

UNEP/SETAC Life Cycle Initiative - Type 2 Peer Review Process

Global Guidance Principles for LCA Databases

Comments by page - CHAPTER 2

Chapter	Page	Text Concerned	Comment	Suggested Change/ Recommended Action
2	1	This chapter provides guidance for developers and users on how to develop a unit process dataset and how to document the procedures in a structured way.	Add "development" to clarify the procedures.	
2	1	A unit process dataset is obtained as a result of quantifying inputs and outputs in relation to a quantitative reference flow from a process .	<p>1) Definition literally should define terms. Here "a unit process datasets" should be defined. No such definition can be found here. First define what it is, then explain how to obtain it, and how is it different from aggregated process datasets.</p> <p>2) I would define "a unit process dataset" as" a set of normalized input and output data from a unit process with respect to the quantitative reference of the process.</p> <p>3) "of" instead "from"</p> <p>4) Use of "Reference flow " in this context may not be a proper expression here. "A quantitative reference of a process(e.g. major output from a unit process) would be the right choice.</p>	A unit process dataset as a set of normalized input and output data from a unit process with respect to the quantitative reference of the process.
2	1	literdata	Unclear. What is this?	
2	2	On the contrary, an aggregated process dataset is obtained from an aggregation of existing datasets	limited scope	Change to: On the contrary, an aggregated process dataset is obtained from an aggregation of existing unit process and/or other aggregated datasets.
2	3	· Geography covered	"Geographical area" is better than "geography"	· Geographical area covered
2	3	Targeted databases for the unit process dataset	perhaps considering data format is more appropriate	Change to: Reference to data format used
2	3	Intended use of the data set in general (applications, modeling situations including attributional or consequential modeling)	limited scope	Change to: Intended use of the data set in general (applications, modeling situations including attributional or consequential modeling, comparative assertions)
2	3	box 2.1: e.g. when VOC emissions are measured for unit process A separately and for unit processes B+C together,	there is some level of agreement that groups of substances should not be inventoried (like VOCs), thus perhaps this is not the best example to use	e.g. when benzene emissions are measured for unit process A separately and for unit processes B+C together,

2	3-4	box 2.1 (and related discussion on page 6)	encourages partitioning/ allocation and the preparation of incomplete data (which is subsequently discouraged on page 4)	Whereas process disaggregation should be encouraged, allocation within a unit process should be discouraged to the fullest extent as it reduces the usefulness of the data. The box should be rephrased.
2	4	API	Full name in ()	
2	4	ILCD	Full name in ()	
2	4	Step 1: Prepare an inventory list	To be consistent with the definition of unit process dataset where inputs and outputs data are quantified, and to avoid possible confusion with the inventory analysis in LCA, it would be better to use "input and output data list" instead of "inventory list".	input and output data list
2	4	When developing the unit process dataset, in alignment with the database management and documentation requirements, it is also important that the developer clearly defines the final intent of the unit process dataset, in terms of impact categories and indicators....	encourages the preparation of incomplete data	Omit or provide guidelines on completeness of flows to and from nature
2	4	This includes the developer using, as much as possible, the common and agreed upon nomenclature and naming schemes for the various elements of the unit process dataset of the target data bases or APIs.	is it possible to use this effort to seek standard nomenclature/ coding/ classification? This would be preferred to perpetuating the development of data sets that are not universally compatible.	Require a specific coding/ classification system.
2	4	API	definition missing	Add definition
2	4	and for dataset users.	not sure what this is intended to mean	Omit?
2	4-5	The data and information includes <input type="checkbox"/> mathematical relationships <input type="checkbox"/> raw data <input type="checkbox"/> unit process dataset <input type="checkbox"/> supportive information	seems to be incomplete or ill explained text	Omit or elaborate
2	5	a list of inputs and outputs of the unit process	This is what an inventory list means as such there is no need to introduce "inventory" here. If this is not practical, then at least state that "an inventory list means a list of inputs and outputs of the unit process."	

