

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

Updated 02.07.2023

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>)

Wilfried Winiwarter and Markus Geupel

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, 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 '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"
Andrea Schröck	error correction		34		"Internal structure of the agriculture pool..." should be deleted probably
Andrea Schröck	recommendation	flow name	35	Fig. 2	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	wording	35	2	suggestion: "Futher important N flows in or out of the sub-pools, <i>as well as respective N stocks</i> , include:
Andrea Schröck	error correction		35	11	spelling mistake: "compounds"
Andrea Schröck	error correction		36	15	update reference to "section 3.1"
Andrea Schröck	recommendation	potentially useful for Annex 0	36-40		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	request/clarification	inconsistency between AG/HS/MP	46	table 3	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/EF			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/MP	72	table 14	Biomass for biofuel production is sent to the pool MP (but not explicitly included there).
Andrea Schröck	request/clarification	flow from AG to HS is unclear	73	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	crosscheck data	79	table 15	Such data is given at page 168 (table 12). Could this be used as well?

Markus Geupel	request	Annex "atmosphere": lightning		Include "lightning" NOx emissions to Annex Atmosphere (with reference to TFEIP guidelines)
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		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	flow missing (inconsistency to HS) in revised Annex MP		MP.OP-HS / TEXT/ Annex MP / N content factors are given in Table 14, and 16 in Annex 6 (HS) 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	N fixation better described in revised Annex MP		Table 8 - add statement like "The transformation of unreactive nitrogen (N2) into reactive nitrogen (NH3) 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
Carina Broneder	request	Reference from one Annex to another not considered in referenced Annex	227	Annex 8 describes how to calculate the Exchanges with the pool Humans and settlements. For two parameters for the calculation Annex 6 is referenced. Annex 6 does not specify methods of computation or suggested data sources for the flows.
Carina Broneder	recommendation	specification of flows	206	It would be of help if in pool atmosphere flows and codes were specified for more consistent evaluations

Julia Tanzer	recommendation	Consideration of forest products	124	Forest products are described but only firewood, industrial wood and wood export are considered in export flows, neglecting harvested green parts. Recommendation: consider forest products as output flow from forest to the sector material and production where it is then split for use in different purposes (industrial, energetic, export). Wood import can also be considered in the sector material and production. This would correspond better to structure of available statistical data and allows for consideration of waste and by-products from sawing industry for energetic purposes.
Julia Tanzer	clarification	Consideration of surface water runoff from agricultural areas	128	Why is surface water runoff only considered for wetland areas and not for forests/semi-natural areas? Depending on the wetland definition used (e.g. CORINE Land Cover Classes), area of wetlands can be small.
Julia Tanzer	user experience	Simplification of method description to calculate stock changes in the pool FS	131	Method to calculate stock changes and land-use changes could be simplified, referring more to methodology and data available in the National Inventory Reports.
Julia Tanzer	recommendation	Consideration of land-use changes	139	Land use changes are only considered as stock changes in the pool forest and semi-natural areas. Corresponding stock changes should also be added in the pools agriculture and humans and settlements. In addition, flows between the pools representing land use changes should be added.
Julia Tanzer	error correction	Error in equation 5.7	141	Equation 5.7 should be: $N_{\text{retention}} = C_{\text{SOM-accumulation}} * N_{\text{SOM:C}}$