Making a Feed PEF study in practice

FEFAC/GFLI webinar

1. Preparation
2. Data collection
   1. Feed composition data
   2. Feed mill data
   3. Outbound transport
   4. Feed materials production
   5. Inbound transport
3. Calculation
4. Reporting
5. Verification
6. DIY or hiring a consultant

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1. Preparation

- Who is asking
- Purpose, time period and averaging
- Organizing your data
- Considering support

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1. Preparation: Define the time period for feed production

Table 9.1.1-1: Time period in relation to purpose and scope of the PEF study

Purpose	Scope	Time period for deriving weighted averages	Reporting requirements
1. Cradle to gate PEF compliant information for studies on food producing animals	Determined by PEF study on food producing animals	According to specifications of PEF study on food producing animals	Record and communicate time period of setting weighted average.
2. Cradle to gate PEF study on compound feed, without comparison	Feeds on the market with fixed nutritional specifications for more than a year (such as standard or supplier specified dairy and pig fattening feed)	1 year feed ingredient weighted average or longer up to 3 years if longer term market cycles occur in feed materials production	Report a time period of 1 year and if appropriate, justify the use of a longer period.
	Feeds on the market with nutritional specifications fixed for period shorter than a year.	Use the longest possible time period	Report and justify the chosen time period.
3a. Cradle to gate PEF study including product comparison	To show if an innovative feed performs better than the alternative	Use a time period to derive feed composition for making a fair comparison	Report and justify the chosen time period.
3b. Cradle to gate PEF study for performance tracking	To show developments and/or improvements in performance over time	Two options (can be combined): No averaging if trend analysis aims to show actual fluctuations (also related to market fluctuations and not to actual changes in composition). Rolling weighted averages to correct for market fluctuations.	Report on trends and changes in feed materials composition and nutritional analysis data.

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1. Preparation: Organizing your data

- What data is needed
- Where is the data in your organization
- How often are you going to report (manual or tooling)

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2. Data Collection

2.1 Feed composition

For the time period under consideration

1. List of feed ingredients (100% of weight)
2. Nutritional analysis data

- Nitrogen (N), Phosphorus (P) content in g/kg
- Ash (g/kg)
- Copper (Cu), Zinc (Zn) content in g/kg (from all sources)
- Gross Energy (MJ/kg gross calorific value or HHV) and digestible energy fraction[19] (% of gross energy)
- Fossil carbon content

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2. Data Collection

2.2 Feed mill data

(For the time period under consideration)

Energy use
1. Average energy use (all energy use/all feed)
2. Specific energy use (specific energy use/specific feed line)

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2. Data collection

2.3 Outbound transport

Primary data shall be collected for outbound transport (i.e. feed delivery to the livestock or fish farm). This may be done with different levels of accuracy, as indicated in the hierarchy below from the most accurate to the least accurate, depending on data availability.

1. Fuel consumption for farm-specific delivery and transport means
2. Farm specific delivery distance and transport mean
3. Average fuel consumption per tonne delivered, for the feed type under study and transport means (the average is specific to the feed under study, but the farm specific delivery distance is not available)
4. Average distance from mill to farms in scope, per type of feed (ruminants, poultry, pork, fish; other) and transport mean (the average is not specific to the feed under study and the farm specific delivery distance is not available, but the average is at least distinguished according to the main feed types)
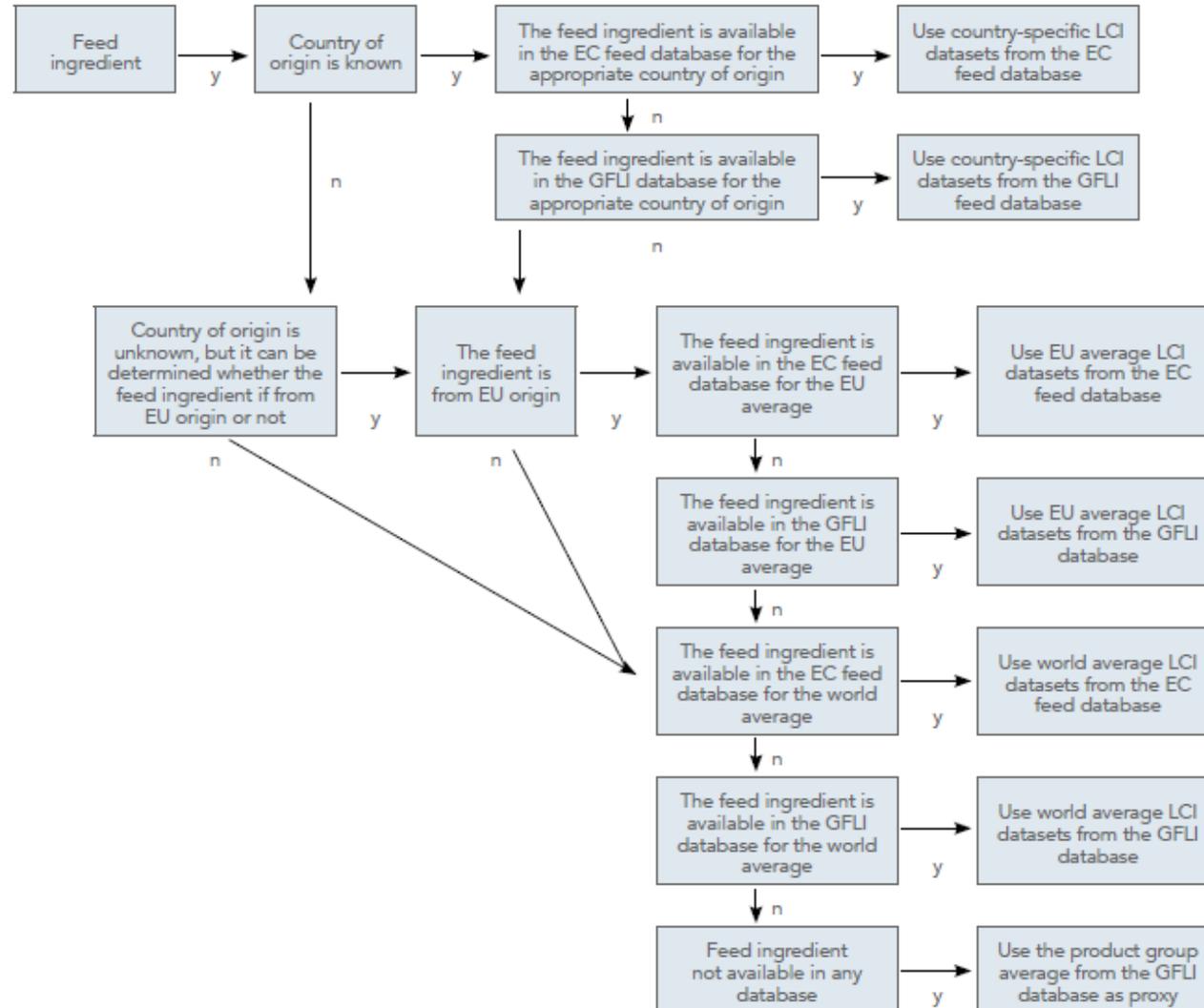
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2. Data collection

