WP2 updates

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24 May 2022

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WP2, Aim

- LCA of a few DK feed ingredients, according to GLFI guidelines
- GFLI guidelines: approval of a project -> data requirements

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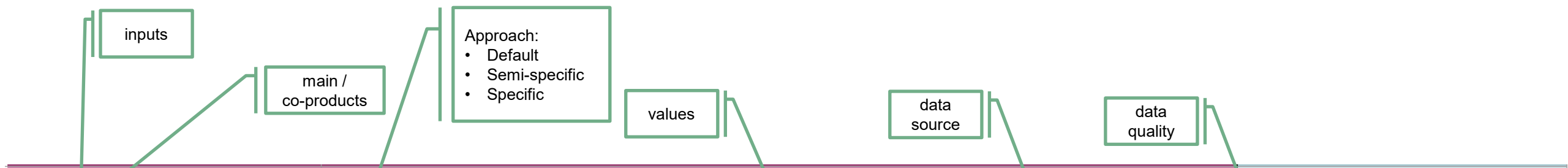

Product outputs			Collection method	Action - instructions for data collector	Comment	Value	Value	Value	Unit	Source	Source	Source	DQR			
						Country A	Country B	Country C		Country A	Country B	Country C	P	TiR	TeR	GR
	main product (harvested crop)	Region		Preferably use ISO-2 code for country/region												
		Name main product		Preferably use same name as in FAOstat												
		Yield main product ("as is")	-- Specify --										-- Specify precisic	-- Specify time re	-- Specify technic	-- Specify geogra
									kg/ha*yr							
									kg/ha*yr							
									kg/ha*yr							
									kg/ha*yr							
									kg/ha*yr							
		Average yield main product							kg/ha*yr							
		Standard deviation yield main product														
		Producer Price (3 year average)	Default	GFLI default (please add value)					$/kg				-- Specify precisic	-- Specify time re	-- Specify technic	-- Specify geogra
		Dry matter content	Default	GFLI default (please add value)					%/kg				-- Specify precisic	-- Specify time re	-- Specify technic	-- Specify geogra
		Caloric value	Default	GFLI default (please add value)					MJ/kg				-- Specify precisic	-- Specify time re	-- Specify technic	-- Specify geogra
		N-content	Default	GFLI default (please add value)					kg N/kg				-- Specify precisic	-- Specify time re	-- Specify technic	-- Specify geogra
		P-content	Default	GFLI default (please add value)					kg P/kg				-- Specify precisic	-- Specify time re	-- Specify technic	-- Specify geogra
		For additional properties see "Properties" tabsheet														
	co-products	Yield co-product ("as is")	Default	Use GFLI default (no action required)									-- Specify precisic	-- Specify time re	-- Specify technic	-- Specify geogra
									kg/ha*yr							
									kg/ha*yr							
									kg/ha*yr							
									kg/ha*yr							
									kg/ha*yr							
		Average yield co-product							kg/ha*yr							
		Standard deviation yield co-product														
		Producer Price (3-year average)	-- Specify --						$/kg				-- Specify precisic	-- Specify time re	-- Specify technic	-- Specify geogra
		Dry matter content	-- Specify --						%/kg				-- Specify precisic	-- Specify time re	-- Specify technic	-- Specify geogra
		Caloric value	-- Specify --						MJ/kg				-- Specify precisic	-- Specify time re	-- Specify technic	-- Specify geogra
		N-content	-- Specify --						kg N/kg				-- Specify precisic	-- Specify time re	-- Specify technic	-- Specify geogra
		P-content	-- Specify --						kg P/kg				-- Specify precisic	-- Specify time re	-- Specify technic	-- Specify geogra
		For additional properties see "Properties" tabsheet														

