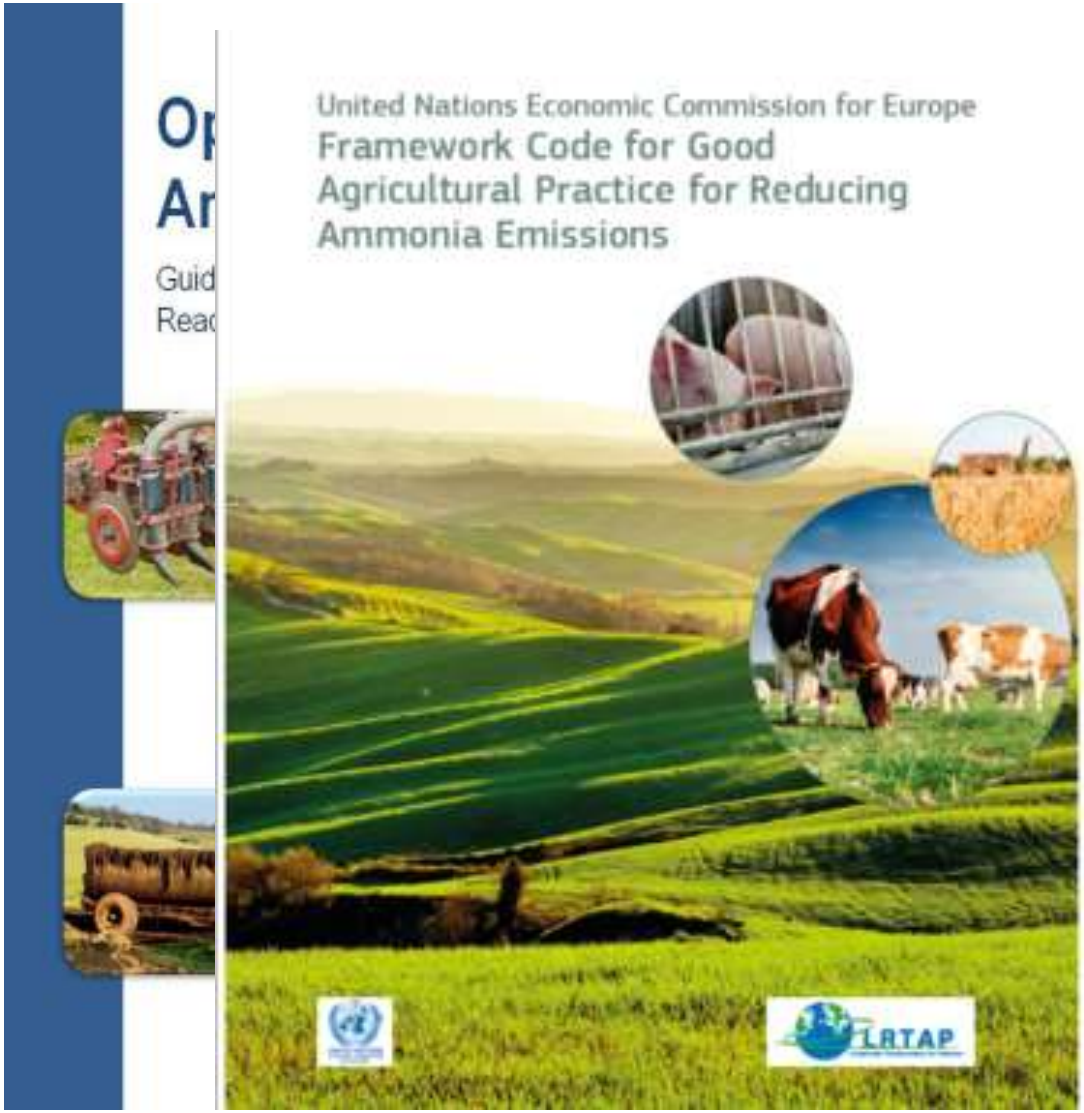
At its twenty-fifth session (Geneva, 10–13 December 2007), the Executive Body for the Convention on Long-range Transboundary Air Pollution established the Task Force on Reactive Nitrogen (TFRN). In accordance with its revised mandate set out in the annex to decision 2018/6, the Task Force is required to report on progress in its work to the Working Group on Strategies and Review.

The present report of the Task Force presents an overview of activities of the Task Force covered by its mandate and summarizes the progress in the implementation of the 2024–2025 workplan for the implementation of the Convention (ECE/EB.AIR/154/Add.1, forthcoming).