2	5	<input type="checkbox"/> A list of emissions can be preliminarily prepared by checking the impact categories targeted in the scope definition of this unit process. Then, some emissions can be removed if they are not relevant to this unit process.	encourages the preparation of incomplete data	Omit or provide guidelines on completeness of flows to and from nature
2	5	<input type="checkbox"/> It is also helpful to check the inventory list of existing datasets with the same technology and practice for differences which might be indications of omissions or extraneous data	should also encourage a review of technology related literature outside of that prepared for LCA and review by subject area experts. A great example is the omission of formulation ingredients for pesticides and fertilizers.	Change to: Review the inventory list of existing datasets with the same technology and practice; review related literature outside of that prepared for LCA; and consult subject area experts. Describe the search space in accordance with the principles of systematic review/ meta analysis. List and justify omissions within the context of the goal and scope and in accordance with ISO completeness guidance (the treatment of missing data and data gaps should result in: <ul style="list-style-type: none"> • a “non-zero” data value that is explained, • a “zero” data value if explained, or • a calculated value based on the reported values from unit processes employing similar technology.”)
2	5	data is		data are
2	5-6	2..3.2. Define the mathematical relationships	might be difficult to follow	consider adding a flow chart
2	5-6	2..3.2. Define the mathematical relationships	should refer to parameterizatio and provide guidance for its use in unit process preparation	add text with guidance for parameterization using mathematical relationships
2	6	<input type="checkbox"/> For product, by-product,	missing reference to co-product	<input type="checkbox"/> For product, by-product, co-product,
2	6	if bookkeeping or statistical data are available for the unit process	should be flow instead of unit process	if bookkeeping or statistical data are available for the flow
2	6	the mathematical relationships based on total amount of occurrence are preferred.	it is not clear how the developer will interpret this	clarify
2	6	Mathematical relationships based on on-site measurement may be preferred	use of emission factors can mean that mass balance is not achieved, and it seems "may be" can be replaced with "are"	Mathematical relationships based on on-site measurement and/or mass balance are preferred
2	6	<input type="checkbox"/> For average unit process dataset- data availability can vary largely according to the definition of goal and scope.	it is not clear how the developer will interpret this	clarify
2	6	Box	it is not clear how the developer will interpret this	clarify/ add an example WITH REFERENCES to archival literature (should make it more clear)
2	7	ERP	Full name in ()	
2	7	Raw data is data that has not been set in relation to the quantitative reference of the unit process dataset.	missing reference to mathematical relationships	Raw data are data that has not been set in relation to the quantitative reference of the unit process dataset or has not been subject to a mathematical relationship.

2	7	The purpose of the data gathering needs to be supported by the unit process dataset mathematical relationships and the goal and scope.		omit
2	7	ERP	missing definition	define
2	7	A)- C)	missing examples, clarity needed	make reference to the additional information in the "Data collection guidance" section starting on page 8
2	7	- calculations (e.g. missing emission factors from input data) - estimates	need to define calculation vs. estimate	define calculation, define estimate
2	7	For each unit process dataset, a combination of these options is usually applied.		For each unit process dataset, a combination of these options is usually applied, thus raising the importance of flow data quality analysis (reference to the data quality portion of the overall document).
2	7	data is		data are
2	8	inventory data	What is the difference from the raw data?	
2	8	flows	Be specific, in bracket (e.g. process, materials, energy flows, etc)	
2	8	On site measurements	To be consistent with the edited version A)	
2	8	PRTR	Full name in ()	
2	8	data is		data are
2	8	Data collection guidance		add a flow diagram, refer to the previous 2 sections; provide example archival data sources for each (e.g., make reference to a statistical survey technique, a standard measurement technique)
2	9	There is a general ranking of data collection methods: measurements > calculations > estimations (of the same quality).	infers interviews and literature are always superior to calculations; data quality has not been defined	define "same quality"; ensure validation method and data quality method match ranking
2	9	Estimates should be avoided, and if they cannot be avoided, they should be backed by measurements or by calculations, which then can be used as plausibility checks. This is useful even if the specific missing data cannot be measured, but "other data" can then be used in relation.	need to define estimate	define calculation, define estimate, add validation procedure
2	9	data is	twice	data are

2	9	When the data is to be prepared [collected] in the [by an] industry association, if a work group is established for that, it is possible to expect reduction in the work load due to division of the work and also preparation of data with high reliability. As a secondary effect, it can also cause deeper understanding of LCA within the industry association.	data reliability has not been defined, and it is not clear why industry association data will be any more reliable than data collected by others	omit
2	9	It is good practice to distinguish missing values from zero.	needs clarification	The ISO standard requires missing values be distinguished from zero values.
2	9	“When the data is not clear, it should be entered as ‘?’ which should be distinguished from the entry ‘0’ when clearly not used or emitted.”	data formats will not accept ? In numeric data fields	See comment in row 18, which requires missing data be explained
2	9	Seasonal changes should be taken into account.	needs clarification	We have used the following in the preparation of data quality for the LCA Digital Commons (see http://riley.nal.usda.gov/nal_display/index.php?info_center=8&tax_level=1&tax_subject=757): The flow data were collected over at least 3 years for agricultural (crop, livestock, forest, range) processes or other processes in which the data point varies for uncontrolled annual conditions (e.g., weather). Note however we are still in peer review of this method.
2	10	The results of calculation and the methemathical relationships	Calculation was made using the mathematical relationships and raw data, which yields the unit process dataset.	delete "the mathematical relationships"
2	10	asf	Please clarify what this represents.	
2	10	There is no general practice on how to deal with closed loops in processes, for example in dealing with reclaimed steel that is input into the steelmaking process. On one hand, data that needs to be collected becomes smaller; on the other hand, the process then deviates from reality.	needs clarification	Add clarification based on a review of archival literature on modeling closed loop recycling.

