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
1	Original	Revised	general					CEFS	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, for 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-dividing 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.		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. We cannot locate the section in 14040/46 which prohibits subdivision when there are loops.
2	Original	Revised	vii	25	Foreword		GE	CEFS	“Promotion of this assessment” approach is a step too early as there is no mutual agreement among stakeholders upstream (agriculture, primary processing) 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.	**Decline.** There is the opportunity to adjust the guidelines after a 3-year period. 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.
3	Original	Revised	Vii	18-19			GE	IFIF/FEFANA	At this point it should be mentioned the feed to 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.	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.	Accept
4	Original	Revised	Vii	21-22			GE	IFIF/FEFANA	All relevant stakeholders should be listed		Accept. Stakeholders are: farmers, processors of food and beverage products, feed millers or compound feed producers, feed integrators, traders, transporters and other intermediate agents.
5	Original	Revised	viii	9-11			GE	AFIA	AFIA believes Dr. Frank Mitloehner 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. Mitloehner.	Add “Dr. Frank Mitloehner, LEAP Chair 2012-2013” to the bottom of the FOREWORD.	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	Carbon dioxide equivalent	TE	WEIDEMA	“impact” is too unspecific	Change “impact” to “accumulated radiative forcing over a specified time horizon”	Accept. It is suggested to add a definition of radiative forcing to the glossary.

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7	Original	Revised	xi		Glossary	Carbon storage	TE	WEIDEMA	term is not used in the document	Delete	**Decline**: Carbon storage is cross-referenced to "biogenic" & "temporary carbon storage" definitions. I would suggest keeping this definition
8	Original	Revised	xi		Glossary	Characterization	TE	WEIDEMA	Please spell out abbreviations for understanding and readability	Spell out “EF”	EF = emission factor, accept.
9	Original	Revised	xii		Glossary	Comparison	TE	WEIDEMA	Without a definition of “comparative assertion” this definitions becomes meaningless.	Add definition of “comparative assertion”: “A statement that there is a significant difference in environmental performance between two or more products”	Accept.
10	Original	Revised	xii		Glossary	Co-production	TE	WEIDEMA	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.	Change the name of the term defined here to “Joint production”	Glossary corrected.
11	Original	Revised	xii		Glossary	Co-product	TE	WEIDEMA	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.	Change “Output” to “Product” and delete second sentence.	Accept.
12	Original	Revised	xii		Glossary	Crop product	TE	WEIDEMA	Without good reasons, definitions should not deviate from normal usage.	Add “plant, fungus or algae” before “cultivation”	Accept.
13	Original	Revised	xii		Glossary	Cultivation	TE	WEIDEMA	Without good reasons, definitions should not deviate from normal usage.	Change the name of the term defined here to “Plant cultivation”	Accept.
14	Original	Revised	xii		Glossary	Delayed emissions	TE	WEIDEMA	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:	Change definition to: “Emissions that take place one year or more after the start of the human activity from which the emissions occur.”	No, we intended to define slow-release emissions. We have to define this word in the glossary and in the text.
15	Original	Revised	xii		Glossary	Economic value	TE	WEIDEMA	The term “market value ... at the point of production” is ambiguous.	Please specify if the value shall include product taxes or not.	The product price/value does not include taxes.
16	Original	Revised	xii		Glossary	Emission factor	TE	WEIDEMA	The definition is imprecise	Change to “Factor expressing the amount of an emission relative to a unit of activity”	Definition revised.
17	Original	Revised	xii		Glossary	Feed	TE	WEIDEMA	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”	delete last sentence or bring text on page 19 in accordance with this	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.
18	Original	Revised	xiii		Glossary	Global Warming Potential	TE	WEIDEMA	It appears strange not to mention the most important impact from global warming	Add “habitat change,” before “storm”	Standard definition adopted.

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19	Original	Revised	xiii	Glossary	glossary	Feed	GE	IFIF/FEFANA	The definition of Feed says that *"Feed additives are excluded from the definition of feed"* Definition of feed should be in line with the CODEX for consistency reasons.	For consistency between those two parts, it is necessary to revise the definition of feed in the glossary or to change the paragraph in page 19. Other changes may be necessary elsewhere in the text.	Also change text in glossary. Use similar text as in cell I18 and check with definition of Codex.
20	Original	Revised	xii		Glossary		TE	CEFS	The definition for co-product is unclear.	We propose to use the definition from ISO 14040 series : any of two or more products coming from the same unit process or product system	accept
21	Original	Revised	xvi		Glossary		TE	CEFS	The first sentence for the definition of residue is unclear. Moreover, there is no scientific reference to explain that only materials with an economic value higher than 1% of the turnover cannot be considered as a residue. Is this the annual turnover of the company?	We propose to use the following definition: Residue is an output flow which is neither a product nor a waste.	Definition adopted from European Commission 2010/C 160/02
22	Original	Revised	xvii		Glossary		TE	CEFS	Waste cannot be an integral part of the production process as it is not deliberately produced in a production process as it would result in wastage of the raw material and other resources such as energy. Moreover, imagine the consequences if hazardous waste was an integral part of the production process. Its difference with a production residue (which is also not deliberately produced) is that the user has a clear intention to discard it.	We propose to use the definition from ISO 14040 series: substances or objects which the holder intends or is required to dispose of.	Used ISO definition: ISO 14044:2006, 3.35
23	Original	Revised	xiv		Glossary	Impact category indicator	TE	WEIDEMA	The indicator as such is unrelated to the product output. Use ISO 14040 definition:	Change to: "Quantifiable representation of an impact category endpoint"	Accept Used ISO definition: ISO 14044:2006, 3.40
24	Original	Revised	xiv		Glossary	Joint production	TE	WEIDEMA	This is the definition of combined production. Joint production is when the products *cannot* be independently varied.	Change the name of the term defined here to "Combined production"	accept
25	Original	Revised	xiv		Glossary	Land use change	TE	WEIDEMA	The changes also include conversion of non-used land (nature) into use by humans. Without good reasons, definitions should not deviate from normal usage.	Change to: "A process by which human activities transform the landscape"	Accept. We suggest adding "from grassland/pastureland to cropland" in the parenthesis as additional example of LUC.
26	Original	Revised	xiv		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.	Adopted: Product Environmental Footprint Guide, European Commission, 2013
27	Original	Revised	xv		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" Spell out "EF".	PEF definition adopted.
28	Original	Revised	xv		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 14040 definition:	Change to: "Measure of the outputs from processes in a given product system required to fulfil the function expressed by the functional unit"	accept ;ISO definition adopted: ISO 14044:2006, 3.29
29	Original	Revised	xv		Glossary	Release	GE	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.	Decide for one consistent terminology and apply this throughout the document.	ISO definition adopted

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30	Original	Revised	xvi		Glossary	Reporting	TE	WEIDEMA	Is it intended to exclude purely internal reporting? If not, then:	Change “and” to “or”	Adapted from: ENVIFOOD Protocol: 2013
31	Original	Revised	xvi		Glossary	Residue	TE	WEIDEMA	There is no justification for treating so defined outputs differently from other outputs. The term is therefore an unnecessary complication.	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.
32	Original	Revised	xvi		Glossary	Secondary data	TE	WEIDEMA	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.
33	Original	Revised	xvi		Glossary	System boundary	TE	WEIDEMA	Without good reasons, definitions should not deviate from normal usage. The definition provided is a definition of the criteria for setting system boundaries, not the system boundaries themselves.	Change to “The boundary between the activities included in the system and the system environment”	Set of criteria specifying which unit processes are part of a product system [ISO 14044:2006, 3.32].
34	Original	Revised	xvi		Glossary	Temporary carbon storage	TE	WEIDEMA	This is not a definition but a description of when the process to be defined occurs. Term is not used in the document.	Delete	Accept.
35	Original	Revised	xvii		Glossary	Weighting	TE	WEIDEMA	Please spell out abbreviations for understanding and readability	Spell out “EF”	Accept.
36	Original	Revised	2-3	25 page 2 to 26 page 3	Chapter 2 (Scope)	Paragraph 4	GE	French Ministry of Ecology, Sustainable development and Energy	Guidance on the evaluation of additional impacts exists at French and European level, cf. Agribalyse project in France and PEF and Envifood Protocol in the EU. In France, LCI for (ingredients of) feed products at farm level exist for several impacts categories: GHG emissions, ecotoxicity, eutrophication, water consumption. Cf. Agribalyse project: www.ademe.fr/agribalyse-en.This work was carried on by the public operator ADEME with INRA, the main French public agricultural research institute, ART (Swiss research institute) and all the French technical institutes representing each product. Thus, the work is based on strong agricultural and LCA expertise and provides consensual LCI data and modeling method for French agriculture LCI. Method used for is in line with the European Commission PEF: science-based methods, consensual at European level at least, is available to quantify this impact. This impacts category is considered highly relevant for feed by the TAG of the guidance. The ambition of World Food Data project (project from ADEME) has the ambition to develop LCI related to non-French products. This work can help to include impact category related to eco-toxicity in the guidance.	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.

