1. Original | Revised | general | CEFS

**Comment:** The whole concept of the paper -
- to sub-divide productions in unit processing steps
- to divide co-products is “real” co-products and residues is highly flawed because it neglects -- at least for sugar and ethanol production - the fact that there are material and energy flows back and forth the unit steps defined. For example, beet sugar production pulp drying is typically an integral part of the sugar production because it uses (low temperature) energy from the sugar production. There are also common installations like waste water treatment plants used. In consequence the sub-division done is not in line with ISO 14040 series. Sub-division into process steps shall only be done if there are no energy and/or material feedback loops.

**Proposed change:** Indeed, it is not easy to make this further subdivision. However, sugar factories can make a decision to sell pulp in a wet or a dry form. In that case they can derive the additional energy use for drying by comparing both situations. So, no contradiction with the guidelines.

**Response:** We cannot locate the section in 14040/46 which prohibits subdivision when there are loops.

2. Original | Revised | vii | Foreword | GE

**Comment:** Promotion of this assessment” approach is a step too early as there is no mutual agreement among stakeholders upstream and downstream. We would recommend removing this phrase and amend phrase 21 so as it reads:

To assess the potential of developing a harmonized, science-based approach depending on a consensus amongst upstream and downstream stakeholders of the sector.

**Proposed change:** The goal as stated is not restrictive – the guidelines have been through consensus with multiple stakeholders in the discussion to date, and this will continue.

**Response:** Decline. There is the opportunity to adjust the guidelines after a 3-year period. The goal stated is not restrictive – the guidelines have been through consensus with multiple stakeholders in the discussion to date, and this will continue.

3. Original | Revised | vii | 18-19 | GE | IFIF/FEFANA

**Comment:** At this point it should be mentioned that food supply chain to make it clear that also the transformation of feed through the target animal must be considered as well since that stage is currently also not properly reflected by the meat sector.

**Proposed change:** The feed sectors is aware of this and increasingly there is a growing interest in measuring and improving the environmental performance of the whole feed to food chain including animal performance.

**Response:** Accept

4. Original | Revised | vii | 21-22 | GE | IFIF/FEFANA

**Comment:** All relevant stakeholders should be listed

**Proposed change:** Accept. Stakeholders are: farmers, processors of food and beverage products, feed millers or compound feed producers, feed integrators, traders, transporters and other intermediate agents.

**Response:** Accept.

5. Original | Revised | vii | 9-11 | GE | AFIA

**Comment:** AFIA believes Dr. Frank Miltosahn is not given the recognition he deserves as chair the first year. He led the drafting and finalization of the final draft. Perhaps his name should be listed at the bottom of the introduction page along with Mr. Lalji Desai. This would recognize both chairpersons for the work they did in creating this document up to the current period. It is appropriate to provide recognition for the work done by Dr. Miltosahn.

**Proposed change:** Good suggestion. Accept. But we should mention that the third year the Govt will provide a chairman of the steering Committee.

6. Original | Revised | xi | Glossary | TE

**Comment:** “Impact” is too unspecific

**Proposed change:** Change “impact” to “accumulated radiative forcing over a specified time horizon”

**Response:** Accept. It is suggested to add a definition of radiative forcing to the glossary.
<table>
<thead>
<tr>
<th>Number</th>
<th>Original/Revised</th>
<th>Line no.</th>
<th>Glossary</th>
<th>Chapter no./ annex</th>
<th>Paragraph/Figure Table/Note (e.g., table 1)</th>
<th>Type of comment*</th>
<th>Stakeholders</th>
<th>Comment (justification for change of technical aspects must be supported by either scientific-literature or technical documents)</th>
<th>Proposed change</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Original</td>
<td>xi</td>
<td>Glossary</td>
<td>Carbon storage</td>
<td>TE</td>
<td>WEIDEMA</td>
<td>Item is not used in the document</td>
<td>Delete</td>
<td>Decline: Carbon storage is cross-referenced to “biogenic” &amp; “temporary carbon storage” definitions. I would suggest keeping this definition. EF’s emission factor, accept.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Original</td>
<td>xi</td>
<td>Glossary</td>
<td>Characterization</td>
<td>TE</td>
<td>WEIDEMA</td>
<td>Please spell out abbreviations for understanding and readability</td>
<td>Spell out “EF”</td>
<td>Accept.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Original</td>
<td>xi</td>
<td>Glossary</td>
<td>Comparison</td>
<td>TE</td>
<td>WEIDEMA</td>
<td>Without a definition of “comparative assertion” this definition becomes meaningless.</td>
<td>Add definition of “comparative assertion”: “A statement that there is a significant difference in environmental performance between two or more products”</td>
<td>Accept.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Original</td>
<td>xii</td>
<td>Glossary</td>
<td>Co-production</td>
<td>TE</td>
<td>WEIDEMA</td>
<td>This is not the normal usage of this term. Co-production is normally understood as encompassing both joint production (as defined here) and combined production. Without good reasons, definitions should not deviate from normal usage.</td>
<td>Change the name of the term defined here to “Joint production”</td>
<td>Glossary corrected.</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Original</td>
<td>xii</td>
<td>Glossary</td>
<td>Co-product</td>
<td>TE</td>
<td>WEIDEMA</td>
<td>It is probably not intended that wastes and emission outputs should be included in this definition (see definition of “Output”). Co-products are normally understood as product outputs, whether goods or services (see also the definition of “multi-functionality”). Without good reasons, definitions should not deviate from normal usage.</td>
<td>Change “Output” to “Product” and delete second sentence.</td>
<td>Accept.</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Original</td>
<td>xii</td>
<td>Glossary</td>
<td>Crop product</td>
<td>TE</td>
<td>WEIDEMA</td>
<td>Without good reasons, definitions should not deviate from normal usage.</td>
<td>Add “plant, fungus or algae” before “cultivation”</td>
<td>Accept.</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Original</td>
<td>xii</td>
<td>Glossary</td>
<td>Cultivation</td>
<td>TE</td>
<td>WEIDEMA</td>
<td>Without good reasons, definitions should not deviate from normal usage.</td>
<td>Change the name of the term defined here to “Plant cultivation”</td>
<td>Accept.</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Original</td>
<td>xii</td>
<td>Glossary</td>
<td>Delayed emissions</td>
<td>TE</td>
<td>WEIDEMA</td>
<td>What is defined here is “Slow-release emissions”. Probably it was intended to define “Delayed emissions” in accordance with the way the term is used in the text, i.e. on page 40 line 23-24:</td>
<td>Change definition to: “Emissions that take place one year or more after the start of the human activity from which the emissions occur.”</td>
<td>No, we intended to define slow-release emissions. We have to define this word in the glossary and in the text.</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Original</td>
<td>xii</td>
<td>Glossary</td>
<td>Economic value</td>
<td>TE</td>
<td>WEIDEMA</td>
<td>The term “market value ... at the point of production” is ambiguous.</td>
<td>Please specify if the value shall include product taxes or not.</td>
<td>The product price/value does not include taxes.</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Original</td>
<td>xii</td>
<td>Glossary</td>
<td>Emission factor</td>
<td>TE</td>
<td>WEIDEMA</td>
<td>The definition is imprecise</td>
<td>Change to “Factor expressing the amount of an emission relative to a unit of activity”</td>
<td>Definition revised.</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Original</td>
<td>xii</td>
<td>Glossary</td>
<td>Feed</td>
<td>TE</td>
<td>WEIDEMA</td>
<td>The last sentence is not in line with the text on page 19, line 6-7: “Feed additives such as minerals, synthetic amino acids etc. are considered as feed in these guidelines”</td>
<td>Delete last sentence or bring text on page 19 in accordance with this</td>
<td>Change the sentence on page 19. Feed additives such as... Are essential in animal nutrition and their production and use will have an environmental impact. But they will not be considered in these feed guidelines.</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Original</td>
<td>xii</td>
<td>Glossary</td>
<td>Global Warming Potential</td>
<td>TE</td>
<td>WEIDEMA</td>
<td>It appears strange not to mention the most important impact from global warming</td>
<td>Add “habitat change,” before “slorn”</td>
<td>Standard definition adopted.</td>
<td></td>
</tr>
</tbody>
</table>
23. Glossary

Impact category indicator

TE

WEIDEMA

Change to: “Quantifiable representation of an impact category endpoint”

Used ISO definition: ISO 14044:2006, 3.40

Accept

24. Glossary

Joint production

TE

WEIDEMA

This is the definition of combined production. Joint production is when the products cannot be independently varied.

Accept

25. Glossary

Land use change

TE

WEIDEMA

The changes also include conversion of non-used stand (nature) into use by humans. Without good reasons, definitions should not deviate from normal usage.

Used ISO definition: ISO 14044:2006, 3.35

Accept

26. Glossary

Multifunctionality

TE

WEIDEMA

The second sentence provides one specific way to handle multifunctionality. A definition should not contain unnecessary prescriptive procedures.

Delete second sentence.


27. Glossary

Normalization

TE

WEIDEMA

Text is unclear.

Change “unit” to “system”. Add “relative to the reference system” after “by the analyzed system”. Add “of each impact category separately” after “impact potential” Spelled out “IP”.

PEF definition adopted.

28. Glossary

Reference flow

TE

WEIDEMA

Without good reasons, definitions should not deviate from normal usage. A reference flow can also be non-material. Use the ISO 14044 definition.

Used ISO definition: ISO 14044:2006, 3.29

Accept

29. Glossary

Harvest

TE

WEIDEMA

Circular definition. Emissions are defined in terms of releases and discharges. Then, you cannot define releases in terms of emissions. In general the terms are used somewhat arbitrarily in the document.

Usoe for one consistent terminology and apply this throughout the document.

ISO definition adopted
Is it intended to exclude purely internal reporting? If not, then:

Change "and" to "or"

Adapted from: ENVIFOOD Protocol: 2013

Is it intended to exclude purely internal reporting? If not, then:

Delete

Decline. I suggest to keep the residue in. It is a kind of co-product where allocation can be different. In fact Weidema is right, but I think for clarity it is good to keep it in.

Add "or of lower quality" after "not available"

The note was removed.

The NOTE appears to suggest that secondary data are always of lower quality than primary data, which is not always the case.

The note was removed.

The NOTE appears to suggest that secondary data are always of lower quality than primary data, which is not always the case.

Add "or of lower quality" after "not available"

The note was removed.

The NOTE appears to suggest that secondary data are always of lower quality than primary data, which is not always the case.

Add "or of lower quality" after "not available"

The note was removed.

The NOTE appears to suggest that secondary data are always of lower quality than primary data, which is not always the case.

Add "or of lower quality" after "not available"

The note was removed.

The NOTE appears to suggest that secondary data are always of lower quality than primary data, which is not always the case.

Add "or of lower quality" after "not available"

The note was removed.

Please spell out abbreviations for understanding and readability

Accept.

Include additional impacts in the guidance, using French and European experiences. It can be done quickly for impact categories where an impact categorization model is available and consensual at the European level: eco-toxicity, eventually water scarcity (water consumption including stress factors).

Decline. This has been extensively discussed in the Steering Committee. This is planned for the future, however, was not possible to include in the current scope.
Clear references should be given to exclude impact categories, as some suggestions appear unjustified. For example, the exclusion of human health/toxicity and ionising radiation does not appear to be supported by study-based evidence. Considering only e.g. climate change may give a distorted environmental picture, particularly towards products that rely on specific energy mixes preferred by some countries and associated risks.

Reference to PEF has been made. LEAP provides guidelines and should not be considered as a PEFCR as defined by the PEF.
<table>
<thead>
<tr>
<th>Number</th>
<th>Page no.</th>
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<th>Paragraph/figure/table/no (e.g. Table 1)</th>
<th>Type of comment*</th>
<th>Stakeholders</th>
<th>Comment justification for change of technical aspects must be supported by either scientific literature or technical document(s)</th>
<th>Proposed change</th>
<th>Response</th>
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</thead>
<tbody>
<tr>
<td>43</td>
<td>Original</td>
<td>Revised</td>
<td>3</td>
<td>1A-Nov</td>
<td>Chapter 2 (Scope)</td>
<td>Paragraph 3</td>
<td>GE</td>
<td>French Ministry of Ecology, Sustainable development and Energy</td>
<td>It welcomes very well the LEAP initiative to work on the assessment of biodiversity loss. It can share the study that has been led in 2013 on the development of an indicator on biodiversity loss based on landscape features: cf. <a href="http://www.developpement-durable.gouv.fr/Analyse-d-un-indicateur.html">http://www.developpement-durable.gouv.fr/Analyse-d-un-indicateur.html</a> (in French language)</td>
</tr>
<tr>
<td>44</td>
<td>Original</td>
<td>Revised</td>
<td>3</td>
<td>1-14</td>
<td>2.1</td>
<td>TE</td>
<td>BASF -Schöner</td>
<td>It is explained which impact categories are included and what is the reasoning to exclude others. The impact category (abiotic) resource depletion (as also indicated in Figure 2) is not mentioned. When for example thinking about P use as fertilizer and as feed ingredient, this category is of significant relevance.</td>
<td>Include resource depletion (mineral, fossil; CML2002 model, in kg Sb equivalent) in the covered categories of this guidelines or include reasoning why this category is not included</td>
</tr>
<tr>
<td>45</td>
<td>Original</td>
<td>Revised</td>
<td>3</td>
<td>41913</td>
<td>2.1</td>
<td>GE</td>
<td>eC, IRE, IB; Sustainable Assessment &amp; Monitoring Agricultural Resources Units</td>
<td>Exclusion of relevant impact categories such as water use and others appears to be unjustified and not in line with e.g. the EnvIPond Protocol developed by key business representatives with support/input from EC, FAO, UNEP, and others. The same can be said for several other impact categories</td>
<td>The rationale for not including some impact categories was not based on the importance of that category in LCA, but rather on the pragmatic requirement of completing the guidance within the timeframe available. It has been stated that future revisions will be extended to include additional impact categories.</td>
</tr>
<tr>
<td>46</td>
<td>Original</td>
<td>Revised</td>
<td>3</td>
<td>41913</td>
<td>2.1</td>
<td>GE</td>
<td>eC, IRE, IB; Sustainable Assessment &amp; Monitoring Agricultural Resources Units</td>
<td>Some impact categories seem to be missing and of relevance, such as particulate matter. A cross-check with commonly considered/recommended indicators such as in the ILCD/PEF is recommended.</td>
<td>The rationale for not including some impact categories was not based on the importance of that category in LCA, but rather on the pragmatic requirement of completing the guidance within the timeframe available. It has been stated that future revisions will be extended to include additional impact categories.</td>
</tr>
<tr>
<td>47</td>
<td>Original</td>
<td>Revised</td>
<td>3</td>
<td>41826</td>
<td>2</td>
<td>GE</td>
<td>EC, IRE, IB; Sustainable Assessment &amp; Monitoring Agricultural Resources Units</td>
<td>The statement on “Agreement in the LCA community on the validity of the impact categorization model” (scientific consensus does not seem justified.</td>
<td>Accept</td>
</tr>
</tbody>
</table>

*Type of comment: Original, Revised

Response: Accept
Current LCA practice generally foresees a more holistic approach. Based on international practice and dialogue, the International Reference Life Cycle Data System (ILCD) facilitated by the European Commission provides recommendations for most of the impact categories considered in current LCA practice. These are also adopted in e.g. the EC’s PEF/OEF recommendations. These recommendations are operational and, as far as possible, reflect global average factors for generic assessments. We recommend cross-reference to such regional/international developments to help justify the selection of methods adopted. We recognize that several indicators require updating, where LEAP could refer to more recent developments, that indicators reflect different social/health/environment considerations, that they vary in terms of scope (pressures, risks, socio-economic,…), and that indicators considered in e.g. an agricultural context may not be readily available in LCA frameworks. A clearer distinction/justification of what would be mandatory vs what is recommendable would be beneficial with associated supporting justifications. Comment is valid but the list of impact categories is already broader than the initial scope of LEAP. Difficult to assess everything at once at global level. We can add references to EC’s PEF, JRC ILCD handbook.

The argument to separately report indirect/direct land-use change emissions based on the time when emissions occur is not in line with LCA practice. All emissions in an LCA inventory can occur at different times/locations. A distinction in terms of short-term vs long-term emissions may be justified, but must then be conducted in a coherent manner. We recommend to delete this reason, while maintaining a position of caution in relation to consensus and separate reporting. Accept. Delete the first reason and leave the second.

