Product Environmental Footprint Category Rules

for

Dairy Products

Annex 7

Existing sectorial guidance documents

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Annex 7 - Existing sectorial guidance documents

The literature related to the environmental assessment of dairy products is extensive, ranging from specific sectorial guidance to band scientific papers. Also, it should be noted that many broader guidance documents on the LCA of agricultural products include sections related to dairy products. This section aims to provide an overview of the most important documents. Tab. VII-1 gives an overview of specific existing guidance (all cannot be called PCRs) for the environmental assessment of dairy products.

Tab. VII-1: Existing specific guidance on the environmental assessment of dairy products

Title	Author	Year	Geography
Carbon and water footprint guidelines for dairy products	International Dairy Federation	2015	Global
Product Category Rules for Yoghurt, butter and cheese	The International EPD® System	2014	Global
General principles for an environmental communication on mass market products - Part 20: Methodology for the environmental impacts assessment of dairy products – Unpublished DRAFT	AFNOR	2014	France
Product Category Rules for Raw milk	The International EPD® System	2013	Global
Product Category Rules for Processed liquid milk and cream	The International EPD® System	2013	Global
Key Performance Indicators (KPIs) for Dairy	The Sustainability Consortium	2013	Global
PCR for strawberry yogurt	The Sustainability Consortium	2011	Global
Product Category Rules (PCR) for conducting environmental and social LCA on dairy products in Quebec	Quebec Dairy Council	2011	Quebec
Guidelines for the Carbon Footprinting of Dairy products in the UK	DairyCo	2010	UK

None of these documents is totally aligned with the PEF requirements and therefore cannot be used as a basis for the development of this PEFCR. Nevertheless, these documents represent very useful sources of information and are used as references when relevant.

A short comparative analysis of existing sectorial guidance is presented in Tab. VII-2.

Tab. VII-2: Comparison of existing sectorial guidance

Title	Carbon and water footprint guidelines for dairy products	Product Category Rules for Raw milk	Product Category Rules for Processed liquid milk and cream	Product Category Rules for Yoghurt, butter and cheese	General principles for an env. comm. on mass market products - Part 20: dairy products	PCR for conducting environmental and social LCA on dairy products in Quebec	Guidelines for the Carbon Footprinting of Dairy products in the UK	Key Performance Indicators (KPIs) for Dairy
Authors	International Dairy Federation	The International EPD® System	The International EPD® System	The International EPD® System	AFNOR	Quebec Dairy Council	DairyCo	The Sustainability Consortium
Year	2014 (DRAFT)	2013	2013	2013	2014 (DRAFT)	2011	2010	2013
Scope	Dairy cattle farming and dairy manufacturing Milk from cattle only	Raw milk, defined as the secretion of the mammary glands of mammals destined to human consumption. Raw milk from bovine animals and other raw milk	Processed milk, cream and whey derived from milk produced by mammals	Yoghurt, butter and cheese derived from milk produced by mammals Yoghurt and other fermented or acidified milk and cream Butter and other fats and oils derived from milk Cheese, fresh or processed	Milk products Evaporated milk products Fermented milk products Milk-based desserts Cheeses Butterfat products Creams Milk from cattle only.	Dairy products made from milk from cows, sheep and/or goats, including: drinking milk, cream, artisanal and industrial cheeses, yoghurt, ice cream, butter, milk powder, condensed milk, kefir	Milk Cream Milk Products Cheese Butter Yoghurt	Unflavoured milk products derived from cows, butter, cheese, and yoghurt.
Unit of analysis	Milk at farm: 1 kg of fat and protein corrected milk (FPCM) at the farm gate	Declared unit: 1 litre of liquid raw milk entering the processing plant or being	Declared unit: 1 kg of product including packaging	Declared unit: 1 kg of product (yoghurt, butter or cheese) including packaging	Dependent on the sub-category: 100 g, 100 ml, or 1 portion	Producing in Quebec in [year] 1 [volume or mass unit] of [processed dairy product],	Must be a meaningful and recognised unit: can be volume-based or same functional unit	Not applicable