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37	Original	Revised	2		1 and the whole document		GE	EC, JRC, IES, Sustainable Assessment & Monitoring Agricultural Resources Units	Through the entire document, there are no reference at all to the PEF methodology and very little to the ILCD handbook and recommendations, while this methodology is currently tested by dozens of industrial sectors including the feed and livestock sector. It would have been extremely helpful that the LEAP guidance specify where they comply (and when not) to the PEF requirements. This would be a clear added value to members of the food pilots.		Reference to PEF has been made. LEAP provides guidelines and should not be considered as a PEFCR as defined by the PEF.
38	Original	Revised	2		2.1		GE	EC, JRC, IES, Sustainable Assessment & Monitoring Agricultural Resources Units	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.		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.
39	Original	Revised	2	12	1		GE	IFIF/FEFANA	The understanding of product performance by the farmers clearly implements the understanding of the environmental impacts of SFIs. Thus, it should be precised as already commented above.		It is assumed that this is dealt with by accepting suggestions at earlier comments.
40	Original	Revised	2	28	1		GE	IFIF/FEFANA	The fossil energy demand is mentioned as an impact to be assessed. There are other source that might be depleted, such as phosphate for example. Should these sources also be included?		On the longer term they should. But it was not feasible to do that at this stage. Phosphate is indeed important. We suggest to include "resource depletion" in impacts mentioned on Page 3, from lines 10 - 14.
41	Original	Revised	3	15	2.1		GE	(S&T)2 Consultants Inc.	Since this is an attributional LCA it should be made clear that it is direct land use change which is to be calculated and not indirect land use change. This is added at page 16 but it should be noted at the first instance of the term.		We can add "direct land use change" to the definition in the glossary. It is suggested adding the definition for indirect land use change, and specifying that "iLUC is not considered these guidelines" as part of iLUC definition text.
42	Original	Revised	3	20	2.1		GE	(S&T)2 Consultants Inc.	Arable land and grassland should be defined terms. FAO notes a lack of harmonization of the meaning of grasslands (http://www.fao.org/ag/agp/agpc/doc/grass_stats/grass-stats.htm)	Add definitions for arable land and grassland.	Add definitions to glossary

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43	Original	Revised	3	10-Nov	Chapter 2 (Scope)	Paragraph 3	GE	French Ministry of Ecology, Sustainable development and Energy	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. http://www.developpement-durable.gouv.fr/Analyse-d-un-indicateur.html (in French language)		Biodiversity is studied by a TAG. Good input there.
44	Original	Revised	3	1-14	2.1		TE	BASF -Schöner	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.	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.	The category is very relevant, indeed. Can be done in a next version of the Feed Guidelines, as it is beyond the current scope.
45	Original	Revised	3	41913	2.1		GE	eC, JRC, IES, Sustainable Assessment & Monitoring Agricultural Resources Units	Exclusion of relevant impact categories such as water use and others appears to be unjustified and not in line with e.g. the EnviFood 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		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.
46	Original	Revised	3	41913	2.1		GE	eC, JRC, IES, Sustainable Assessment & Monitoring Agricultural Resources Units	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.		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.
47	Original	Revised	3	41826	2		GE	EC, JRC, IES, Sustainable Assessment & Monitoring Agricultural Resources Units	The statement on “Agreement in the LCA community on the validity of the impact categorization model’ (scientific consensus does not seem justified. Please delete.		Accept

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48	Original	Revised	3		2.1		GE	EC, JRC, IES, Sustainable Assessment & Monitoring Agricultural Resources Units	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.
49	Original	Revised	3	20-25	2.1		GE	EC, JRC, IES, Sustainable Assessment & Monitoring Agricultural Resources Units	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.
50	Original	Revised	3	1-25	2.1		GE	AFIA	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.

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51	Original	Revised	4	41699	2.2		GE	WEIDEMA	The choice of an attributional approach, providing “a static representation of average conditions” 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 the 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: “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.” 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.	Change to: “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.”	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.

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52	Original	Revised	4	4 to 8	Chapter 2 (Scope)	Paragraph 2	GE	French Ministry of Ecology, Sustainable development and Energy	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.	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).	See comments above
53	Original	Revised	5	9-Oct	3	3.1	TE	IFIF/FEFANA	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.	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.	We refer to discussion of the SC. No change in text. Animal performance is included in the inventory of the animal guidelines – it is not explicit, but a clear requirement for inclusion due to the requirement of primary data for the foreground.
54	Original	Revised	7	Dec-13	4	4.2	TE	IFIF/FEFANA	Impact categories are not in line with the Guidelines on Poultry. These downstream guidelines should be adapted accordingly.		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. At present, adding categories to the animal guidelines is beyond the project scope.
55	Original	Revised	8	1	4.2		TE	WEIDEMA	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.	Delete “natural”	Accept.
56	Original	Revised	8		4.3		TE	BASF -Schöner	Six reference documents (ISO 14040, 14044, 14025, 14067, GHG Protocol, PAS 2015) 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. (Quote from page 2 "In developing the guidelines, it was assumed that the primary users will be individuals or organizations with a good working knowledge of life cycle assessment.”)	Include how the LEAP guidelines relate to the PEF.	Reference to PEF has been made as a non-normative standard.

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57	Original	Revised	8 to 9	12 page 8 to 27 page 9	Chapter 4.3		GE	French Ministry of Ecology, Sustainable development and Energy	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.	Add French document BPX-30-323 and its declinations in the food sector to the normative documents listed. See them in attached file.	Accept. But it is document for inspiration, not a normative reference.
58	Original	Revised	12	12-15			GE	BASF -Schöner	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 "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." 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: "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..." http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013H0179&from=EN "The overall goal of an Environmental Product Declaration, EPD®, is to provide relevant, verified and comparable information about the environmental impact of goods and services." http://www.environdec.com/	Clarify language around relationship/referring to the sector-specific guidelines as PCRs and PEFCRs	Response to be formulated in relation to other comments.
60	Original	Revised	p 12				GE	IDELE	A comment could be added about how those guidelines are connected, or complete, others (ISO, ILCD, EnviFood, PEF,)	please add a comment	we could add a figure explaining relationship between the various guidances

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
61	Original	Revised	12	Dec-15	5.1		GE	AFIA	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
62	Original	Revised	13	19 to 23	Chapter 5.2		GE	French Ministry of Ecology, Sustainable development and Energy	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.

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63	Original	Revised	13	1	5.2		GE	(S&T)2 Consultants Inc.	There is a notable lack of North American input into the process		Noted. There was a North American chair of LEAP and a member in the TAG.
64	Original	Revised	14	2	6.1		TE	(S&T)2 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.	Add geographic qualifier to increasing demand	Decline. In general, the statement is correct. No detailed information needed. We only can mention that regional differences exist.
65	Original	Revised	14	10	6.1		TE	(S&T)2 Consultants Inc.	Ruminants in North America consume very large quantities of grains and protein concentrates in finishing feedlots.	Add geographic qualifier	See previous comment.
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”	Accept.
67	Original	Revised	14	7-Sep	6	6.1	GE	IFIF/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?	The definition of crop residues is clear in literature; we also refer to IPCC. The other products come from processing and are considered as Agro industrial by products (AIBP), see also the Feedipedia. No extra explanation is required.
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.	Deletion of the mentioning of antibiotics	Accept.
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.	Reference is Gerber et al., 2013. Will be added.
71	Original	Revised	16	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 you one would not be possible to produce safe feed from them	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