The guidelines highlight the impact categories that are covered and those that are left out. Abiotic resources, such as minerals and chemicals, were not included directly. An explanation for their absence was not included either. Figure 2 on page 7 shows the impact categories as well, but the list does not directly match the list on page 3. We recommend closer alignment of these two lists. Land use change is mentioned as an impact category as well, however, no temporal boundary is specified. ENVIFOOD uses the cut-off date of January 2008. Does the LEAP partnership offer guidance? The rationale for not including some impact categories was not based on the importance of that category in LCA, but rather on the pragmatic requirement of completing the guidance within the timeframe available. It has been stated that future revisions will be extended to include additional impact categories. Coordination of Figure 2 and Table 3 will be made.
<table>
<thead>
<tr>
<th>Number</th>
<th>Page no.</th>
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<th>Comment (justification for change of technical aspects must be supported by either scientific literature or technical documents)</th>
<th>Proposed change</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>51</td>
<td>Original</td>
<td>4</td>
<td>41699</td>
<td>2.2</td>
<td>GE</td>
<td>W.E.EMA</td>
<td>The choice of an attributional approach, providing &quot;a static representation of average conditions&quot; is in conflict with the target audience and application areas provided on page 2, line 9-14, the statement that LCA can be used as a decision support tool (page 6, line 14; page 10, line 7 and 20), as well as with the many references later in this document to ISO 14040/44 (which does not support an attributional approach). It is important to be aware that LCA is not the same as Environmental Performance Assessment (which is regulated in ISO 14031); see the Introduction to ISO 14040: &quot;LCA is one of several environmental management techniques (e.g. risk assessment, environmental performance evaluation, etc. ...), and might not be the most appropriate technique to use in all situations.&quot; The important difference is that Environmental Performance Assessment is made on an organization, i.e. a multifunctional activity. As soon as we wish to isolate one specific product from a multifunctional production system, LCA is required, and here the handling of co-products becomes crucial. A true accounting approach, with mass balances etc., is only possible for a multifunctional (unallocated) system, and thus not for an allocated, attributional product system. An attributional approach cannot say anything about the environmental performance of a product, only about the environmental performance of that part of the product system that is included according to the chosen allocation rules for by-products. This is why ISO 14040/44/49 recommends the use of system expansion to avoid allocation, and generally describes a consequential approach to system modeling. The main reason for this is that ISO 14040/44/49 is intended for supporting improvements, which requires LCAs that provides information on the consequences of these improvements. The main problem of choosing an attributional approach is that the results cannot be used for decision support regarding improvements of the analyzed systems, simply because the results do not reflect the environmental consequences of such improvements. The results will be misleading if they by mistake should anyway be used for decision-making. It does not seem wise for an international guideline to adopt a modeling approach that cannot be used for decision support.</td>
<td>Change to: &quot;These guidelines are generally based on the consequential approach to life cycle modelling. The approach refers to process-based modelling, intended to provide a static representation of the consequences of the production and/or consumption of an additional amount of product.&quot;</td>
<td>The Steering Committee has required that the guidelines be strictly attributional. This sets limitations to the use of the results for defining and estimating the impact of improvement options. There should be a disclaimer about this somewhere. If not, we have to strengthen the disclaimer. We respectfully disagree that the ISO 14044 does not support attributional approaches to LCA.</td>
</tr>
<tr>
<td>Number</td>
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</tr>
<tr>
<td>52</td>
<td>Original</td>
<td>Revised</td>
<td>4</td>
<td>4 to 8</td>
<td>Paragraph 2</td>
<td>GE</td>
<td>The French Ministry of Ecology, Sustainable development and Energy agrees that more environmental impact categories are needed to understand the wider environmental implications and to claim overall environmental superiority of some small ruminant production systems and products. Include other impact categories in the guidance would be a strong opportunity to have wider uses of the guidance.</td>
<td>Include additional impacts in the guidance using French and European experiences. It can be done quickly for impact categories where an impact categorization model is available and consensual at the European level: ecotoxicity, eutrophication, eventually water scarcity (water consumption including stress factors).</td>
<td>See comments above</td>
</tr>
<tr>
<td>53</td>
<td>Original</td>
<td>Revised</td>
<td>5</td>
<td>9-Oct</td>
<td>3</td>
<td>TE</td>
<td>Even the use in conjunction with the meat sector misses the information on the effects of the SFIs and the animal performance (cross-check with the LEAP Guidelines on poultry). The Guidelines on Feed focus on the 3 impact categories GWP, AP and EP, whilst the Guidelines for Poultry only consider GWP.</td>
<td>The LEAP animal feed guidelines are not intended to stand alone but are meant to be used in conjunction with the LEAP Animal Guidelines considering also the importance of animal performance on the farm level.</td>
<td>We refer to discussion of the SC. No change in text.</td>
</tr>
<tr>
<td>54</td>
<td>Original</td>
<td>Revised</td>
<td>7</td>
<td>Dec-13</td>
<td>4</td>
<td>TE</td>
<td>Impact categories are not in line with the Guidelines on Poultry. These downstream guidelines should be adapted accordingly.</td>
<td>The rationale for not including some impact categories was not based on the importance of that category in LCA, but rather on the pragmatic requirement of completing the guidance within the timeframe available. It has been stated that future revisions will be extended to include additional impact categories.</td>
<td>The LEAP animal feed guidelines are not intended to stand alone but are meant to be used in conjunction with the LEAP Animal Guidelines considering also the importance of animal performance on the farm level.</td>
</tr>
<tr>
<td>55</td>
<td>Original</td>
<td>Revised</td>
<td>8</td>
<td>1</td>
<td>4.2</td>
<td>TE</td>
<td>It may be typical to limit the assessment to natural resources, but the purpose of these guidelines should not be to perpetuate such a limited understanding.</td>
<td>It is not explicit, but a clear requirement for inclusion due to the requirement of primary data for the foreground.</td>
<td>We refer to discussion of the SC. No change in text.</td>
</tr>
<tr>
<td>56</td>
<td>Original</td>
<td>Revised</td>
<td>8</td>
<td>4.3</td>
<td>TE</td>
<td>BASF-Schöner</td>
<td>Six reference documents (ISO 14040, 14044, 14025, 14087, GHG Protocol, PAS 2060) are mentioned in the guidelines. What is missing in our opinion is the relationship of this LEAP guideline with the PEF by the EC. PEF has a European focus, but as we live in a global economy this is the reference document that currently receives the greatest attention globally and drives the market. As LCA practitioners follow developments around the PEF, and this LEAP guidance is intended for those practitioners the link between the two is inevitable.</td>
<td>The rationale for not including some impact categories was not based on the importance of that category in LCA, but rather on the pragmatic requirement of completing the guidance within the timeframe available. It has been stated that future revisions will be extended to include additional impact categories.</td>
<td>Reference to PEF has been made as a non-normative standard.</td>
</tr>
<tr>
<td>Number</td>
<td>Page no.</td>
<td>Line no.</td>
<td>Type of comment*</td>
<td>Stakeholders</td>
<td>Document</td>
<td>Proposed change</td>
<td>Response</td>
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<tr>
<td>57</td>
<td>Original</td>
<td>8 to 9</td>
<td>GE</td>
<td>French Ministry of Ecology, Sustainable Development and Energy</td>
<td>The French document BPX-30-323 and its declinations in the food sector (food products in general, dairy products, coffee). Established by the multi-stakeholders platform ADEME-AFNOR, is also a normative document that may ease assessing environmental footprint of feed products. It is in line with ISO standards.</td>
<td>Add French document BPX-30-323 and its declinations in the food sector to the normative documents listed. See them in attached file.</td>
<td>Accept. But it is a document for inspiration, not a normative reference.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>Original</td>
<td>12-15</td>
<td>GE</td>
<td>BASF-Schöner</td>
<td>According to this paragraph on page 12, the sector-specific guidelines for small ruminants and poultry may also be referred to as PCRs or PEFCRs. At the same time on page 3 (lines 31-33) of all 3 documents posted for review it says &quot;A more strict prescription on the methodology, including allocation and acceptable data sources, is required for product labelling or comparative performance claims. Users are referred to ISO 14025 for more information and guidance on comparative claims of environmental performance.&quot; Often PCRs or PEFCRs are positioned with the goal to achieve comparable results (if they actually achieve this is a different story). Example of positioning PCRs and PEFCR around comparability: &quot;This PEF Guide is not intended to directly support comparisons or comparative assertions (i.e. claims of overall superiority or equivalence of the environmental performance of one product compared to another (based on ISO 14040:2006)). Such comparisons require the development of additional PEFCRs...&quot;</td>
<td>Clarify language around relationship/referring to the sector-specific guidelines as PCRs and PEFCRs</td>
<td>Response to be formulated in relation to other comments.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>Original</td>
<td>p 12</td>
<td>GE</td>
<td>IDELE</td>
<td>A comment could be added about how those guidelines are connected, or complete, others (ISO, ILCD, EnviFood, PEF...)</td>
<td>please add a comment</td>
<td>we could add a figure explaining relationship between the various guidances</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Although the Product Environmental Footprint (PEF) guide has a European focus, in the global economy, it is the reference document that currently receives the greatest attention and drives significant market share. It would therefore be helpful to include how LEAP may (or may not) fit into a PEF. LEAP says sector-specific guidelines can provide "a common basis from which to evaluate resource use and environmental impacts." The sector-specific guidelines can also be referred to as Product Environmental Footprint Category Rules (PEFCRs). The PEF was "not intended to directly support comparisons or comparative assertions... such comparisons require the development of additional PEFCRs..." (Page 9, http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013H0179&from=EN). Because the LEAP guidelines refer to sector-specific guidelines as PEFCRs and the PEF suggests PEFCRs are needed to make comparisons, it would seem comparisons are now possible. However, this is not the case. On page 3 (lines 32 and 33) in each of the sector-specific guidelines (and the LEAP guidelines), it reads, "A more strict prescription on the methodology, including allocation and acceptable data sources is required for product labelling or comparative performance claims." Therefore, comparison claims are inappropriate. Perhaps the LEAP guidelines should not refer to the poultry and small ruminant sector-specific guidelines as PEFCRs if PEF says you need PEFCRs to make comparisons. AFIA members have, in general, expressed concern that the LEAP guidelines will be used to make direct comparisons that are not appropriate.

We should also explain that the LEAP Guidelines are at the same time "above" and "below" the PEF in the hierarchy of methodology. Above because it is less prescriptive than the PEF, and below because it is sector specific whereas the PEF is horizontal. At some place, we should add a qualifier stating that Feed guidelines should not be used for comparative assertions.

Need to check poultry/ruminant for PEFCR

Agribalyse project contains full LCI studies related to some (ingredients of) feed products: silage maize, grain maize, alfalfa (several LCI depending on the on the system of farming), rapeseed, System boundary: cradle-to-farm-gate Functional unit: kg of dry matter for silage maize, kg of raw matter otherwise -Allocation, shared inputs: - machinery and equipment: time of use - manure and organic nitrogen: according to the model Agribalyse -Environmental impacts: GHG emissions, eco-toxicity, eutrophication, water consumption Add Agribalyse and its LCI studies on feed products in appendix 1. Accept.
63 Original Revised 13 1 5.2 GE USAI/F Consultants Inc. There is a notable lack of North American input into the process.

64 Original Revised 14 2 6.1 TE USAI/F Consultants Inc. The comment that there has been an increase in demand for animal feed is not true for North America. Shifting diets to poultry from beef is capping feed demand.

65 Original Revised 14 10 6.1 TE USAI/F Consultants Inc. Ruminants in North America consume very large quantities of grains and protein concentrates in finishing feedlots.

66 Original Revised 14 7 6.1 TE WEIDEMA "depends on" is a strong assertion that is not justified. Change "depends on" to "is supplied by".

67 Original Revised 14 7-Sep 6 6.1 GE FFF/FEFANA The animal feed sector especially for discussing environmental performance cannot exclude to SFIs industry. The animal feed sector depends on a number of sources for feed material including the crop production sector and the specialty feed ingredients, the food industry, products deriving from the slaughter and processing of livestock, the marine industry, and biofuels. We do not give guidelines for the SFIs that is why these are not mentioned here.

68 Original Revised 15 3 6.1 TE Alexandre Berndt Need better description of "crop residue". According to Figure 3, crop residues are the second larger source of feed, but there is a wide range of residues that can be used by ruminants. A better description is necessary. Are cottonseed, citrus pulp, sugarcane bagasse co-products or residues?

69 Original Revised 15 21 6 6.1 GE Antibiotics should not be listed in a way of "regular" feed components for large scale concentrated livestock production. Antibiotics are only used in case of diseases as veterinary measurements, which might also necessary in extensive production systems in case of infections. Delete the mentioning of antibiotics.

70 Original Revised 16 5-6 6.2 TE CEFS Globally, GHG emissions from the production, processing and transport of feed account for about 45% of sector emissions. Please add a reference to this phrase otherwise consider removing.

71 Original Revised 16 28 28 TE CEFS "In other situations, residues from industrial processes such as sugar production, biofuel production, vegetable and fruit processing may be used as feed after further processing". Feed produced from parts of the raw material within sugar, starch or ethanol industry is produced on purpose, i.e., this material flows are either feed co-product from these industries or a co-product from these industries from which a third party produces feed. Be aware that this material flows have to fulfill a product specification otherwise one would not be possible to produce safe feed from them.

Noted. There was a North American chair of LEAP and a member in the TAG.

Decline. In general, the statement is correct. No detailed information needed. We only can mention that regional differences exist.

see previous comment.

Accept.

Delete example sugar and biofuel production. Decline. There is nothing wrong in the sentence. The point of "further processing" is to ensure these specifications are met. Commenting on the processing is beyond the scope of these guidelines.
<table>
<thead>
<tr>
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<th>Chapter no./ annex</th>
<th>Paragraph/figure/table/notes (e.g. table 1)</th>
<th>Type of comment*</th>
<th>Stakeholders</th>
<th>Comment (justification for change of technical aspects must be supported by either scientific literature or technical documents)</th>
<th>Proposed change</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>72</td>
<td>Original</td>
<td>Revised</td>
<td>16</td>
<td>4</td>
<td>6</td>
<td>GE</td>
<td>As mentioned above, other substances might be depleted, such as phosphate. Why aren’t they taken into account?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>73</td>
<td>Original</td>
<td>Revised</td>
<td>16</td>
<td>41919</td>
<td>6.2</td>
<td>TE</td>
<td>WEIDEMA The numbers provided here are derived with a particular allocation method and can therefore not be said to be generally valid. Prudence in presentation is warranted.</td>
<td>Add &quot;; when delimiting the average supply chains with a combination of different allocation methods&quot; before the first reference</td>
<td>Decline. Assumptions and delimitations always affect the results. This is always the case in studies.</td>
</tr>
<tr>
<td>75</td>
<td>Original</td>
<td>Revised</td>
<td>16</td>
<td>24</td>
<td>6.2</td>
<td>TE</td>
<td>Teagasc &quot;Feed links livestock to land use both directly via grazing and indirectly via traded feedstuffs.&quot; There seems to be no link between diet quality and this effect on the return of nutrients.</td>
<td>Add at the beginning of the paragraph: &quot;In an attributional study, using a combination of different allocation methods, it was found that...&quot;</td>
<td>Decline. Assumptions and delimitations always affect the results. This is always the case in studies.</td>
</tr>
<tr>
<td>76</td>
<td>Original</td>
<td>Revised</td>
<td>16</td>
<td>18</td>
<td>6.2</td>
<td>GE</td>
<td>DANISHI ALI Lots of kWhs are consumed to withdraw groundwater for irrigation in arid regions. So electricity generation can be the major source of CO2 emission in some places. For more details see:</td>
<td>Add electricity generation. Also I would suggest to somehow guide reader about the method of calculating emissions from electricity generation</td>
<td>This is a good suggestion, but we can only speak in general wording, because data on the use of irrigation water is limited</td>
</tr>
<tr>
<td>77</td>
<td>Original</td>
<td>Revised</td>
<td>17</td>
<td>1-May</td>
<td>6.1</td>
<td>TE</td>
<td>IFIF/FEFANA This is an effect that is often cited. But are there also figures available that demonstrate this assumption?</td>
<td>If possible, a more precise description</td>
<td>The C sequestration can be supported by references. We will do this. We can add some sentences to give an impression whether the C sequestration can compensate methane or not. Set maximum C sequestration at 1600 kg C (with N surplus is 300 kg/ha and C:N ratio is 15). This is equivalent to 73 kg of methane (GWP=25). Grass production is about 12 tons, which is enough to feed 2 cows. These two cows produce about 2 * 125 = 250 kg of methane.</td>
</tr>
</tbody>
</table>

The rationale for not including some impact categories was not based on the importance of that category in LCA, but rather on the pragmatic requirement of completing the guidance within the timeframe available. It has been stated that future revisions will be extended to include additional impact categories.
78 Original

19 6-Jul

19 7.1

Original

Fig. 1

GE

IIFF/FEFANA

In this paragraph, it is mentioned that feed additives are considered as feed in these guidelines. Refer to remark on the definition of feed in the glossary.

