

# User feedback to the Detailed Annexes to ECE/EB.AIR/119 – “Guidance document on national nitrogen budgets”

[https://www.unece.org/fileadmin/DAM/env/documents/2013/air/eb/ECE\\_EB.AIR\\_119\\_ENG.pdf](https://www.unece.org/fileadmin/DAM/env/documents/2013/air/eb/ECE_EB.AIR_119_ENG.pdf)

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Updated 04.06.2021

Referring to Detailed Annexes in the version of 02.03.2021

This document serves to quickly update on feedback received on errors and suggestions for improvements of the Annexes to the Guidance Document on National Nitrogen Budgets. Users of the Annexes are advised to consult the respective latest version of the user feedback. We distinguish issues that have been sorted out (“closed issues”) and are expected to be resolved in the next EPNB session, and issues that have not received attention yet (“open issues”) – either as considered merely editorial so that no decision has been taken yet, or as requiring further elaboration for which there was no opportunity.

Closed issues are provided with documentation, open issues in the version submitted (based on the NNB review sheet, see <http://www.clrtap-tfrn.org/epnb>)

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Co-chairs, EPNB

## Closed issues

### 1 Annex 1 – Energy and Fuels

Benjamin Bodirsky remarks on N contents of fuels (crude oil) which in Table 2 is set at a default value of 1.05 % and proposes to decrease to max. 0.25%. As explanation, he refers to the two sources quoted in the Annex:

Prado et al. write: “The nitrogen content of crude oils is usually less than 1 wt % N. In about 90% of crude oils the nitrogen content is <0.25 wt %, and many have <0.1 wt % nitrogen. This led to the convenient classification of crude oils into high-nitrogen oils with nitrogen contents higher than 0.25 wt % and nitrogen-poor oils with nitrogen contents lower than 0.25 wt %.”

According to [https://chempedia.info/info/nitrogen\\_compounds\\_in\\_crude\\_oil](https://chempedia.info/info/nitrogen_compounds_in_crude_oil), N content is between 0.02 and 1.5%. This source also emphasizes that “Due to higher nitrogen content in shale oil and coal liquid (1-2%) than in crude oil (<0.5%), it is essential to lower the nitrogen content in shale oil before any refinery processes are performed.”

Bettina Schächli, author of the original text, agrees with the proposed change.

With the next update, “avg. [wt%]” N content for crude oil in Table 2 will be updated to 0.25, unless other convincing evidence can be found.

## 2 Open Issues

The following elements have been raised as to be potentially corrected. Page numbers may refer to different versions of the Annexes, hence need to be seen with some caution.

| Name of reviewer | Type of comment  | Short version ("title") of comment | from page | line                | full description of comment / recommendation / suggestion of improvement  |
|------------------|------------------|------------------------------------|-----------|---------------------|---|
| Andrea Schröck   | recommendation   | wording                            | 10        | point<br>'matrices' | "Examples for important matrices are food products (soft wheat, eggs, wood, explosives, ..)" Suggestion: <i>Examples for important matrices are food products (as soft wheat or eggs) as well as wood or explosives.</i>  |
| Andrea Schröck   | error correction |                                    | 32        | 3                   | displaced brackets  |
| Andrea Schröck   | error correction |                                    | 32        | 3                   | "of the pools" (double wording?)  |
| Andrea Schröck   | error correction |                                    | 32        | 4                   | missing space character: "...pool). This annex..."  |
| Andrea Schröck   | error correction |                                    | 32        | 5                   | in a National Nitrogen Budget (singular; plural is used)  |
| Andrea Schröck   | error correction |                                    | 33        | 8                   | "The flow of the biomass...." starting of a new sentence  |
| Andrea Schröck   | recommendation   | wording                            | 33        | 14                  | "Return from the environmental compartments is by...." Soil, to which N returns to, is an "environmental compartment" as well. Suggestion: <i>Small fractions of N emitted to pool 7 and 8 return by N deposition from the atmosphere or with irrigation water.</i>                               |
| Andrea Schröck   | recommendation   | wording                            | 33        | 19                  | I would suggest: <i>"Besides the national production, feed is imported from the RoW as well (not exclusively as compound feed)."</i> (In the first moment I thought all feed is assumed being imported - which is clearly nonsense and clarified by fig. 2)                                       |
| Andrea Schröck   | recommendation   | wording                            | 33        | 21                  | One exception is the use of biofuels or manure as fuel, <i>which might occur under some national circumstances.</i> Suggestion: <i>One exception is the use of biofuels or manure as fuel, when the national production level achieves considerable amounts (cf. Annex 0, 2 Level of Detail).</i> |
| Andrea Schröck   | request          | unclear                            | 33        | 27                  | I do not understand: "In some data sets relevant for the AG pool household gardens and golf courses are not included."  |
| Andrea Schröck   | error correction |                                    | 33        | 38                  | spelling mistake: "yoghurt"   |
| Andrea Schröck   | error correction |                                    | 33        | 39                  | spelling mistake: "thickening agents"   |