Title	Carbon and water footprint guidelines for dairy products	Product Category Rules for Raw milk	Product Category Rules for Processed liquid milk and cream	Product Category Rules for Yoghurt, butter and cheese	General principles for an env. comm. on mass market products - Part 20: dairy products	PCR for conducting environmental and social LCA on dairy products in Quebec	Guidelines for the Carbon Footprinting of Dairy products in the UK	Key Performance Indicators (KPIs) for Dairy
	Processed dairy product: 1 kg of product, with x per cent fat and y per cent protein, packaged at dairy factory gate ready to be distributed	dispensed at a raw milk distributor				distribute [geographic location] and ensure its conservation until its use	as used for nutritional information (e.g. serving quantity)	
Allocation	Feed: economic Dairy farm: biophysical based on feed energy content System expansion for manure application Processing: physico-economic based on fat, protein and lactose content Default F:P:L price (global average).	Heifer phase: economic value Lactation: economic allocation btw milk and surplus calves, no allocation to meat. No default data proposed for economic value No system expansion	Processing: based on mass of protein and fat. Product that are not suitable for the market must be considered as waste	Processing: based on mass of protein and fat. Product that are not suitable for the market must be considered as waste	Dairy farm: Physical allocation based on protein content Processing: Based on product dry matter content 	Feed: economic or energetic Dairy farm: based on the biological fate of the energy supplied in feed Processing: dry matter content	Dairy farm: economic (when subdivision is not possible) Processing: dry may (seen as a proxy to economic allocation)	Not applicable

Title	Carbon and water footprint guidelines for dairy products	Product Category Rules for Raw milk	Product Category Rules for Processed liquid milk and cream	Product Category Rules for Yoghurt, butter and cheese	General principles for an env. comm. on mass market products - Part 20: dairy products	PCR for conducting environmental and social LCA on dairy products in Quebec	Guidelines for the Carbon Footprinting of Dairy products in the UK	Key Performance Indicators (KPIs) for Dairy
Environ-mental indicators	Climate change OPTIONAL Key parameters (e.g. DM intake, milk yield, manure management system, split by GHG)	MANDATORY Resources Water use Global warming 100 year Acidification Ozone creating potential Water oxygen depletion Waste production (hazardous and non-hazardous) OPTIONAL Ecological footprint Water footprint Land use Land use change and forestry Marine water eutrophication Aquatic ecotoxicity	MANDATORY Resources Water use Global warming 100 year Acidification Ozone creating potential Water oxygen depletion Waste production (hazardous and non-hazardous) OPTIONAL Ecological footprint Water footprint Land use Land use change and forestry Marine water eutrophication Aquatic ecotoxicity	MANDATORY Resources Water use Global warming 100 year Acidification Ozone creating potential Water oxygen depletion Waste production (hazardous and non-hazardous) OPTIONAL Ecological footprint Water footprint Land use Land use change and forestry Marine water eutrophication Aquatic ecotoxicity	Climate change (100 y) Water consumed Marine eutrophication Aquatic ecotoxicity Biodiversity	Non renewable resources Water consumed Land use Climate change Human toxicity Aquatic eutrophication Acidification Ecotoxicity Photochemical oxidant formation Ozone layer depletion	Global warming (100 y)	24 KPIs for environmental and social hotspots, some quantitative, some qualitative. E.g: air emissions from fertilisers manufacturing, antibiotic use, cattle culling / grazing, crop protection application, economic health of rural communities, energy consumption, enteric methane, fertiliser application, food waste, land occupation, water use, etc.

Tab. VII-3 lists a selection of papers, reports and broader methodological guidance relevant to the dairy sector. The list of reference documents will be updated during the project if needed.