Inputs	Economic inputs	Type of economic input	Collection method	Action	Comment	Value	Value	Value	Unit	Source	Activity data			
											P	TiR	TeR	GR
	Energy and fuels (field activities)	Energy, from diesel burned in machinery	-- Specify --						liter/ha*yr		-- Specify precisic	-- Specify time re	-- Specify technic	-- Specify geogra
		Energy, from diesel burned for irrigation	-- Specify --						liter/ha*yr		-- Specify precisic	-- Specify time re	-- Specify technic	-- Specify geogra
		Electricity consumption	-- Specify --						kWh/ha*yr		-- Specify precisic	-- Specify time re	-- Specify technic	-- Specify geogra
	Energy and fuels (storage)	Electricity consumption	-- Specify --						kWh/ton		-- Specify precisic	-- Specify time re	-- Specify technic	-- Specify geogra
		Natural gas, burned in boiler	-- Specify --						MJ/ton		-- Specify precisic	-- Specify time re	-- Specify technic	-- Specify geogra
		Propane	-- Specify --						MJ/ton		-- Specify precisic	-- Specify time re	-- Specify technic	-- Specify geogra
		Light fuel oil	-- Specify --						MJ/ton		-- Specify precisic	-- Specify time re	-- Specify technic	-- Specify geogra
		Other energy carriers? Please specify	-- Specify --						Specify unit					
	Fertilizers (Total NPK use)	Nitrogen fertilizers	Semi specific	Specify total N only (fertilizer types based on fertilizer statistics)					kg N-eq/ha*yr		-- Specify precisic	-- Specify time re	-- Specify technic	-- Specify geogra
		Phosphorus fertilizers	Semi specific	Specify total P only (as P2O5) fertilizer types based on fertilizer statistics					kg P2O5-eq/ha*yr		-- Specify precisic	-- Specify time re	-- Specify technic	-- Specify geogra
		Potassium fertilizers	Semi specific	Specify total K only (as K2O) fertilizer types based on fertilizer statistics					kg K2O-eq/ha*yr		-- Specify precisic	-- Specify time re	-- Specify technic	-- Specify geogra

Emissions to environment

Modelling by Blonk

I/O	Type of flows		Collection metho	Action - instructions for data collector	Comment	Value A	Value B	Value C	Unit	Source A	Source B	Source C	DQR for Country A			
													P	TiR	TeR	GeR
Output	Emissions	Elementary flows (optional)		Specification	Comment	Emissions A	Emissions B	Emissions C	Unit	Source			Activity data			
	air emissions	Dinitrogen monoxide			N2O direct emissio				kg	IPCC (2006)						
		Dinitrogen monoxide			N2O indirect emiss				kg	IPCC (2006)						
		Ammonia			Ammonia emissior				kg	IPCC (2006)						
		Ammonia			Ammonia emissior				kg	EMEP/EEA (2016)						
		Carbon dioxide, fossil			Direct CO2 emissio				kg	IPCC (2006)						
		Carbon dioxide, fossil			Direct CO2 emissio				kg	IPCC (2006)						
		Dinitrogen monoxide			N2O direct emissio				kg	IPCC (2006)						
		Dinitrogen monoxide			N2O direct emissio				kg	IPCC (2006)						
		Dinitrogen monoxide			N2O indirect emiss				kg	IPCC (2006)						
		Dinitrogen monoxide			N2O indirect emiss				kg	IPCC (2006)						
		Carbon dioxide, land transformation			Calculated using th				kg	DLUCAT - based on PAS2050-1 (2012)						
		Active ingredients of all pesticides			9% of active ingred				kg	PEFCR for feed (2017)						
	water emissions	Nitrate			Nitrate emissions,				kg	IPCC (2006)						
		Nitrate			Nitrate emissions,				kg	IPCC (2006)						
		Nitrate			Nitrate emissions,				kg	IPCC (2006)						
		Phosphorus			Phosphorous emis				kg	ReCiPe (2013)						
		Phosphorus			Phosphorous emis		To be calculated by Blonk		kg	ReCiPe (2013)						To be c
		Cadmium			Leaching of heavy r				kg	Nemecek & Schnetzer (2011)						
		Chromium			Leaching of heavy r				kg	Nemecek & Schnetzer (2011)						
		Copper			Leaching of heavy r				kg	Nemecek & Schnetzer (2011)						
		Mercury			Leaching of heavy r				kg	Nemecek & Schnetzer (2011)						
		Nickel			Leaching of heavy r				kg	Nemecek & Schnetzer (2011)						
		Lead			Leaching of heavy r				kg	Nemecek & Schnetzer (2011)						
		Zinc			Leaching of heavy r				kg	Nemecek & Schnetzer (2011)						
		Active ingredients of all pesticides			1% of active ingred				kg	PEFCR for feed (2017)						
	agricultural soil emis	Cadmium			Soil emission from				kg	Nemecek & Schnetzer (2011)						
		Chromium			Soil emission from				kg	Nemecek & Schnetzer (2011)						
		Copper			Soil emission from				kg	Nemecek & Schnetzer (2011)						
		Mercucry			Soil emission from				kg	Nemecek & Schnetzer (2011)						
		Nickel			Soil emission from				kg	Nemecek & Schnetzer (2011)						
		Lead			Soil emission from				kg	Nemecek & Schnetzer (2011)						
		Zinc			Soil emission from				kg	Nemecek & Schnetzer (2011)						
		Active ingredients of all pesticides			90% of active ingre				kg	PEFCR for feed (2017)						