Proposed change

Response

See cell 518. Feed additives are considered as feed, but we do not provide guidelines in the report.

79 Original

19 18-22

7 7.1

Original

GE

IIFF/FEFANA

The contribution of SFIs to the ecological burden of a feed might be high, but not even significant. But the net impact will be rather small due to the very significant improvement of animal performance in livestock production and thus for the overall environmental performance.

The link to the feed additives sector here is exactly correct and should be supported by using the SFIS-study as a reference.

Proposed change

Response

Can the reviewer provide this reference? The study has to be publicly available.

80 Original

19 21

7.1

GE

Teagasc

Feed additives must be included in this document as they can be relevant for some systems and not relevant at all for other systems. Not including the additives will result in an underestimation of emissions.

Include all feed additives

Proposed change

Response

Decline. We have been clear about the importance of additives but we stated that we do not provide guidelines, as this is still under construction. Maybe have a look at the wording, it seems not clear to some readers.

81 Original

19 27-28

7 7.1

Original

TE

IIFF/FEFANA

See the comments above and the link to SFIs.

Proposed change

Response

What do the reviewers mean?

82 Original

20 20

7.2

Box 1

Original

GE

Alexandre Berndt

Complete ration can also be called Total Mixed Ration - TMR

Proposed change

Response

Accept.

83 Original

20 7

7.2

Box 1

Original

GE

[S&T]2 Consultants Inc.

Five stages are presented

Proposed change

Response

Accept.

84 Original

20 16

7.2

Box 1

Original

GE

[S&T]2 Consultants Inc.

Should this be Compounding stage to be more consistent with the following figures and boxes?

"Feed mill" is a common term in use already for a long time.

Proposed change

Response

Indeed, has to be transport and trade.

85 Original

20 Box 1

Original

TE

[S&T]2 Consultants Inc.

Should this be transport and trade instead of Transport and Storage? This will be consistent with other parts of document.

Proposed change

Response

We can give the four stages another color in the figure.

86 Original

21 4

Original

GE

CEFS

Sugar beet pulp drying is often done in an integrated way of sugar production and are therefore no example for "avoiding allocation" by sub-division of system.

Delete phrase on beet sugar pulp drying

Proposed change

Response

Decline. When sugar pulp drying can be divided in the sugar plant, this is a good and useful option.

87 Original

21 12

7.2

2

Original

GE

Teagasc

Grazing systems can be both intensive and extensive

Proposed change

Response

Decline. We suggest to leave the word "extensive" out.

88 Original

21 Figure 4

Original

GE

[S&T]2 Consultants Inc.

Can the 4 main stages be delineated in this figure?

Proposed change

Response

We can give the four stages another color in the figure.
<table>
<thead>
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</thead>
<tbody>
<tr>
<td>91</td>
<td>Original</td>
<td>Revise</td>
<td>23</td>
<td>7.2</td>
<td>TE</td>
<td>WEIDEMA</td>
<td>Box 2 describes the use of cassava leaves and peel as by-products from the production of cassava for food. The description provides a misleading representation of what the cassava by-products represent in a feed ration, since the amount of cassava cannot be independently changed, since it depends on the supply from the food product. In a consequential model these activities would belong to the food production, not to the feed supply chain. A consequential model would take its starting point in the energy and protein content of the two by-products and consider the amount of energy and protein feeds from the market that these two by-products should be represented by. This would be independent of the production route, and would thus show a much simpler picture than the current. An interesting aspect that is missing in the current description (also in Box 3) is that when the by-products are not fully utilized, they contribute no additional environmental burden when used as an input.</td>
<td>Rewrite the text in Box 2 to represent the consequential modeling.</td>
<td>Decline. We are not performing consequential analysis.</td>
</tr>
<tr>
<td>93</td>
<td>Original</td>
<td>Revise</td>
<td>25, 26</td>
<td>8.2-8.3</td>
<td>GE</td>
<td>IDELE</td>
<td>No detail is given here on how to determine the &quot;functional unit&quot; for feed.</td>
<td>It could be useful to explain the difference with the reference flow.</td>
<td>Indeed, and that is explicitly meant to be that way.</td>
</tr>
<tr>
<td>94</td>
<td>Original</td>
<td>Revise</td>
<td>25</td>
<td>May-28</td>
<td>8</td>
<td>GE</td>
<td>These sentences should not only explain the opportunities of the LCA methodology to identify the ecological footprint and the burdens of products and/or systems but also to show the benefits of products and systems for the environment. It is not in the focus of the guidelines to make comparisons, but these ones allow identifying solutions for environmental improvement.</td>
<td>It is right to mention, that the guidelines and the tools should not be used for labelling purposes since this is a real commercial topic.</td>
<td>So, we don't need to change anything?</td>
</tr>
<tr>
<td>95</td>
<td>Original</td>
<td>Revise</td>
<td>26</td>
<td>Jan-00</td>
<td>8.3</td>
<td>GE</td>
<td>Reword, &quot;LEAP Poultry and Small Ruminants Guidelines to LEAP Poultry, small ruminants and large ruminants Guidelines&quot;</td>
<td>Reword</td>
<td>Accept, but LR Guidelines are not available yet.</td>
</tr>
<tr>
<td>Number</td>
<td>Page no.</td>
<td>Line no.</td>
<td>Chapter no.</td>
<td>Type of comment</td>
<td>Stakeholders</td>
<td>Comment</td>
<td>Proposed change</td>
<td>Response</td>
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<td></td>
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<tr>
<td>96</td>
<td>Original</td>
<td>26</td>
<td>13</td>
<td>8.3</td>
<td>TE</td>
<td>UA&amp;TA Consultants Inc.</td>
<td><em>Preferably shall</em> in not an acceptable term.</td>
<td>This is a recommendation so the term must be <em>should</em></td>
<td>Accept.</td>
</tr>
<tr>
<td>97</td>
<td>Original</td>
<td>26</td>
<td>17-24</td>
<td>8.3</td>
<td>GE</td>
<td>[SA&amp;TA Consultants Inc.</td>
<td>These two paragraphs relate to animal production which is covered in the other documents and not to feed production.</td>
<td>Remove the paragraphs.</td>
<td>Decline. These paragraphs have been added to assess yield not as kg per ha, but as grazing time per animal, where feed intake assessment will help to indirectly assess the yield per hectare.</td>
</tr>
<tr>
<td>98</td>
<td>Original</td>
<td>26</td>
<td>10-Nov-8</td>
<td>8.3</td>
<td>TE</td>
<td>IIFF/FEPANA Consultants Inc.</td>
<td>The minimum requirements to set up the characteristics of the feed are too limited. At least the amino acid to energy ratio should be fixed as well. Otherwise the different feed does not show the equivalence in functionality.</td>
<td>Add a section on defining the functional unit, e.g. based on EP Weidema, H Wenzel, C Petersen, K Hansen (2004): The product, functional unit and reference flows in LCA. København: Miljøstyrelsen. (Environmental News 70), with sufficient real life examples for feed markets with different obligatory feed properties, cf. Appendix 2.</td>
<td>Decline. The mentioned ratio can be calculated from the requirements. The purpose of these guidelines is not to ensure a feed is formulated to meet an animal’s needs, but rather to ensure that the quantities which are consumed are fully accounted. Determining that feeds compared are equivalent is the role of the practitioner in defining their functional unit. We do not consider a “real” functional unit since feed is an intermediate product, we stick to the reference flow added a reference to Weidema as in the other guidelines.</td>
</tr>
<tr>
<td>99</td>
<td>Original</td>
<td>26</td>
<td>8.3</td>
<td>GE</td>
<td>WEIDEMA</td>
<td>While the reference flow is described, the document does not contain any description of how to define the functional unit, although this is probably one of the most difficult and error-prone tasks in an LCA, and one of the few tasks where product-specific guideline is warranted.</td>
<td>Gross energy is normally understood as higher heating value. Also, whenever using kg, specify whether dry or wet.</td>
<td>Specify the term gross energy in accordance with normal usage or note clearly if deviating</td>
<td>Accept. Propose to add the following definition to the glossary (source feedipedia): Gross energy (or heat of combustion) is measured as the energy released as heat when a compound undergoes complete combustion with oxygen in a bomb calorimeter. It can be predicted relatively accurately from the chemical composition. Often abbreviated as GE.</td>
</tr>
<tr>
<td>100</td>
<td>Original</td>
<td>26</td>
<td>11</td>
<td>8.3</td>
<td>TE</td>
<td>WEIDEMA</td>
<td>Gross energy is normally understood as higher heating value. Also, whenever using kg, specify whether dry or wet.</td>
<td>Gross energy is normally understood as higher heating value. Also, whenever using kg, specify whether dry or wet.</td>
<td>For economic allocation of factory prices are needed (ILCD 2010). A brief description will be provided by Hans Blonk.</td>
</tr>
<tr>
<td>101</td>
<td>Original</td>
<td>27</td>
<td>9-11</td>
<td>8.4.1</td>
<td>TE</td>
<td>WEIDEMA</td>
<td>The text in line 9-10: “all the stages ranging from raw material extraction to the point at which the functional unit is produced” is not consistent with the inclusion of “consumption and final disposal” in line 11.</td>
<td>Make a clear distinction between the description of a full LCA (not in this guideline) and the modular “from cradle-to-the-animal’s mouth” announced in Chapter 7.2. Thus, delete the words “consumption and final disposal”.</td>
<td>For economic allocation of factory prices are needed (ILCD 2010). A brief description will be provided by Hans Blonk.</td>
</tr>
<tr>
<td>102</td>
<td>Original</td>
<td>27</td>
<td>24</td>
<td>8.4.2</td>
<td>TE</td>
<td>WEIDEMA</td>
<td>It is confusing to mention also co-products (dairy and slaughter products, fish from aquaculture), which do not have a “feed production stage” relevant to this guideline.</td>
<td>Delete the words in brackets (and the brackets)</td>
<td>Decline, this is exactly what we mean with the products of animal origin. And indeed, they don’t have a feed production stage, but they need to enter this feed chain.</td>
</tr>
</tbody>
</table>

**Notes:**
- **Original** refers to the original document.
- **Revised** refers to the revised document.
- **Type of comment** indicates the type of comment or change.
- **Stakeholders** indicate the stakeholders involved in the comment.
- **Comment** provides the detail of the comment or change.
- **Proposed change** outlines the proposed changes.
- **Response** indicates the response to the comment or change.
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</thead>
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<tr>
<td>103</td>
<td>Original</td>
<td>Revised</td>
<td>27</td>
<td>28-30</td>
<td>8.4.2</td>
<td>TE</td>
<td>WE/DEMA</td>
<td>The time boundary is equally relevant, disregarding whether the production cycle is 1, 2 or 3 per year (or any other number). What is relevant is how to consistently determine the boundary between two cropping cycles (including necessary fallow periods before or after a crop)</td>
<td>Delete the sentence. Consider adding instead (and to Chapter 8.4.9) a sentence describing how to determine the temporal boundary between two subsequent crops with an intermittent fallow period.</td>
<td>Indeed, it is equally relevant. Sentence can be deleted. For clarity, we can add: For multiple harvests per year of the same crop, it can be decided to set the time boundary between two consecutive growing seasons (years), but when the user wants to go into more detail, it can be considered that the time boundary is set between two production cycles of the same crop. Then the boundary will be set at the moment when the crop or harvest (of the same crop) has been removed and activities for the new crop or harvest (of the same crop) will start. All emissions related to activities for or residues of the previous crop or harvest will be allocated to that previous crop or harvest. More details about time boundaries are given in chapter 8.4.9.</td>
</tr>
<tr>
<td>104</td>
<td>Original</td>
<td>Revised</td>
<td>27</td>
<td>23-24</td>
<td></td>
<td>TE</td>
<td>ELC, IMC, Ebs, Sustainable Assessment &amp; Monitoring Agricultural Resources Units</td>
<td>The ‘time boundary’ is not really clear to me. Isn’t the link to the production cycle true for every LCA? The distinction between different cuts makes only sense if there are significant differences in the impacts of the grass depending on the season; even then the life of the grass leaves the grassland and thus such differences do not need a time boundary for being captured? In section 8.4.9 this is explained but I don’t think that the term ‘time boundary’ is appropriate. The fact that the point in time is very important and needs to be stressed, but it does not impose boundaries.</td>
<td>Explain better or re-consider.</td>
<td>See text above</td>
</tr>
<tr>
<td>105</td>
<td>Original</td>
<td>Revised</td>
<td>27</td>
<td>27, 28</td>
<td>8.4.2</td>
<td>TE</td>
<td>IDELE</td>
<td>This paragraph should include a cross-reference to 8.4.9, which deals with time boundary.</td>
<td>Please add the reference</td>
<td>We have made a cross reference</td>
</tr>
<tr>
<td>106</td>
<td>Original</td>
<td>Revised</td>
<td>27</td>
<td>24</td>
<td>8.4.2</td>
<td>GE</td>
<td>IFIF/FEFANA</td>
<td>The feed production stage encompasses plant-based materials via crop cultivation and non-plant materials mainly of animal origin (dairy and slaughter products, co-products of dairy production and slaughtering systems), fish from aquaculture and wild catch and co-products from fish processing, and of non-biogenic origin.</td>
<td>No change. We already distinguish co-products and waste streams. Waste has the intention to be discarded to a landfill or another treatment, but is not considered to be used as feed anymore.</td>
<td>We have made a cross reference</td>
</tr>
</tbody>
</table>
When considering the feed, production efficiency seems to be in the focus. This includes also considering the production waste since there is still a significant potential for improvement through harvesting and storage. Why are production wastes at this stage excluded?

Production wastes should be included. We recommend to make a mass balance of incoming and outgoing products, waste is on that sheet. So, they are included. When production plants are able to utilize the waste, we will see this on the mass balance sheet.

A comment had to be added here to specify if the different Drafts are always in accordance or if some differences appear and why. i.e. this Feed guideline recommend to use economic allocation to upstream materials, including animal co-products, but Small ruminants guidelines recommend to use Fat + protein to allocate impacts at dairy processing gate; this affects whey, which is used in animal feeding. So there is here an inconsistency.

This is correct, we can solve this by asking the small ruminants TAG to add the option to apply other allocation options.

The upstream boundaries are not described as a line, but as a production process (which is not a boundary), in contrast to the downstream boundaries that are clearly defined as points of delivery. What is relevant here is to define the nature of the substances that cross the system boundary.

Change upstream boundaries from "Production of inputs, including the extraction of raw materials" to "Inputs from unmanaged nature, measured in such a way that that the system maintains mass balance, i.e. including all materials represented in the system outputs."

The discussed text is required to make clear to people from the livestock side where grazing belongs.

Delete the paragraph. Decline. This can be very clear to the reviewer, but might help others.

Linkage between feed quality and the animal needs to be created to ensure that all components are accurately modelled. This is correct and already be mentioned in the introduction section.

Technically speaking, the reviewer is right, but this has been a discussion between the animal and the feed TAGs, where to put the grazing. It has been decided to put this in the feed guidelines, as it is feed. The discussed text is required to make clear to people from the livestock side where grazing belongs.