The 18th meeting of the Task Force will take place on 18–19 June 2024 in Aarhus, Denmark (hybrid format), as follow-up to the 17th meeting of the Task Force taking place in Dessau (hybrid format) on 2–4 May 2023, and the special meeting with focus on the Ammonia Guidance Document Revision process, hosted 16–17 November 2023 at Aarhus University, Denmark. The main focus for the TFRN work in 2023-2024 was on this ammonia guidance document revision, and the interactions with impacts on other emissions, including methane, and the related effects on biodiversity, climate etc., including effects from changes in the whole food system. This work involves collaboration with other key bodies and task forces, and the current workplan progress reported, and upcoming meetings organized.

https://unece.org/sites/default/files/2024-04/Agenda%20item%20%282%29%20Report%20TFRN.pdf

EPMAN – ammonia guidance revision



Alberto Sanz-Cobena (UPM Spain) and Rasmus Einarsson (SLU Sweden) on board
Together with the EPMAN expert panel chairs Shabtai Bittman (AGR, Ca) and Barbara Ammon (ATB, DE)

Initial prep. meeting April 2023

Revision process started at meeting in Aarhus, November 2023

Next meeting June 2024

http://www.isa.ulisboa.pt/proj/nitroportugal/docs/2019/Portuguese%20version%20Ammonia%20Framework%20Code.pdf

National Ammonia Codes (NACs)

- Number of parties to the GP – 37 ratified the original 1999 protocol, and 26 ratified the 2012 amended protocol,
- In 2020 TFRN reported 18 published incl. those imbedded in other codes
- How has it developed? Possible update of Survey from Claudia to be send out via the secretariate

Summary of revision process

Inf. Doc. to the UNECE Convention on Long-range Transboundary Air Pollution.
62nd Meeting of the Working Group on Strategies and Review

Revision of the 'Guidance document on preventing and abating ammonia emissions from agricultural sources' (ECE/EB.AIR/120) (Ammonia Guidance Document).

Note submitted by the Co-chairs of the Task Force on Reactive Nitrogen (TFRN).

The present note has been prepared by members of the TFRN Expert Panel on Mitigation of Agricultural Nitrogen (EPMAN).

Summary: The 'Guidance document on preventing and abating ammonia emissions from agricultural sources' (ECE/EB.AIR/120), hereafter the 'Ammonia Guidance Document' was adopted in 2012 and has now been in use for 12 years. The Task Force on Reactive Nitrogen (TFRN) has revision of the guidance document as a priority task for the 2024-2026 Workplan of the Convention. This note updates on the current state of progress.

https://unece.org/sites/default/files/2024-05/Agenda%20item%20%282%29%20Revision%20status%20NH3%20Guidance%20Doc.pdf

Revision process

Revision process: Work started 1.5 years ago with creation of the core group of researchers and other actors potentially interested and finally involved in the revision process. Several on-line meetings have taken taking place with a hybrid one in November 2023 at Aarhus University (AU) supported by AU and the Land-CRAFT research centre. There is a group of c. 30 people from more than 12 countries coordinating the revision of the chapters. The revision process is coordinated by Alberto Sanz-Cobeña (UPM, Spain), Rasmus Einarsson (SLU, Sweden) and being done through the TFRN Expert Panel on Mitigation of Agricultural Nitrogen (EPMAN), as chaired by Shabtai Bittman (Canada) and Barbara Amon (Germany).

https://unece.org/sites/default/files/2024-05/Agenda%20item%20%282%29%20Revision%20status%20NH3%20Guidance%20Doc.pdf

Expected timeline

- Following the latest on-line meeting on 21 May 2024, progress will be discussed in Aarhus at the 18th TFRN meeting (June 2024).
- It is anticipated that the main revisions are completed by the end of 2024. Discussions are taking place with a party about a possible workshop with stakeholders to finalize the guidance document early in 2025 (to be confirmed).
- It is anticipated to provide an informal draft to WGSR in Spring 2025 to allow reaction to the main element, as a basis for subsequent finalization.
- The Task Force anticipates that it would be most likely to expect adoption by the Executive Body in December 2026, unless there there is a second session of WGSR during autumn 2025.
- The Task Force notes that it will be important to ensure harmony between a revised Guidance Document (GD) and possible future revision of Annex IX. For this reason, it may be advisable to see both revisions finalized at the same time.