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72	Original	Revised	16	4	6	6.2	GE		As mentioned above, other sources might be depleted, such as phosphate. Why aren't they taken into account?		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.
73	Original	Revised	16	41919	6.2		TE	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.	Add ", when delimiting the average supply chains with a combination of different allocation methods" before the first reference	Decline. Assumptions and delimitations always affect the results. This is always the case in studies.
74	Original	Revised	16	20-23	6.2		TE	WEIDEMA	The numbers provided here are derived with a particular allocation method and can therefore not be said to be generally valid. In particular, it appears strange that emissions from manure have apparently been allocated to the grass. Prudence in presentation is warranted.	Add at the beginning of the paragraph: "In an attributional study, using a combination of different allocation methods, it was found that…"	Decline. Assumptions and delimitations always affect the results. This is always the case in studies.
75	Original	Revised	16	24	6.2	5	GE	Teagasc	"Feed links livestock to land use both directly via grazing and indirectly via traded feedstuffs." There seems to be no link between diet quality and this effect on the return of nutrients. Nowhere in the document is this explained. To me this is a significant missing link and may cause an over or underestimation of emissions	Have an implicit link between the Animal and the feed TAGS. There needs to be a direct link between the different supply chains to ensure that all situations are catered for.	There is a link between the different Guidelines. We delimited our system boundaries to the animals' mouth. In the introduction it is now made clear that animal nutrition is an essential part of the whole chain. See comments FEFAC. There are recommendations for estimating the manure composition in the animal guidelines. There is only a weak connection between the manure composition as an output of the animal guidelines and the use of manure as an input for feed production. For situations of integrated production (animal and crops), the accounting required is specific. In general cases, it may not be known where the manure is sourced. It is possible that over/under counting could occur in this case.
76	Original	Revised	16	18	6.2		GE	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: http://dx.doi.org/10.1016/j.jclepro.2014.05.057	Add electricity generation. Also I would suggest to somehow guide reader about the method of calculating emissions from electricity generation	This is a good suggestion, but we can only speak in general wordings, because data on the use of irrigation water is limited
77	Original	Revised	17	1-May	6	6.1	TE	IFIF/FEFANA	This is an effect that is often cited. But are there also figures available that demonstrate this assumption. Is the land use effect as high as necessary to compensate the methane emissions of the ruminants using the grassland?	If possible, a more précised description	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 3000 kg C (with N surplus is 200 kg/ha and CN ratio is 15). This is equivalent to 120 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.

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78	Original	Revised	19	6-Jul	7.1	1st paragraph	GE	IFIF/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.	See cell I18. Feed additives are considered as feed, but we do not provide guidelines in the report.
79	Original	Revised	19	18-22	7	7.1	GE	IFIF/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.	Can the reviewer provide this reference? The study has to be publicly available.
80	Original	Revised	19	21	7.1	3	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 under estimation of emissions	Include all feed additives	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	Revised	19	27-28	7	7.1	TE	IFIF/FEFANA	See the comments above and the link to SFIs		What do the reviewers mean?
82	Original	Revised	20	20	7.2	Box 1	TE	Alexandre Berndt	Complete ration can also be called Total Mixed Ration - TMR	... Farmers prepare rations by blending all feedstuffs into a single, complete ration or total mixed ration.	Accept
83	Original	Revised	20	7	7.2	Box 1	GE	(S&T)2 Consultants Inc.	Five stages are presented	A feed supply chain can be divided into four main stages and one or more intermediate stage:	Accept.
84	Original	Revised	20	16	7.2	Box 1	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.
85	Original	Revised	20			Box 1	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.		Indeed, has to be transport and trade.
86	Original	Revised	21	4			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	Decline. When sugar pulp drying can be divided in the sugar plant, this is a good and useful option.
87	Original	Revised	21	12	7.2	2	GE	Teagasc	Add the text “and intensive” after the word “extensive”	Grazing systems can be both intensive and extensive	Decline. We suggest to leave the word "extensive" out.
88	Original	Revised	21			Figure 4	GE	(S&T)2 Consultants Inc.	Can the 4 main stages be delineated in this figure?		We can give the four stages another color in the figure.

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89	Original	Revised	21	10/5/2014	7.2		TE	WEIDEMA	The text from “The first stage…” to “...only at the farm stage” are confusing and unnecessary, since it does not add any information that is useful to the reader at this stage.	Delete the text from “The first stage…” to “...only at the farm stage”	Decline. It is our experience that it is helpful to the reader to explain that products does not necessarily enter the chain at the farm stage.
90	Original	Revised	21-22	2/22/2014	7.2		TE	WEIDEMA	When applying a consequential approach, this description becomes unnecessary, since these processes belong to the processing industry, not to the feed supply chain. The important consideration here is the crude protein and energy content that determines how much protein and energy feed these inputs represent.	Replace the existing text by: “Using co-products from processing industry reduces the need for other feed inputs, depending on their specific compositions, notably their protein and energy content. When calculating the environmental performance of a feed ration, the industry co-products are represented by the equivalent amounts of protein and energy feeds from the markets.”	Decline. We are not performing consequential analysis.
91	Original	Revised	23		7.2	Box 2	TE	WEIDEMA	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 represents 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, in they contribute no additional environmental burden when used as an input.	Re-write the text in Box 2 to represent the consequential modeling.	Decline. We are not performing consequential analysis.
93	Original	Revised	25, 26		8.2-8.3		GE	IDELE	no detail is given here on how to determine the "functional unit"	it could be useful to explain the difference with the reference flow	Indeed, and that is explicitly meant to be that way.
94	Original	Revised	25	May-28	8	8.1	GE	IFIF/FEFANA	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.	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.	So, we don't need to change anything?
95	Original	Revised	26	Jan-00	8.3	5	GE	Teagasc	Reword, “LEAP Poultry and Small Ruminants Guidelines to “ LEAP Poultry, small ruminants and large ruminants Guidelines”	Reword	Accept, but LR Guidelines are not available yet.

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96	Original	Revised	26	13	8.3		TE	(S&T)2 Consultants Inc.	“Preferably shall” in not an acceptable term.	This is a recommendation so the term must be “should”	Accept.
97	Original	Revised	26	17-24	8.3		GE	(S&T)2 Consultants Inc.	These two paragraphs relate to animal production which is covered in the other documents and not to feed production.	Remove the paragraphs.	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.
98	Original	Revised	26	10-Nov	8	8.3	TE	IFIF/FEFANA	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.		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.
99	Original	Revised	26		8.3		GE	WEIDEMA	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.	Add a section on defining the functional unit, e.g. based on B P 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.	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**
100	Original	Revised	26	11	8.3		TE	WEIDEMA	Gross energy is normally understood as higher heating value. Also, whenever using kg, specify whether dry or wet.	Specify the term gross energy in accordance with normal usage or note clearly if deviating	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.
101	Original	Revised	27	9-11	8.4.1		TE	WEIDEMA	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.	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”.	For economic allocation of factory prices are needed (ILCD 2010). A brief description will be provided by Hans Blonk.
102	Original	Revised	27	24	8.4.2		TE	WEIDEMA	It is confusing to mention here also co-products (dairy and slaughter products, fish from aquaculture), which do not have a “feed production stage” relevant to this guideline.	Delete the words in brackets (and the brackets)	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.

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103	Original	Revised	27	28-30	8.4.2		TE	WEIDEMA	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)	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.	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. **FT: I deleted the sentence and added the text**
104	Original	Revised	27	23ff			TE	EC, JRC, IES, Sustainable Assessment & Monitoring Agricultural Resources Units	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 at the time of cutting 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'.	Explain better or re-consider.	See text above
105	Original	Revised	27	27, 28	8.4.2		TE	IDELE	this paragraph should include a cross-reference to 8.4.9, which deals with time boundary	please add the reference	We have made a cross reference
106	Original	Revised	27	24	8	8.4.2	GE	IFIF/FEFANA	It should be précised if only products are in the scope or also waste streams of the production systems as co- products. This is a very important point due to further allocations of ecological burdens of different systems.	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.	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.

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107	Original	Revised	28	8-Nov	8	8.4.3	GE/TE	IFIF/FEFANA	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.
108	Original	Revised	28		8.4.2	table 1	GE	IDELE	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	please add a comment	Indeed this is correct, we can solve this by asking the small ruminants TAG to add the option to apply other allocation options
109	Original	Revised	28	12	8.4.3		TE	IDELE		Please add Upstream in the sentence to clarify: "In the case of products of animal origin, the distinction between the feed production stage and the UPSTREAM processing stage can be artificial, ..."	Accept.
110	Original	Revised	28		8.4.2	Table 1	TE	WEIDEMA	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”	Accept.
111	Original	Revised	28	12-15	8.4.3		TE	WEIDEMA	It is confusing to mention here these artificial problems relating to co-products, which do not have a “feed production stage” relevant to this guideline.	Delete the paragraph.	Decline. This can be very clear to the reviewer, but might help others.
112	Original	Revised	29	12	8.4.5	3	GE	Teagasc	There is a requirement to create a linkage between the feed offered and the animal outputs in relation to organic N etc. The diet will affect the emissions	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.
113	Original	Revised	29	10-12	8.4.5		TE	WEIDEMA	It is confusing to talk of artificiality here just because the farm stage is sometimes void. This can apply to any life cycle stage, when you make artificial boundaries.	Change two last sentences to “In this case, the farm stage is void.”	Technically spoken, the reviewer is right. But this has been a discussion between the animal and the feed TAG, 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.
114	Original	Revised	30	1-Feb	8	Table 2	TE	IFIF/FEFANA	System boundaries definition clearly shows the gap between feed and animal product guidelines.	The missing link of animal performance and the further considering of SFIs 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.