2.4 Feed materials

- Secondary data from database
- Primary data from supplier

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2. Data Collection

2.4. Selection of secondary data of inbound

2. Data collection

2.4 Inbound transport

- Specific data on distance and mode
- Secondary data from Annex 6. Default data for transport (distance and mode)

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2. Data Collection

For DQR

$$DQRtotal = \overline{DQRfm} * a + \overline{DQRo} * b + \overline{DQRfi} * c + \overline{DQRfip} * d + \overline{DQRfis} * e \quad (<3)$$

Where:

- DQRfm = average DQR of **feed mill operation** (s);   (<3)
  - a = contribution of feed mill operation(s) to single Environmental Impact (EI) score

- DQRo= average DQR of **outbound transport**(s);   (<1.6)
  - b = contribution of outbound transport(s) to EI score

- DQRi = average DQR of **inbound transport**(s);   (<3)
  - c = contribution of inbound transport(s) to EI score

- DQRfip = average DQR of **feed ingredient(s) primary** data;   (<1.6)
  - d = contribution of feed ingredient(s) for which primary data are used to EI score

- DQRfis = average DQR of **feed ingredient(s) secondary** data;   (<3)

  - e = contribution of feed ingredient(s) for which secondary data are used to EI score

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2. Data Collection

For DQR, example feed mill operation

Quality rating	Precisison	Time representativeness energy use feed mill	Time representativeness energy production data	Technology representativeness activity data and energy production data	Geographical repersnetativiness
1	Measured/calculated <u>and</u> externally verified	Data cover the time period in the scope of the study and refer to the most recent annual administration period	The EF report publication date happens within the time validity of the dataset	The technology(ies) are specific for the feed product(s) in scope and based on production line specific information	The data concern the specific feed mill production plant(s) in scope in their weighted share of production
2	Measured/calculated and internally verified, plausibility checked by reviewer	Data cover the time period in the scope of the study and refer to the previous annual administration period	The EF report publication date happens not later than 2 years beyond the time validity of the dataset	The data reflect the average feed mill operations data and are not from the specific production lines	The data concern unweighted averages of the feed mill locations where the production of feed in scope takes place
3	Measured/calculated/literature and plausibility not checked by reviewer OR Qualified estimate based on calculations plausibility checked by reviewer	No PEF	No PEF	No PEF	No PEF

3. Calculation

- Use generic LCA software

- Use dedicated tools (such as APS-footprint spin off)

- Hire an LCA consultant

4. Reporting

- **All impact categories**

- **Additional information:**
  - Nitrous oxide (N2O) emissions for climate change
  - Biodiversity

Impact on biodiversity with ReCiPe end score on ecosystems health (Goedkoop et al., 2009)
  - Climate change Ecosystems
  - Terrestrial acidification
  - Freshwater eutrophication
  - Terrestrial ecotoxicity
  - Freshwater ecotoxicity
  - Marine ecotoxicity
  - Agricultural land occupation
  - Urban land occupation
  - Natural land transformation

Impact category	Robust-ness
Climate change	I
Ozone depletion	I
Ionising radiation, Human Health	III
Photochemical ozone formation, Human Health	III
Respiratory inorganics	I
Non-cancer human health effects	II
Cancer human health effects	II
Acidification terrestrial and freshwater	II
Eutrophication freshwater	II
Eutrophication marine	II
Eutrophication terrestrial	II
Ecotoxicity freshwater	III
Land use	III
Water scarcity	III
Resource use, energy carriers	III
Resource use, mineral and metals	III

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5. Verification

- Verification is needed to communicate results

- Generic requirements in PEF guidance

- Specific for this PEFCR Particular attention shall be paid to the following aspects:

  a) Is the list of feed ingredients representative for the feed under study, and does it accurately reflect the time related variability?

  b) Is the list of feed ingredients consistent with the nutritional analysis data?

  c) Is the list of feed ingredients correctly connected to the available secondary data?

  d) If proxies have been used, are these determined in accordance to the procedures described in this PEFCR, and has the data quality been modified accordingly?

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6. DIY or hiring a consultant

- Support from a specialized consultant helps

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