Outlined table of contents

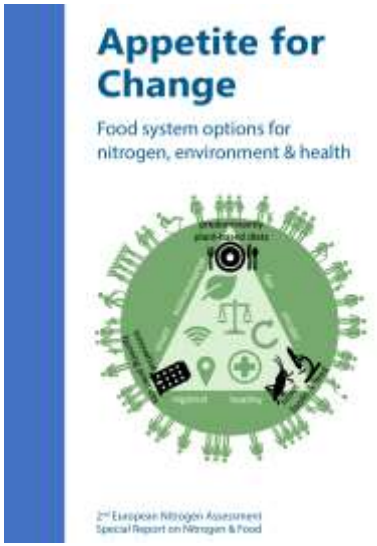
- Chapter 1: Introduction
- Chapter 2: Ammonia abatement through a systems approach
- Chapter 2: Livestock feeding strategies
- Chapter 3. Livestock housing
- Chapter 4. Manure treatment (inc. acidification, additives, separation, AD, composting, ...)
- Chapter 5. Manure storage
- Chapter 6. Manure application
- Chapter 7. Synthetic fertilizer application
- Chapter 8. Non-agricultural ammonia emissions
- Annex A. Methods for measurements & Quality criteria of publications
- Annex B. Ammonia and interactions with (all) GHG (focusing on methane)

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)
- Feedback from users of the "Guidance Document on National Nitrogen Budgets" collected and made available via the https://www.clrtap-tfrn.org/epnb webpage
- Update to current guidance document on National N budgets foreseen for end 2024 (according to workplan)
- The aim is to finalize the revision by February 2025 as a basis to report to TFRN and WGSR. That would allow adoption by the Executive Body (December 2025) and consideration to include the revised Guidance document on Nitrogen Budgets in as part of proposed revision of the Gothenburg Protocol.
- Successful application to Germany and other countries have identified potentials
- New national N budget visualization tool has been developed, to be hosted at the INMS website as a budget repository
- Further country support is essential to proceed further.

EPNF – Nitrogen and Food

- Co-chairs Adrian Leip, EC-JRC, and Susanna Kugelberg, UN-WHO, Copenhagen (+ Joao Leite and Jan Wollgast)
- **Food system approach** (from a nitrogen perspective) with focus on:
  - Food chain losses/waste and opportunities for improvement
  - Food production technological efficiencies and mitigation options
  - Consumption (health) issues and way forward
- Acheiving 50% N pollution reduction extremely difficult without dietary change; more plant based diets are key
- New **Appetite for change**: food options for nitrogen, environment and health. **R**eport published https://www.clrtap-tfrn.org/content/appetite-change-food-system-options-nitrogen-environment-health-2nd-european-nitrogen)
- Special issue completed (*Managing Nutrients: The key to acheive sustainable food systems for healthy diets. Leip, Kugelberg and Bodirsky, eds.*)
- Option for thematic session, e.g. at WGSR



EPN-EECCA at a second stage

- Linking Convention activities with other conventions at global-scale
- INMS partnership with GEF and UNEP
- Presentations at the XXII Int. N workshop in Aarhus, June 2024
- Special link of this Expert panel to the East-Europe demonstration region funded by INMS
- Task 4.4.2 Expert consultancy on Preparing and facilitating a workshop and farm site visit on good agricultural practice in Georgia

4.4 Promoting good practices and intersectoral cooperation, including on climate and biodiversity policies

- 4.4.2 Workshop to promote good agricultural practice at national level (e.g. Georgia or another interested country) to assist countries in abating nitrogen emissions and managing nitrogen more sustainably that help maintain ecosystems and build capacity to adapt to climate change

Progress in the implementation of the 2024-2025 workplan

https://unece.org/sites/default/files/2023-07/ECE_EB.AIR_WG.5_2023_1%20%28E%29.pdf

- **2.1 Analysis of policy-relevant information and follow-up to the review of the Gothenburg Protocol, as amended**
- **2.2 Development and promotion of guidance documents**
- **4.4 Promoting good practices and intersectoral cooperation, including on climate and biodiversity policies**

UNECE Task Force on Reactive Nitrogen

2.1 Analysis of policy-relevant information and follow-up to the review of the Gothenburg Protocol, as amended

- 2.1.3 Provide technical support on options to inform preparations for possible future updating of annex IX to Gothenburg Protocol
- 2.1.6 Continued cooperation with and monitoring of the work withing INMS on the International Nitrogen Assessment, including preparation of specific summary for Convention's policymakers
- 2.1.7 Analyse implications of NH_3 as energy carrier as part of decarbonization strategies, including possible emissions of NH_3, N_2O and NO_x, and possible interactions with international N market prices
- 2.1.8 Examination of benefits and barriers to dietary change to reduce N air pollution, including co-benefits, possible scenarios and opportunities to overcome barriers
- 2.1.9 Assessment of opportunities for mobilizing N recovery and reuse (white ammonia and white nitrogen) leading to extension of an existing database
- 2.1.10 Assessment of risks associated with "alkaline air" and analysis of policy implications
- 2.1.11 Assessment of technical and non-technical options for meeting Global Biodiversity Framework target 7, with special reference to N air pollution, including benefits of such action

