Draft EPNB 18 minutes

5.10.2021 virtual ZOOM meeting

Participants:
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Presentation slides are available at:
http://www.clrtap-tfrn.org/epnb

Status Review, Work Plan 2020-2021 - Wilfried

- Completion of annexes (waste still open)
- Review of internal consistency of annexes, provide edits in texts
- Reporting template & evaluation
- Collect country feedback & provide country results on webpage
- Provide support to integrated N processes (e.g. GP review – interest from water community)
- Extension beyond UNECE area (e.g. Japan)

National Activities

Austria – Ika (UBA Wien)

- Checking availability of data for Austrian national data 2015-2019
    - Deadline by end of year
    - Funding continues beyond 2021
    - Possible contributions to reporting guideline & writing of waste annex
        - possible collaboration with UBA Wien sharing responsibilities
        - new updates from UBA Wien after October whether resources are available
- N indicators for protected areas

Sweden – Filip (ivl)

- Stepwise approach as not all data immediately available
- Started with agriculture, then semi-natural, hydrosphere, etc, all pools work ongoing, waste & NNB synthesis remaining -> done by 2022 or 2023
    - Graphs showing biggest in & biggest out per pool
    - Leaching from wetlands is big post in Swedish budget
- Recommendation: divide budget & get funding bit by bit
    - https://www.ivl.se/english/ivl/publications/publications/nitrogen-budget---agriculture-sweden.html
    - https://www.ivl.se/english/ivl/publications/publications/swedish-national-nitrogen-budget---hydrosphere.html
    - https://www.ivl.se/english/ivl/publications/publications/swedish-national-nitrogen-budget---forest-and-semi-natural-vegetation.html

- NO, FI did NNBs for F&S and there will be efforts to coordinate work between FI, SE, NO, DK
- Unresolved issues: What happens to NOx emissions of international shipping in territorial waters?
- Maybe more details on categorization of horses – not entirely clear
- Feedback on guidelines will be provided
- Markus: comparison of Swedish & German N budget
    - Bring into similar format (graphs) to compare pool wise
    - Normalization might be necessary

Germany – Markus (UBA Dessau)

- Contribution to N problem by pool
    - Useful when communicating with policy makers
        - How much is agriculture contributing to air pollution, water pollution etc is often being asked by policy makers & can be answered by showing national N budgets
        - Having a benchmark for budgets will be useful -> integrated national N target (UBA report & publication available) including 6 different limits
            - To simplify communication
            - Using national N budgets to evaluate improvements
    - More information on budget for 2010-2014 can be found on UBA website (report)
    - Thematic online atlas "Nitrogen" to visualize N budgets (only German)
- New project planned for 2022 to support national activities on communication of N environmental problem & enhance international cooperation → Germany will contact Austria and Sweden to learn from them, which activities of the workplan can be covered by their activities to minimize overlaps and to increase efficiency for the open work plan items 2022/23 (see below)

General Questions

- Shabtai: Difficulties in getting data from farms & data generally – how do you collect reliable data that is consistent over time?
    - Germany used national data also due to privacy issues
    - Other option: surveys, EUROSTAT etc
- Further (practical) applications of N budgets?
- Natalia: How to deal with regional differences within a country?
    - Even more valuable to compare regional budgets within a country if data available
- Rasmus: Is there are a common reporting format?
    - Not established yet
    - Might be useful to decide on a format before

Review of GP 2022 - Wilfried

- Contribution from nitrogen budgets?
    - If GP has to be revised – Annex 9 (ammonia) (is 15-20 years old) will have to be revised. Also the level of obligation may be changed (current wording: "national N budgets provided by EMEP" may change into a stronger

involvement of countries - that might facilitate current activities & increase availability of information & resource acquisition)
        - Invitation to convince national representatives to argue for a more obligatory wording
        - Germany has brought in such a proposal via the EU coordination group for the discussion on October 25: *"(...) The question remains whether the reporting of NNBs should be obligatory (as NACs are) or stay non-mandatory. Considering the excellent policy relevant information provided by NNBs, and the mature development of NNB methodologies, DE would agree making NNBs mandatory."*
        - Data availability could challenge the creation of national N budgets & would speak against obligation
    - WGE (working group on effects) -> experts could help to promote N budgets
        - Inform TFRN
- Questions to participants
    - How are national N budgets useful & what are possible barriers?
        - Please send your feedback until January 31.
            - Will be compiled to one common feedback (not attributable to single countries)

