www.clrtap-tfrn.org

# 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 S. C. Marques-dos-Santos, Mark Sutton
Lead country: Denmark

TFTEI 8th October 2025

https://unece.org/info/Environmental-Policy/Air-Pollution/events/393909

# TFRN Status

https://unece.org/sites/default/files/2025-04/Agenda%20item%202%20TFRN_report2025_0410.pdf

- **General status**
  - UNECE Ammonia Guidance Document revision workshop 18-19 June 2024 in Aarhus, Denmark / hybrid format together with TFRN-18 (90 experts from 23 countries, ≈50 in person), kindly sponsored by DK.
  - TFRN-19 meeting, 24 April 2025 via Teams (>50 registered from 20 countries, https://www.clrtap-tfrn.org/TFRN-19), TFRN-20 planned for DK October 2025.
- **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**

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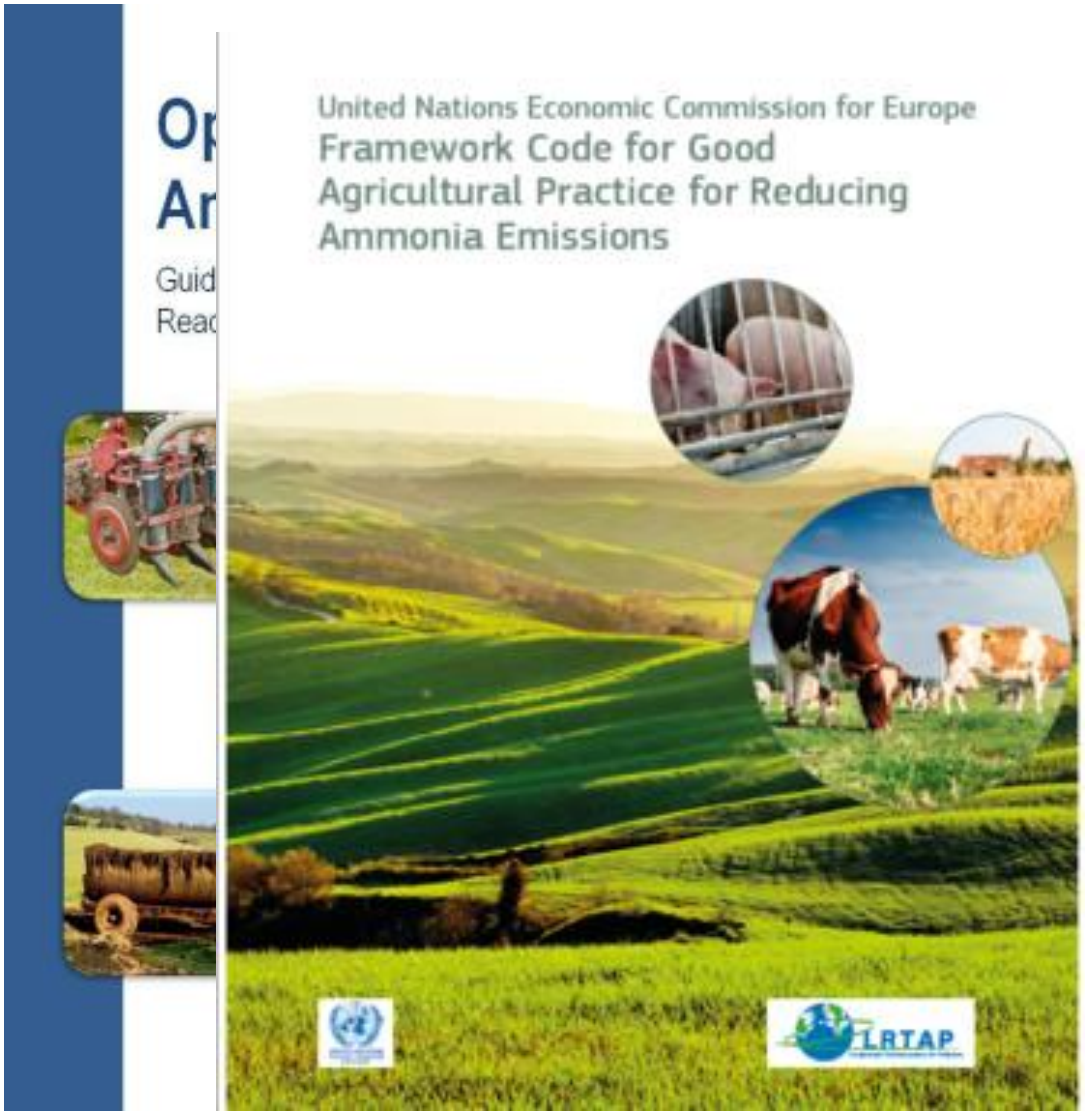
# TFRN-20 UNECE Task for on Reactive Nitrogen meeting – Helsingør Denmark, October 23-24th

- **Session 1:** Strategic Overview of TFRN tasks, in particular in relation to revision of the Gothenburg Protocol.
- **Session 2:** Updating guidance on ammonia mitigation and information on costs and benefits.
- **Session 3:** National case studies. Evidence from Parties on ammonia and nitrogen mitigation strategies.
- **Session 4:** National Nitrogen Budgets. How they can help, call for evidence and state of progress.
- **Session 5:** Nitrogen, Food and Food waste. How to develop opportunities for non-technical approaches to reduce nitrogen pollution with multiple co-benefits.
- **Session 6:** Agreement on next steps.