Ammonia (NH_3) as energy carrier

(work plan item 2.1.7, reported by Rasmus Einarsson, SE)

- Inf. doc being drafted by TFRN in cooperation with TFIAM and TFTEI.
- NH_3 is a carbon-free energy carrier. Considerable industry interest for use as liquid fuel in shipping, stationary combustion, etc.
- Net climate benefit is uncertain:
  - Unmitigated N_2O emissions can negate large part of climate benefit compared to fossil fuel.
  - NH_3 is merely an energy carrier which needs to be produced using other energy input. Unless this is low-emission energy (e.g., renewable electricity), there will be no net climate benefit of NH_3 fuel.
- Non-climate risks related to NH_3 slip and fuel-sourced NO_x.
- There are possible interactions with N fertilizer markets, which need further attention from a food security perspective.

2.2 Development and promotion of guidance documents

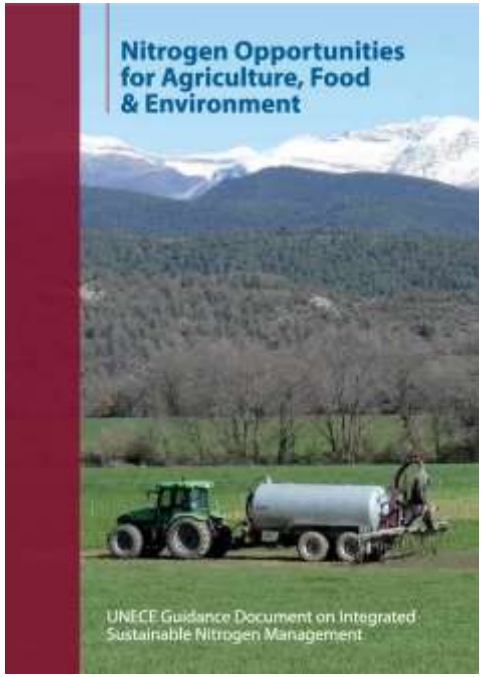
- 2.2.1 Promotion of guidance documents, including those recently adopted
- 2.2.3 Development of guidance document on non-technical and structural measures
- 2.2.4 Scoping of possible integrated N framework code (linking different forms of N including interactions with other gases)
- 2.2.5 Revision and publication of Guidance document on national nitrogen budgets and supporting documents
  - a) Revised Guidance document on national nitrogen budgets submitted for consideration to WGSR and Executive Body in 2025
  - (b) Extended summary for policymakers based on revised Guidance document
  - (c) Policy brief based on revised Guidance document and extended summary for policymakers to engage with parallel activities
  - (d) Call for data to Parties in 2025, encouraging them to make use of reporting template on national nitrogen budgets with analysis of results in 2025–2026
- 2.2.6 Continue revision of Guidance document for preventing and abating ammonia emissions from agricultural sources
- 2.2.7 Review ECE Framework Code For Good Agricultural Practice for Reducing Ammonia Emissions and commence revision based on conclusion of revised Guidance document for preventing and abating ammonia emissions from agricultural sources
- 2.2.8 Further elaboration on interactions between emissions of CH4 and NH3, and other N compounds, and potential for their co-mitigation from agricultural sources

Integrated N guidance document

https://unece.org/sites/default/files/2021-04/Advance%20version_ECE_EB.AIR_149.pdf

Working Group on Strategies an | ECE_EB.AIR_WG.5_2022_2-22010 | Nitrogen Opportunities for Agric

clrtap-tfrn.org/content/nitrogen-opportunities-agriculture-food-environment-unece-guidance-document-integrated-0



Nitrogen Opportunities for Agriculture, Food & Environment: UNECE Guidance Document on Integrated Sustainable Nitrogen Management

Submitted by Natalie on Mon, 21/11/2022 - 12:26

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Report

Authors:

Mark Sutton; Clare M. Howard; Kate E. Mason; Will Brownlie; Claudia Cordovil

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UNECE Task Force on Reactive Nitrogen

Meetings planned for 2024-25

- TFRN-18: June 18-19 (together with the International N-workshop in Aarhus, Denmark), co-sponsored by DK EU chairmanship
- Possible Guidance document meeting: early 2025 in Brussels, co-sponsored by a party.
- Possible Appetite for Nitrogen event, e.g. programmed together with the WGSR
- NH3 guidance document, expert panel and TFRN bureau meetings

Figure VI.1: Simplified overview of landscape N_r flows showing source and sink functions of landscape elements such as farm buildings, fields, forests, pasture etc. for various N_r forms