



# Environmental assessment of new European protein sources for feed (Task 6.2)

## Part 2 - at animal product perimeter

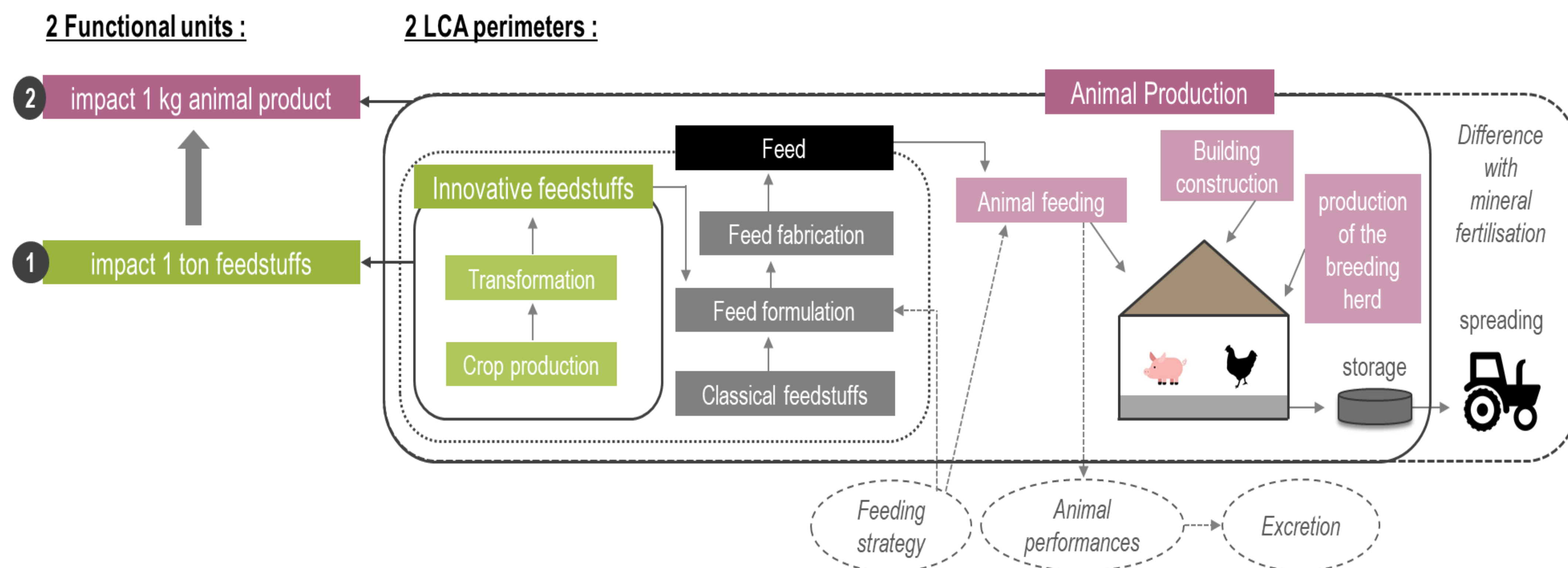
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**Objectives.** Assessing the environmental consequences for animal products (pig and poultry) of using innovative protein sources to replace Brazilian soybean meal in the feed.

## Work plan

**4 innovative feedstuffs (IF)** to replace Brazilian soybean meal for pig and broiler production (cf. poster part 1) :



- Fine fraction of rapeseed meal obtained through physical treatment,
- Soybean meal, obtained from dehulled soybeans and with an innovative extrusion process (DCP),
- French soybean meal, obtained from non-dehulled soybeans and with an innovative extrusion process (CP),
- Danish protein paste extracted from green biomass.

**Feeds with IF** are formulated thanks to a least cost formulation. The IF are incorporated in feed to their maximal potential considering a cost of 0€.

**For pig production** the system concerned is a conventional farrow-to-finish pig farms with animals housed in buildings dynamically ventilated on fully-slatted floors.

**For broiler production**, animals are raised in a standard broiler production unit in a building with dynamic ventilation and a litter floor.

**For egg production**, the system is conventional, indoor cage-free to reflect the expected change in the egg production sector in France.