2	10	In order to allow for consequential analysis to be performed in an automated manner, there is the requirement to classify the technology according to a specific nomenclature, e.g. 'outdated, old, current, modern, or new', so that the technology level of development becomes machine-interpretable	limited scope, terminology ill defined	applies only to some CLCA methods, at a minimum the reference to this method and definitions of the terminology should be added
2	10	to classify the technology according to a specific nomenclature, e.g. 'outdated, old, current, modern, or new', so that the technology level of development becomes machine-interpretable just as the geographical and temporal representativeness. Likewise, the specification of numerical annual production volumes is essential for linking of datasets into production/consumption mixes.		It is not clear why among all the meta data that describes unit process data that only this small group is mentioned. Pages 12-16 seem to hit many others. Has there been a systematic review of meta data in current databases to get to this point? If so, can it be made available for review?
2	11	<ul style="list-style-type: none"> • Certainty level The unit process dataset comes with a level of uncertainty and shall not be used in LCAs seeking a greater level of precision. The unit process dataset user shall thus be made aware of uncertainty issues and any other specific validation problem discussed above.	limited scope	Add a specific description of how uncertainty is to be estimated and communicated. Use standard statistical terminology; require the mean, median, and first and third quartile be included for all flows for which uncertainty data are available; and define data without such information (or information from which these can be estimated) as of low quality.
2	11	If the unit process dataset has multiple outputs, the developer should indicate the type of allocation technique the inventory data can support, e.g. economic allocation, content based allocation, system expansion allocation.	needs clarification	describe each method

2	12	Validation is understood as the procedure of ascertaining that the developed unit process data set represents the "real" process data set well, by comparing the behaviour of the developed process to that of the real one	rephrase, eliminating "real" and "behaviour"	rephrase, eliminating "real" and "behaviour"
2	13	data is		data are
2	13-16	Is there a way to communicate these assessment results?		See also the comment in row 45
2	15	qualitative method: using expert judgment	To help the users, it is advisable to give an example how to perform "expert judgment" by listing examples of criteria for judgment, etc.	
2	15	However, if needed, the quantitative method is normally used for complicated unit process	Overall, the depth of this section is rather superficial compared with the other section such as consistency check. Need n\more practical and easy to follow guideline for the uncertainty assessment.	
2	18	reference	same reference appears twice	

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Comments by page - CHAPTER 3

Chapter	Page	Text Concerned	Comment	Suggested Change/ Recommended Action
1.1	2	Bullet points for aggregation steps	A step is missing to consider data quality (consistency & completeness) in the aggregation steps	Add a bullet point on ensuring consistency & completeness prior to aggregation of processes
3 section 1.1	2	7th bullet point	specify into what characterization should happen	
3	3	Figure 2	I did not understand the difference between 4 and 5. Modify the explanation or example to make this difference clearer.	Modify the explanation or example to make this difference clearer.
1.2	3,4	Figure 2	Difference between "Database" and "Background" requires more clarification	Expand explanation of examples and better explain definition of background and database in the text explaining the figure
3	4	Section 1.2	It is not clear what is being refernced in the bullets under "non-terminated vs. partially vs. fully...". For example read bullet 2, "another is a gate to gate unit process". Another example of what? Modify to read "Another example of a totally non-terminated aggregated process is...". Move the information at the end of bullet 2 to a section on "partial vertical aggregation". Do not mix the two concepts in one bullet.	Recommend addressing the concepts of "non-terminated vs. partially vs. fully terminated" into separate paragraphs and under each respective paragraphs include the respective bullets.
1.2	4	Bullet points at end of section	Next to last bullet point refers to 'distribution phase' which is not intuitively obvious what is meant.	Define distribution phase (i.e. transport, retailing, warehousing ???)
1.2	4	Text box at end		Include "feedstock energy fuel mix" as one of the relevant aspects in the last sentence.
3	5	Table 1	Remove references to "data providers" in the Explanation column of Table 1 and make "datasets" the subject of these explanation statements. This action will simplify the Table and remove the presumption as to who will be doing the action.	For example, "Datasets are aggregated to protect business-sensitive, competetion-sensitivie..."" , "Datasets may be aggregated to combine processes together to protect..."
1.3	5	Table	Table does not fit the page	Correct table size or page orientation to accommodate the table
1.3	5	Table	Examples would be helpful	Add examples