# EPMAN – ammonia guidance revision



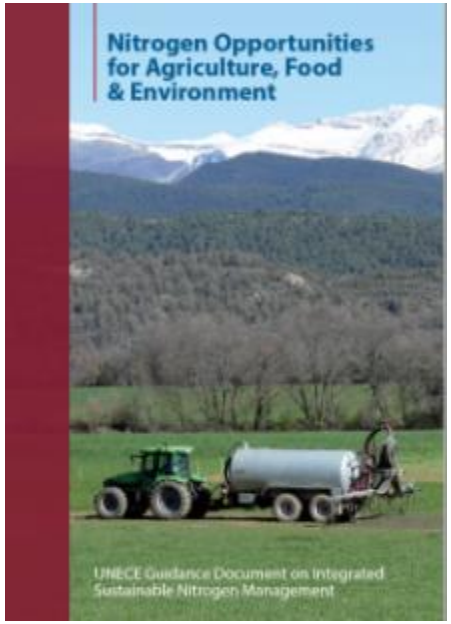

Alberto Sanz-Cobena (UPM Spain) and Rasmus Einarsson (SLU Sweden) on board
Together with the EPMAN expert panel chairs Shabtai Bittman (AGR, Ca) and Barbara Ammon (ATB, DE)

- Revision process started at meeting in Aarhus, Nov 2023
- Next summary meeting October 2025 in DK

https://www.clrtap-tfrn.org/sites/default/files/2024-11/clrtap_AGD_final_file.pdf
http://www.isa.ulisboa.pt/proj/nitroportugal/docs/2019/Portuguese%20version%20Ammonia%20Framework%20Code.pdf

# UNECE Guidance Document on Integrated Sustainable Nitrogen Management

- 24 principles; 76 measures
- Adopted by UN Air Convention

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Dietary Measure 5: Adapt protein intake in diet (poultry)


Housing Measure 1: Immediate segregation of urine and faeces (cattle)


Manure Measure 2: Covered storage of slurry (natural crust & impermeable base)


Nutrient Recovery Measure 5: Ammonia stripping and recovery


Field Measure 14: Nitrification inhibitors (with inorganic fertilizers)


Landscape measure 8: Drainage management


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# 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 to be send out via the secretariate

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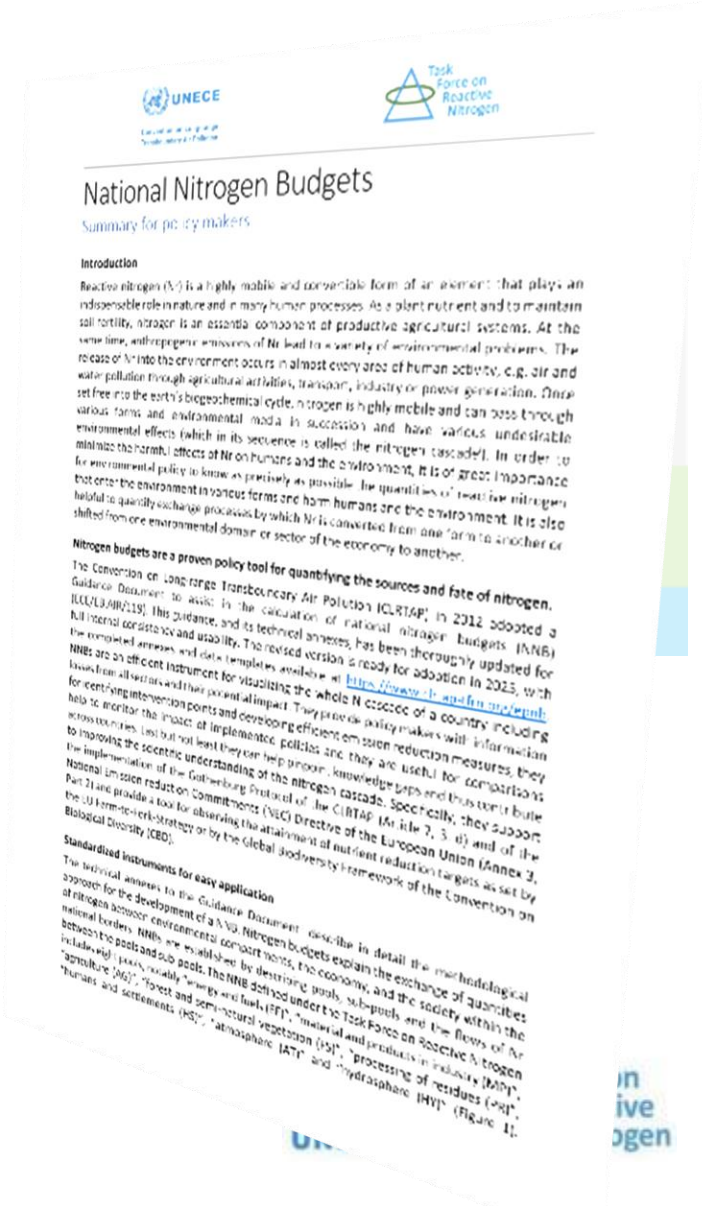
# EPNB – Nitrogen Budgets

