

## WHITE PAPER – Life Cycle Assessment of Rendered Products (GFLI methodology)

### Introduction

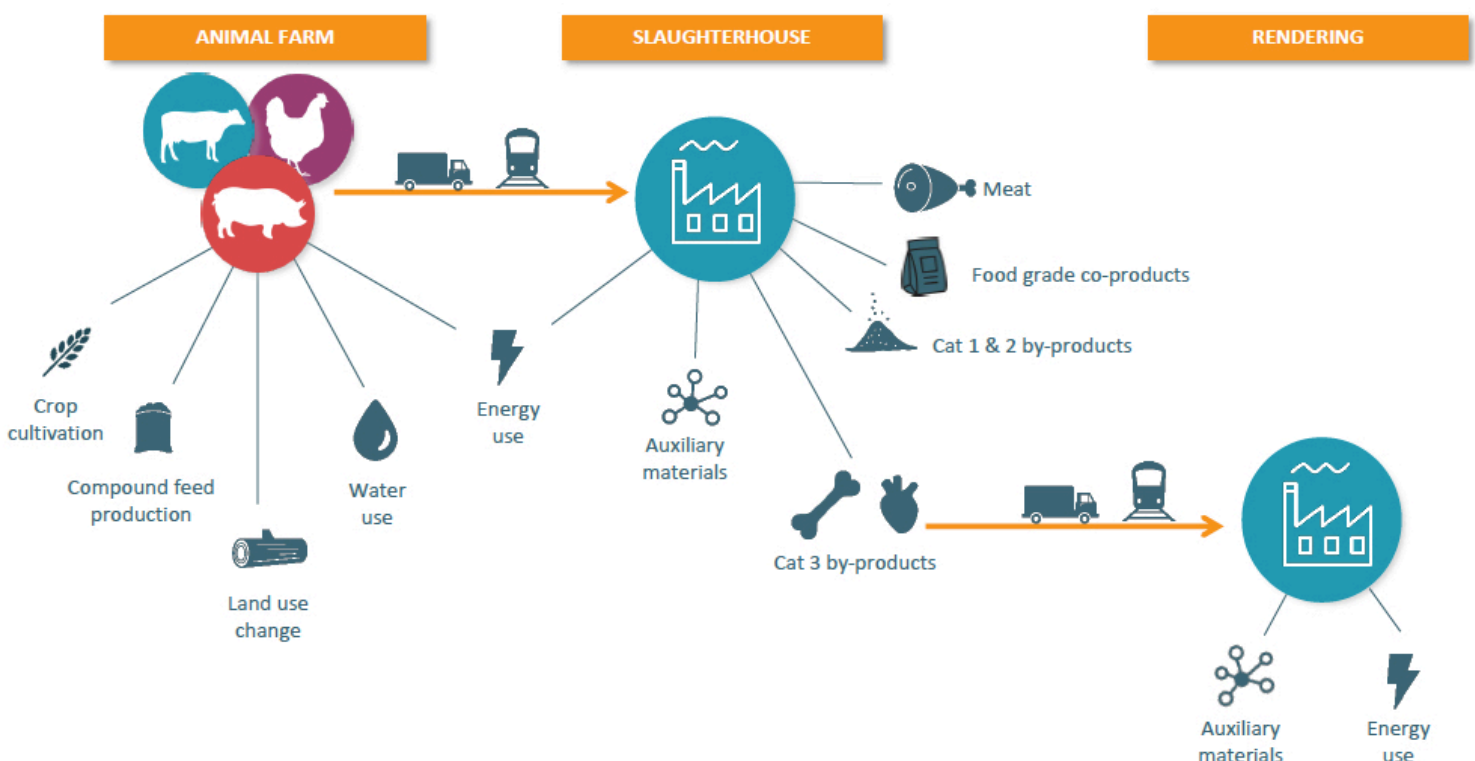
Rendering is the process that converts animal by-products from the meat and livestock industry into usable materials. As a result, rendering contributes to sustainability and European objectives to move to a circular economy by ensuring that animal by-products can be reused for economic purposes. Rendered animal by-products have several market applications, with animal feed and pet food being the biggest markets. Stakeholders along the value chain increasingly request a better understanding on the environmental performance of these products. The European Fat Processors and Renderers Association (EFPRA), representing Europe’s fat melting and rendering industry, initiated a project to generate high quality environmental data for 12 rendered products, as EU representative averages.