3 section 1.3	5+6	Table 1	It would be helpful to indicate if having disaggregated data in parallel to aggregated data would be a concern for each goal of aggregation. For example, confidentiality excludes the possibility of having parallel databases (aggregated/disaggregated), but computation efficiency may allow it.	could be done by indicating this in the note or by adding another column
3	7	Section 1.4	This section address attributional, consequential and other approaches. Mention the other approaches upfront, so that the reader knows where the section is going.	Also, add the word "approaches" following "both" in the second sentences as follows: "Both approaches are theoretically associated with different objectives" Re-write the third sentence as "Different objectives of the two approaches have real repercussions on the models used in the LCA. These differences are usually (but in theory not exclusively) reflected in the LCI phase."
1.3	7	Bullet points	Potential errors in aggregation are not discussed in these bullet points	Include potential errors - with examples such as making changes that don't apply (mixing regionalization changes that don't fit with technology selection, etc – see the table of reasons on aggregates)
1.4	7	Attirbutional vs. Consequential	These terms are obtuse and require much more explanation with examples. The two bullet points are not representative of the set of differences between the two.	Expand this section to better define the two approaches with examples, and more factors which differentiate the methodologies.
1.4	7	Consequential bullet point	System expansion may also be applicable to attributional LCA - Allocation method does not seem like a real differentiator	Consider removing allocation method as a differentiator for these two methods. Sensitivity analysis should be used for allocation technique - so excluding a method based on approach does not seem appropriate
3	8	Section 2.1	Add an introductory sentence to this section or move the second to last paragraph up to the front. As written, the reader is left wonder the goal and scope of what? Is the bulleted list intended to define what should be included in the goal and scope . If so, state this.	Change the word "provide" to "represent" and incorporate "reference flow in the sentence and delete the following sentence as follows: "The product (good or service) that the aggregated process dataset will represent (reference flow).
1.4	8	Implications to LCI dataset suppliers	I disagree with the suggestion to try for a single modeling approach within a single dataset. Different parts of an LCA may be better described by different approaches	At least encourage sensitivity analysis if a single approach is recommended

1.4	8	Marginal & large scale changes	Pointing out that LCA handles small scale or marginal changes in production volumes is counter-intuitive without a better explanation of what is meant by "small scale"	Better define what is meant by "small scale changes" and the type of changes envisioned - These are not differences from 1yr to the next, but perturbations to the system based on market influences?
2.1	8	Goal & Scope		The first bullet point should say " Properties and functions of the product"
2.1	8	Goal & Scope	The intended audience should be included to the bullet points	Add a bullet point for the intended audience to the goal & scope issues to be clearly defined
3	9	Section 2.1	Add "and guidelines followed" to the 6th bullet as follows: "The modelling approach and guidelines followed for the aggregation"	
2.2	9	Horizontal averaging	First sentence suggested to be as follows:	Horizontal averaging is the action of aggregating multiple unit process datasets or aggregated process datasets which provide the same reference flow in order to create a new process dataset.
3	10	Section 2.3		Change "For these cases" to "For these complex systems". The paragraph above refers to "complex systems", not cases. When I read this I was left wondering What cases?
2.4.1	10	Linking to supplier specific datasets	Third bullet suggests only increases may be observed	Address possibility of decreases in production / etc.
2.4.1	11	Linking to marginal production	First bullet point has an incomplete sentence.	Complete the thought - it is not obvious what the author intends, so I can not provide a suggestion - However, the thought should include the recommendation for sensitivity analysis
2.4.2	13	Allocation	When choosing an allocation method, it should be encourage to perform sensitivity analysis	Include recommendation / requirement to evaluate multiple allocation techniques
2.4.2	13	Allocation	A sentences suggests using uniformly applied allocation methods - This may not be appropriate	Suggest following GaBi approach of evaluating the allocation approach for each allocation opportunity and then doing sensitivity analysis. Provide examples to highlight the magnitude of impact an allocation choice may have (say HCl co-product by mass, economic, avoidance with HCl production from some other method, avoidance with Cl equivalent, or perhaps biofuel co-product (lignin filter cake)

2.4.2	14	Allocation	All the major databases use different allocation techniques. Which one is recommended - To me this suggests multiple allocation techniques should be investigated through sensitivity analysis	Does this paper suggest to follow one of these databases with their allocation technique?
2.5.1	14	Cut-off rules	Examples for cut-off rules are given but no recommendation is made	Does this group have a recommendation? The ILCD method seems as though one has to first include something to understand its potential impact before excluding - which really suggests you should just include everything since you have already included it to see how important it was
2.5.2	14	Capital Equipment	During the March 2009 meeting on the NREL database, the general consensus was to include infrastructure	
2.5.2	14	Capital Equipment	Suggesting that "minimally, infrastructure should be included where significant requires that one know when it is significant.	Give more examples, or concrete situations where infrastructure should be included
3 section 2.4.2	14		The text describes different allocation principles and provides information on approaches for different databases. Is there a recommendation to follow a consistent allocation approach within a given aggregation effort (vertical or horizontal). This section reads a bit like a text book on allocation without making conclusions for the aggregation procedures.	
3 section 2.5	14		same comment as above with respect to the listed items in that section. What are the recommendations or conclusions?	
3	15	Section 2.6.1	"Once the model has been constructed". What model? Add a clarifying word in front of the word "model", so that that everyone is think about the same model. LCA model?	
2.5.3	15	Incidents & Accidents	Suggesting these should be included is unrealistic.	Recommend that Risk-based evaluations of these types of events be performed. How we combine LCA and risk-based evaluation into a greater study is still an issue (i.e. remediation industry)

