**Critical review of group 1’s project report**

**Over all comments**

The LCA was very interesting and informative. With both general information about the process of conducting a LCA and something extra with the social aspects. Structure of the report appears to be adequate and sufficient. Instead of starting the outline with an abstract you choose to include a summary. A summary is always good but it would be even better if you had both an abstract and a summary, or only an abstract as stated in the instructions.

Under a very critical eye it can be said that grammar is very good with the exception a few sentences that need a bit more context to convey their message, however the text conveys the message in an effective way. The including of list of figures and tables in the table of contents was very nice. The report seems very thoroughly researched.

The goal and scope includes a good background and problem identification, but some questions arise:   
- Who is the intended audience for this LCA?  
- Have you thought about the time horizon for this LCA?

On one hand the allocations section of the report gives a good explanation of what allocations are, and how the need for them arise, but does not state how allocations have been handled in this LCA. It is not mentioned until the discussion that no allocations have been performed. It would be good to clarify this in the initial allocations section, and also the reason for this. Did no allocation problems arise? And what about the allocations already included in datasets from databases? On the other hand, the economic allocation that has been made is very relevant regarding the share of milk produced. However, when thinking about allocation the following question pops naturally into mind: How would the production of energy from the manure reduce the impact of climate change category? On this regard it is clear that the scope and goal of the LCA does not include this question but the sole mention of this matter is longed for.

The results show that the environmental impacts are higher for the Swedish meat production but it is good that you have also looked into the animal welfare, the potential impacts for involved and possible protein options apart from meat. The life span of the cattle being one of the reasons for the difference on the impact categories is a keen point because it is attached to the impact of each kg of dressed meat to be consumed. However, a question that can raise from the functional unit (FU) is the likelihood that cattle producers might want to keep a somewhat constant production of cattle during the year, so when each kg of meat is harvested from the animal, another animal may already be in place, in substitution of the felled (slaughtered) colleague. This consideration, if deemed to be sound, could be mentioned along the selection of the FU, and if pertinent, criticize the FU in light of this possibility.

The life cycle inventory analysis section is very good. You have visualized your data collection great in the tables. Equations conducted are easy to follow and the referencing is very good. Some questions regarding the data collection:

- Did you have any data gaps and in that case, how did you solve them?

- In the instructions it says you should create at least one new process or material data sheet in SimaPro and include it in the report as an appendix. We have not been able to find information in the report – did you create a new process or material data sheet?

The sensitivity analysis includes a change in input parameters but you do not address how good your model is. The discussion is interesting and addresses all topics mentioned in the report in a good way. Stated conclusions are informative and clear and suits the aim and the objectives for the LCA well and are supported by the results.

**Suggested improvements**

**General**

The language is generally good, but some spelling mistakes have slipped through so running the report through a spell check is recommended before final submission, as well as making sure that all parts of the text is in the same font and size (see sensitivity analysis section in report).

As veal isn’t an animal but a type of meat, the sentence in section 1.1 “405 324 grown cattle were slaughtered as well as an additional 21 751 veals in Sweden”, should probably be changed.

The table captions could be a bit more detailed. Especially the system flowchart might need a bit more information, to help interpret what is visualized. For example, the excluded processes (slaughterhouse, consumer) are in the flowchart and it might be good to clarify that they are excluded in the caption or by use of a legend.

**Abstract**Include an abstract to replace summary or add an abstract and move the summary below the table of content.

**Goal and scope**

One suggestion is to also include some information about the impact assessment method and your choice of environment impact categories in the scope as well as in the life cycle impact assessment.

**Allocation**

Add information on the decision to not perform any allocations, and specify allocations included in database datasets (if any).

**Create one new process/material data sheet** in SimaPro and include it in the report as an appendix.

**Some minor comments regarding the referencing**

- One reference is mentioned in the reference section but should either also be included in the text or removed from the refence section:

Carin Rougoor, E. E. (2015). *LCA of Dutch pork - Assessment of three pork production systems in the Netherlands.* Amsterdam: CLM.

- In four cases you have two references with the same author and year:

Curran, M. A. (2015), Jordbruksverket (2016), Livsmedelsverket (2016) and

Svenskt kött (2016)

To make it possible for the reader to distinguish which of these you are referring to in the text it would be good to include for example 2016a and 2016b.

- In some places you include the first letter of the authors first name in the text as well as in the reference section, for example on page 15.