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115	Original	Revised	31	26-28	8	8.4.7	GE/TE	IFIF/FEFANA	Not only inputs of all activities should be implemented, but also all outputs especially when they are positive for the environment	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.	Decline, the suggested text is already in the line before.
116	Original	Revised	31	23	8.4.7		TE	WEIDEMA	Why is economic and social suddenly included here, when they are otherwise excluded from the scope of these guidelines (page 2, line 29)?	Delete “, economic and social”	Accept.
117	Original	Revised	31	23	8.4.7		TE	IDELE	Why economic and social impacts are here mentioned?	please clarify or delete	see line above
118	Original	Revised	32	27	8.4.9		GE	AFIA	Reference section 11.2 on page 32 in addition to Section 9. The text on page 32 mentions that allocation methods to address in/outputs over a full crop rotation will be addressed in the section on allocation. Section 11.2 addresses this same topic in a clearer and more direct manner, and should be referenced.	“Section 9 on allocation and section 11.2 on cultivation deal with how to …”	Accept.
119	Original	Revised	32	2-9	8.4.8		TE	WEIDEMA	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.	Change to: “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.”	Accept. The whole section has be re written and the following sentence has been added: "It should be noted that if data are readily available, the cut-off rules are not intended to justify exclusion of these inputs "
120	Original	Revised	32		8.4.9		TE	IDELE	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 Agribalyse program the assessment period is generally harvest to harvest, or 1 year for the grasslands. See the Methodological report page 33 here : http://www2.ademe.fr/servlet/KBaseShow?sort=-1&cid=96&m=3&catid=25661)	please add specificity	Using 1 year for grassland is not correct as there are large differences in inputs, yield and quality over the year. This item has been mentioned before. The text suggestion for page 27 provides enough clarity.
121	Original	Revised	32	25	8.4.9		TE	IDELE	The sentence "Many crops…" appears 2 times not consistent with Small Ruminants guidelines which focuses on GHG and energy. This paragraph should be consistent with 11.2.2 ("goal and scope of the study will determine which emissions have to be calculated"). No word is said about toxicity. Why? It could be useful to mention something about that.	please delete one of the extra sentence please add a comment to explain why the different LEAP guidelines don't focus on the same impacts	This is discussion of the SC. We suggest to reconsider the text of the introduction.
122	Original	Revised	32	13	8.4.9	3	GE	Teagasc	It is not clear how this paragraph will relate to grazed grass.	Can this be expanded to make it more clear.	Will be elaborated.

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
123	Original	Revised	33	1	8.4.9	1	GE	Teagasc	The statement longer period is ambiguous.	An example range should be given.	We already refer to section 10, where things are made more clear...
124	Original	Revised	33	5-10	8.4.10		TE	WEIDEMA	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.	Consider simplifying by making it a general requirement to include capital goods, i.e. deleting the section except the last 6 words.	Decline.
125	Original	Revised	33	18	8.4.12		TE	WEIDEMA	The reader cannot be expected to know what the PAS 2050 approach is.	Describe instead the recommended approach.	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 GHG emissions under this guidance. PAS can be added as a footnote
126	Original	Revised	33	19-22	8.4.12		TE	WEIDEMA	The text here suggests that “All emissions associated with products to the primary processing stage … are not taken into account” except for “the emission of biogenic carbon, occurring in the case of land use and land-use change and in the use of lime and urea.” Probably the intention here is not to exclude all agricultural emissions from the inventory, but only those relating to biogenic carbon?	Add “of biogenic carbon” after “emissions”. Clarify what is meant by “associated with products to the primary production stage”	Accept. Change text to: "All emissions of biogenic carbon associated with the cultivation stage of products are assumed to occur etc.
127	Original	Revised	33	17-22	8.4.12		TE	WEIDEMA	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.	Consider to apply instead the more consistent and generally accepted approach of ISO 14067	This can be covered by used the GWP for methane, adjusted for biogenic carbon.
128	Original	Revised	33	25-26	8.4.13		TE	WEIDEMA	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 GHG emissions associated with a process or product through the removal of, or preventing the release of, GHG emissions in a process *related* to the life cycle of the product”	Delete second sentence. Consider adding instead: “However, if a reduction in GHG emissions associated with a process or product through the removal of, or preventing the release of, GHG emissions in a process related to the life cycle of the product, this shall be included in the inventory.”	Accept. implemented in the feed document but do we also implemented in the other guidelines
129	Original	Revised	33	5	8.4.10		TE	(S&T)2 Consultants Inc.	The inclusion of the machinery adds complexity and will rely on secondary data. If this is kept the sentence should be simplified.	Used in cultivation which should instead be included in the life cycle inventory.	This will be rephrased accordingly the comments of Weidema. See above.

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
130	Original	Revised	34	4	8.5		GE	(S&T)2 Consultants Inc.	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.		We consider fossil energy demand from a resource depletion perspective, not from a resource efficiency one. However, it is an interesting option, which could be implemented in a next version of the Guidelines. In that case, alignment with other existing approaches is required.
131	Original	Revised	35	1	8.5	3	TE	Teagasc	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.	Include GTP metric as a sensitivity measure	It is a useful suggestion, but beyond the scope of the current version.
132	Original	Revised	35			Table 3	GE	(S&T)2 Consultants Inc.	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.		Decline. This is a simplified method to calculate LUC emissions. Indeed, the operator has no control, but it gives insight in LUC emissions related to the system.
133	Original	Revised	35		8.5	Table 3	TE	WEIDEMA	The inventory models for “Climate change from LUC” and the associated references belong in the inventory Chapter.	Move the inventory models for “Climate change from LUC” and the associated references to the inventory Chapter.	Correct. We will change this.
134	Original	Revised	35		8.5	Table 3	TE	WEIDEMA	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 condensated 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.	Change “LHV” to “Higher heating value”	Decline: The LHV does not include heat of vaporization of water. As long as the user is consistent in using LHV or HHV, they should get the same result.
135	Original	Revised	35		8.5	Table 3	TE	WEIDEMA	For acidification and eutrophication it does not seem wise to recommend different methods for different geographical parts of the inventory.	Recommend same method for all geographies.	Decline. There is no general method. This will not be accepted by other regions.

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136	Original	Revised	36, 42 and 90	p. 36 lines 3-11 and p. 42 lines 1-15 p. 90 lines 24-25			Ge	AAF- Gruson L.	In page 36, the principles described by ISO 14 040 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 clearly mislead any user of the guidelines, by discrediting 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 creates 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.	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.
137	Original	Revised	35		8.5	Table 3	ge	DANISHI ALI	Environmental impact assessment methods	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 methods? 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 tis in general terms.
138	Original	Revised	36	24-25	9.1		TE	CEFS	Would it be possible to be more precise as to what is defined as the economic value of the products? Would that be world market price, and which years should be taken into account?	Specification of number of years and also price needed	For economic allocation, factory prices are needed (ILCD 2010). A brief description will be provided by Hans Blonk.
139	Original	Revised	36	26-27	9.1		TE	CEFS	The fact that outputs can be partly co-products and partly waste is unclear. Product residues should also be defined.	Please include a definition of products, product residues and waste in the Glossary. (See comment on Glossary)	We have definitions of all three.
140	Original	Revised	37	8	9.2		TE	WEIDEMA	Combined and joint productions are two different things. The meaning of the term "complex" is unclear.	Change ", complex" to "and"	Accept.
141	Original	Revised	37	13	9.2		TE	WEIDEMA	Since this guideline follows ISO 14040/44, the approach should not be characterized as "attributional"	Delete sentence.	decline
142	Original	Revised	37-42	14 ff.	9.2 a)		ge	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.	See specific comments.	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 for separate the different production units.