The missing link of animal performance and the further considering of SIFIs should be mentioned at least in a footnote. This will be mentioned in the introduction section of the feed guidelines. Here we work with the system boundaries of the feed chain.
<table>
<thead>
<tr>
<th>Number</th>
<th>Page no.</th>
<th>Line no.</th>
<th>Chapter/annex</th>
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<th>Type of comment*</th>
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<th>Comment (justification for change of technical aspects must be supported by either scientific literature or technical documents)</th>
<th>Proposed change</th>
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<tbody>
<tr>
<td>115</td>
<td>Original</td>
<td>Revised</td>
<td>31</td>
<td>26-28</td>
<td>8.4.7</td>
<td>GE/TE</td>
<td>Not only inputs of all activities should be implemented, but also all outputs especially when they are positive for the environment</td>
<td>A Feed LCAs should also include all emissions associated with land use and land use change. All emissions directly related to inputs, outputs and activities in the feed production chain stages shall be included, irrespectively of their location.</td>
<td>Deny, the suggested text is already in the line before.</td>
</tr>
<tr>
<td>116</td>
<td>Original</td>
<td>Revised</td>
<td>31</td>
<td>23</td>
<td>8.4.7</td>
<td>TE</td>
<td>Why is economic and social suddenly included here, when they are otherwise excluded from the scope of these guidelines (page 2, line 29)?</td>
<td>“...economic and social”</td>
<td>Accept.</td>
</tr>
<tr>
<td>117</td>
<td>Original</td>
<td>Revised</td>
<td>31</td>
<td>22</td>
<td>8.4.7</td>
<td>TE</td>
<td>Why economic and social impacts are here mentioned?</td>
<td>Please clarify or delete</td>
<td>See line above</td>
</tr>
<tr>
<td>118</td>
<td>Original</td>
<td>Revised</td>
<td>32</td>
<td>27</td>
<td>8.4.9</td>
<td>GE</td>
<td>Reference Section 11.2 on page 32 in addition to Section 9. The text on page 32 mentions that allocation methods to address inputs/outputs over a full crop rotation will be addressed in the section on allocation. Section 11.2 addresses this same topic in a cleaner and more direct manner, and should be referenced.</td>
<td>“Section 9 on allocation and section 11.2 on cultivation deal with how to…”</td>
<td>Accept.</td>
</tr>
<tr>
<td>120</td>
<td>Original</td>
<td>Revised</td>
<td>32</td>
<td>2-9</td>
<td>8.4.8</td>
<td>TE</td>
<td>In a system of 160 activities, which is not unusual, a cut-off of 1% for each unit process will lead to a completeness below 50% at the system level. This is not what is intended in ISO 14044. The cut-off requirement should apply at the systems level. However, cut-offs are generally unnecessary with the currently available complete databases. If data are unavailable, they are best estimated with the average environmental performance of a similar or average input.</td>
<td>Inputs for which data are not readily available shall not be excluded, but shall be included with a best estimate, e.g. as an average input of a similar or average input.</td>
<td>Accept.</td>
</tr>
<tr>
<td>121</td>
<td>Original</td>
<td>Revised</td>
<td>32</td>
<td>25</td>
<td>8.4.9</td>
<td>TE</td>
<td>The definition of a “production cycle” or crop rotation should probably specify if it begins at harvest of the previous crop, or at seeding, etc. In the AgriBayes program the assessment period is generally harvest to harvest, or 1 year for the grasslands. See the Methodological report page 33 here: <a href="http://www2.ademe.fr/servlet/KBaseShow?sort=-1&amp;cid=96&amp;m=3&amp;catid=25661">http://www2.ademe.fr/servlet/KBaseShow?sort=-1&amp;cid=96&amp;m=3&amp;catid=25661</a></td>
<td>Using 1 year for grassland is not correct as there are large differences in inputs, yield and quality over the year.</td>
<td>Accept.</td>
</tr>
<tr>
<td>122</td>
<td>Original</td>
<td>Revised</td>
<td>32</td>
<td>13</td>
<td>8.4.9</td>
<td>GE</td>
<td>It is not clear how this paragraph will relate to grazed grass.</td>
<td>Can this be expanded to make it more clear.</td>
<td>Will be elaborated.</td>
</tr>
<tr>
<td>Number</td>
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<td>Line no.</td>
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<td>123</td>
<td>Original</td>
<td>Revised</td>
<td>33</td>
<td>1</td>
<td>8.4.3</td>
<td>1</td>
<td>GE</td>
<td>Teagasc</td>
<td>The statement longer period is ambiguous. An example range should be given.</td>
</tr>
<tr>
<td>124</td>
<td>Original</td>
<td>Revised</td>
<td>33</td>
<td>5-10</td>
<td>8.4.10</td>
<td>TE</td>
<td>WIDEIMA</td>
<td>Considers simplifying by making it a general requirement to include capital goods, i.e. deleting the section except the last 6 words.</td>
<td>Delete.</td>
</tr>
<tr>
<td>125</td>
<td>Original</td>
<td>Revised</td>
<td>33</td>
<td>18</td>
<td>8.4.12</td>
<td>TE</td>
<td>WIDEIMA</td>
<td>The reader cannot be expected to know what the PAS 2050 approach is. Describe instead the recommended approach.</td>
<td>Where not arising from land use change (5.5), changes in the carbon content of soils including both emissions and removals shall be excluded from the assessment of GHS emissions under this guidance. PAS can be added as a footnote.</td>
</tr>
<tr>
<td>126</td>
<td>Original</td>
<td>Revised</td>
<td>33</td>
<td>19-22</td>
<td>8.4.12</td>
<td>TE</td>
<td>WIDEIMA</td>
<td>It appears an unnecessary complication to have different recommendations/requirements for applications that involve alternate systems. Often a study that was first intended as stand-alone is later used in a comparison.</td>
<td>Consider simplifying by making it a general requirement to include capital goods, i.e. deleting the section except the last 6 words.</td>
</tr>
<tr>
<td>127</td>
<td>Original</td>
<td>Revised</td>
<td>33</td>
<td>17-22</td>
<td>8.4.12</td>
<td>TE</td>
<td>WIDEIMA</td>
<td>It is unclear what is suggested here under the heading of “delayed emissions”. It appears to be a suggestion to exclude biogenic carbon from the inventory. If so, this is likely to lead to confusion as to the accounting for biogenic methane, and will make it difficult to establish adequate mass balances.</td>
<td>Consider to apply instead the more consistent and generally accepted approach of ISO 14067. This can be covered by using the GWP for methane, adjusted for biogenic carbon.</td>
</tr>
<tr>
<td>128</td>
<td>Original</td>
<td>Revised</td>
<td>33</td>
<td>25-26</td>
<td>8.4.13</td>
<td>TE</td>
<td>WIDEIMA</td>
<td>It is unclear why it should be allowed to include “emissions in a process unrelated to the life cycle of the product” (quote from the definition of offsetting) under “additional information”. This opens up for adding any kind of irrelevant information under “additional information”. Rather, to avoid confusion, it may be relevant to state that it is allowed to include in the inventory “a reduction in GHS emissions associated with a process or product through the removal of, or preventing the release of, GHS emissions in a process related to the life cycle of the product”.</td>
<td>Delete second sentence. Consider adding instead: “However, if a reduction in GHS emissions associated with a process or product through the removal of, or preventing the release of, GHS emissions in a process related to the life cycle of the product, this shall be included in the inventory.” Accept. Change text to: “All emissions of biogenic carbon associated with the cultivation stage of products are assumed to occur etc.”</td>
</tr>
<tr>
<td>129</td>
<td>Original</td>
<td>Revised</td>
<td>33</td>
<td>5</td>
<td>8.4.10</td>
<td>TE</td>
<td>S&amp;T2 Consultants Inc.</td>
<td>The inclusion of the machinery adds complexity and will rely on secondary data. If this is kept the sentence should be simplified.</td>
<td>Used in cultivation which should instead be included in the life cycle inventory. This will be rephrased accordingly the comments of Weidema. See above.</td>
</tr>
<tr>
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<td>130</td>
<td>Original</td>
<td>Revised</td>
<td>34</td>
<td>4</td>
<td>8.5</td>
<td>GE</td>
<td>GE (S&amp;T)2 Consultants Inc.</td>
<td>Why not also include total energy demand as well as fossil energy demand? It provides more information about the sustainability of the system. Using fossil energy only can present a distorted impression of the actual energy efficiency. Sugar can ethanol is a good example, on a fossil energy basis it looks very good but on a total energy basis it is less efficient than corn ethanol.</td>
<td>Include GTP metric as a sensitivity measure</td>
</tr>
<tr>
<td>131</td>
<td>Original</td>
<td>Revised</td>
<td>35</td>
<td>1</td>
<td>8.5</td>
<td>TE</td>
<td>Teagasc.</td>
<td>The IPCC fifth assessment report also now provides Global Temperature potentials (Working group 1 chapter 8 Table 8.7). This may be the preferred metric in future given that it provides a more meaningful relationship with temperature change.</td>
<td>Include GTP metric as a sensitivity measure</td>
</tr>
<tr>
<td>132</td>
<td>Original</td>
<td>Revised</td>
<td>35</td>
<td>3</td>
<td>Table 3</td>
<td>GE</td>
<td>(S&amp;T)2 Consultants Inc.</td>
<td>The global marginal land use change should be removed. It is essentially a measure of indirect land use change for which the operator has no control.</td>
<td>Correct. We will change this.</td>
</tr>
<tr>
<td>133</td>
<td>Original</td>
<td>Revised</td>
<td>35</td>
<td>8.5</td>
<td>Table 3</td>
<td>TE</td>
<td>WEIDEMA</td>
<td>The inventory models for “Climate change from LUC” and the associated references belong in the inventory Chapter.</td>
<td>Move the inventory models for “Climate change from LUC” and the associated references to the inventory Chapter.</td>
</tr>
<tr>
<td>134</td>
<td>Original</td>
<td>Revised</td>
<td>35</td>
<td>8.5</td>
<td>Table 3</td>
<td>TE</td>
<td>WEIDEMA</td>
<td>For a general impact category as “Fossil energy demand” it is not relevant to use LHV (Lower Heating Value) of the raw materials, since the LHV depends on the specific combustion conditions (extent to which the reaction products are condensed and the heat used). The higher heating value is therefore less situation-dependent and more useful in a generic resource assessment. See also Frischknecht R, Heijungs R, Hofstetter P. (1998). Einstein’s lessons for energy accounting in LCA. Int. J. LCA 3(5):266 – 272.</td>
<td>Change “LHV” to “higher heating value”</td>
</tr>
<tr>
<td>135</td>
<td>Original</td>
<td>Revised</td>
<td>35</td>
<td>8.5</td>
<td>Table 3</td>
<td>TE</td>
<td>WEIDEMA</td>
<td>For acidification and eutrophication it does not seem wise to recommend different methods for different geographical parts of the inventory.</td>
<td>Recommend same method for all geographies.</td>
</tr>
</tbody>
</table>
In page 36, the principles described by ISO 14 046 regarding allocation for multi-functional processes are reminded. Nevertheless, going through the rest of the guidelines, we feel that these ISO principles are loosely interpreted in a way that could easily mislead any user of the guidelines, by disclosing the first steps in the ISO hierarchy for allocation, and suggesting that the last possibility in this ISO hierarchy would be best. We have observed, in the framework of our own research that physical allocation was possible to apply for our multi-functional processes and that economical allocation (applied in the framework of a sensitivity analysis) was not applicable in our case.

The overall proposal, that would apply to all comments proposed in the column (6), would be not to draw conclusions on the best allocation method for multi-functional processes in such guidelines. This would lead to major inconsistencies in rules defined for certain industries to perform LCA studies of their processes/products. Each and every sector/link in the supply chain should determine LCA rules for its products, as it knows best its processes, its products and its market. Trying to define rules in a bottom to top approach is not an option, as it would most of the time create inconsistencies between different outlets of a sector. Therefore, each link in the supply chain should determine the rules for LCA studies on its processes, to be applied by downstream sectors in a top to bottom approach.

There is a lack of regionalized impact assessment method for many parts of the world, for instance, impact categories like Acidification or Eutrophication. Is it possible to recommend some of the already existed Impact assessment methods for certain regions or countries which don’t have their own assessment method? For example, which impact assessment method is better to assess acidification potentials of a process in a semi-arid region like Tehran? Most of the methods are developed for temperate regions of the world like Europe or Japan.

It is not feasible to develop such a recommendation. We can only mention its in general terms.

For economic allocation, factory prices are needed (ILCD 2010). A brief description will be provided by Hans Blonk.

See also comment on Glossary.

The reviewer has a reasonable point, but this is a governance item. We give priority to product (feed) consistency over process consistency. This is in line with ISO. Hence not leading to changes in the current text.

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<th>Proposed change</th>
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<tbody>
<tr>
<td>143</td>
<td>Original</td>
<td>Revised</td>
<td>37</td>
<td>18-24</td>
<td>9.2 a)</td>
<td>TE</td>
<td>WEIDEMA The division into 3 “steps” is unnecessarily complicated and leads to a duplication of identical decision boxes in step 2 and 3 in Figure 7. Essentially, only two “steps” can be identified from the description: 1) A division of the farm/factory into separate production units; 2) A procedure for the co-products from each production unit. To avoid confusion, the term “step” in this context should only be used about the ISO procedure, not about the “steps” (boxes) in Figure 7.</td>
<td>Change to: “A farm or a factory may subdivided into several individual production units that can be described as physically independent operations, each producing one or more co-products. Examples are the crop fields in an arable farm, or the production lines in a factory. The ISO stepwise procedure is applied at the level of such production units. Thus, before application of the ISO stepwise procedure, the farm/factory is subdivided into production units (Figure 7). This corresponds to an initial application of the ISO step 1a: avoid allocation by subdivision (Box 1, Figure 7).”</td>
<td>see above</td>
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<td>We will use the word “stage” as an alternative.</td>
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</tr>
<tr>
<td>145</td>
<td>Original</td>
<td>Revised</td>
<td>37</td>
<td>26-27</td>
<td>9.2 a)</td>
<td>TE</td>
<td>WEIDEMA Cf. the ISO quote on p. 36, line 26-27, it is not the status of the co-products that needs to be defined more precisely, but the nature of the outputs: Are they wastes or co-products? The distinction between residues and wastes is an unnecessary complication. The original ISO text is cleaner and could be applied directly. However, when allocation is generally avoided, it is an unnecessary requirement to divide product outputs in co-products or wastes, since this has no implications for the calculations. The text could therefore also be completely removed.</td>
<td>Delete or change to: “Furthermore, the status of the outputs needs to be defined more precisely. Some outputs may be partly co-products and partly waste. In such cases, it is necessary to identify the ratio between co-products and waste since the inputs and outputs shall be allocated to the co-products alone.”</td>
<td>Accept.</td>
</tr>
<tr>
<td>146</td>
<td>Original</td>
<td>Revised</td>
<td>37</td>
<td>27-29</td>
<td>9.2 a)</td>
<td>TE</td>
<td>WEIDEMA There is no need to resort to economic allocation, and even if there were, the grouping of co-products is an optional procedure that is only relevant for co-products that have identical functional units and no significant differences in downstream application, not when they are supplying separate markets with separate functional units and/or have differences in the downstream lifecycle. What is relevant here, and not only for economic allocation, is the identification of the market that is supplied by each co-product, and the functional unit of the product on this market.</td>
<td>Delete sentence, or replace by: “And finally, it is necessary to identify the market supplied by each co-product, and the functional unit of the product on this market. Grouping can also be made of co-products from the same production unit when they have the same functional unit and the downstream application is not affected by the differences between the products.”</td>
<td>Accept.</td>
</tr>
<tr>
<td>147</td>
<td>Original</td>
<td>Revised</td>
<td>37</td>
<td>27</td>
<td>9.2 a)</td>
<td>TE</td>
<td>IDELE Clear definitions should be given at this stage for the 3 outputs: co-products, residue, and waste. In the document, only residue is clearly defined. It could help to have a clear definition for the 3 of them. The distinction between a waste and a co-product could also be determined by the status of the company which use it; does it have the legal capability to receive and treat waste or not?</td>
<td>The definitions have been refined for clarity. The status of the downstream use is not relevant for these guidelines; it is assumed that the legal and regulatory requirements are always met.</td>
<td>Please define</td>
</tr>
</tbody>
</table>

*Type of comment: TE = Technical; WEIDEMA = WEIDEMA
148

Original: Revised: 38
Original: Revised: 38
Original: Revised: 39
Original: Revised: 39

148

Original: Revised: 38

9.2 a) Figure 7
The division into 3 steps is unnecessarily complicated and leads to a duplication of identical decision boxes in step 2 and 3 in Figure 7. Essentially, only two steps can be identified from the description: 1) a division of the farm/factory into separate production units; 2) a procedure for the co-products from each production unit. The description in Box 3 is unnecessarily complicated and includes unnecessary procedures. The Box to the right of box 3 is unclear as to what exactly is to be done.