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Overall preliminary approach for crop cultivation and silage

	SOURCE	REFERENCE PERIOD	APPROACH
yields	Statistics Denmark	2016-2020	Semi-specific
DM, nutrients	*Tal om kvæg*	2017-2019	Specific
prices	*Farmtal Online*	2017-2019	Specific
electricity	*Farmtal Online* / GFLI default		Semi-specific / GFLI default
fuel	*Farmtal Online* / GFLI default		Semi-specific / GFLI default
water for irrigation	*Farmtal Online* / GFLI default		Semi-specific / GFLI default
fertilizer	*MarkOnline*	2016-2020	Semi-specific
pesticides	*MarkOnline* / GFLI default	2016-2020	Specific / GFLI default
liming materials	*SEGES*	2016-2020	Semi-specific
seeds	GFLI default		GFLI default
capital goods	GFLI default		GFLI default
transport			Semi-specific / GFLI default

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List of Danish feed ingredients (currently lacking in GFLI), which we wished to contribute with:

List of Danish feed ingredients (currently lacking in GFLI), which we wish to contribute with:

- ❑ Grass (average), conventional, at farm /DK Economic
- ❑ Grass silage, at farm /DK Economic

→ *Ongoing discussion between GFLI and Blonk on whether to include roughages in GFLI (DK values will be available in AFP6)*

- ❑ Maize, conventional, at farm /DK Economic : *maize & stover*
- ❑ Maize silage, at farm /DK Economic

- ❑ Crude rapeseed oil (pressing), conventional, at processing /DK Economic : *oil & expeller*

The process will be in the upcoming GFLI version

- ❑ Wheat grain, organic, at farm /DK Economic : *grain & straw*

As for now, no organic ingredients will be accepted by GFLI / Blonk (ongoing modelling discussions)

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So, what do we do now?

Some of the questions to Blonk / GFLI

Overall:

- ❑ Support & Verification (€)
- ❑ Verification of input data: who, when, €

Data collection:

- ❑ Planned (by far the most) VS Registered (mineral & organic) fertilizer uses

  amounts and type of fertilizer

- ❑ Reference period for data collection
- ❑ Any requirement for public availability of source data (to final database user and verifier)?

  MarkOnline data is only accessible by SEGES; data ownership remains with the farmer.

  3 DK factories generating rapeseed expeller & oil; potential confidentiality

- ❑ Ensiling process:

  “tractor baling” VS “concrete bunker”

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Some of the questions to Blonk / GFLI

Modelling:

- ★ ❑ IPCC 2019 emission factors for mineral fertilizer and manure?
- ★ ❑ Inclusion of peat soil oxidation?

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Plan

- We need to modify / adapt our list of DK feed ingredients, and agree this with GFLI & Blonk

- Further meet with Blonk (hopefully in June)
  - ➢ agree on some of the methodological doubts and data sources
  - ➢ agree on a common time-plan

  +

  - ➢ agree on the external verification of collected data
  - ➢ € for support and modelling

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The End

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Initial overall (preliminary) plan

- Data collection: until ~Sept. ‘22
- Follow-up online meetings with Blonk: 1 August, 1 September
- Ongoing exchange of emails with Blonk / GFLI for clarifications
- Verification of input data : ?

- Carbon Footprint modelling in Oct.-Nov. ’22?
- Verification of Carbon Footprint values: ?

STØTTET AF

Promilleafgiftsfonden for landbrug

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