Blonk Consultants, an internationally renowned and independent consulting firm, was commissioned to calculate the environmental impact of these products according to the Life Cycle Assessment (LCA) methodology, as described in international standards [ISO 14040](#) and [ISO 14044](#). Data are made publicly and freely available in the [database](#) of the Global Feed LCA Institute (GFLI), an independent feed industry initiative. The GFLI database is the result of several years of methodology development to the highest possible standards, being the [LEAP Guidelines](#) and [Feed PEFCR](#).

### Methodology

The carbon footprint for rendered products is from “cradle to gate”. The system boundary comprises the European animal farming system (including the production of animal feed), slaughterhouses and rendering into end-products. The environmental impact is calculated at the rendering plant’s exit. Delivery to customer (i.e. feed producers) is out of scope.

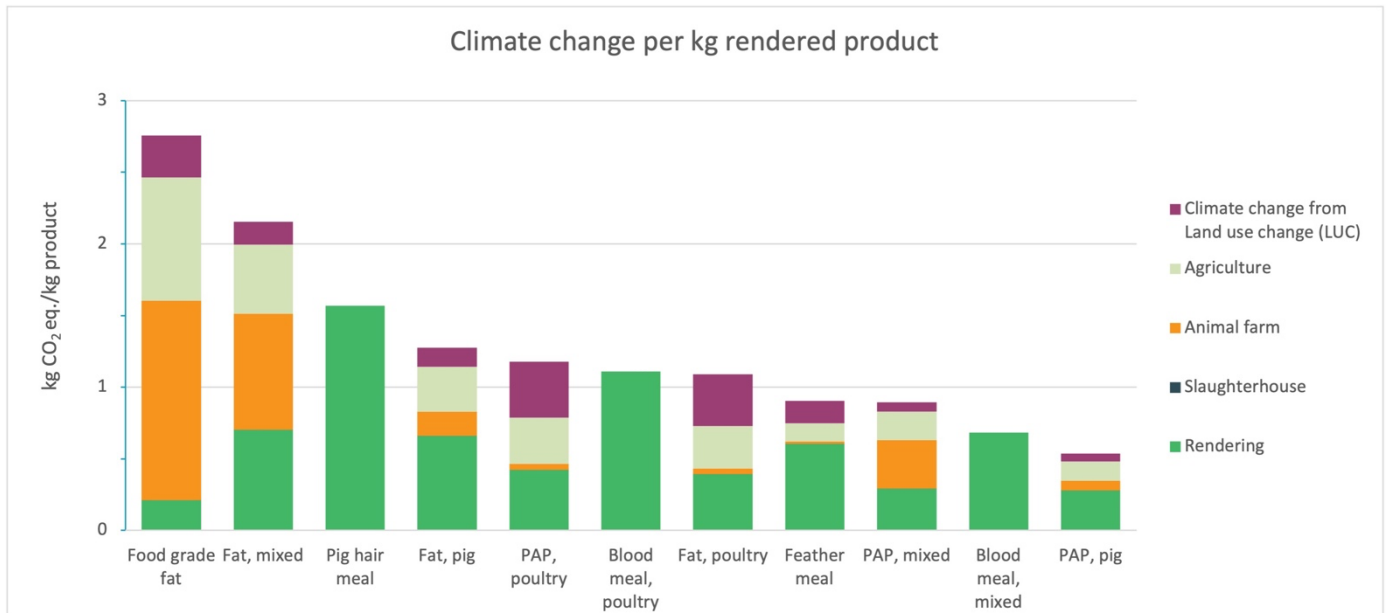
Animal farm data are predominantly based on publicly available data, national statistics and literature. Transport and energy use at slaughterhouses are based on the default GFLI process. Rendering operations data are gathered from EFPRA members, covering 46 production lines for the years 2016–2018.



## Results

The total environmental impact per rendered product is calculated based on the weighted average of all companies' data, per production line. All models are aligned to the GFLI methodology. The LCA primarily focuses on climate change, as one of the most relevant impact categories in the Feed PEFCR and the impact category of high interest to EFPPRA members.

The climate change impact of rendered products ranges from 0.5 to 2.75 kg CO<sub>2</sub> equivalent per kg rendered product. Farm emissions (including crop cultivation) varies from 15% to 80% of the total impact, depending on the economic value of animal by-products at the slaughterhouse. Therefore, the contribution of rendering varies from 10% to 70% of the total impact. Energy use at slaughterhouses and transport to the rendering facility are less significant.



Note: Land Use Change (LUC) refers to changes in the purposes for which land is used by humans (e.g. between crop land, grass land, forest land, wetland, industrial land). Land use has a direct impact on climate change when the transformation of land reduces carbon stocks and/or generates greenhouse gas emissions during removal. In LCA land use change is considered when having occurred within the last 20 years.