Proposed change: Change Figure 7 to have only two main boxes: One box replacing box 1, to be named “When possible, subdivide the farm/factory further into separate production units” with the decision box: “Is it possible to subdivide the farm/factory further into separate production units?” YES leads to the small box “Draw up…” which is now given the number 2, and the existing box 2 is deleted. NO leads directly into box 3 without passing through box 2. One box 3 (existing), to be named “Convert production units with more than one product into single-product units” in which the decision boxes are changed, so that the first one is “Does the production unit have more than one product?” NO leads to a new box outside box 3: “No allocation needed. Draw up the inventory.” which replaces the existing box to the right of box 3. YES leads to a decision box “Can the output of the co-product be individually varied?” YES leads to “Subdivide the combined production by applying the physical causality between each input and each additional unit of output” and then leading on to the above mentioned box outside of box 3. NO leads to “Identify the determining products and change all other co-products to inputs with a negative sign. Identify the markets for these co-products, and describe the functional unit and name of each co-product accordingly.” and then leading on to the above mentioned box outside of box 3.

In fact, the reviewer is correct. But there is nothing wrong in duplicating the decision boxes in step 2 and 3. We can add a sentence, indicating that this is a duplication, but that we do this to separate the different production units.

149

Original: Revised: 38

9.2 figure 7
The decision tree doesn’t seem very easy to use in every case. It could be nice to have some examples for different materials entering animal feeds (crops, co-products from meat / dairy sector - to make a link with other drafts - other co-products)

Examples have been provided, they are somewhat later in the text.

150

Original: Revised: 39 1
9.2 a) Tipo IDEALE
To avoid confusion, the term “step” in this context should only be used about the ISO procedure. The subdivision in 3 groups is an unnecessary complication.

Proposed change: Change to: “Avoid allocation by sub-division” see above

151

Original: Revised: 39 2/1/2016
9.2 a) Tipo IDEALE
It is not all processes and activities that should be divided, but only those that leads to the reduction in the number of co-products for which system expansion is needed.

Proposed change: Change to:

In the first step 1ISO step 1a subdivision”, subdivision of the farm/factory into production units should be done when this implies that co-products can be assigned specifically to one production unit, for example:
- storage and drying operations that can be assigned to one specific product only: feed intake for a specific animal type at a multi-type-animal farm inputs of pesticides, fertilizers, energy

In theory, this is correct. But we decided to make this three step approach, in fact the difference between step 2 and 3 is that in step 2 one input comes from a higher level to a production unit and in step 3 from a production unit to a co-product. One could merge the steps 2 and 3, but it is doubtful whether this simplifies the picture

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9.2.a) no./ annex Chapter Paragraph/figure/table/note (e.g. table 1) Type of comment* Stakeholders Comment/justification for change of technical aspects must be supported by either scientific literature or technical documents Proposed change Response

159 Original Revised 39 9.2.a) TE Weidema Text does not add any relevant information Delete It's just an introduction. Could be removed

160 Original Revised 39 9.2.a) TE Weidema The text here suggests that there are situations where avoided production cannot be unambiguously identified. However, since the input to a market is identified by the same procedure whether the market output is decreasing (avoided inputs) or increasing (normal inputs), the avoided production can be determined with the same degree of unambiguity as any other market input to the product system. If the procedure that is generally accepted for identifying upstream market inputs is discarded just because the sign of the flow has been inverted, this places into question the entire procedure by which we link our product systems, and can therefore not be used as an argument for not applying the procedure specifically for avoided production. Multiplying system expansion and allocation in the same study leads to the result being neither attributable nor consequential. System expansion is not relevant for attributional questions and allocation is not relevant for consequential questions. Each allocation method provides an answer to a specific question, so when combining different allocation methods within the same study, both the question and the answer is obscured. Consistently applying system expansion for joint production and subdivision by physical causality for combined production provides an unambiguous

Change to “System expansion (ISO step 1b) should be applied whenever possible. It is always possible to determine the avoided production with the same degree of unambiguity as any other market input to the product system. Use the same procedures for identifying the avoided production as those used for determining the other inputs to the product system, cf. ISO 14049 clause 6.4: ‘The supplementary processes to be added to the systems must be those that determine increased need for each in step 2 and 3 in the same degree of (un)ambiguity as any other market input to the product system, by using the same procedures for identifying the avoided production as those used for determining the other inputs to the product system. This consequential approach is not chosen and applying system expansion is consequential modeling.

Decline. This consequential approach is not chosen and applying system expansion is consequential modeling.
answer to the question of the consequences of a decision, which is the purpose of the majority (if not all) LCAs. Thus, system expansion should be accepted as adequate in all cases where the subdivision by physical causality has not been possible. Since the procedure for identifying suppliers to a market is not widely known, due to its convoluted placement in ISO 14049, it may be helpful to quote this ISO text, in parallel to the quote on p. 36 of the allocation section in ISO 14044. costs and consequently is the marginal supplier/technology when the demand for the supplementary product is generally decreasing or increasing, respectively. In practice, the avoided production is included in the product system by changing the non-determining co-products to inputs with a negative sign, whereby they directly cause a reduction in the contribution from the suppliers determined by the above procedure.

To further a more clear and straightforward description, this text has been included (modified) in the new text suggested for displacing the existing text on page 39, line 2-16: “In the first step "ISO step 1a subdivision", subdivision of the farm/factory into production units should be done when this implies that co-products can be assigned specifically to one production unit, for example:
- storage and drying operations that can be assigned to one specific product only;
- feed intake for a specific animal type at a multi-type-animal farm;
- inputs of pesticides, fertilizers, energy inputs of field operations for a specific crop at a multi-crop farm.
It should be noted that lime, fertilizers and soil improvement products or operations that are applied to or performed for a specific crop may reduce the need for such inputs to other crops, and these inputs may therefore be subdivided in proportion to the requirements of each crop for the specific inputs. Some general inputs, such as internal transport, capital goods and office overheads, which cannot be directly attributed to specific production units, but are nevertheless necessary for the operation of all production units, can normally be assigned to each production unit in proportion to the causal relationship that determines increased need for each input, such as weight, volume, or area (transport, roads, buildings) or revenue (office

The Steering Committee has required that the guidelines be strictly attributional.
and accounting. Note that the issue of intercropping has been left out in this text, since this is a normal case of joint production and should be dealt with as other such cases, namely by system expansion for the non-determining crop. Note that manure, peat and compost has been generalized in this text as "fertilizers and soil improvement products". Since manure and compost are non-determining by-products, they will not be included in any crop inputs, but their application and emissions will be an input to the activity that produces the manure and compost, as will the avoided fertilizer use etc.

169
Original
40
31 to 33
Chapter 9.2
g
French Ministry of Ecology, Sustainable development and Energy

The recommendation is to use an economic allocation based on a minimum of three years of recent average prices. For information, in French project Agribalyse, economic allocation should be based on data smoothed on five years excluding the two extreme years (Olympic average): it allows to avoid strong prices fluctuations.

170
Original
40
22-33
9.2
g
AFIA

Increased clarity would also be beneficial on the upstream system boundary for the feed production stage, specifically in the case of manure used as a nutrient source for feed crop production. Our members felt it is not clear if this part of the text addresses "production of inputs" or just storage and transport.

171
Original
40
6
9.2
TE
IDELE

An interesting paragraph is provided about allocation of inputs through the different crops of a rotation. This is also applicable for emissions, such as Nitrogen.

172
Original
40
17-21
9.2
TE
CEFIS

What do you refer to as the nutrient requirements of the crops? Would information on one nutritional parameter such as Nitrogen be enough? Why is there an exception for crop rotation?

173
Original
41
14
9.2
TE
CEFIS

Cross validation and critical review is needed to be able to express that the feed guidelines are in line with the ISO stepwise approach.

Proposed change
169
Original
40
31 to 33
Chapter 9.2
g
French Ministry of Ecology, Sustainable development and Energy

The allocation mentioned in this part of text is about collecting information for open field cultivation and related emissions. Economic allocation is not mentioned here.

A description of the activity data for manure application is provided. It is based on the assumption that manure is considered a residual at the farm gate of the livestock system. This is in agreement with the recommendation of the animal guidelines; however, if a situation exists where the manure is considered a co-product, then the detailed procedures in the animal guidelines should be followed to include the upstream burdens of the manure as nutrient source for the crop.

170
Original
40
22-33
9.2
g
AFIA

This already follows the allocation of the inputs by using the relationship between e.g. leaching and allocated inputs. So, no extra text is needed.

172
Original
40
17-21
9.2
TE
CEFIS

We can specify, this holds for phosphate, potassium and nitrogen. But it also could be for lime or trace elements, if necessary. The exception for crop rotation is when information about crop requirements is lacking. Then you can do this on economic value or on area. The latter for open field cultivation.

Response
We would recommend removing line 14. Accept.
<table>
<thead>
<tr>
<th>Number</th>
<th>Page no.</th>
<th>Line no.</th>
<th>Chapter no./annex</th>
<th>Paragraph/figure/table/note (e.g. table 1)</th>
<th>Type of comment*</th>
<th>Stakeholders</th>
<th>Comment (justification for change of technical aspects must be supported by either scientific literature or technical documents)</th>
<th>Proposed change</th>
<th>Response</th>
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<tbody>
<tr>
<td>174</td>
<td>Original</td>
<td>41</td>
<td>18-23</td>
<td>9.2</td>
<td>TE</td>
<td>LBP</td>
<td>In alignment with the comment on page 36 (lines 26-27) the definition for product residues should be coherent with the definitions in the glossary. Moreover outputs that are sold as they first appear in the process (e.g. wet beet pulp) do not necessarily contribute very little to the turnover of the company. Wet beet pulp can be sold directly as fresh animal feed or as feedstock for biogas making it a valuable resource.</td>
<td>Consider deleting footnote 4.</td>
<td>Decline. When you are able to sell the co product for a higher price, allocation shall be considered. For these guidelines, the classification depends on the price.</td>
</tr>
<tr>
<td>175</td>
<td>Original</td>
<td>41</td>
<td>4-12</td>
<td>9.2 a)</td>
<td>TE</td>
<td>WEIDEMA</td>
<td>To further a more clear and straightforward description, this text has been included (modified) in the new text suggested for displacing the existing text on page 39, line 2-16.</td>
<td>Delete here when new text is adopted for page 39 line 2-16.</td>
<td>We hardly change the text on page 39, so we can leave the sentences in the text.</td>
</tr>
<tr>
<td>176</td>
<td>Original</td>
<td>41</td>
<td>13</td>
<td>9.2 a)</td>
<td>TE</td>
<td>WEIDEMA</td>
<td>To avoid confusion, the term “step” in this context should only be used about the ISO procedure. The unnecessary overlap between step 2 and 3 can be avoided by deleting the heading here.</td>
<td>Delete.</td>
<td>We chose to have a clear distinction between the steps 2 and 3. This will be explained and we will not delete the heading. The word step will be changed to stage. See earlier comments and response.</td>
</tr>
<tr>
<td>177</td>
<td>Original</td>
<td>41</td>
<td>14</td>
<td>9.2 a)</td>
<td>TE</td>
<td>WEIDEMA</td>
<td>It should not be necessary to repeat that here.</td>
<td>Delete</td>
<td>Accept.</td>
</tr>
<tr>
<td>178</td>
<td>Original</td>
<td>41</td>
<td>15-17</td>
<td>9.2 a)</td>
<td>TE</td>
<td>WEIDEMA</td>
<td>This paragraph repeats what is already covered above.</td>
<td>Delete paragraph.</td>
<td>Correct, but we are not all highly trained LCA workers. We prefer to leave it in.</td>
</tr>
<tr>
<td>179</td>
<td>Original</td>
<td>41</td>
<td>18-29</td>
<td>9.2 a)</td>
<td>TE</td>
<td>WEIDEMA</td>
<td>Based on the description here, it is not obvious what is the purpose for isolating “residues” from other co-products. The mere fact that the revenue from these outputs is low cannot justify a separate treatment. Nor can the fact that there is “the upstream and production process that produce the output are not deliberately modified for the outputs” be a justification for treating these outputs differently from other co-products. The separate definition and description thus becomes an unnecessary complication. The distinction of waste and residue is also unnecessary when allocation is generally avoided, since this distinction will then have no implications for the calculations.</td>
<td>Delete.</td>
<td>We don’t avoid allocation, so the distinction between residue and waste remains. The criterion for residue is indeed the economic value.</td>
</tr>
<tr>
<td>180</td>
<td>Original</td>
<td>41</td>
<td>18</td>
<td>9.2</td>
<td>TE</td>
<td>UDL/LLE</td>
<td>to help in better understanding, the definitions should be exactly the same in p 41 and p90 and through the different drafts</td>
<td>Align in final document.</td>
<td>We will do this.</td>
</tr>
<tr>
<td>181</td>
<td>Original</td>
<td>42</td>
<td>18-28</td>
<td>9.2</td>
<td>GE</td>
<td>Teagasc</td>
<td>It is possible that with the direction that the large ruminants group is going with allocation that there may be different approaches used between the feed and the large ruminants group.</td>
<td>Discussion in steering committee. Different allocations are possible, indeed. It is not necessary to have the same allocation along the whole chain.</td>
<td></td>
</tr>
</tbody>
</table>
As animal productions provide co-products for the animal feed sector, this recommendation pleads to use economic allocation in all drafts ... and that doesn't seem acceptable regarding position of some Food industry sectors, such as milk. So there is a risk of inconsistency through the current drafts. Please specify if all drafts should be in accordance on this point.

Discussion in steering committee. Different allocations are possible, indeed. It is not necessary to have the same allocation along the whole chain.

Recommendations should probably be given on how to apply economic allocation, because prices could differ a lot from one country to another (or even from one area to another), and through years. Which type of sources can be used / are recommended, average on how many years, sensitivity analysis ...

Clear glossary definitions with examples are provided. Recommendations on data sources can be added.

Please define what is called "material, feed, and food". This should be in accordance with the different other drafts on animal production. Food and feed are clear; material is all non-food or -feed. Is this necessary to add?

The speculations here are irrelevant when applying subdivision or system expansion to all co-products.

Delete. This is not speculation, but a reasoning why economic allocation is used.

The use of sensitivity analysis for inputs should be recommended in general. No need to specify this at this place.

Delete. Repetition is acceptable.

The description of economic allocation and grouping here requires a rationale and more elaboration to be comprehensible.

Change to: "When the same co-producing system have more than one determining product, which happens when these products have no alternative production routes, the determining products must be analyzed separately to identify the consequences of an isolated increase in demand for each. The co-producing system will react with an increase in production in proportion to the revenue from the specific determining product relative to the revenue from all the determining products of the co-producing system. This is equivalent to the result of a revenue allocation of the co-producing system, and is justified by the necessity for the prices of the joint products (that do not have any relevant alternative production routes) to adjust so that the market is cleared, i.e., so that all the products produced will also be sold. In this situation, a change in demand for one of the joint products will influence the production volume of the joint production in proportion to its share in the revenue of the joint production. Since the change in the co-producing system only partly satisfies the demand that gave rise to the change in its output, the missing supply must be obtained by a reduction in use of the product in its marginal application (the application that has the highest relative cost of production). This is a comment about a consequential approach, which is not applied in our guidelines."
Since the multi-product activity is not allocated, but only scaled to the change in demand, it is still a multi-product activity, and the output of the other joint products thus increases proportionally to the induced change in the multi-product activity, and must therefore be dealt with as for the simple situation above. However, since the other reference products have no alternative production route, the additional output cannot displace any other production, and therefore specifically influences their marginal consumption activities and further downstream lifecycles, and thus require the inclusion of these specific activities. This is achieved by linking the negative input of the other reference products directly to the marginal consumption activities. If there are no significant differences in the functional unit and downstream applications of two determining products from the same co-producing system, despite the different physical quantities consumed, these determining products can be grouped together and treated as one, even when they do not have the same price. Examples can be different cuts of meat with similar applications or apples of different qualities.

It is stated that in most cases, no simple and consistent physical model can be used. We believe this is misleading for several reasons: - there is no justification proposed defining a "simple and consistent" model for allocation. - The wording is oriented and might lead the guidelines' users to discard too quickly the possibility to consider existing models. - It leads the users to believe that there are "simple and consistent" economical models that can be used, which is not always the case. - One should not forget that any price given to a product is given on the basis of a verifiable physical basis (price/ton or price/volume for example).