Footprint activities & tentative cooperation (N footprint network) - Alley

- Country (different countries available & work to include further ongoing), campus (carbon & nitrogen footprint tool in one – used for sustainable food goals at US universities), watershed (residents' contribution to water pollution for the Chesapeake Bay), community (urban) footprints (Dukes et al. 2020, linking N footprint to socio-economic factors), food label toolkit (including water, carbon & nitrogen for sustainability label, cooperation with social psychologist – Piester et al., 2020)
- Looking at a defined entity's resource consumption – connect activities with Nr loss (potential impacts)
    - Food (consumption, production, wastewater) (makes up over 75% of footprint) & energy (transport, production of goods, electricity, heating etc)
        - For food -> virtual N factors (VNFs) to facilitate calculation calculated for major food categories for a country
- 3 main areas
    - Education & outreach – online tools, food labels
    - Goal setting & tracking & reduction – for campus & cities
    - Research – food label studies
- What is a sustainable N footprint? – ongoing work
- How can footprint be used for outreach? – ongoing work
- Collaboration with N budgets?
    - Data overlaps as opportunities for both sides:
        - Easier to calculate footprint if N budget data is available
        - Guidance document could be provided how footprint calculation can be used
        - NUE & footprint could be used together – having more indicators for policy work is very useful
            - The smaller the scale, the closer footprint & budget become

- Food labels
    - Difficult to label globally – differences between food categories are bigger than within (related to different production systems) – therefore star system
- Policy
    - Clearly defined system boundaries are useful to policy makers for goal setting & evaluation
- NUE & vertical emission factor
    - EF accounts for recycling too
- Trade & Livestock production are problematic to allocate & are missing from national budget
    - Information in detail documented in footprint (trade weighted VNFs) – VNFs needed per country
- N footprint of farm could be of interest – tracing back where feed etc comes from
- NUE vs VNF – NUE is part of VNF
    - Where are differences?
        - NUE related to farm activities
        - N footprints can be used for communication
        - Looking at other footprints might be helpful

Discussion

- Alley will send out info on data synergies & for communication
- Liaise with EPNF on footprints
- In the discussion it was highlighted that the footprints are more an academic tool than to be used as tool for policy, however this strongly depends on the system boundaries. It was also discusses that not all parameter needed for a VNF or for the footprint calculator can be generated from the NNB; also it was mentioned that the Footprint Calculator so far is not able to account for N emission from imported food in the country of origin → it was stated that product related VNF are needed for each country and it was mentioned, that Kentaro Hayashi from Japan is going to lead a project on this in the framework of INMS
- Two countries mentioned, that the focus should be kept on NNB and opening to other complex processes such as footprint calculation should be evaluated with care

6.10.2020 virtual ZOOM meeting

Participants:
Shabtai Bittman, Benjamin Bodirsky, Ika Djukic, Rasmus Einarsson, Markus Geupel, Bruna Grizzetti, Kentaro Hayashi, Katrin Kaltenegger, Natalia Kozlova, Hanna Malchykhina, Lidiya Moklyachuk, Filip Moldan, Bibiana Rodriguez Sendón, Wilfried Winiwarter, Victoria Vertyankina

Technical Questions

VNF & NUE - Rasmus

- NUE: product/inputs for different system boundaries
- N footprint = pollution indicator

- VNF: env. Emissions / product – need to account for accumulation in soils etc
- Generally NUE cannot be used to calculate VNFs BUT if accumulation & denitrification is zero -> VNF can be defined as surplus / product
    - Knowing flows in system can be useful but if NNBs calculated from Agriculture Annex then not all info on production system will be available
- In the discussion it was said,
    - that also denitrification should be accounted for as an unwanted loss of reactive nitrogen
    - that the term VNF is somewhat misleading and something like “N emission intensity” would be better

Horses which category

A few times the question was discussed, under which pool horses should be accounted for (agriculture or pets/recreational)? It was recommended to use the same category as in GHG reporting

Integrated Nutrient Management Action Plan (INMAP) - Bruna

as specified in the EU Biodiversity Strategy and Farm-to-Fork Strategy

- 'Knowledge for INMAP (integrated nutrient management action plan)' (Bruna)
    - Background: EU biodiversity strategy & Farm to fork strategy – reducing nutrient losses by at least 50%
        - In 2022, the commission will develop INMAP to reach goals
            - JRC is putting together existing knowledge on topic (1 year project) as preparation to support INMAP discussion
                - Assess N & P flows in Europe (pollution & losses) & effort from different countries
                - Quantify nutrient flows (per sources, pathways, region), evaluate distance to environmental targets & review measures to achieve objectives (lit review & scenario modelling)
    - JRC - EPNB interaction
        - Systematic way of calculating NNB is useful for transparency & communication
        - Commission & people involved should be aware of work by EPNB
        - Knowledge developed by countries is important as to where major flows are found
        - JRC can learn from group’s experience on agreements on important fluxes, data availability
        - NNBs will not be used as project is too short but information on existing NNBs will be included in report
        - At the moment JRC uses data from EUROSTAT, FAOSTAT or European scale modelling as no access to national data to trigger discussion BUT for INMAP probably national data will be used
        - Which methodology will be used for INMAP will be decided at a later point – JRC project only aims at collecting information
            - FTF strategy & biodversity strategy are potential users of NNB (for evaluation)