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143	Original	Revised	37	15-24	9.2 a)		TE	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.	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).”	see above We will use the word "stage" as an alternative.
145	Original	Revised	37	26-27	9.2 a)		TE	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 clearer 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.	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.”	Accept.
146	Original	Revised	37	27-29	9.2 a)		TE	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.	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.”	Accept.
147	Original	Revised	37	27	9.2 a)		TE	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?	please define	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.

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
148	Original	Revised	38		9.2 a)	Figure 7	TE	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. 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.	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 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	TE	IDELE	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)		TE	WEIDEMA	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.	Change to: "Avoid allocation by sub-division"	see above
151	Original	Revised	39	2/1/2016	9.2 a)		TE	WEIDEMA		Change to:	No change
152	Original	Revised	39	2/1/2016	9.2 a)		TE	WEIDEMA	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. It is unclear what the conditions are for inputs/activities to be "directly" assigned to a co-product for Flow 1.a. The examples does not specify what co-product the inputs are assigned to. Flow	"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	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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									1a rather appears to be the co-products from production units that cannot meaningfully be further subdivided The difference between flow 1.b. and flow 1 c is unclear. The division at this point gives an unnecessarily complicated description and leads to a duplication of identical decision boxes in step 2 and 3 in the current Figure 7. By including here all forms of subdivision, also those currently described under Step 2 (page 39), the description becomes more clear and straightforward. 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 changing the heading here to a common heading.	inputs of field operations for a specific crop at an 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 and accounting) Change to: “Convert production units with more than one product into single-product units	
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 (un)ambiguity 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 inversed, 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. Mixing system expansion and allocation in the same study leads to the result being neither attributional 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 several 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, by using 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 would actually be involved when switching between the analyzed systems. To identify this, it is necessary to know: - whether the production volume of the studied product systems fluctuate in time (in which case different submarkets with their technologies may be relevant), or the production volume is constant (in which case the base-load marginal is applicable), - (. . .) whether (. . .) the inputs are delivered through an open market, in which case it is also necessary to know: - whether any of the processes or technologies supplying the market are constrained (in which case they are not applicable, since their output will not change in spite of changes in demand), - which of the unconstrained suppliers/technologies has the highest or lowest production	Decline. This consequential approach is not chosen and applying system expansion is consequential modeling.

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									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.	
161	Original	Revised	40	6-30	9.2.a)		TE	WEIDEMA		Delete here when new text is adopted for page 39 line 2-16.	See earlier comments. Some text will be adjusted.

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
163	Original	Revised	40	6-30	9.2 a)	O	TE	WEIDEMA	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 an 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	Delete here when new text is adopted for page 39 line 2-16.	The Steering Committee has required that the guidelines be strictly attributional.

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
									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	Revised	40	31 to 33	Chapter 9.2		ge	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.		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.
170	Original	Revised	40	22-33	9.2		ge	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.		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.
171	Original	Revised	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 Nitrates	please add a paragraph	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	Revised	40	17-21	9.2		TE	CEFS	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?	Please Specify	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.
173	Original	Revised	41	14	9.2		TE	CEFS	Cross validation and critical review is needed to be able to express that the feed guidelines are in line with the ISO stepwise approach.	We would recommend removing line 14.	Accept.

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
174	Original	Revised	41	18-23	9.2		TE	CEFS	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.	Consider deleting footnote 4.	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.
175	Original	Revised	41	4-12	9.2 a)		TE	WEIDEMA	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	Delete here when new text is adopted for page 39 line 2-16.	We hardly change the text on page 39, so we can leave the sentences in the text.
176	Original	Revised	41	13	9.2 a)		TE	WEIDEMA	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.	Delete	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.
177	Original	Revised	41	14	9.2 a)		TE	WEIDEMA	It should not be necessary to repeat that here.	Delete	Accept.
178	Original	Revised	41	15-17	9.2 a)		TE	WEIDEMA	This paragraph repeats what is already covered above.	Delete paragraph.	Correct, but we are not all highly trained LCA workers. We prefer to leave it in.
179	Original	Revised	41	18-29	9.2 a)		TE	WEIDEMA	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 “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.	Delete	We don't avoid allocation, so the distinction between residue and waste remains. The criterion for residue is indeed the economic value.
180	Original	Revised	41	18	9.2		TE	IDELE	to help in better understanding, the definitions should be exactly the same in p 41 and p90 and through the different drafts		We will do this.
181	Original	Revised	42	18-28	9.2	4	GE	Teagasc	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.	Align in final document	Discussion in steering committee. Different allocations are possible, indeed. It is not necessary to have the same allocation along the whole chain.

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182	Original	Revised	42	13	9.2		ge	IDELE	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.
183	Original	Revised	42	18	9.2		TE	IDELE	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...	please add recommendations	Clear glossary definitions with examples are provided. Recommendations on data sources can be added
184	Original	Revised	42	24	9.2		TE	IDELE	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?
185	Original	Revised	42	1-15	9.2 a)		TE	WEIDEMA	The speculations here are irrelevant when applying subdivision or system expansion to all co-products.	Delete	Decline. This is not speculation, but a reasoning why economic allocation is used.
186	Original	Revised	42	16-17	9.2 a)		TE	WEIDEMA	The use of sensitivity analysis for inputs should be recommended in general. No need to specify this at this place.	Delete	Decline. Repetition is acceptable.
187	Original	Revised	42	18-32	9.2 a)		TE	WEIDEMA	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	Decline. This is a comment about a consequential approach, which is not applied in our guidelines.

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										the least alternative costs from not using the product in question, and is therefore the most sensitive to changes in price). Such reductions in marginal use shall therefore be added as inputs to the market activities supplied by the co-producing system to compensate for the missing supply from the co-producing system. 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.”	
192	Original	Revised	42	1/1/2015			TE	AAF- Gruson L.	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 model 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).	See above.	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.

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193	Original	Revised	Page 42	lines 8-10			Ge	AAF- Gruson L.	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.	See above.	There is no perfect method. No changes in text. And we go for product consistency over process consistency.
194	Original	Revised	Page 42	lines 13-15			TE	AAF- Gruson L.	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) can 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.	Because of this, the guidelines should remain neutral as it cannot capture the specificities of the processes/products that will be studied.	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.
195	Original	Revised	42	12			TE	Alexandre Berndt	Useless webpage in Dutch	Use reference available in English	Link to web page deleted.
196	Original	Revised	42	3-10	9.2		TE	CEFS	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.	Propose to delete sentences 8-10 as they are misleading.	Decline. We do not consider the sentences as misleading. We also speak about the feed quality related to underlying physical processes in animal production.
197	Original	Revised	42	13-15	9.2		TE	CEFS	Choosing economic allocation would mean assigning on price to each feed material. This would lead to differentiation in LCA results 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.	Propose to consider physical allocation using digestible energy or mass according to the main function of the animal feed.	Decline. It is not only protein and energy, but also the utilization of this, it is different types of energy for different animals (pigs, 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.

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198	Original	Revised	43	27	9.2.2		Ge	(S&T)2 Consultants Inc.	This should be clarified so that the N2O emissions associated with manure application are also included in the system boundary.	Only the application and decomposition of manure in cultivation falls within the system boundaries.	we can adjust the text to clarify
199	Original	Revised	43	9-11 and 13-14	9.2.1		TE	WEIDEMA	It can hardly be said to be good practice to apply worst-case estimates. Good practice must be to provide a best estimate with a corresponding uncertainty, cf. the requirement in section 10.4, 2nd bullet. Anyway, 100% empty return trips can hardly be called worst case. In Europe, the worst national average for empty trips is 45% (for Cyprus). Anyway, this can hardly be a relevant topic in a chapter on allocation. This would fit better in a chapter on data sources.	Delete	Thank you for the information. This will be used to adjust text. We can consider the moving of the text about the empty kilometres.
200	Original	Revised	43-44	line 27 - line 2 on p. 43	9.2.2		TE	WEIDEMA	Since manure is a non-determining co-product, manure does not cross the system boundary to the plant-based feed production systems. The supply of the corresponding fertiliser equivalents needed to fulfill the crop requirements comes from the markets for fertilizers. This is due to the supply of manure being constrained by the demand for the determining animal products (see ISO 14049, clause 6.4).	Replace by: “For the feed guidelines, the only relevant issue is the fertiliser requirement of the feed crop. This is supplied from the markets for fertilsers, which do not include manure, due to this supply being constrained by the demand for the determining animal products (see ISO 14049, clause 6.4).”	Decline. The suggested text is consequential approach, which is not applied here.
201	Original	Revised	43	2-Mar	9	9.2.1	Ge	IFIF/FEFANA	It is not only the global transportation of the final feed but also the global sourcing of feed raw materials for the production of compound feed. These transportation inputs should be considered as well.	Since the feed products as well as the feed raw materials are transported all over the world, the importance of transport in the overall environmental impact can be significant.	We will change the text to: since feed raw materials and feed products, are transported...
202	Original	Revised	43	27-33	9	9.2.2	GE/TE	IFIF/FEFANA	The allocation of the manure is a very important and also complex point, which has been investigated thoroughly in the SFIs study. As recommended here, the manure is not properly reflected in the poultry guidelines, since this document only considers GWP but not AP and EP, which play a more important role for manure treatment than the GWP.	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 like 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).
203	Original	Revised	45	11-12	10.1		ge	AFIA	Additional clarity on time-related representativeness of data collection would also be helpful. How much disparity should be allowed among data sources? For example, is it appropriate to assess feed utilized in 2014, using 2012 yield data (most recent) for certain feed ingredients?		We can provide extra information
204	Original	Revised	46	29-34	10.2.1		ge	AFIA	Our members would appreciate additional clarity on transport and trade traceability requirements. Full traceability of a feed grain to an origin farm location is not practical. One potential issue is comingling of feed products at a processing plant from multiple feed production sites, ranging from 10 to 100 miles from the plant. Is it appropriate to use an average “distance to processing		Additional information is provided in Appendix 7.