We can remove the word simple. But a consistent model is lacking at this moment. And there is currently no model that combines the different physical bases as weight or volume.
<table>
<thead>
<tr>
<th>Number</th>
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<th>Proposed change</th>
<th>Response</th>
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</thead>
<tbody>
<tr>
<td>193</td>
<td>Ge</td>
<td>It is to be noted that having different allocation rules for each use of a product/process would also lead to inconsistencies. This would be the case for many feed materials, the production processes of which could lead to products for other outlets than feed. The same comment, as proposed in the guidelines regarding physical allocation, could be applied for economical allocation at sector level for suppliers of the feed industry.</td>
<td>See above.</td>
<td>There is no perfect method. No changes at text. And we go for product consistency over process consistency.</td>
</tr>
<tr>
<td>194</td>
<td>TE</td>
<td>It is to be noted here that the complex relationship between products cannot easily be captured by their price either. Prices, when they can be determined (which is often not the case with multi-functional processes, and as we found was the case for the starch industry multi-functional processes) cannot be influenced by many factors (policies, market, geographical location) and hence do not represent the relationship between co-products and the input/output of the considered process. In many cases, intermediate products that come from a multi-functional process do not even have a price/market value as such. In addition, this approach would make it impossible for a sector/company to perform a specific LCA study: in fact, a specific LCA study (as opposed to a comparative LCA study) aims at identifying hot spots in a production process/supply chain, in order to identify possible improvements. To measure these improvements, two studies performed at different time (e.g. 10 years between two studies) should use similar factors. As products' reference prices can vary over such a period of time, no conclusions on the achieved improvements could be drawn.</td>
<td>Because of this, the guidelines should remain neutral as it cannot capture the specificities of the processes/products that will be studied.</td>
<td>We are neutral. We only state that economic allocation covers the wide variation in feed quality parameters via the price. The time problem you mention can also be a problem when you apply physical allocation, caused by changes in technology. One solution is applying the same allocation factors, irrespective the method. Price availability is sometimes a problem, but this often holds for intermediate products.</td>
</tr>
<tr>
<td>195</td>
<td>TE</td>
<td>Use reference available in English</td>
<td>Use reference available in English</td>
<td>Link to web page deleted.</td>
</tr>
<tr>
<td>196</td>
<td>TE</td>
<td>The ISO hierarchy does not specify that one type of physical allocation should be used for materials of the same function (e.g. animal feed). The importance is placed on identifying an underlying physical relationship.</td>
<td>Propose to delete sentences 8-10 as they are misleading.</td>
<td>Decline. We do not consider the sentences as misleading. We also speak about the feed quality related to underlying physical processes in animal production.</td>
</tr>
<tr>
<td>197</td>
<td>TE</td>
<td>Choosing economic allocation would mean assigning on price to each feed material. This would lead to different results in LCA according to the price fluctuation over the years for each feed material. This does not lead to consistency but high uncertainty of results. If the prices of feed materials are related to their nutritional value and more specifically their energy and protein content then there are two main physical relationships to be taken into account.</td>
<td>Propose to consider physical allocation using digestible energy or mass according to the main function of the animal feed.</td>
<td>Decline. It is not only protein and energy, but also the utilization of this. It is different types of energy for different animals (e.g., poultry, ruminants), it is a wide variation in protein quality (amino acids). This is just what we state: such a simple approach makes no sense. There is no model available yet.</td>
</tr>
</tbody>
</table>
plant. Is it appropriate to use an average “distance to processing feed production sites, ranging from 10 to 100 miles from the comingling of feed products at a processing plant from multiple origins farm location is not practical. One potential issue is trade traceability requirements. Full traceability of a feed grain to Our members would appreciate additional clarity on transport and for certain feed ingredients? 

assess feed utilised in allowed among data sources? For example, is it appropriate to assess feed utilized in transport and role for manure treatment than the GWP. 

constrained by the demand for the determining animal products (see ISO 14049, clause 6.4). As recommended here, the manure is not properly considered in the SFIs study. As recommended here, the manure is not properly considered as a residual in most situations, thus there is consistency with the feed guidelines. In some situations, a closer evaluation may be required (manure as a co-product, or application in excess of crop requirements). 

The clear recommendation should be fixed here how to deal with the topic of manure management and it should be implemented in the different sectorial documents. Also specific regional aspects such the local climate, soil quality etc. should be considered. 

The recommendations for manure have been revised and harmonized. The animal guidelines recommend manure be considered a residual in most situations, thus there is consistency with the feed guidelines. In some situations, a closer evaluation may be required (manure as a co-product, or application in excess of crop requirements). 

We will change the text to: since feed raw materials and feed products, are transported all over the world, the importance of transport in the overall environmental impact can be significant. 

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--- | --- | --- | --- | --- | --- | --- | --- | --- | ---
205 | Original | Revised | 46 | 8 | 10.2.2 | TE | WEIDEMA | Secondary data may sometimes be of higher quality than primary data. | Add “, of lower quality,” after “available” | Accept. change implemented in all 4 documents
206 | Original | Revised | 48 | 11 | 8.4.5 | 2 | Teagasc | Grazing should be treated as a unique feed case given the important interactions between the sward and ruminants | Create a separate module for grazing and animal module | Decline. This will lead to confusion in the system boundaries between feed and animal guidelines. It is possible to separate the grass production and the utilization by the grazing animal.
207 | Original | Revised | 48 | 10 | 10.2.2 | Ge | CS&T/S Consultants Inc. | It should be stated that Table 4 is an example of databases and is not exhaustive. | Text revised for clarity
208 | Original | Revised | 49 | 10 | 10.2.2 | Table 4 | TE | IDELE | we can suggest to add the Agribalyse database and other country specific databases | Thank you, will be added.
209 | Original | Revised | 49 | 10 | 10.2.2 | Table 4 | ge | IDELE | It is not said if those databases all follow the recommendations of the guidelines. For example, do they all include carbon sequestration? (p 68, line 10 : carbon sequestration shall be included) | A comment will be added alerting practitioners to the possibility of different methodological choices implemented in different databases.
210 | Original | Revised | 49 | 10 | 10.2.2 | Table 4 | Chapier 10.2.2 | ge | French Ministry of Ecology, Sustainable development and Energy | In France, LCI for (ingredients of) feed products at farm level exist for several impacts categories. Cf. Agribalyse project: www.ademe.fr/agribalyse-en. See first comment. | Add Agribalyse to databases that can be used in LCA analysis for collecting secondary data. | Added.
211 | Original | Revised | 50 | 2-8 | 10 | 10.2.3 | Ge | IFIF/FEFANA | The critical review of the SFIS study from the IFIF / FEFANA Project has been finalized by May 30, 2014. The study report including the critical review report is now available on request for interested stakeholders | Update the availability of the SFIS study accordingly. | Will be done.
212 | Original | Revised | 58 | 20-21 | 11.2.1 | TE | WEIDEMA | The one year sufficiency does not seem aligned with the following recommendations of using 3 year averages. | Delete | Agree
More specificity would be helpful in determining how to allocate inputs into a multiple crop production system that benefit future crops, when the input itself is a feed product (e.g., legumes providing additional nitrogen input for a following crop). The guidelines suggest using a three-year data assessment period for annual crops, but do not clarify how, for example, the fixed nitrogen would be allocated in a soy/corn/wheat rotation, where each crop is used as a feed ingredient.

For now, it is suggested to stick to the original text. This is a point that will be further addressed in the next revision.

Rewrite: “for annual crops, an assessment period of AT LEAST 3 years shall be used…”

Add “air” (or CO$_2$) as natural resource input. Consider changing water to rainwater and moving water and land to be economic inputs.

Perennial plants. I guess that the ‘steady state’ assumption shall make sure that e.g. unproductive stages or stages with different impact intensity must be included proportionally in the assessment.

Explain better (or refer to later section where it is explained). This is already explained in line 2 - 3.

N2O emissions from mineralization of organic matter is missing? Relevant also for LUC. Burning of crop (residues) or associated with LUC should be included.

Add to table. This can be added to the table. In the LUC calculation, NO2 emission is included.

It is mentioned that if the feed is part of a livestock system analysis, only GHG and energy are relevant: no! LCA of livestock production systems can include more than those 2 impacts…

please explain or delete This is the situation for these guidelines. It is explained in the introduction; a caveat is added here.
Manure and crop residues should not be included as inputs, as they are non-determining co-products and their amount therefore not determined by the demand for feed products, and they therefore cannot supply the markets, cf. ISO 14049, Clause 6.4. Instead the crop requirement fulfilled by these inputs should be calculated and included as input from the corresponding markets.

In an attributional study, manure and crop residues both can be considered as an input. Crop residues play an important role as feed for livestock, bedding material and feedstock for bio-energy.

Manure and crop residues both can be considered as inputs in an attributional assessment.

For consistency with the recommendation for fertilizers in general, the lime should be assigned to the crops in the cropping system in proportion to their pH requirement relative to the situation before liming. Change to: “The lime shall be assigned to the crops in the cropping system in proportion to their pH requirement relative to the situation before liming. This may imply that the lime is assigned to only one or a few of the crops.”

The text already states “between consecutive applications”.
<table>
<thead>
<tr>
<th>Number</th>
<th>Page no.</th>
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<th>Comment (justification for change of technical aspects must be supported by either scientific literature or technical documents)</th>
<th>Proposed change</th>
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</thead>
<tbody>
<tr>
<td>225</td>
<td>Original</td>
<td>Revised</td>
<td>64</td>
<td>3/2/2014</td>
<td>11.2.3 e)</td>
<td>TE</td>
<td>WEIDEMA Biogenic residues should not be included as input, as they are non-determining co-products, and their amount therefore not determined by the demand for feed products, and they therefore cannot supply the markets. cf. ISO 14049, Clause 6.4. Instead the crop requirement fulfilled by these inputs should be calculated and included as input from the corresponding markets.</td>
<td>Noplace with &quot;Application of and emissions from biogenic residues are part of the product system in which these products arise. To avoid double-counting they shall not be included in the feed production systems. The lime supplied to the feed production system shall be represented by an input from the market for lime, which is supplied exclusively by fossil lime.&quot;</td>
<td>In an attributional assessment these residues can be accounted as inputs.</td>
</tr>
<tr>
<td>226</td>
<td>Original</td>
<td>Revised</td>
<td>64</td>
<td>1</td>
<td>11.2.3</td>
<td>GE</td>
<td>CEFS &quot;Liming can also take place with residual products (e.g. residues from sugar beet processing) from industry&quot; The term &quot;residual product&quot; is confusing. ISO 14040 series uses for the output flows either (co-)intermediate product or waste (for disposal).</td>
<td>Change to: &quot;Liming can also take place with co-products or residues (e.g. co-products from sugar beet processing) from industry&quot;</td>
<td>Accept.</td>
</tr>
<tr>
<td>227</td>
<td>Original</td>
<td>Revised</td>
<td>65</td>
<td>12</td>
<td>11.2.3 i)</td>
<td>GE</td>
<td>Teagasc Is including fossil fuel consumption by machinery double counting the use of fuel mentioned in the previous section?</td>
<td>Only include fossil fuel consumption by machinery once.</td>
<td>Indeed, one could consider this as double counting. We will add text to make clear that this can only be counted once.</td>
</tr>
<tr>
<td>228</td>
<td>Original</td>
<td>Revised</td>
<td>66</td>
<td>19-21</td>
<td>11.2.3 k)</td>
<td>TE</td>
<td>WEIDEMA To clarify that all the residue must be accounted for, a sentence should be added to that effect.</td>
<td>Add at end of paragraph: &quot;Instead, the full amount of the residue shall be calculated as either burned or left in the field, based on the normal local practice.&quot;</td>
<td>Decline, not all the residue shall be accounted for, only the fraction of the residue that is used for other purposes.</td>
</tr>
<tr>
<td>229</td>
<td>Original</td>
<td>Revised</td>
<td>67</td>
<td>2/1/2014</td>
<td>11.2.3 k)</td>
<td>TE</td>
<td>WEIDEMA Excluding biogenic carbon from the inventory is likely to lead to confusion as to the accounting for biogenic methane, and will make it difficult to establish adequate mass balances.</td>
<td>Consider to apply instead the more consistent and generally accepted approach of ISO 14067.</td>
<td>We follow IPCC guidelines regarding biogenic carbon.</td>
</tr>
<tr>
<td>230</td>
<td>Original</td>
<td>Revised</td>
<td>68</td>
<td>18-19</td>
<td></td>
<td>TE</td>
<td>EC-JRC, IES, Sustainable Assessment &amp; Monitoring Agricultural Resources Units The following is sentence is slightly misleading: &quot;The soil carbon models used in the assessment shall be published in peer reviewed scientific papers and have received good acceptance.&quot;</td>
<td>Change the sentence to: &quot;The soil carbon models used in the assessment shall have been published in peer reviewed scientific papers and have received good acceptance.&quot;</td>
<td>Accept.</td>
</tr>
<tr>
<td>Number</td>
<td>Page no.</td>
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<tr>
<td>231</td>
<td>Original</td>
<td>68</td>
<td>10</td>
<td>11.2.3 l)</td>
<td>TE</td>
<td>EC, JRC, IES; Sustainable Assessment &amp; Monitoring Agricultural Resources Units</td>
<td>How is ‘good acceptance’ for a paper defined? Number of citations? Impact factor of the journal? This is extremely vague and not likely to improve the assessment. I agree that ‘peer review’ might not always be sufficient for guaranteeing high quality and representativeness of the study.</td>
<td>Instead of relying on subjective ‘good acceptance’ develop criteria of technical nature (e.g. for the validation procedure, representativeness, that the paper must fulfill the data quality criteria set out in the guidelines etc.) to facilitate the decision about the quality of a (peer reviewed) paper.</td>
<td>Indeed, this is vague. We will try to improve. However, the good acceptance is based on positive comments that this is also a way to consider LUC emissions.</td>
</tr>
<tr>
<td>232</td>
<td>Original</td>
<td>68</td>
<td>10</td>
<td>11.2.3 m)</td>
<td>GE</td>
<td>IDELE</td>
<td>&quot;GHG related to land use SHALL be included&quot;: it is very ambitious! It is very difficult to reach to a consensus on the methodology to take it into account</td>
<td>Replace by SHOULD</td>
<td>Decline. The consensus recommended is to use different methods and to report separately.</td>
</tr>
<tr>
<td>233</td>
<td>Original</td>
<td>69</td>
<td>10/3/2014 11.2.3 n)</td>
<td></td>
<td>TE</td>
<td>WEIDEMA</td>
<td>This sentence is not clear. The amount of nutrients taken up by the crop must of course be an input to the crop production, in order to maintain mass balance for the crop production system.</td>
<td>Delete or clarify</td>
<td>Decline. The benefit of the released nutrients will be captured through lower inorganic fertilizer requirements.</td>
</tr>
<tr>
<td>234</td>
<td>Original</td>
<td>70</td>
<td>18</td>
<td>11.2.3</td>
<td>GE</td>
<td>Q&amp;I2 Consultants, Inc.</td>
<td>I don’t see how the second and third option are relevant. If the country of production is not known then none of the other primary data that is required to undertake this work will be available. The global average method is totally inappropriate. All of the available data shows that land use change is regional and that there is not a free flow of goods throughout the world. Applying a global average value of land use change is meaningless and will not lead to any change in behavior.</td>
<td>Eliminate options 2 and 3.</td>
<td>Decline. The global method has been applied in other studies as well and has its value in the discussion of environmental impacts of land use change. We do not need to mix incentives with a simplified method to calculate LUC emissions.</td>
</tr>
<tr>
<td>235</td>
<td>Original</td>
<td>70</td>
<td>24f</td>
<td></td>
<td>TE</td>
<td>EC, JRC, IES; Sustainable Assessment &amp; Monitoring Agricultural Resources Units</td>
<td>The third bullet should refer to total cropland expansion.</td>
<td>Modify to &quot;if so, how much of total cropland expansion was into grassland and into forest land, respectively?&quot;</td>
<td>Accept.</td>
</tr>
</tbody>
</table>
236
Original Revised 70 29 TE EC, JRC, IES, Sustainable Assessment & Monitoring Agricultural Resources Units

In countries where forests and grasslands are not declining... I agree in general with this method. However, for example, afforestation and deforestation are not symmetrical. This should be critically mentioned.

Discuss difference between net LUC and gross LUCs.

Accept. We can mention this and we refer to the net area of forest and grasslands.

237
Original Revised 70 29 TE EC, JRC, IES, Sustainable Assessment & Monitoring Agricultural Resources Units

Is there any requirement on the minimum characteristics of a country? There might be cross-border ILUC, so a regional approach might be better for small countries?

That could be considered, but we have recommended the PAS2050 approach, with its definitions.

238
Original Revised 70 4 11.2.3 TE Alexandre Berndt

Define correct reference

... using the ENVIFOOD method adapting the PAS2050-1 2012. Obs. In the references it is mentioned: Food SCP RT 2013 ENVIFOOD Protocol, Environmental Assessment of Food and Drink Protocol.

Thanks, we will correct.