## Comparison with vegetable alternatives

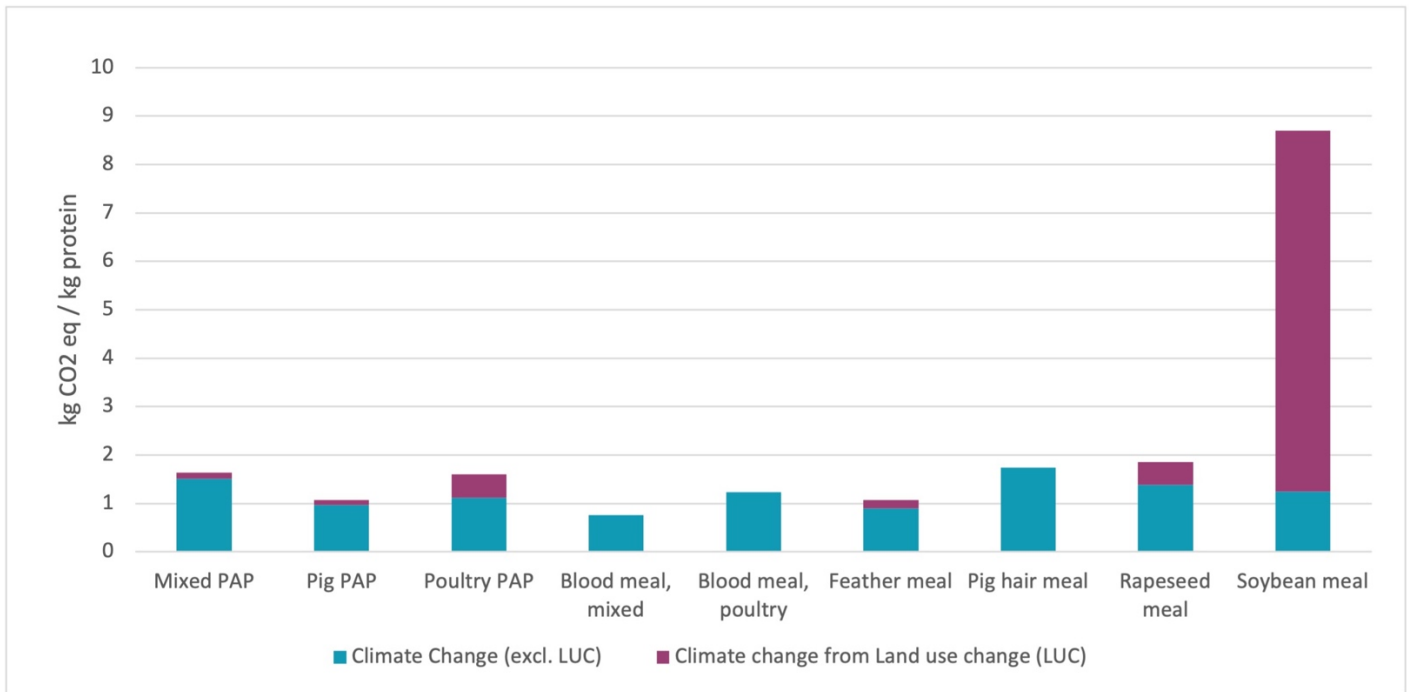
To illustrate the impact of rendered products on climate change, the vegetable alternatives are shown in comparison. To fairly calculate the data for vegetable alternatives, the figures are an average based on the volumes of a particular feed ingredient arriving in the EU from different sources. Each source has a different quantity of CO<sub>2</sub> equivalent emissions, these can vary greatly due to farming practices and extent of land use change in specific producing areas.

The LCA results show that vegetable-based alternatives (like soybean, palm and rapeseed) have a higher carbon footprint than rendered products. Vegetable sources are highly associated with deforestation and have a high share of agriculture activities associated to its production. In the case of rendered products, the majority of agriculture and animal farming impact is allocated to the production of fresh meat. Only rapeseed meal has a low carbon footprint, comparable to some rendered products.

Soybean meal and palm fat, respectively have the highest carbon footprint of all the evaluated proteins and fats because they are mainly sourced from countries of land use change. Rapeseed meal has a higher carbon footprint than most rendered products, due to its relatively low protein content.

In conclusion, nearly all rendered products have lower CO<sub>2</sub> equivalent emissions than the vegetable alternatives. Rendered products are a sustainable option for use in animal feed.

## Climate change impact of rendered sources of protein compared to vegetable sources



## Climate change impact of rendered sources of fat compared to vegetable sources