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									plant" assumption for all feed products transported to a single processing plant?		
205	Original	Revised	46	8	10.2		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	TE	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	(S&T)2 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		10.2.2	Table 4	TE	IDELE	we can suggest to add the Agribalyse database and other country specific databases http://www2.ademe.fr/servlet/KBaseShow?sort=-1&cid=96&m=3&catid=25657		Thank you, will be added.
209	Original	Revised	49		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	Table 4	Chapter 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

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213	Original	Revised	58	23-25	11.2.1		ge	AFIA	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.
214	Original	Revised	58	23	11.2.1		TE	IDELE		Rewrite: "for annual crops, an assessment period of AT LEAST 3 years shall be used…"	Agree
215	Original	Revised	59	17-21	11.2.2	Figure 10	TE	WEIDEMA	It seems strange not to list the most important natural resource input: Air (or CO_2 at least). Except for natural precipitation, water and land are actually most often economic inputs prepared by other suppliers rather than direct natural resource inputs.	Add “air” (or CO_2) as natural resource input. Consider changing water to rainwater and moving water and land to be economic inputs.	Good suggestion. This can be changed.
216	Original	Revised	59	1ff			TE	EC, JRC, IES, Sustainable Assessment & Monitoring Agricultural Resources Units	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).	Decline. This is already explained in line 2 - 3.
217	Original	Revised	60		Table 7			EC, JRC, IES, Sustainable Assessment & Monitoring Agricultural Resources Units	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.
218	Original	Revised	60	6	11.2.2		TE	IDELE	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.

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219	Original	Revised	61		11.2.2	Figure 11	TE	WEIDEMA	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.	For row 2 and 11 (Input of manure…, Input of crop residues) explain the rationale and procedure for conversion to market inputs.	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
220	Original	Revised	61	1	11.2.2	11	GE	Teagasc	Please reword “if data no quality data”	Delete data	Thanks for the correction. Word will be deleted.
221	Original	Revised	62	32	11.2.3	5	GE	Teagasc	Not clear to me what the relevance of ratios are in the calculation. Need actual numbers	Expand	When data on P content of manure are missing, you can use the NP ratio from literature and apply this instead.
222	Original	Revised	62-63	line 26, p. 62 to line2 on p. 63	11.2.3 b)		TE	WEIDEMA	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.	Replace with: “Manure application and emissions are part of the product system for animal production. To avoid double-counting they shall not be included in the feed production systems. To the feed production systems, the manure application supplies fertiliser value. In the feed production system this is represented by an input from the markets for fertiliser, which are supplied exclusively by synthetic fertiliser manufacturers. The conversion from manure to fertiliser input is based on the amount of fertiliser actually substituted by the manure, which can either be calculated from the fertiliser requirement of the crop or on the fertiliser value in the manure, depending on which of these data sources are most reliable.”	Manure and crop residues both can be considered as an inputs in an attributional assessment.
223	Original	Revised	63	30-31	11.2.3 e)		TE	WEIDEMA	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.”	We will change the text.
224	Original	Revised	63	27-31			TE	EC, JRC, IES, Sustainable Assessment & Monitoring Agricultural Resources Units	Why lime application is averaged over 3 years and not as many years as the application interval is (e.g. if it is applied every 5 years, the impact could be averaged over 5 years).		The text already states “between consecutive applications”

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225	Original	Revised	64	3/2/2014	11.2.3 e)		TE	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.	Replace with: “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.”	In an attributional assessment these residues can be accounted as inputs.
226	Original	Revised	64	1			GE	CEFS	“Liming can also take place with residual products (e.g. residues from sugar beet processing) from industry” The term “residual product” is confusing. ISO 14040 series uses for the output flows either (co-/intermediate) product or waste (for disposal).	Change to: “Liming can also take place with co-products or residues (e.g. co- products from sugar beet processing) from industry”	Accept.
227	Original	Revised	65	12	11.2.3	i)	GE	Teagasc	Is including fossil fuel consumption by machinery double counting the use of fuel mentioned in the previous section?	Only include fossil fuel consumption by machinery once.	Indeed, one could consider this as double counting. We will add text to make clear that this can only be counted once.
228	Original	Revised	66	19-21	11.2.3 k)		TE	WEIDEMA	To clarify that all the residue must be accounted for, a sentence should be added to that effect.	Add at end of paragraph: “Instead, the full amount of the residue shall be calculated as either burned or left in the field, based on the normal local practice.”	Decline, not all the residue shall be accounted for, only the fraction of the residue that is used for other purposes.
229	Original	Revised	67	2/1/2014	11.2.3 k)		TE	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.	Consider to apply instead the more consistent and generally accepted approach of ISO 14067	We follow IPCC guidelines regarding biogenic carbon.
230	Original	Revised	68	18-19			TE	EC, JRC, IES, Sustainable Assessment & Monitoring Agricultural Resources Units	The following is sentence is slightly misleading: “The soil carbon models used in the assessment shall be published in peer reviewed scientific papers and have received good acceptance.”	Change the sentence to: “The soil carbon models used in the assessment shall have been published in peer reviewed scientific papers and have received good acceptance.”	Accept.

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231	Original	Revised	68	19			TE	EC, JRC, IES, Sustainable Assessment & Monitoring Agricultural Resources Units	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.	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.	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.
232	Original	Revised	68	10	11.2.3 l)		GE	IDELE	"GHG related to land use SHALL be included": it is very ambitious! It is very difficult to reach to a consensus on the methodology to take it into account	Replace by SHOULD	Decline. The consensus recommended is to use different methods and to report separately.
233	Original	Revised	69	10/9/2014	11.2.3 n)		TE	WEIDEMA	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.	Delete or clarify	Decline. The benefit of the released nutrients will be captured through lower inorganic fertilizer requirements.
234	Original	Revised	70	18	11.2.3		GE	(S&T)2 Consultants, Inc.	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.	Eliminate options 2 and 3.	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.
235	Original	Revised	70	24ff			TE	EC, JRC, IES, Sustainable Assessment & Monitoring Agricultural Resources Units	The third bullet should refer to total cropland expansion.	Modify to "if so, how much of total cropland expansion was into grassland and into forest land, respectively?	Accept.

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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				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.* 1–64.	Thanks, we will correct.
239	Original	Revised	70	6	11.2.3 o)		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	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 et 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 text and figure to accommodate changes proposed for section 9.2 a)	Adjust text and figure to accommodate changes proposed for section 9.2 a)	Decline
243	Original	Revised	75	3-4	11.2.4.	2	GE	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.