239
Original Revised 70 6 11.2.3 a) TE IDELE

"...the user shall compare results with another method developed by Audsley et al. (2009) and Vellinga et al. (2013): it is not clear if it is the same method or 2 different ones. Why other methods (current or future) are not possible? There is no reference to the Appendix 3 please specify and rewrite if necessary

We will rewrite: developed by Audsley and modified by Vellinga. It is similar but not exactly the same.

240
Original Revised 71 Oct 24 11.2.3 GE Teagasc

Why is pasture land included in this calculation?

Exclude pasture land

Decline. Pasture land is often a result of deforestation as well and rangeland is considered as natural pastures, where grassland is the natural climax vegetation.

241
Original Revised 71 21 11.2.3 TE Alexandre Berndt

Reference Henderson at al 'forthcoming' already published?

Check publication.

Camillo, can you check at AGAL?

242
Original Revised 73-75 2/20/2014 11.2.4 TE WEIDEMA

Adjust last and figure to accommodate changes proposed for section 9.2 a)

Adjust last and figure to accommodate changes proposed for section 9.2 a)

Decline

243
Original Revised 7 3-4 11.2.4. 2 UE Teagasc

It is not clear how to correct for a non-steady state situation in different crop situations

An example of how to correct to a steady state situation would be useful to include as on its own this sentence is not very useful

Suggestions needed.
<table>
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<tr>
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<tr>
<td>244</td>
<td>Original</td>
<td>Revised</td>
<td>76</td>
<td>9/1/2014</td>
<td>IE: WEIDEMA</td>
<td>Adjust text and figure to accommodate changes proposed for section 9.2 a). System expansion is applicable to this situation.</td>
<td>Adjust text and figure to accommodate changes proposed for section 9.2 a)</td>
<td>Decline.</td>
</tr>
<tr>
<td>246</td>
<td>Original</td>
<td>Revised</td>
<td>77</td>
<td>21-27</td>
<td>TE: WEIDEMA</td>
<td>Adjust text to accommodate changes proposed for section 9.2 a). System expansion is applicable to this situation.</td>
<td>Adjust text to accommodate changes proposed for section 9.2 a). System expansion is applicable to this situation.</td>
<td>Decline.</td>
</tr>
<tr>
<td>247</td>
<td>Original</td>
<td>Revised</td>
<td>77</td>
<td>1ff</td>
<td>TE: EC, JRC, IES, Sustainable Assessment &amp; Monitoring Agricultural Resources Units</td>
<td>Allocation of land over multiple production cycles is not very clear. Total emissions from LULUC could e.g. be based on the share of produced digestible energy per cut over total digestible energy produced in the whole year?</td>
<td>Explain better.</td>
<td>We can make a better explanation.</td>
</tr>
<tr>
<td>248</td>
<td>Original</td>
<td>Revised</td>
<td>77</td>
<td>1-27</td>
<td>All: TEagasc</td>
<td>Not clear how grazed pasture will be handled here.</td>
<td>Include grazed pasture as an example</td>
<td>We will try.</td>
</tr>
<tr>
<td>249</td>
<td>Original</td>
<td>Revised</td>
<td>78</td>
<td>29-33</td>
<td>Box 4: TE: WEIDEMA</td>
<td>Adjust description to accommodate that the example can be handled with system expansion. The proposed text here is as minimalistic as the remaining text in these guidelines. Much more text can of course be provided, if a more detailed guideline for the procedure is desired.</td>
<td>Replace by: “The maize grain can be identified as the determining product, which means that the stover is modeled as displacing feed on the energy and protein market in proportion to the energy and protein content of the stover. In situations where the stover is used for biofuel production, the stover displaces the dedicated lignocellulose crop inputs to the local market for lignocellulose for biofuel production, on a kg to kg basis.”</td>
<td>Decline. The suggested text is consequential approach, which is not applied here.</td>
</tr>
<tr>
<td>250</td>
<td>Original</td>
<td>Revised</td>
<td>7</td>
<td>1 - 2 - 5</td>
<td>I: IE, TE, MA</td>
<td>This text is superfluous when allocation is always avoided. Instead a formula for avoided burdens can be inserted, although this may be unnecessary. More useful would probably be a more detailed description of how to identify the determining product, as found in e.g. the ecoinvent data quality guidelines.</td>
<td>May be replaced by: “The general model for assigning inventory data per production unit to co-products is expressed by the formula: (E,R)DeterminingProduct = (E,R)TotField,Cycle - (E,R)MarginalMarketSupplyDependentCoproduct And (E,R)DependentCoproduct = (E,R)MarginalMarketSupplyDependentCoproduct in which: (E,R)DeterminingProduct = emissions and resource use of determining product (E,R)TotField,Cycle = total emissions and resource use directly used in the production unit (E,R)MarginalMarketSupplyDependentCoproduct = emissions and resource use of the marginal suppliers to the market on which the dependent co-product is sold</td>
<td>Decline. The suggested text is consequential approach, which is not applied here.</td>
</tr>
</tbody>
</table>

*Type of comment: IE = invited expert, TE = technical expert, All = all stakeholders,Box 4 = Box 4, IE, TEagasc = IE, Technical Expert Agricultural Resources Units, IE, JRC, IES, Sustainable Assessment & Monitoring Agricultural Resources Units,

# List of stakeholders
- IE: WEIDEMA
- TE: WEIDEMA
- All: TEagasc
- Box 4: TE: WEIDEMA

# List of proposed changes
- Adjust text and figure to accommodate changes proposed for section 9.2 a).
- Adjust text to accommodate changes proposed for section 9.2 a).
- System expansion is applicable to this situation.
- Adjust text to accommodate changes proposed for section 9.2 a).
- System expansion is applicable to this situation.
- Adjust text and figure to accommodate changes proposed for section 9.2 a).
- System expansion is applicable to this situation.
- System expansion is applicable to this situation.
- Explain better.
- We can make a better explanation.
- Include grazed pasture as an example
- We will try.
- We can make a better explanation.
- Decline. The suggested text is consequential approach, which is not applied here.
- Decline. The suggested text is consequential approach, which is not applied here.
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<th>Response</th>
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<tbody>
<tr>
<td>259</td>
<td>Original</td>
<td>79</td>
<td>11-28</td>
<td>11.2.5</td>
<td>TE</td>
<td>WEIDEMA This text is superfluous when allocation is always avoided.</td>
<td>Delete</td>
<td>Decline</td>
</tr>
<tr>
<td>260</td>
<td>Original</td>
<td>80</td>
<td>11</td>
<td>11.2.6</td>
<td>TE</td>
<td>EC, JRC, IES, Sustainable Assessment &amp; Monitoring Agricultural Resources Units Wild fish. Wild fish is a resource which should be considered as well. As long as only GHG emissions are in the focus, the method is ok, but caution is needed that the analogy with ‘cultivation’ is not mis-interpreted.</td>
<td>We could rephrase the first sentence to reduce this risk.</td>
<td></td>
</tr>
<tr>
<td>261</td>
<td>Original</td>
<td>82</td>
<td>5-6</td>
<td>11.3.1</td>
<td>GE</td>
<td>WEIDEMA This text is confusing and does not add any relevant information.</td>
<td>Delete</td>
<td>Accept</td>
</tr>
<tr>
<td>262</td>
<td>Original</td>
<td>82</td>
<td>9</td>
<td>11.3.1</td>
<td>GE</td>
<td>WEIDEMA The assessment should come after the inventory.</td>
<td>Replace: “an assessment that models” by “a model of”</td>
<td>Accept</td>
</tr>
<tr>
<td>263</td>
<td>Original</td>
<td>83</td>
<td>4/-</td>
<td>11.3.2a</td>
<td>GE</td>
<td>WEIDEMA The last row, right column should be “Not relevant”, since the treatment of residues is outside the system boundaries.</td>
<td>Change the last row, right column to: “Not relevant”</td>
<td>Decline, treatment of materials that become residues is within the system boundaries.</td>
</tr>
<tr>
<td>264</td>
<td>Original</td>
<td>83</td>
<td>11-13</td>
<td>11.3.2a</td>
<td>GE</td>
<td>WEIDEMA This sentence is unclear. The energy and ancillary material inputs must at least appear as waste or emission outputs.</td>
<td>Delete or clarify</td>
<td>Decline, the text is correct. Energy use is found back as emission, so is waste. Not necessary to mention it here.</td>
</tr>
<tr>
<td>265</td>
<td>Original</td>
<td>83</td>
<td>14-15</td>
<td>11.3.2a</td>
<td>GE</td>
<td>WEIDEMA While it is desirable to know the chemical characteristics of the inputs, it does seem too demanding to use a “shall” for this very vaguely specified data item, which may or may not be relevant for the further calculations.</td>
<td>Remove the “shall” requirement for “chemical characteristics”, or specify more precisely what characteristics are essential for the goal and scope.</td>
<td>The chemical characteristics are required to calculate Gross Energy, which is necessary for other allocation methods. This could be added as a sentence.</td>
</tr>
<tr>
<td>266</td>
<td>Original</td>
<td>83</td>
<td>16-20</td>
<td>11.3.2a</td>
<td>GE</td>
<td>WEIDEMA It appears unnecessary to specify the exact amount that a reference flow shall have. What is important is that all exchanges are re-calculated relative to the reference flow. And it is unclear why the fact that the reference flow is fixed should mean that information should not be collected on the amount of inputs.</td>
<td>Delete or clarify</td>
<td>We can change the text to: All exchanges have to be recalculated relative to the reference flow. This is often expressed as per kg or 1000 kg of input product.</td>
</tr>
<tr>
<td>267</td>
<td>Original</td>
<td>84</td>
<td>10 and 14-15</td>
<td>11.3.2a</td>
<td>GE</td>
<td>WEIDEMA It is not the emissions as such that needs correction, but the amount of input required.</td>
<td>Replace by “The amount of input product required shall be corrected for losses, which will result in more emissions and resource use per unit of output product.”</td>
<td>Accept</td>
</tr>
</tbody>
</table>
Number | Page no. | Line no. | Chapter no./annex | Paragraph/figure/table/note (e.g. table 1) | Type of comment* | Stakeholders | Comment (justification for change of technical aspects must be supported by either scientific literature or technical documents) | Proposed change | Response

268 | Original | Revised | 84 | 2-2 | 11.3.2 (g) | GE | WEIDEMA | It is not in line with the general recommendation not to allow measurement of the emissions. Change calculated to 'measured or calculated' | Accept

269 | Original | Revised | 85 | 2-3 | 11.3.2 (f) | GE | WEIDEMA | The data on processing of residues are not relevant here, as they feed crops and protein feed crops. Delete the semicolon and the following part of the sentence (or clarify) Accept

270 | Original | Revised | 85 | 8-9 | 11.3.2 (f) | TE | WEIDEMA | These data need only to be collected when they are part of the functional unit for the market on which the co-product is sold, or if they influence the downstream lifecycle. Replace by: "Additionally, the co-products shall be described in terms of the properties of the functional unit of the market on which they are traded, and any other properties that may influence the downstream lifecycle." | Decline. The suggested text is too general.

272 | Original | Revised | 85 | 10-13 | 11.3.2 (f) | GE | WEIDEMA | It is not necessary to collect data on the prices of the products, except for life cycle costing. Delete | Decline. In economic allocation it is necessary.

273 | Original | Revised | 86 | 1-2 | 11.3.2 (g) | GE | WEIDEMA | The distinction between residues and other co-products is irrelevant. When allocation is avoided, it is an unnecessary requirement to divide product outputs in co-products or wastes, since this has no implications for the calculations. On the other hand, what is important is the distinction between determining products and dependent co-products. Change to: "The list of output products shall be completed by identifying the determining products and all other output products explicitly, irrespectively of whether they are co-products or wastes." | Decline. The text already states that all outputs shall be identified. Because this is attributional assessment, the identification as determining product is not necessary as all co-products receive an allocated share of the inputs and emissions.

274 | Original | Revised | 86 | 2-5 | 11.3.2 (g) | GE | WEIDEMA | It is unnecessary and confusing to mix the identification of the product outputs with the allocation procedure. | Decline. This helps the user to decide what to do per "product" or product group.

275 | Original | Revised | 86 | 20-23 | 11.3.2 (g) | TE | WEIDEMA | Since biogenic residues are non-determining co-products and their amount therefore not determined by the demand for feed products, and they therefore cannot supply the markets, cf. ISO 14049, Clause 6.4, it should be described how their share in a feed input is modeled as the input from the corresponding markets. Add to the end of paragraph: "The residues and the drying or other processing that may be required for them to be available on the feed market are part of the product system in which these residues arise. To avoid double-counting they shall not be included in the feed production systems. The energy and protein supplied to the feed production system shall be represented by corresponding inputs from the markets for energy feed crops and protein feed crops, respectively." | Decline. This is from a consequential perspective.

276 | Original | Revised | 86 | 24-26 | 11.3.2 (g) | TE | WEIDEMA | The data on processing of residues are not relevant here, as they are outside the system boundaries. Replace by: "Data shall be collected on the energy and protein content of the residues, in order to determine how much they represent in terms of required input from the markets for energy feed crops and protein feed crops."

Use of "residues" here seems inconsistent with the definition; once it is a residue, it is indeed out of the system.

277 | Original | Revised | 86 | 27-28 | 11.3.2 (g) | GE | WEIDEMA | The data on processing of residues are not relevant here, as they are outside the system boundaries. Change to: "Not relevant" Use of "residues" here seems inconsistent with the definition; once it is a residue, it is indeed out of the system.
Residues can be very valuable from the point of view of animal nutrition. Good examples are the citrus pulp that remains after the production of orange and grapefruit juices and the sugar beet pulp after the production of sugar.

Sugar beet pulp is not a residue. Within beet sugar factories the sugar beet is processed to produce sugar, beet pulp (used as wet, pressed or dried pulp as feed or for energetic uses), carbonation lime (lime fertilizer) as well as molasses (used as feed as well as raw material for fermentation industry).

Delete example on beet pulp

Delete. We defined the residue and it has little value when it is not dried.

The data on processing of residues are not relevant here, as they are outside the system boundaries. What is relevant is their energy and protein content that determines how much they represent in terms of required input from the markets for energy feed crops and protein feed crops.

Replace by: "In such cases, a simplified data collection method can be applied by solely focusing on the energy and protein content of the residues, replacing the inputs of the residues by the corresponding inputs of energy and protein from the general markets for energy feed and protein feed."

Use of ‘residue’ here seems inconsistent with the definition, once it is a residue, it is indeed out of the system. If the beet plant dries the pulp and sells it as a valuable product, the drying is handled by separation, and assigned to the co-product, but the co-product should also carry upstream burdens – else we are not consistent with system boundaries.

To avoid confusion, the term ‘step’ in this context should only be used about the ISO procedure.

Change to: "As explained in the section on allocation (Section 9), the attribution consists of:"

Decline. Changes not adopted as an attributional approach is used in the guidelines.

Re-design to accommodate changes proposed for section 9.2 a)

Decline. Changes not adopted as an attributional approach is used in the guidelines.
Delete line 3e shall be used and update reference. I don't think the reference to line 3e is wrong. So, decline.

We will make a clarification. Wet beet pulp has a very low emissions, however transporting leads to high emissions, while processed beet pulp has a higher emissions because dying emissions are fully allocated to the pulp.

Narrow the list of examples in the box. Ensure that all of the examples are consistent with the definition of residue. We can remove distillers grains. In our calculations economic value is higher than one percent of the turnover and therefore shouldn't be considered as a residue. They are provided a credit in almost all LCAs done in these sectors and therefore should have a "debit" associated with them in feed systems.

We can remove distillers grains. In our calculations economic value is very low. When it is higher than 1%, it is not a residue any more. Indeed. That is correct.

We can remove distillers grains. In our calculations economic value is very low. When it is higher than 1%, it is not a residue anymore. Indeed, That is correct.

We will make a clarification. Wet beet pulp has a very low emissions, however transporting leads to high emissions, while processed beet pulp has a higher emissions because dying emissions are fully allocated to the pulp.

Narrow the list of examples in the box. Ensure that all of the examples are consistent with the definition of residue. We can remove distillers grains. In our calculations economic value is very low. When it is higher than 1%, it is not a residue any more. Indeed. That is correct.

We can remove the sentence.

Section revised to reflect fully attributional approach for the guidelines.

Section revised to reflect fully attributional approach for the guidelines.
What is important to add here is that inputs of non-determining co-products shall be modeled in terms of how much they represent of required input from the markets for energy feed crops and protein feed crops. Replace by: “No upstream emissions shall be attributed to inputs of non-determining co-products, such as residues (which can more generally be classified as shown in Box 5). Instead, the energy and protein content in these inputs are replaced by the corresponding inputs of energy and protein from the general markets for energy feed and protein feed.”