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)
- A **revised Guidance Document** has been submitted to UNECE as a formal document to WGSR, in English with **translation into Russian and French**. The document has been endorsed by TFRN.
- The **Annexes to this guidance document** have been fully revised for completeness and consistency. This was contracted work, enabled by an in-kind contribution by Germany. The revised Annexes also have been endorsed by TFRN and are available as final draft (subject to final copy-editing) at https://www.clrtap-tfrn.org/epnb .
- A **summary for policymakers** has been prepared based on that revised guidance and is available as an informal document to WGSR.
- A **policy brief** on NNationalBudgets and the updated guidance has been put into the Work Plan for September, subject to funding.

# Conclusions

- Guidance to National Nitrogen Budgets is complete
  - Documents
  - Templates
  - Procedures
- Endorsement by EPNB and TFRN
- Scientific underpinning is available
- Material completed to support national experts to establish NNBs
- EPNB is looking forward to country activities
- policy document is available 4-page summary of NNB purpose and update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National Nitrogen Budgets

Summary for policy makers

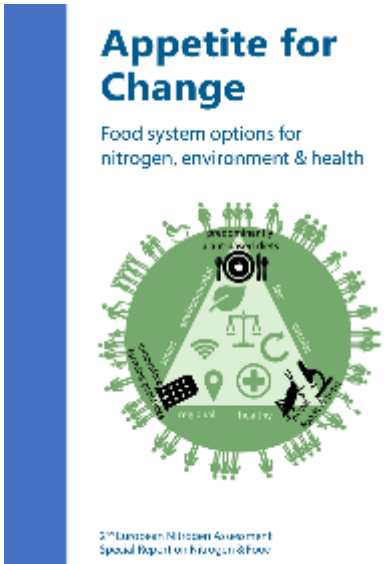
Introduction

Nitrogen budgets are a proven policy tool for quantifying the sources and fate of nitrogen.

Standardized instruments for easy application

# **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
- The **Appetite for change**: food options for nitrogen, environment and health **Report published** https://www.clrtap-tfrn.org/content/appetite-change-food-system-options-nitrogen-environment-health-2nd-european-nitrogen)
- Perspectives presented at the Leuwen-meeting
  - It shows how behavioural change options such as change towards more plant-based foods can be combined with technical measures across the chain to halve nitrogen waste
  - See also the Draft guidance document on non-technical measures



# 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 and other interested country

# Additional activities

# Ammonia ($NH_3$) as energy carrier

- 2024-2025 work plan item 2.1.7. Inf. doc. submitted by TFRN, as reported by Rasmus Einarsson, SE (proceeding work with TFTEI and others).
- **$NH_3$ is a carbon-free energy carrier.**
  Considerable industry interest for use as liquid fuel in shipping, stationary combustion, etc.
- Large-scale adoption **could increase global $NH_3$ use by factor 10.**
- Substantial risk of **increased nitrogen air pollution**
  - Emissions of $NH_3$, nitrogen oxides (NO*x*), nitrous oxide ($N_2O$)
- Substantial risk of **low or negative climate benefit**
  - Use-phase emissions of $N_2O$
  - Current $NH_3$ production is entirely dependent on fossil energy
- Policy response urgently needed to ensure life-cycle net benefit

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# Revision and publication of Guidance document on national nitrogen budgets and supporting documents Options for Ammonia Mitigation


Slurry spreading:
a wide range of low-emission techniques are available




Requirements now in:
NL, DK, BE, IE,
CH, DE,
parts of UK (Scot, NI)…

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# Benefits

- Reduced effects on human health, natural environment, materials and crops
- Improved protection of biodiversity
- Reduced cost of nature protection and nature restoration
- Billions of € cost savings from reducing waste of valuable resources
- Improved food security, through reduced dependence on new $N_r$ inputs.

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THANK YOU