- Communication is central to pass message from science to policy makers – strong, robust tool that makes communication easy will be most successful
    - Advantage of NNBs: data from national inventory reports can be used
        - Will be easier to argue for NNBs to become obligatory if used by INMAP
- Once first draft of report is submitted (end of 2021), Bruna might come back with questions to EPNB
    - Workshop with experts is planned & more information on NNBs might be needed – maybe a presentation in a workshop will be needed
- Updates on number of NNBs available and collection of experiences will be much appreciated by Bruna
- Bruna mentions, that for acceptance at COM-Level it is key, that the scientific robustness of the methods and at the same time easy-understandable tools for communication are documented → figures presented by Filip or Markus could be an option

- Shabtai: Are management strategies included that are targeting more than one nutrient?
    - Bruna: Plan is to include interaction between nutrients -> e.g. for water coming from WWTP – N/P ratio is important & will be considered

What can NNBs be used for?

- Assessing marine ecosystems (Baltic Sea)
    - Sufficient information on atmospheric input & N input from rivers to sea needed
        - Atmospheric data is available but inputs to sea needed
        - Bruna: Modelled data (2005-2012) on N & P loads to all European coastal areas and a link to a data viewer at JRC are available under https://www.sciencedirect.com/science/article/pii/S0959378021000601
        - New study where period will be enlarged is coming

Work Plan 2022-2023 - Wilfried

Progress could be documented, a new project in the pipeline in Austria, several small projects in Sweden, NNB activities in Ukraine, Moldovia and Romania, and in Japan.
Nice figures and summarizing graphs have been presented

The most important upcoming activities:

- Support to GP review → resend the questions
    - why it is useful to do national nitrogen budgeting, and
    - what were the main barriers in national application since its implementation in the last revision of the GP 2012?
- Completion of waste annex
- Reviewing annexes – internal consistency

- Reporting template and evaluations
    - Collect existing templates from Germany, Sweden, Ukraine, Japan and take the best out of it
- Explore NNB applications (such as N-Footprint, support of the ad-hoc group on marine ecosystems, INMAP)

Japan N budget 2000-2015 - Kentaro

- using adjusted CHANS model
    - accounting for heavy reliance on import
- N waste calculated
- Indicators: TLRNE (Trends in reactive N loss to the environment), TND (trends in N deposition), Energy use, Chemical fertilizer ratio, NUE (food, livestock, crops), food consumption & supply, self-sufficiency, age composition ratio
- rN concentrations in environment (water, air)
- N footprint calculation
    - Budget can be used to quantify & compare N flows
        - 'N footprint' of consumed food
    - N footprint needs additional information on production
    - N footprint differs between age groups & sex
- Future expectations:
    - NIR like reporting extended countries
    - Awareness rising
    - Future collaboration between EPNB, INMS
- Possibility to compare Japanese N budget with other NBBs
    - Might be difficult as CHANS was used
        - Total N waste, Total N loss to environment per capita can be compared between NNBs
    - Differences in production systems
    - International trade is tricky to estimate
        - Example: Poultry production without land, all feed is imported & manure recycling is difficult
- Data availability
    - Waste treatment etc data is needed additionally to NIR data– Japan has many additional statistics
        - Challenge: finding N emission factors (especially NH3 emissions), N content etc

INMS East European demo region - Ukraine, Moldova & Romania - Lidiya

- Covers all of Moldova (including Transnistria) and parts of the Ukraine and Romania
- Detailed analysis (budgets) of agriculture pool
- Insufficient N supply of soil – degradations, also in EU member Romania
- Mineral fertilizer of BNF needed to replenish nutrients

INMS: INA indicators - Wilfried

- Using simple, expeditious & powerful tools
- Indicators to describe conditions along the DPSIR framework and are excellent to describe temporal trends, or for benchmarking of situations

- Cause-effect chain can be mimicked with indicators only in part
- Efficiency indicators help to describe the performance of a (agricultural) system
- Standardization and good definitions are needed
- Detailed analysis may be needed to confirm any indicator results

Any other business

- No issues reported

Notes by Katrin Kaltenegger, with additions of the EPNB co-chairs