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244	Original	Revised	76	9/1/2014	11.2.5		TE	WEIDEMA	Adjust text and figure to accommodate changes proposed for section 9.2 a)	Adjust text and figure to accommodate changes proposed for section 9.2 a)	Decline.
246	Original	Revised	77	21-27	11.2.5		TE	WEIDEMA	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.	Decline.
247	Original	Revised	77	11ff			TE	EC, JRC, IES, Sustainable Assessment & Monitoring Agricultural Resources Units	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?	Explain better.	We can make a better explanation.
248	Original	Revised	77	1-27	11.2.5	All	GE	Teagasc	Not clear how grazed pasture will be handled here.	Include grazed pasture as an example	We will try.
249	Original	Revised	78	29-33	11.2.5	Box 4	TE	WEIDEMA	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.	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 markets 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."	Decline. The suggested text is consequential approach, which is not applied here.
250	Original	Revised	79	1-10	11.2.5		TE	WEIDEMA	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 detailed description of how to identify the determining product, as found in e.g. the ecoinvent data quality guidelines.	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	Decline. The suggested text is consequential approach, which is not applied here.

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										$(E,R)_{DependentCoproduct}$ = emissions and resource use of the dependent co-product"	
259	Original	Revised	79	11-28	11.2.5		TE	WEIDEMA	This text is superfluous when allocation is always avoided.	Delete	Decline, this is all related to consequential approach, which is not applied.
260	Original	Revised	80	1ff		11.2.6	TE	EC, JRC, IES, Sustainable Assessment & 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.		We could rephrase the first sentence to reduce this risk.
261	Original	Revised	82	5-8	11.3.1		GE	WEIDEMA	This text is confusing and does not add any relevant information.	Delete	Accept.
262	Original	Revised	82	9	11.3.1		GE	WEIDEMA	The assessment should come after the inventory.	Replace: "an assessment that models" by "a model of"	Accept.
263	Original	Revised	83	4-7	11.3.2	Figure 16	GE	WEIDEMA	The last row, right column should be "Not relevant", since the treatment of residues is outside the system boundaries.	Change the last row, right column to: "Not relevant"	Decline, treatment of materials that become residues is within the system boundaries.
264	Original	Revised	83	11-13	11.3.2 a)		GE	WEIDEMA	This sentence is unclear. The energy and ancillary material inputs must at least appear as waste or emission outputs.	Delete or clarify	Decline. The text is correct. Energy use is found back as emission, so is waste. Not necessary to mention it here.
265	Original	Revised	83	14-15	11.3.2 a)		GE	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.	Remove the "shall" requirement for "chemical characteristics" or specify more precisely what characteristics are essential for the goal and scope.	The chemical characteristics are required to calculate Gross Energy, which is necessary for other allocation methods. This could be added as a sentence.
266	Original	Revised	83	16-20	11.3.2 a)		GE	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.	Delete or clarify	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.
267	Original	Revised	84	10 and 14-15	11.3.2 a)		GE	WEIDEMA	It is not the emissions as such that needs correction, but the amount of input required.	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."	Accept.

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268	Original	Revised	84	25	11.3.2 e)		GE	WEIDEMA	It is not in line with the general recommendations 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	It is not clear why the additional treatment of a co-product should lead to evaporation of the inputs?	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 pr	Delete	Decline. This helps the user to decide what to do per "product" (or
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. 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: “Data shall be collected on the energy and protein content of the residues, in order to determine much they represent in terms of required input from the markets for energy feed crops and protein feed crops.”	Use of ‘residue’ 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 ‘residue’ here seems inconsistent with the definition; once it is a residue, it is indeed out of the system

Commented [GT1]: I agree with Weidema that the text is confusing.

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279	Original	Revised	86	12			GE	CEFS	"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	Decline. We defined the residue and it has little value when it is not dried.
280	Original	Revised	87	8-17	11.3.3		GE	WEIDEMA	"Input/output analysis at factory level" is described as an economic allocation at the factory level and is as such irrelevant when allocation is generally avoided.	Delete	This is true for consequential assessment, but allocation is not avoided in these guidelines...
281	Original	Revised	87	15-24	11.3.3		TE	WEIDEMA	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 boundarys
282	Original	Revised	88	3-4	11.3.4		GE	WEIDEMA	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:"	We will change this.
283	Original	Revised	88	16-25	11.3.4		GE	WEIDEMA	Re-write to accommodate changes proposed for section 9.2 a)	Re-write to accommodate changes proposed for section 9.2 a)	Decline. Changes not adopted as an attributional approach is used in the guidelines.
284	Original	Revised	89	41791	11.3.5	Figure 17	GE	WEIDEMA	Re-design to accommodate changes proposed for section 9.2 a)	Re-design to accommodate changes proposed for section 9.2 a)	Decline. Changes not adopted as an attributional approach is used in the guidelines.

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285	Original	Revised	89	41982	11.3.5		TE	WEIDEMA	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 (un)ambiguity as any other market input to the product system, not only for energy products. Thus, system expansion should be accepted as adequate in all cases where the subdivision by physical causality has not been possible (refer to comments to Chapter 9).	Change “this is the case only when the co-product is used for energy production that otherwise would be taken from the grid. Therefore, when products are used to replace fossil fuels for producing heat, steam or electricity, system expansion can be applied and line 3a can be used” 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, by using 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 (see Chapter 9)”	Section revised to reflect fully attributional approach for the guidelines.
286	Original	Revised	88	31, 32			GE	IDELE	This last sentence seems confusing		We can remove the sentence.
287	Original	Revised	89	7	11.3.5		TE	IDELE		replace by Figure 17 (if appropriate)	Thank you, we will.
288	Original	Revised	89	11	11.3.5		TE	IDELE	What about residues used to replace fossil fuels? It should be appropriate to also apply system expansion.		Section revised to reflect fully attributional approach for the guidelines.
289	Original	Revised	90	1-14	11.3.5		TE	WEIDEMA	When allocation is generally avoided, this text becomes irrelevant.	Delete	Decline
290	Original	Revised	90	16	11.3.5		TE	WEIDEMA	Figure reference is superfluous (or should be corrected)	Delete “line 3e shall be used and” or update reference.	I don't think the reference to line 3e is wrong. So, decline.
291	Original	Revised	90	19-33	11.3.5		GE	WEIDEMA	When allocation is generally avoided, this text becomes irrelevant.	Delete	Decline
292	Original	Revised	91	12-32	11.3.5	All	GE	Teagasc	It’s not clear how the definition of residue and waste is arrived at. How are these decided upon? This might make products like beet pulp which are fed fresh have a very low emissions value. Processed beet pulp has a significant economic value in many countries	Clarification	We will make a clarification. Wet beet pulp has a very low emission (however transporting leads to high emissions), while processed beet pulp has a higher emission, because drying emissions are fully allocated to the pulp.
293	Original	Revised	91	17		Box 5	GE	(S&T)2 Consultants, Inc.	The classification of all wet co-products as residue is totally in consistent with current practices. Wet distillers’ grains and brewers’ grains have significant economic value. Their 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 LCA’s done in these sectors and therefore should have a “debit” associated with them in feed systems.	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 anymore. Indeed. That is correct.
294	Original	Revised	91	41944	11.3.5		GE	WEIDEMA	When allocation is generally avoided, this text becomes irrelevant.	Delete	Decline
295	Original	Revised	91	12	1.3.5		GE	WEIDEMA	The “a)” in this heading is strange, since there is no b). The heading is probably best removed since the text flows directly from the above.	Delete line	Indeed, but there are sub-headings in this section. So we leave the heading in the text.