2.5.4	15	Certificates	Certificates have no place in a LCA. They are part of the LCA of the product supply chain through which they are purchased – Including them is double counting – Once for the supply chain where the burdens have been replaced and once for where they are used.	RECs and certificates should be excluded from LCA data in all instances.
2.6.1	16	End of 3rd paragraph	Reword last sentence as follows:	This issue tends to be less relevant in the case of datasets aggregated for confidentiality reasons on a “gate-to-gate” or “partially-aggregated” basis.
3.1	17	Data quality	Data quality should be included earlier in this section - i.e. as a specific bullet point in selecting aggregation method, etc.	
3 section 3.2	17		the text refers to procedures which are in a different chapter. This chapter would read more easily if the key procedures would be briefly mentioned.	

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Comments by page - CHAPTER 4

Chapter	Page	Text Concerned	Comment	Suggested Change/ Recommended Action
4	5	2.1.3 Scope of the Dataset The dataset should include a system description ...	This should be a requirement not a recommendation.	change "should" to "shall" or "must"
4	5	Allocation	editorial	is described in more detail in Chapters...
4	7	2.2.3 Calculation Models and other Conventions		Add a sentence: "It is recommended that actual electricity consumption (kwh or MJ) be reported for datasets, along with the fuel mix or quantities of fuel used to generate the reported electricity.
4	7	1.1.1 Materiality (Transparency) ... Information should be provided on the key contributing processes to the inventory results of an aggregated dataset. In addition, a sensitivity analysis of the key contributors should also be provided. A similar assessment should be preformed from a life cycle impact standpoint.	Sensitivity analysis is very useful, but selecting the appropriate parameters for a sensitivity analysis is key to meaningful results. The sensitivity analysis should only be completed if the parameters are appropriate and it adds to the knowledge of the decision-maker. Otherwise, you create confusion and waste money and effort.	Consider further if any guidance about appropriate sensitivity analysis can be provided.
4	8	Description of how the engineering-based models (gate-to-gate) used to prepare the aggregate dataset have been developed, where necessary	I don't think you can assume that the gate-to-gate models will be engineering-based	Consider removing the words "engineering-based"
4	8	Before an LCI dataset is included in a publicly available LCI database, it shall undergo an independent review, which should be external.	Either require the review to be external by indicating "shall" not "should, or delete the phrase, "which should be external".	I prefer that the phrase, "which should be external" be deleted.
4	8	Verification and review	Verification is not a term of ISO 14040 ff. If necessary at all, verification follows the critical review as a final step, not vice versa	

4	9	<p>3.2.3 Minimum Review Requirement For datasets that are used internally and not intended for public use or disclosure, the review requirements are managed by the organisation. Datasets that will be made publicly available (freely or for a fee) shall undergo a minimum an independent review, which is preferably conducted by external reviewers.</p>	<p>Preferring external review ties the hands of organizations set up to perform independent reviews internally. It makes these organizations seem less capable because they do not pay for outside reviewers. They will either be compelled to pay outside reviewers, or be seen as providing less reliable data. An unfair position.</p>	<p>remove the phrase, "which is preferably conducted by external reviewers".</p>
4	9	<p>3.2.5 Cost Considerations In order to minimize duplication of review efforts and costs associated with conducting reviews of datasets, a streamlined review procedure and report is recommended.</p>	<p>As it is, this is not a useful sentence.</p>	<p>Either remove or elaborate on this section.</p>
4	10	<p>3.4.1 Type of Review To do an adequate review the reviewer(s) need a technical understanding of the process described by the dataset (including specific geographic and temporal knowledge), as well as experience in LCA and, further, knowledge of LCA review process and requirements.</p>	<p>It should be recognized that the engineer(s) providing data for a specific facility(ies) are most knowledgeable about the technical aspects of the data. Finding an outside technical expert to review data before aggregation will be difficult due to confidentiality reasons. A technical expert within an industry may be able to evaluate aggregated data for gross errors, but facilities do vary significantly in operations.</p>	
4	10	<p>end of 3.2.3</p>	<p>editorial</p>	<p>shall underg as a nimum</p>
4	11	<p>3.4.3.1. ... The following more specific criteria will usually be set by the database manager in order to ensure consistency of process data within the database</p>	<p>It is unclear from the text under 3.4.3 and the text under 3.4.3.1 whether or not the listed specific criteria are required or recommended.</p>	<p>Consider revising the language for clarity.</p>
4	12	<p>3.4.4 ... (e.g. <i>ecoinvent</i>).</p>	<p>It seems inappropriate to list ecoinvent alone as the example that other databases should be compared to.</p>	
4	13	<p>4. Database Management</p>	<p>We understand the notion of library and database as the distinction between aggregated LCI and LCI systems which can be analysed and modified for each sub-stage / process.</p>	

