

Overview of the datasets ready for the LCA

Alberto Maresca^a

^a SEGES Innovation P/S, Agro Food Park 15, 8200 Aarhus, Danmark



Promilleafgiftsfonden for landbrug

STØTTET AF

December, 2023

Introduction

The KlimÆpro project consists of various project partners, working at different value chain stages. The “KlimÆpro, LCA methodology” delivery in 2022 (LCA: Life Cycle Assessment) describes the system boundary, and included value chain stages, that will be used for the LCA in Working Package 6 (WP6). Briefly, the main stages considered in this LCA will be the cultivation stage, the pea protein extraction (isolates and concentrates), and the production of the two products of interest. While there is a lot of research that is currently being carried out within “KlimÆpro” for the selection of the most suitable pea varieties, via for example (small-to-large) field trials and lab analyses, the plant breeding stage will be out of the scope of this LCA, but still contributing to key data describing the cultivation process (e.g., in terms of pea yields, and protein yields).

The following section gives an overview of the datasets that will be used during the LCA modelling, and the status of the data collection process. It is noteworthy that all companies involved in the KlimÆpro project required the use of Non-Disclosure Agreements (NDAs) to protect the confidentiality of their data. The presence of NDAs will restrict the communication format of the final LCA report, which will neither be able to share activity data nor to discuss the impact of specific hotspots within a company (e.g. specific ingredients, or energy sources). The success of KlimÆpro depends on its companies, which in turn need to protect their business. While it is understandable that the companies require NDAs, the presence of NDAs provides challenges for the communication of the results to the public (because of, *inter alia*, the impossibility to discuss specific hotspots and ways to reduce these impacts).

Status on data collection

As of December 2023, all partners have been contacted in relation to the provision of representative primary data in order to closely represent specific company operations. The bullet points below summarize the status with the data collection, also in relation to the presence of NDAs.

Cultivation data:

- Description:

activity data describing the cultivation process will mostly be based on current Danish averages, using sources such as MarkOnline, Danmark statistik and FAOstat (Danmarks Statistik, 2022; SEGES Innovation P/S, 2022; The Food and Agriculture Organization of the United Nations, 2022). While we expect that the cultivation of new varieties of peas through the KlimÆpro project will have only a minor effect on the activities currently carried out for peas’ production (e.g. minimal effect on the amounts of liming and fertilizing materials, and use of machineries), we plan to quantify these differences via the “Plan for data registration in WP2-WP5” – which will be used to update the activity data used in the cultivation module.

- Status with data collection:

the source databases have been identified, but the data has not been extracted yet.

Pea-protein isolates:

- Description:

the impacts from the pea-protein isolates process will be, to the extent possible, based on Cosucra's operations, possibly combined with other sources (e.g. the Agri-footprint database (Blonk et al., 2022)).

At the end of 2022, Cosucra agreed to share some of the aggregated environmental impacts, and related documentation, of their "pea-protein isolate" product. The potential sharing of primary data describing Cosucra's operations was however deemed unfeasible, because of confidentiality reasons.

- Status with data collection:

as for now, neither the environmental impacts nor the LCA report have been made available – so it is not possible to know how / whether this information could be used in the LCA that will be carried out under this project. There is a need to follow-up with the company. In the worst case, other data sources (e.g. the Agri-footprint database (Blonk et al., 2022)) will need to be used..

Pea-protein concentrates:

- Description:

Activity data describing the pea-protein concentrates process will be based on available sources (e.g. the Agri-footprint database (Blonk et al., 2022)), combined with the knowledge from the pilot scale production of pea-protein concentrates from Aarhus University.

- Status with data collection:

While readily available data is present in the Agri-footprint database, this may need to be complemented with some of the latest literature studies available in scientific journals.

Vegetarian mince

- Description:

Primary data describing the current production of NATURLI' Minced were delivered by Orkla in November 2023.

- Status with data collection:

The first round of data collection has been carried out. The collected data refers to the product recipe, and to the factory operations (e.g. energy use, waste amounts and treatment and packaging). The data is protected by NDA.

Pea drink

- Description:

Primary data describing the production of the hypothetical NATURLI' Pea drink were delivered by Dragsbæk in November 2023.

- Status with data collection:

The first round of data collection has been carried out. The collected data refers to the hypothetical product recipe (the product is not available on the market yet), and to the factory operations (e.g. energy use, waste amounts and treatment and packaging). The data is protected by NDA.

REFERENCES

Blonk, H., Tyszler, M., van Paassen, M., Braconi, N., Draijer, N., van Rijn, J., 2022. Agri-footprint 6 Methodology Report. Part 1. <https://doi.org/part1>

Danmarks Statistik, 2022. Statistikbanken [WWW Document]. URL www.statbank.dk (accessed 12.7.22).

SEGES Innovation P/S, 2022. MarkOnline [WWW Document]. URL <https://www.seges.dk/software/plante/mark-online> (accessed 9.29.22).

The Food and Agriculture Organization of the United Nations, 2022. FAOstat [WWW Document]. URL <https://www.fao.org/faostat/en/#data> (accessed 12.7.22).