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296	Original	Revised	91	13-15	1.3.5		GE	WEIDEMA	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.”	Decline
297	Original	Revised	91	29-32	1.3.5		GE	WEIDEMA	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.”	Decline. As an attributional guideline, the text, as written is appropriate.
298	Original	Revised	91	20	11.3.5		TE	IDELE		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.
299	Original	Revised	91	17-25		Box 5	GE	AFIA	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. While 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 its 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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300	Original	Revised	91	Box 5			GE	CEFS	The concept of dividing co-products into “real” co-products to which upstream emissions are allocated and residues with no allocation is highly misleading. If an output flow is produced on purpose (e.g. when it fulfills a certain specification or underwent certain processing steps like egg drying) then it is a (co-)product which also upstream emissions have to allocated to.	Delete examples “beet pulp from sugar production” and “distillers grain from ethanol production” because these examples are co- products. .	Decline. The wet residue, as an internal exchange in the refinery is treated as a residue, and has no upstream emission. Subsequent additional treatment upgrades the wet residue to a co-product, where only drying energy is assigned at the factory gate.
301	Original	Revised	92	6, 7	11.3.5		TE	IDELE		finish the sentence by "if physical allocation is not applicable, in accordance with the decision tree)	Accept.
302	Original	Revised	92	4/1/2014	1.3.5	Figure 18	GE	WEIDEMA	This figure is misleading. A residual (dependent) co-product does not have an independent life cycle.	Delete	Decline. From an attributional perspective, this is an appropriate description.
303	Original	Revised	92	5/1/2029	1.3.5		GE	WEIDEMA	When allocation is generally avoided, this text becomes irrelevant.	Delete	Decline
304	Original	Revised	92			Figure 18	TE	CEFS	The diagram for dried beet pulp contains certain errors: · Pressing and Drying are separate processes where drying precedes pressing. However, not all pulp is dried. Often pressed pulp is sold separately as feed. · Molasses does not incur further treatment but is used as feed (e.g. dried together with pressed beet pulp) or is used as raw material for fermentation industry. Output flow from these processes typically is vinasse. · Unlike cane sugar, beet sugar does not undergo refining but purification to produce white sugar. This is an integral production step of sugar production. Final waste is not technically correct. The separation process leads to beet leaves and roots to be separated from the rest of the beet which are used as animal feed or for biogas production.	We would like to replace the diagram with the following:	Decline. The figure we used is applied in sugar industry as well.
305	Original	Revised	Page 92	Line 8-9 and 20-21			GE	AAF- Gruson L.	This part under the title “applying allocation to valuable co-products” tends to suggest that, should an allocation method not be chosen, the input/output analysis could be carried out at the factory level. This would lead to an even greater uncertainty as it would not evaluate specific processes applied to different intermediate products, after the multi-functional process. This would, in most cases, not be acceptable, as it would lead to environmental profiles that have no link to the production process of each product.		The reviewer is referred to the next page where we clearly explain another method as well. So, the text is correct. It is our experience that division into sub processes is difficult because the processing industry often does not have the data. When the data are there, the better!

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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	1-5	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 “CO-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		TE	IDELE	It should be AT LEAST two alternative allocation methods recommended	Rewrite (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 methodology.	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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316	Original	Revised	95	6-9	1.3.5		GE	WEIDEMA	Table 8 can be re-worked to support the system expansion and the conversion from residue inputs to generic market inputs.	Change to: “List of default properties	Decline
317	Original	Revised								To support the consistent performance of feed LCA’s, the use of default properties is recommended (Table 8). The defaults are derived from a global assessment of production processes.”	Decline.
318	Original	Revised	95-96		1.3.5	Table 8	GE	WEIDEMA	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.	Decline.
319	Original	Revised	Page 95	Line 7-9 and table 8			GE/TE	AAF- Gruson L.	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.	The European starch industry cannot support the allocation fractions proposed for its products as “default allocation fraction”.	This is based on technical results and prices. The European starch industry is kindly invited to give their default allocation factors.
320	Original	Revised	95		11.3.5	Table 8	TE	IDELE	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.	Please specify	We will specify and can add text that the default factors come from a limited number of studies and that is recommended to look whether these defaults suit you or that regional defaults need to be developed.
321	Original	Revised	95			Table 8	GE	(S&T) Consultants, Inc.	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.	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.	Accept, good suggestion. The defaults are a kind of emergency exit. So only when you don't have anything better.
322	Original	Revised	96			Table 8	GE	(S&T) Consultants, Inc.	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.	Remove rendering examples.	Decline. See suggestions above. When you don't have better information, the defaults give you a "not-too-wrong" figure.
323	Original	Revised	97	1-16	1.3.5		GE	WEIDEMA	When allocation is generally avoided, this section becomes irrelevant.	Delete	Decline

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324	Original	Revised	97	23-24	11	11.4.1	GE	IFIF/FEFANA	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.	Re-thinking and updating the requirements to feed	This is intended to be the description of activities in this stage, not a requirement for data collection. We can rephrase this sentence to clarify this point.
325	Original	Revised	98		11.4.2	Figure 22	TE	IDELE	Why electricity is not mentioned? And gas	please add if relevant	They are relevant, just forgotten. We will add them.
326	Original	Revised	99	12-13	11.4.2 b)		GE	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.	Remove the "shall" requirement for "chemical characteristics" or specify more precisely what characteristics are essential for the goal and scope.	Decline. The chemical characteristics have been defined in an appendix and are used to help in selecting information about the feed. One could indeed select from this, based on the goal and scope. Other stakeholders even want to extend the list, related to
327	Original	Revised	101	15-16	11	11.5.1	GE	IFIF/FEFANA	Functional unit as laid down at the beginning [illegible] and the energy content. Covering the animal´s requirements, also the energy to Essential Amino Acids ratio should be considered; otherwise the comparison is not valid. On the other hand, the lack of nutrient of the extensive farming would become obvious.		This is correct. We only defined the minimum characterization of the feed, to ensure that, at least, the dry matter consumption and energy provided are able to be correlated between studies.
329	Original	Revised	103	9	11	11.5.2	GE	IFIF/FEFANA	How is phase feeding to be considered??		It isn't mention, but that doesn't mean that is excluded. We can add
330	Original	Revised	104	9	11.5.2		GE	BASF -Schöner	"When primary data are not available a standard ammonia content of grass silage shall be used from internationally accepted literature or databases."		What is the question?
331	Original	Revised	104	1	11.5.2		TE	IDELE	default figures on losses could be proposed (from Agribalyse)		Good suggestion, there are more studies having figures. But when Agribalyse has a list, please send.
332	Original	Revised	110	20-25	12		GE	IFIF/FEFANA	Due to the already indicated weak formulation of the functional equivalence of the assessed option, the interpretation of the results might become difficult, since only the ecological burden of the feed is under consideration based on the energy content and not on the real nutritional value. Also environmental benefits due to the functionality of the feeds (especially through feed additives) are not considered properly.	The minimum requirements for the feed should be reconsidered as already pointed out several times.121	The guidelines are not for interpretation, but for how to calculate environmental impacts. It has already been mentioned in the introduction (and will be improved) that the full chain of feed production and utilization will show the right picture, especially when it comes to additives; animal guidelines necessarily capture the effects of the ration (including SFI) on the performance of the

Commented [GT2]: This is in need of further consideration – Is it the intention that the list of 20+ characteristics of feed are all included in the definition of reference flow? 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?

Commented [GT3]: This is an odd place for mention of phase feeding.

Commented [GT4]: This seems related to comment 326 -

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333	Original	Revised	113	21-22	12.2.3		GE	WEIDEMA	Are you able to specify this / point to specific sources?	Change “greatest overall environmental benefit” to “largest relative environmental improvement”.	Text can be changed.
334	Original	Revised	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 elucidate 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.		This is a good suggestion. We can add some lines about uncertainty.
335	Original	Revised	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.		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.
336	Original	Revised	121	Dec-15	Appendix1		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.	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.	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	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.		This annex is intended to provide an overview of methodological issues from the LCA literature.
338	Original	Revised	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!!!	A general approach on how setting the minimum criteria and the nutritional recommendations should be harmonized.	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	124		Appendix 2	table 2	TE	IDELE	Information about sheep shouldn't be forget		Sheep are ruminants, so they are not forgotten.
340	Original	Revised	127	20	Appendix		GE	AFIA	Correct “…given the pervasive and historical of human activities…”	Perhaps “…given the pervasive and historical nature of human activities…”	Accept. Thank you!

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
341	Original	Revised	130		Appendix 4	Table 5	TE	(S&T) Consultants, Inc.	The peat emission factors for tropical regions are too low. There have been more recent studies with much higher values.	See this paper. Hooijer, A., S. Page, J. Jauhiainen, W.A Lee, X.X. 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. http://www.biogeosciences.net/9/1053/2012/.	Thank you, we will look at the reference and use it.
342	Original	Revised	133	6	Appendix 6		TE	(S&T) Consultants, Inc.	The methane emission rate is too low.	Subramaniam, V., M.A. Ngan, C.Y. May and N.M.N. Sulaiman, 2008. Environmental Performance of the Milling Process Of Malaysian Palm Oil Using The Life Cycle Assessment Approach. Am. J. Environ. Sci., 4: 310-315. http://thescipub.com/abstract/10.3844/ajessp.2008.310.315	Thank you, we will look at the reference and use it.
343	Original	Revised	134		Appendix 7		TE	IDELE	Is the source Feedprint?	Please specify	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.
344	Original	Revised	135	17	Appendix 7		TE	IDELE	Replace Netherland by "a country"	Replace Netherland by "a country"	OK
345	Original	Revised	128		Appendix 3	Table 3	TE	IDELE	Are there C losses due to ploughing?		Indeed, there are. For details see the original paper.
346	Original	Revised	151	1	Appendix 8	3	GE	Teagasc	What are go-downs?	Please explain.	We will find out. Carolyn?