4	15	Figure 1: Sample flowchart of database management, specifically validation and inclusion process	The database / validation process is too much tortuous and the understanding of the different arrows/ directions meaning is a puzzle	The concept of availability of systems versus life cycle datasheet is a point which deserves to be developed and examined in more details since it is a key component of the coverage, representativeness and flexibility of data. As an example it is more interesting to have a parametrized model for electricity generation adaptable to each country mix (when primary data for production/dombustion are representative for the region the country belongs to) and which can be updated every year rather than a single snapshot for every country and every year.
4	15	4.1.2.Note 2	terminology	avoid "such as carbon", use climate change, GHG oder GWP ("carbon" is popular slang)
4	18	4.2.2 Note 1	terminology	"may operate an accreditation scheme" should be cancelled since not usual in the LCA field, excludes the scarce experts in both LCA and review and favours big companies without competence in LCA
4	18	4.2.2 Dataset provider	may or may not be independent of the database: contradicts section 3	
4	Throughout the document	UPI, API, DQI, NAICS, UNSPSC	These acronyms are not present in the glossary	Define all the acronyms, not exluding those which can sound obvious for an LCA expert, and detail them in the text also when mentioned for the first time

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Comments by page - CHAPTER 5

Chapter	Page	Text Concerned	Comment	Suggested Change/ Recommended Action
5		IOT, IOA, IO-LCA		These words should be clearly distinguished.
5		national statistical data		It should be better to replace national statistical data with governmental statistical data because statistical data published by municipalities are also useful.
5	1	Sentence 1 - "There is"...	recommend starting the chapter with a more active voice	
5	1	Paragraph 1 - "different stakeholders"	define which stakeholders referring to	
5	1	Paragraph 1 - "outcomes (e.g., sustainable consumption, eco-efficient organizations and businesses, enhanced public policy and sustainable production)"	order text in parentheses to match diagram read in counterclockwise fashion	
5	1	Figure 1	Am not sure the figure as it stands adds much value or needs more explanation; seems that there is much overlap between eco-efficient organizations and sustainable production and overlap between enhanced public policy and the other three outcomes	
5	1	5.1 Intro and Overview	In the intro, when discussing stakeholder needs, mention the needs discussed in the chapter like the need for more geographical, temporal data, and social and economic assessments	
5	3	the production-level data	It is understandable what the process-level data means, but the meaning of the production-level data does not seem clear enough.	Please avoid using "the production-level data", or present its definition.

5	3	Last sentence in 5.2.1, trends in production volumes	add "to the extent possible" after "To model the time effect of such consequential changes, the production-level data"	
5	4	5.3.2 Geographic information	should mention in this section, the value of this information for transport analysis and for considering other location-specific aspects like electricity-grid fuel mixes in various regions or countries	
5	5	5.3.3 Temporal information	Might also mention the usefulness of temporal information for evaluation of end-of-life impacts and benefits	
5	5	Figure 3	Figure 3 is missing	
5	6	5.4.1, paragraph 2, at end of third to last sentence	suggest adding "and for screening level assessments" after "to provide environmental information to support policy-level decisions"	
5	6	5.4.2 National Stats	In sentence 1, reference or name the UN standard	
5	6-7	for each unit produced in the sector	IOT as a statistical table, which describes a regional economy, and modeling in IOA, in which linear proportionality between output and inputs for each sector is usually assumed, seem to be confused.	For example, "for producing its output"
5	7	Line 1: It gives an overview of the trade in a national economy.	Trade is recognized as foreign trade in many contexts.	It seems that "trade" should read "transaction".
5	7	Line 15: Price homogeneity does distort the results.		Price homogeneity should read "price heterogeneity".
5	7	Line 17: IOA has long been using both economic-value based allocation and system expansion		Do the authors mean "IOA has been used for both economic-value based allocation and system expansion"?