This description is incorrect. Since the amount of additional treatment activities (post splitting) are proportional to the amount of the determining product that gives rise to the residues, and not to the demand for the feed product, the treatment does not belong to the feed LCA system. Replace by: “In both cases, the impact of the necessary additional treatment activities (post splitting) are not included in the feed LCA but in the LCA of the determining product that gives rise to the residues. This is because the amount of treatment activities depends on the amount of the determining product and the location of its production, not on the demand for the residue.”

It’s necessary to specify that this list of residues can change from one context to another. Whey from cheese making is sold and contribute to the turnover of dairy industries in many cases. This list can be flexible indeed. We can rephrase.

There should likely be a credit given for human food co-product that is used in animal food, as it displaces otherwise needed nutrition and would likely be lost without the animal food industry. AFIA appreciates that some of these co-products are listed. Which allocations of upstream impacts have been proposed in other peer-reviewed literature. It is important to avoid double counting of environmental impacts. AFIA members expressed concern over how co-products are accounted for in this LCA guideline. The environmental impact of distillers dried grains with solubles (DDGS) from corn ethanol, for example, depends on what impact is assigned to ethanol. Do the LEAP guidelines imply all of the LCA impact should be assigned to ethanol and a credit given for DDGS based on the displacement of grain that would need to be produced to replace the DDGS? Is there a difference between dry DDGS and wet DDGS?

DDGS wet and dry are important for animal nutrition. We now consider wet DDGS as a residue, due to low contribution to the revenue. So, upstream emission is zero. Only transport emissions can be added from ethanol plant to farm. When DDGS is dried, emissions related to drying are fully assigned to the dry DDGS and the environmental impact rises. The advantage of the dried DDGS is that is easier to transport than the wet DDGS. Would it be useful to add an example? We defined the residue as a co-product with a very limited contribution to the total turnover, less than 1%. Trying to allocate upstream emissions would be of limited value, but separating the process in order to attribute drying of wet co-products fully to that product is important. So, the emphasis in the text should be more on the separation of the process (and when it is complicated to allocate the first part of the process, you might ignore this, because the improvement by separation is much larger). That is maybe a very pragmatic approach. Too pragmatic?
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<tr>
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<th>Comment (justification for change of technical aspects must be supported by either scientific literature or technical documents)</th>
<th>Proposed change</th>
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<td>300</td>
<td>Original</td>
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<td>Original</td>
<td>Revised 91</td>
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<td>302</td>
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<td>4/1/2014</td>
<td>1.3.5</td>
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<td>303</td>
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<td>Revised</td>
<td>5/1/2029</td>
<td>1.3.5</td>
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<td>304</td>
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<td>Revised</td>
<td>92</td>
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<td>305</td>
<td>Original</td>
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<td>305</td>
<td>Original</td>
<td>Revised</td>
<td>Page 52</td>
<td>Line 8-9 and 20-21</td>
<td>GE</td>
</tr>
</tbody>
</table>
306 Original Revised 93 19-24 11.3.5 3 GE Teagasc The description of detailed economic allocation at factory level is very similar to the general input/output factory analysis. A better explanation is needed. Clarification
We will add text to this. The input/output analysis is also essential in the economic allocation, addition of price information allows you to make the economic allocation.

307 Original Revised 93 11 11.3.5 8 GE Teagasc There are no default allocation factors for wet or dry milling of maize. Include default allocation factors. We will try to find default factors.

308 Original Revised 93 1-3 1.3.5 Figure 19 GE WEIDEMA With a slight modification, this figure can be used to explain system expansion. Add a box representing “market for crude vegetable oil, generic” with the output of “crude vegetable oil, generic” just above the “crude soybean oil”. Change the title of the Figure to “CO2 PRODUCTION FOR WHICH AN SYSTEM EXPANSION CAN BE APPLIED”. Change the note to “To make the co-production have only one output (soybean meal), the crude soybean oil is eliminated by subtracting an equivalent amount of “crude vegetable oil, generic” so that the combined system has a net zero production of crude vegetable oil.”
Decline. Consequential assessment is not adopted.

309 Original Revised 93 6-24 1.3.5 GE WEIDEMA When allocation is generally avoided, this text becomes irrelevant. Delete Decline.

311 Original Revised 94 11, 12 11.3.5 Tz U立立 It should be AT LEAST two alternative allocation methods recommended Herewith (if appropriate) please specify if mass allocation is based on raw mass or dry matter (which seems more appropriate to me)
At least does not add so much, as there are hardly other allocation methods found. We will clarify that mass allocation is based on dry matter.

312 Original Revised 94 1-6 1.3.5 Figure 20 GE WEIDEMA This figure is misleading. The entire activity should be included with its determining product (starch) and the remaining co-products eliminated by system expansion. Delete Decline.

313 Original Revised 94-95 7-5 1.3.5 GE WEIDEMA When allocation is generally avoided, this section becomes irrelevant. Delete Decline.

314 Original Revised page 94 Figure 20 TE AAF-Gruson L. As presented, the figure presents some intermediate products as final products, which is not correct. Final feed products of the wet milling of maize are often sold as a mix of the different products presented at the far right of the figure – hence these products, as presented, do not always have a market value as such (the figure is presented as an example under the section “detailed economic allocation”). This figure should not appear in this section, as it cannot be used to properly illustrate the possible use of economic allocation and the attribution of input/output for specific processes.
Hans, can you give an advice?

315 Original Revised Page 94 Line 7 GE AAF-Gruson L. As stated before, the preferred allocation method, as proposed by ISO 14 040, is discredited as it is proposed to consider it “for sensitivity analysis” when the economical allocation is described in the previous page in detail”. This is not a neutral way to present details on how to assess different allocation methodologies. Physical allocation should be described in details, first and before economic allocation. Describing sensitivity analyses to be carried out should be done without referring to a particular type of allocation methodology.
We don't consider this as discredited. Physical allocation does not need a detailed description. We describe this from the point of view of economic allocation as the preferred method. A fundamental goal of the Guide is to restrict practitioners to A more limited set of techniques. I so is not discredited but, system expansion is not supported by the guide.
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<tr>
<td>317</td>
<td>Original</td>
<td>Revised</td>
<td>95</td>
<td>8-9</td>
<td>1.3.5</td>
<td>GE</td>
<td>WEIDEMA</td>
<td>Table 8 can be re-worked to support the system expansion and the conversion from residue inputs to generic market inputs.</td>
<td>Change to: “List of default properties.”</td>
</tr>
<tr>
<td>318</td>
<td>Original</td>
<td>Revised</td>
<td>95-96</td>
<td>1.3.5</td>
<td>Table 8</td>
<td>GE</td>
<td>WEIDEMA</td>
<td>Table 8 can be re-worked to support system expansion and the conversion from residue inputs to generic market inputs. Instead of the economic column, add a column for crude protein content in kg. Change the percentages for mass and gross energy to actual values (kg and MJ). The In/Out column is superfluous when the mass is already given.</td>
<td></td>
</tr>
<tr>
<td>319</td>
<td>Original</td>
<td>Revised</td>
<td>Page 95</td>
<td>Line 7-9 and table 8</td>
<td>GE/TE</td>
<td>AAF, Grasov L.</td>
<td>The guidelines propose a “list of default allocation fractions” in page 95. This table contains surprising values such as the economic allocation fraction proposed for dried potato starch and concentrated fruit juice, which leads us to further doubt the consistency of an economical allocation, as encouraged by the guidelines. We would also like to voice that such values should be established in cooperation with interested stakeholders, which was not the case here as the EU starch industry was not consulted on these values.</td>
<td>The European starch industry cannot support the allocation fractions proposed for its products as an “default allocation fraction”.</td>
<td></td>
</tr>
<tr>
<td>320</td>
<td>Original</td>
<td>Revised</td>
<td>95</td>
<td>11.3.5</td>
<td>TE</td>
<td>IDELE</td>
<td>What is the source of this table? / Of the figures? Please specify the geographic applicability. More detailed studies per country should be recommended also, when they do exist. A study performed in France about co-products and allocation in the meat industry sector will be presented at the LCA Food conference (by Gac et al.) Australia (Wiedemann et al.) has also a paper on this topic.</td>
<td>Please specify. We will specify and can add text that the default factors come from a limited number of studies and that it is recommended to look whether these defaults suit you or that regional defaults need to be developed.</td>
<td></td>
</tr>
<tr>
<td>321</td>
<td>Original</td>
<td>Revised</td>
<td>95</td>
<td>Table 8</td>
<td>GE</td>
<td>(S&amp;T) Consultants, Inc.</td>
<td>While consistency is important, the same product produced in different regions can have different properties and the use of global default values for allocation is not appropriate.</td>
<td>The introduction to Table 8 should be changed. Where accurate actual values for the mass and energy contents are not available, the default values in Table 8 may be used.</td>
<td>Accept, good suggestion. The defaults are a kind of emergency exit. So only when you don't have anything better.</td>
</tr>
<tr>
<td>322</td>
<td>Original</td>
<td>Revised</td>
<td>95</td>
<td>Table 8</td>
<td>GE</td>
<td>(S&amp;T) Consultants, Inc.</td>
<td>The mass of fat and meal from the rendering process is highly dependent on the species or mix of species being rendered. Default values are not appropriate.</td>
<td>Remove rendering examples.</td>
<td>Decline. See suggestions above. When you don't have better information, the defaults give you a “not-too-wrong” figure.</td>
</tr>
<tr>
<td>323</td>
<td>Original</td>
<td>Revised</td>
<td>97</td>
<td>1-16</td>
<td>1.3.5</td>
<td>GE</td>
<td>WEIDEMA</td>
<td>When allocation is generally avoided, this section becomes irrelevant.</td>
<td>Delete</td>
</tr>
</tbody>
</table>
Commented [GT1]: This is an issue of further consideration – it is the intention that the list of 20+ characteristics of feed are all included in the definition of reference feed. This may be reasonable when the feed is considered without reference to livestock production, but when included in an animal study, there will be implicit requirements that the total ration meets the nutritional requirements of the animal. This is in need of further consideration.

Commented [GT2]: This seems related to comment 326.

Commented [GT3]: This is in need of further consideration – the functionality of the feeds (not on the real nutritional value. Also environmental benefits due to the feed is under consideration based on the energy content and results might become difficult, since only the ecological burden of the assessed option, the functional unit as laid down at the beginning being the dry matter content of grass silage and specific requirements for the animal type and for its production phase. This statement is not in line with the definition of the minimum requirements set for the feed in the chapter for the system boundaries. The feed materials will be added on the basis of their nutritional characteristics and the specific requirements for the animal type and for its production phase. This statement is not in line with the definition of the minimum requirements set for the feed in the chapter for the system boundaries.

Commented [GT4]: This is an odd place for mention of phase feeding.

Commented [GT5]: Is it the intention that the list of 20+ characteristics of feed are all included in the definition of reference feed? This may be reasonable when the feed is considered without reference to livestock production, but when included in an animal study, there will be implicit requirements that the total ration meets the nutritional requirements of the animal – so, is this full characterization of the feed needed?
333 Original Revised Page 113 21-22 122.3 GE WEIDEMA

Comment (justification for change of technical aspects must be supported by either scientific literature or technical documents)

Are you able to specify this / point to specific sources?

Proposed change

Change "greatest overall environmental benefit" to "largest relative environmental improvement".

Response

Text can be changed.

334 Original Revised Page 114 17-24 12.5 GE AFIA

Life Cycle Assessment (LCA) results should be reported as a range, with detailed calculations justifying the range. These guidelines could simulate what reasonable ranges of uncertainty are. Our members feel these ranges should likely be large, perhaps +100%/-50%, or for a very well defined study of limited scope it might be +50%/-25%. Explicitly stating data sources and sensitivity analyses results should be included as elements of the LCA report will help ensure higher credibility of the guidelines.

Proposed change

This is a good suggestion. We can add some lines about uncertainty.

Response

335 Original Revised Page 115 4 12.5 GE AFIA

The methodology appears to primarily focus on greenhouse gas outputs in agriculture, yet agriculture does have some potential for greenhouse gas sequestration. AFIA would like to see the ability for potential sequestration to be accounted for and the methodology that could be used.

Proposed change

That has been discussed in the land use section and Appendix 3, Pages 67 and 127. However, the title of Appendix suggests that only emissions occur. It could be considered to change the title.

Response

This annex is intended to provide an overview of methodological issues from the LCA literature.

336 Original Revised Page 121 Dec-15 Appendix 1 GE IFIF/FEFANA

The SFIS study was not available when the first draft of the present document has been tabled. Thus, the reference is missing here.

Proposed change

Reference should be made here to the SFIS study pointing out to the functional unit of 1.0 kg of live weight as another option for the FU and the link to the meat sector.

Response

The current guidelines are about feed and not livestock. The FU of 1kg live weight is in the animal guidelines, where the feed guidelines are basic input. In addition, this annex is intended to provide an overview of methodological issues from the LCA literature.

337 Original Revised Page 121 25-27 Appendix 1 GE IFIF/FEFANA

At this point, the importance of AP and EP should be paramounted again. It should be also recommended as mandatory for the other sectorial guidelines.

Proposed change

This annex is intended to provide an overview of methodological issues from the LCA literature.

Response

This general approach has been made: we made a list of requirements that allows calculations of animal nutrition and performance by publicly available models. Again, the minimum requirements should also be applicable in less (data)-intensive livestock systems and not cover all nutritional views from the industry.

338 Original Revised Page 124-125 Table 2 GE/TE IFIF/FEFANA

How are all the listed amino acids considered? Due to the minimum requirements of feed the energy content was of importance!!!

Proposed change

A general approach on how setting the minimum criteria and the nutritional recommendations should be harmonized.

Response

This general approach has been made: we made a list of requirements that allows calculations of animal nutrition and performance by publicly available models. Again, the minimum requirements should also be applicable in less (data)-intensive livestock systems and not cover all nutritional views from the industry.

339 Original Revised Page 124 Appendix 2 Table 2 TE IDELE

Information about sheep shouldn’t be forgotten

Proposed change

Sheep are ruminants, so they are not forgotten.

Response

Sheep are ruminants, so they are not forgotten.

340 Original Revised Page 127 20 Appendix AE/IA

Correct ... given the pervasive and historic nature of human activities...

Proposed change

Perhaps ... given the pervasive and historic nature of human activities...

Response

Accept. Thank you!
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<td>Revised</td>
<td>130</td>
<td>Appendix 4</td>
<td>Table 5</td>
<td>TE</td>
<td>(S&amp;T) Consultants, Inc. The peat emission factors for tropical regions are too low. There have been more recent studies with much higher values.</td>
<td>See this paper. Hooper, A., S. Page, J. Jauhiainen, W.A Lee, K.Y. Lu, A. Idris, and G. Anshari. 2012. “Subsidence and Carbon Loss in Drained Tropical Peatlands.” Biogeosciences 9 (3) (March 20): 1053–1071. doi:10.5194/bg-9-1053-2012.</td>
<td>Thank you, we will look at the reference and use it.</td>
</tr>
<tr>
<td>343</td>
<td>Original</td>
<td>Revised</td>
<td>134</td>
<td>Appendix 7</td>
<td>IDELE</td>
<td>IDELE</td>
<td>Is the methodology for a general transportation model has been developed for the FeedPrint tool and used for the Guidelines as well as a suggestion. It's not mandatory. We clarify the reference to FeedPrint.</td>
<td>Please specify.</td>
<td>OK</td>
</tr>
<tr>
<td>344</td>
<td>Original</td>
<td>Revised</td>
<td>135</td>
<td>Appendix 7</td>
<td>TE</td>
<td>IDELE</td>
<td>Replace Netherland by &quot;a country&quot;</td>
<td>Replace Netherland by &quot;a country&quot;</td>
<td>OK</td>
</tr>
<tr>
<td>345</td>
<td>Original</td>
<td>Revised</td>
<td>128</td>
<td>Appendix 3</td>
<td>Table 3</td>
<td>IDELE</td>
<td>Are there C losses due to ploughing?</td>
<td>Please explain.</td>
<td>Indeed, there are. For details see the original paper.</td>
</tr>
<tr>
<td>346</td>
<td>Original</td>
<td>Revised</td>
<td>151</td>
<td>Appendix 8</td>
<td>GE</td>
<td>Teagasc</td>
<td>What are go-downs?</td>
<td></td>
<td>We will find out. Carolyn?</td>
</tr>
</tbody>
</table>