Tab. VIII-3: Selection of references relevant to the dairy sector

Title	Authors	Year	Geography
General principles for an environmental communication on mass market products - Part 20: Methodology for the environmental impacts assessment of dairy products – Unpublished DRAFT	AFNOR	2014	France
Agri-footprint: Description of data	Blonk Consultants	2014	Netherlands
LCA of Dutch semi-skimmed milk and semi-mature cheese	Broekema and Kramer	2014	Netherlands
Integrating Nutritional Benefits and Impacts in a Life Cycle Assessment Framework: A US Dairy Consumption Case Study	Ernstoff et al.	2014	USA
Greenhouse gas emissions and fossil energy demand from small ruminant supply chains - Guidelines for quantification (draft for public review)	FAO - LEAP Partnership	2014	Global
Greenhouse gas emissions and fossil energy demand from large ruminant supply chains - Guidelines for quantification (draft)	FAO - LEAP Partnership	2014	Global
Environmental performance of animal feeds supply chains - Guidelines for quantification (draft for public review)	FAO - LEAP Partnership	2014	Global
Method to assess the carbon footprint at product level in the dairy industry	Flysjö et al.	2014	Global
An original way of handling co-products with a biophysical approach in LCAs of livestock systems	Gac et al.	2014	France
Carbon and water footprint guidelines for dairy products – Unpublished DRAFT	International Dairy Federation	2014	Global
Product Category Rules for Yoghurt, butter and cheese	The International EPD® System	2014	Global
Life Cycle Assessment of Cheese Manufacturing in the United States	Kim et al.	2014	USA
Umweltbilanz von Milch- und Milcherzeugnissen – Status quo und Ableitung von Optimierungspotenzialen	Müller-Lindenlauf et al.	2014	Germany
AusAgLCI methodology for developing Life Cycle Inventory	Rural Industries Research and Development Corporation	2014	Australia
Carbon footprint calculator for European farms: preliminary results of the testing phase	Tuomisto et al.	2014	Europe

Title	Authors	Year	Geography
Methodological Guidelines for the Life Cycle Inventory of Agricultural Products	World Food LCA Database	2014	Global
AGRIBALYSE®: Rapport Méthodologique	Koch and Salou	2013	France
Using Life Cycle Assessment methodology to assess UHT milk production in Portugal	González-García et al.	2013	Portugal
Product Category Rules for Raw milk	The International EPD® System	2013	Global
Product Category Rules for Processed liquid milk and cream	The International EPD® System	2013	Global
Life cycle assessment of cheese and whey production in the USA	Kim et al.	2013	USA
Geospatial analysis of potential water use, water stress, and eutrophication impacts from US dairy production	Matlock et al.	2013	USA
Key Performance Indicators (KPIs) for Dairy	The Sustainability Consortium	2013	Global
Category Sustainability Profile (CSP) for Dairy	The Sustainability Consortium	2013	Global
BP-X30-323-15 - General principles for an environmental communication on mass market products - Part 15 : methodology for the environmental impacts assessment of food products	AFNOR	2012	France
Environmental and Socioeconomic Life Cycle Assessment Of Canadian Milk	Canadian Dairy Farmers	2012	Canada
Milk and Meat biophysical allocation in dairy farms	Dollé and Gac	2012	France
Environmental life cycle assessment of a dairy product: the yoghurt	González-García et al.	2012	Portugal
Comprehensive Life Cycle Assessment for 4 Fluid Dairy Delivery Systems	Thoma et al.	2012	USA
Modelling GHG emissions of dairy cow production systems differing in milk yield and breed – the impact of uncertainty	Zehetmeier et al.	2012	Netherlands
Greenhouse gases in cattle breeding: evaluation and mitigation strategies	Dollé et al.	2011	France
Product Category Rules (PCR) for conducting environmental and social LCA on dairy products in Quebec	Quebec Dairy Council	2011	Quebec
Energy Intensity and Environmental Impacts of integrated Dairy and Bio-Energy Systems in Wisconsin	Reinemann et al.	2011	USA
Guidelines for the Carbon Footprinting of Dairy products in the UK	DairyCo	2010	UK

Title	Authors	Year	Geography
Evaluation of the livestock sector's contribution to the EU greenhouse gas emissions (GGELS)	EU-JRC	2010	Europe
Greenhouse Gas Emissions from the Dairy Sector - A Life Cycle Assessment	FAO	2010	Global
Greenhouse Gas Emissions from Production of Fluid Milk in the US	Thoma et al.	2010	USA
Environmental / Ecological Impact of the Dairy Sector: Literature review on dairy products for an inventory of key issues. List of environmental initiatives and influences on the dairy sector	International Dairy Federation	2009	Global
Greenhouse gas emissions in milk production - decision support for climate certification	Sonesson et al.	2009	Sweden
Life cycle assessment of milk production — a comparison of conventional and organic farming	Cederberg and Mattsson	2000	Sweden