5	7	Line 22: the data quality degradation due to aggregation outweighs any benefits of using IO data	It seems that "degradation" does not fit in this context. Aggregation of establishment-level data into sector-level data for compiling IOT is necessary to complete all of its cells. Therefore, aggregation has two different aspects, i.e., losing specific information and getting completeness of data. Because a typical LCA practitioner cannot access to establishment-level data that the statistical office collected, it seems impossible to identify how data quality is degraded by aggregation.	It might be a good strategy to avoid using the word "aggregation" in this sense. This can be mentioned, for example, by "low resolution of sector classification" as the authors already did on page 8.
5	7	Line 25: IOT are usually calculated	IOT is estimated without assuming that "imported commodities are produced using the same technology and structure of domestic industries".	For example, "IOA are usually carried out", or "IO-LCA are usually carried out".
5	7	8th line from the bottom: Methodologically, all other issues are functionally equivalent to the process approach.	Hybrid LCA and the process approach share the same computational structure, given appropriate data sets. However, there are issues of data set construction, and some of them seem methodological.	Please explain how similar and different the hybrid and process approaches are.
5	8	Line 16: Input-Output Tables are derived by statistical agencies from supply-use tables and direct requirement tables.	There should be a possibility that a derived SIOT based on an expert knowledge and mixed technology assumption better reflects reality than a mechanical use of supply and use tables based on, for example, industry-technology assumption.	Input-Output Tables should read "Symmetric Input-Output Tables" here. The reason why and when supply and use tables are preferred to SIOT should be mentioned.
5	8	Line 18: Socio-Economic and Environmental Assessment (SEEA)		SEEA is the abbreviation of "System of integrated Environmental and Economic Accounting".
5	8	7th line from the bottom: Input-Output (IO)-LCA	It is not clear what IO-LCA means here.	Please provide an appropriate reference or describe its definition.
5	8	3rd line from the bottom: IOT accounts for all upstream processes		IOT of "IOT accounts for all upstream processes" should be replaced with IOA or IO-LCA.

5	9	Line 5: aggregated data in the input-output part are substituted iteratively by specific, detailed process data for the most important systemspecific activities	Aggregated data are not merely substituted in a hybrid LCA study. Each sector of concern is disaggregated into two sectors, and then one of the two sectors is substituted by process-level data.	Double counting is an important issue here. The authors may like to cite Stromman et al. (2009). Stromman, A. H., G. P. Peters and E. G. Hertwich (2009). "Approaches to correct for double counting in tiered hybrid life cycle inventories." Journal of Cleaner Production 17(2): 248-254.
5	9	5.4.4 Linking Input-Output Tables with environmental data	At end of first paragraph, add "as discussed in 5.4.1."	
5	10	Line 15: IOT typically does not include data downstream of production	IOT includes waste management sectors, which corresponds to the end-of-life stages.	Do the authors mean "IO-LCA typically does not include data downstream of production"?
5	11	5.6 Summary	recommend expanding on summary (which is probably in the works)	
Glossary		by-product, recycling	Do the authors mean that products which may be recycled must be marketable? I believe there are a lot of non-marketable end-of-life products, which can be recycled.	Please check if typical real examples are not excluded.
Glossary		39 EEIO data (EEIO/EEIO tables); 45 input-output table	The first sentence of its definition does not seem necessary because entry 45 defines IOT. The second sentence clearly defines what the environmental extension is. However, it might exclude accounting flows that are not elementary flows. Examples are a waste that would be not directly disposed of but treated or recycled, and energy consumption.	I propose to change the heading of entry 39 to "environmentally extended input-output table", delete the first sentence of entry 39. It might be a good idea to add "Other product and waste flows may be included".

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Global Guidance Principles for LCA Databases

Comments by page - CHAPTER 6

Chapter	Page	Text Concerned	Comment	Suggested Change/ Recommended Action
6	1	The development of technical expertise is considered essential, especially in developing and emerging economies.	It would be good to sustain this affirmation, may be mentioning some concrete experiences.	For example in Perú, thanks to the training on the EMPA and UNEP/SETAC Life Cycle Initiative the Peruvian Network Life Cycle was strengthened to continue developing ACV's studies.
6	1	In developing countries and emerging economies, as resources are lacking, international and intergovernmental organizations are called to support the national efforts hand-in-hand with essential local partners such as national life cycle networks, centres of excellence, national cleaner production centres, chambers of commerce, and industrial associations.	It would be good to sustain this affirmation, may be mentioning some concrete experiences.	
6.2	1	The development of technical expertise is considered essential	The expression "technical expertise" does not become clear and seem for me be not sufficient, as it is not enough to understand processes and tools, also methodological know-how is important	Please add: The development of methodological and technical expertise is considered essential, especially in developing and emerging economies.
6.2	1	These increased capabilities ultimately result in influence on market developments and on the benefit/cost ratio of life cycle data management.	There's is a link between the first paragraph and this sentence of the subchapter missing	Please add to the paragraph before: Capability development is meant to address researcher, policy makers and industry in order to reach a relevant amount of experts in all parts of the society. These increased capabilities ultimately result in a broader use of Life Cycle Assessment and thus influence market development and the benefit/cost ratio of life cycle data management.
6.2	1	PRé Consultants, PE International AG, Umberto GmbH, and the ecoinvent Centre have supported this activity since 2006. i	Umberto GmbH does not exist, the company's name is ifu Hamburg GmbH	Please change to: PRé Consultants, PE International AG, ifu Hamburg GmbH, and the ecoinvent Centre have supported this activity since 2006.
6	2	The Latin American project funded by the UNEP/SETAC Life Cycle Initiative which aims at enhancing capabilities in five countries (Chile, Argentina, Brazil, Mexico and Peru) regarding development of Life Cycle Inventories of national energy systems .	It would be good to propose a methodology of development of capacities in the development of an international project.	
6.3	2	LCA databases managers	sounds strange	LCA database managers