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|----------------|-----------------------|--------------------------------|-------|----------|--|
| Andrea Schröck | error correction      |                                | 34    |          | "Internal structure of the agriculture pool..." should be deleted probably<br>In this figure it might be good to label all flows of N with respect to their N form, N matrix or N media. Actually, the design of the internal structures of prepared Annexes are not consistent (cf. Internal structure of Annexes 1, 2, 4, 6, 7, 8). Maybe this can be accepted, taking advantage of displaying the individual complexity of each pool.   |
| Andrea Schröck | recommendation        | flow name                      | 35    | Fig. 2   | suggestion: "Futher important N flows in or out of the sub-pools, <i>as well as respective N stocks</i> , include:   |
| Andrea Schröck | recommendation        | wording                        | 35    | 2        | spelling mistake: "compounds"  |
| Andrea Schröck | error correction      |                                | 35    | 11       | update reference to "section 3.1"  |
| Andrea Schröck | error correction      |                                | 36    | 15       | This is a very clear introductory section on data acquisition. Maybe this (or parts of it) could be somehow integrated in the Annex 0? (cf Annex 0, 2 Level of Detail, for instance). Especially the definition of the "basis approach" as well as "determining the correct level of disaggregation" (pages 38-39) could be useful. Probably, the presented decision tree could be generalized for all Annexes, as national reports to UNFCCC or other institutions is relevant for the whole Annex (as it is already mentioned in Annex 0). |
| Andrea Schröck | recommendation        | potentially useful for Annex 0 | 36-40 |          | milk, meat, wool, eggs, leather, pet food directly go from AG to HS. MP is not considered as a station inbetween (Pool MP.FP). Inedible animal-byproducts go to HS as well, which probably should go to WS?  |
| Andrea Schröck | request/clarification | inconsistency between AG/HS/MP | 46    | table 3  | Annex I expects biomass fuels from the pool agriculture (cf table 9 in the Annex I). Animal-byproducts used for energy generation are sent by AG to EF only.   |
| Andrea Schröck | request/clarification | inconsistency between AG/EF    |       |          | Biomass for biofuel production is sent to the pool MP (but not explicitly included there).   |
| Andrea Schröck | request/clarification | inconsistency between AG/MP    | 72    | table 14 | Flow, N return by food crop residues (AG.SM-HS.CRES, tier 2) goes to the pool HS. Why?   |
| Andrea Schröck | request/clarification | flow from AG to HS is unclear  | 73    | table 14 | Such data is given at page 168 (table 12). Could this be used as well?   |
| Andrea Schröck | request/clarification | crosscheck data Annex          | 79    | table 15 | Include "lightning" NOx emissions to Annex Atmosphere (with reference to TFEIP guidelines)   |
| Markus Geupel  | request               | "atmosphere": lightning        |       |          |  |

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|-------------------|------------------|--|--|
| Markus Geupel     | clarification    | N fixation (BNF, Haber-Bosch)  | Needs better visibility - in fact both N fixation cases are presented where applicable, but not at the "outgoing" pools (AT) but where better data is available (AG and MP, respectively)  |
| Lidiya Moklyachuk | extension        | New section 4 on "Flows" in Annex MP<br>flow missing (inconsistency to HS) in revised Annex MP | Adding whole new section (some existing material on flows was heavily extended, existing "calculations" separated out into a new section, including added material)  |
| Andrea Schröck    | error correction | N fixation better described in revised Annex MP  | MP.OP-HS / TEXT/ Annex MP / N content factors are given in Table 14, and 16 in Annex 6 (HS)<br>N bound in POLY, DETG, TEXT, WOOD together account for the tier 2 method used in the Annex HS (cf. Table 9)   |
| Lidiya Moklyachuk | clarification    |  | Table 8 - add statement like "The transformation of unreactive nitrogen (N <sub>2</sub> ) into reactive nitrogen (NH <sub>3</sub> ) in the Haber-Bosch process." to AT_MP  |
| Clare Howard      | error correction | Definitions of AG-WS flows should be revised to AG-HS  | Flows covered in agriculture "AG.AH.ANIM-WS-CAT3" and "AG.AH.ANIM-WS-OCAT3 " need to be renamed to end in "HS": Adrian Leip (Nov 19, 2017) writes: indeed it should be HS instead of WS. AG.AH.ANIM-HS-CAT3 is the aggregate for AG.AH.ANIM-HS-LEAT and AG.AH.ANIM-HS-PETF where we already (correctly) indicated HS. I guess that AG.AH.ANIM-HS-OCAT3 could be even omitted |