

Für Mensch & Umwelt

Umwelt 
Bundesamt

Workshop „German Nitrogen Budget“

DESTINO

Calculating German Nitrogen Budget - Practicability of EPNB Guidelines

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Berlin, German Environment Agency, 2.-3. May 2018

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Practicability of EPNB guidelines – Outline

- Comments on Annexes
- NBB Germany – differences in pool structure and flows
- Proposals pool structure
- N content in materials
- Open questions, problems

Comments on Annexes

- Structure and nomenclature of sub-pools, matrices and flows, level of detail, thoroughness of description etc. - not always consistent between Annexes, e.g.
 - Pools differently broken down, pool AG up to 3 levels (highly disaggregated)
 - Pool HS: food inputs from AG here accounted directly, while MP accounts food flow
AG → MP → HS
 - Annex MP: Sub-pool MP.CI is “Chemical Industry”, in Annex 0 sub-pool MP.NC is “Nitrogen Chemistry”
 - Flow “food”: in Annex HS direct from AG, in Annex MP flow AG → MP → HS
- General remark: Flow calculation/guidelines should refer to multi-national statistics (UNFCCC, FAO, Eurostat, EMEP etc.)

NNB Germany vs. guidelines – Differences in pool structure

- Pool AG: sub-pool “Manure Management” (AG.MM) deleted, sub-pool “Biogas Production” (AG.BP) introduced – corresponding to standard of N-balancing for agriculture in Germany.
- Energy production from biogas is attributed to AG.BP (not to EF.OE)
- Pool HS: sub-pool “Pets” (HS.PT) discarded, then sub-pool “Organic World” (HS.OW) is redundant

NNB Germany vs. guidelines – Differences in flows

- Annex AG: flows of animal products from agriculture are described as separate flows from AG.AH to HS (e.g. flow “wool production”, flow “meat production”, flow “milk production” etc.). German NNB: only one flow aggregates all animal market products.
- Flows “import / export of live animals”: listed in MP.FP-RW / RW-MP.FP in German NBB.
- Flow “leaching and runoff from animal husbandry” (AG.MM.HOST-HY-Ntot; Loss of N to groundwater and surface water due to leakage of runoff): does not exist in the German N-Budget
- Pool HS: Atmospheric deposition on settlement area as additional flow (not mentioned in Annex HS)

Pool structure modifications – Proposals

- For initial sources of “fresh” N_r (ammonia synthesis, biological N fixation, thermal NO_x) and final sinks (denitrification, combustion, landfills): separate labels or flows should be defined. Not all sources starts and sinks ends in the atmosphere as N_2 .
- Pool EF: If N in fuels not considered: no flows between sub-pools → redundant (structuring follows national GHG Reporting, but “sub-pooling” necessary?)
- Pool MP: Differentiation / flow calculation between MP.NC and MP.OP problematic (based on PRODCOM statistic). Simplification: only one sub-pool “Non-food Industry”
- For Germany: Sub-pool “Wetlands”: area and N fluxes are very small, should be integrated in sub-pool “Semi-natural area”.
- Pool HS: Introduction of sub-pool “Urban and industrial areas” for area-related flows (deposition, leaching, surface runoff, recultivation, public and private green etc.)
- Keep the N flow sheets as short as possible, in principle: only one flow from sub-pool to sub-pool (calculations, detailed tables: text)

Default values N content

- Very valuable: Annexes 0 and HS, Tables with data of average N-content relevant for many matrices in MP and HS
- Biological N fixation (Annex FS): very large spans, e.g.
 - Table 5, Natural ecosystems: *Temperate forests ... 6.5 – 26.6 kg N ha⁻¹ a⁻¹*
 - Table 19, Wetlands: e.g. *Coastal wetlands 4 – 460 kg N ha⁻¹ a⁻¹*

- Annex HS, Table 12;
N content milk:
contradictory values

2848	Milk - Excluding Butter	2.1%	1100 Meat, other categories, 1100 Meat, game, 1100 Milk, whole fresh cow, 882 Milk, whole fresh cow, 888 Milk, skimmed concentrated or not, 893 Buttermilk, curdled, acid condensed, 897 Milk, whole dried, 898 Milk, skimmed cow milk, 905 Whey, cheese, 907 Cheese, skimmed buffalo, 955 Cheese, buffalo milk, 982 Milk, fresh goat, 1021 Cheese of goat milk, 1023 Milk, products of natural constituents, 910 Ice cream
2738	Milk. Whole	0.5%	

- Lack of data: N in waste categories

Open questions, problems, flaws, ...

- Some fluxes can be directed only to pool level, but not distributed to a receiving sub-pool , e.g. wastewater from industrial emittents (direct dischargers): statistics not splited into MP.PF, MP.NC, MP.OP
- Initial production of fossile fuels (coal and lignite mining, oil extraction): which Pool(ex)?
- N in fossile fuels: to be considered?
- Formation of thermal NO_x : initial N_r source?
- Annex AG:

HY	AG.SM.LAND	Seed	HY-AG.SM.LAND-Seed	1	Input of N by seed
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- much more items ...

Practicability of EPNB guidelines – Conclusions

- Harmonize structure, terminology, level of details, description etc. among Annexes
- Suitable as standardized reporting schemes for countries?
- Clear up the focus:
 - Detailed description of individual Nr flows?
 - Identification of data gaps?
 - Quantification of the Nr initial sources and final sinks?
 - Sources and amount of environmentally relevant N species (NO_3 , NH_3 , NO_x , N_2O)?

Thank you for your attention

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