Footnotes	2		preferable footnotes containing links should be described and displaying the date of access, as links can change	add the name of the institution owning the website
6.5	3	These support mechanisms are especially important considerations in developing and maintaining the Independently-Managed Databases in order to ensure their sustainability.	The meaning of this sentence does not become clear. If my understanding is right you could replace it with the suggestion on the right:	These support mechanisms are especially important for the continuous development, maintenance and updating of independently managed databases in order to ensure their sustainability and persistence.

UNEP/SETAC Life Cycle Initiative - Type 2 Peer Review Process

Global Guidance Principles for LCA Databases

Comments by page - CHAPTER 7

Chapter	Page	Text Concerned	Comment	Suggested Change/ Recommended Action
general		independently managed databases	throughout the chapter and probably document the spelling of this expression varies.	decide for one and use it consistently
7	2	While it is not the aim to predict the future, presented here are three future scenarios, without knowing which scenario, or combination of scenarios, will develop into practice.	it's obvious that the authors don't know which scenario will develop in the future, that's why the scenarios are developed.	Three different scenarios are developed with the aim of exploring how current trends in information technology can affect the future of LCI databases
7	2	Faced with a wide range of future scenarios and emerging technologies, a group was given the task of screening potentially interesting trends towards the future of LCI databases and knowledge management from the basis of a simple value proposition	a question of style: the text should be more direct, avoiding references to the group of authors. Besides, the fragment is again referring to scenarios, technologies trends and their influence on future databases.	I would eliminate this fragment
7	2	"We wish to promote uses of life cycle assessment (and LCI data) which improve products and processes. We believe that there are current trends in information technology and knowledge management that can support this goal by fundamentally changing the cost/benefit ratio of using LCIs, either by reducing the cost of collecting, managing and using LCI data, or by increasing the value of that data. Our explorations focus on technologies which can deliver on this promise in the 3-5 year time frame, and on plausible transition paths to allow these ideas to be incorporated within the context of existing data systems."	idem previous comment	Current trends in information technology and knowledge management can enhance the use of LCA, fundamentally changing the cost/benefit ratio of using LCIs, either by reducing the cost of collecting, managing and using LCI data, or by increasing the value of that data. The chosen scenarios focus on technologies which can deliver on this promise in the 3-5 year time frame, and on plausible transition paths to allow these ideas to be incorporated within the context of existing data systems.
7.1	2	The key trends which are believed to most pertinent to this document are discussed in Chapter 6 .	In chapter 6 the word "trend" is not used und as this paragraph in cap 7 deals with trends in IT, I can not see the clear link to Chap 6	delete the sentence or replae the word "trend"
7	3	the other pertaining to key information technology trends which, in the group's assessment, will unquestionably influence the evolution of LCI databases over the planning period	idem previous comment	the other pertaining to key information technology trends which are likely to have a strong influence on the evolution of LCI databases over the planning period

7.1	3	At points in this chapter suggestions are made of the potential for LCA data developers and database managers to facilitate exterior applications.	phrase not clear	At points in this chapter suggestions are made on the potential for LCA data developers and database managers to facilitate exterior applications.
7.2	4	The second set of assumptions which guided scenario development regarded information technology trends which are viewed to most likely to shape the way in which people use information in the future, including LCI data.	editorial improvement	The second set of assumptions which guided scenario development regarded information technology trends which are viewed to most likely shape the way in which people use information in the future, including LCI data.
7.3.2	5	and the other format has field containing the expiry date for the user, the converter cannot "judge" how to convert one field to the other.	editorial improvement	and the other format has a field containing the expiry date for the user, the converter cannot "judge" how to convert one field to the other.
7.3.2	5	A logical step forward is to encourage the "owners" of the formats to further harmonize their format.	editorial improvement	A logical step forward is to encourage the "owners" of the formats to further harmonize their formats.
7.5	10	In this context, there can be a competitive marketplace for review and aggregation services. Once review and aggregation are completed, managers of existing centrally-managed databases could decide to integrate the newly available generic data into their databases; indeed, the database managers themselves could undertake the review and/or aggregation tasks. At the same time, newly available generic and reviewed data can also be made available as a free-standing generic dataset for a unit process (e.g., not yet integrated into a centrally-managed database).	only reading chapter 7, the difference between independent and centrally managed databases does not become clear.	see also the already existing comment: What is the difference between independently-managed and centrally-managed databases? Or who is the operator of each? This is the first mention of centrally-managed databases. As I read this section, I think it refers to the governmentally-managed databases from which the raw data was taken.