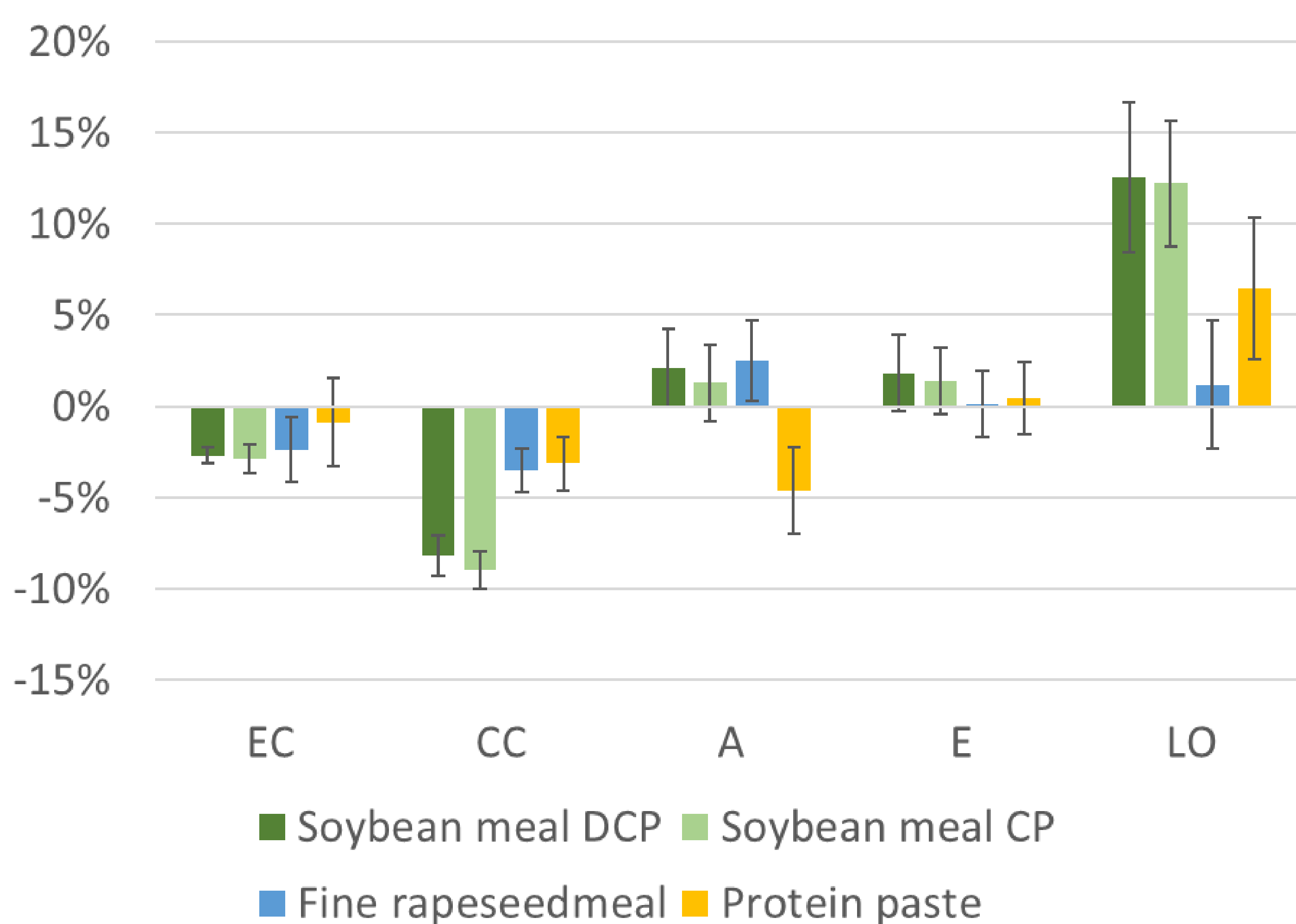
**Environmental impacts** are assessed per kilogram of animal product at farm gate by Life Cycle Assessment (LCA) for 5 impacts : Climate change (CC), Non-renewable Energy consumption (EC), Acidification (A), Eutrophication (E), Land occupation (LO).

In pig and poultry productions, baseline scenarios using standard feeds with Brazilian soybean meal (and without IF) and innovative scenarios using IF were assessed.

Several economic contexts were considered.

## Results

**Pig production :** Difference of impacts between innovative and baseline scenarios

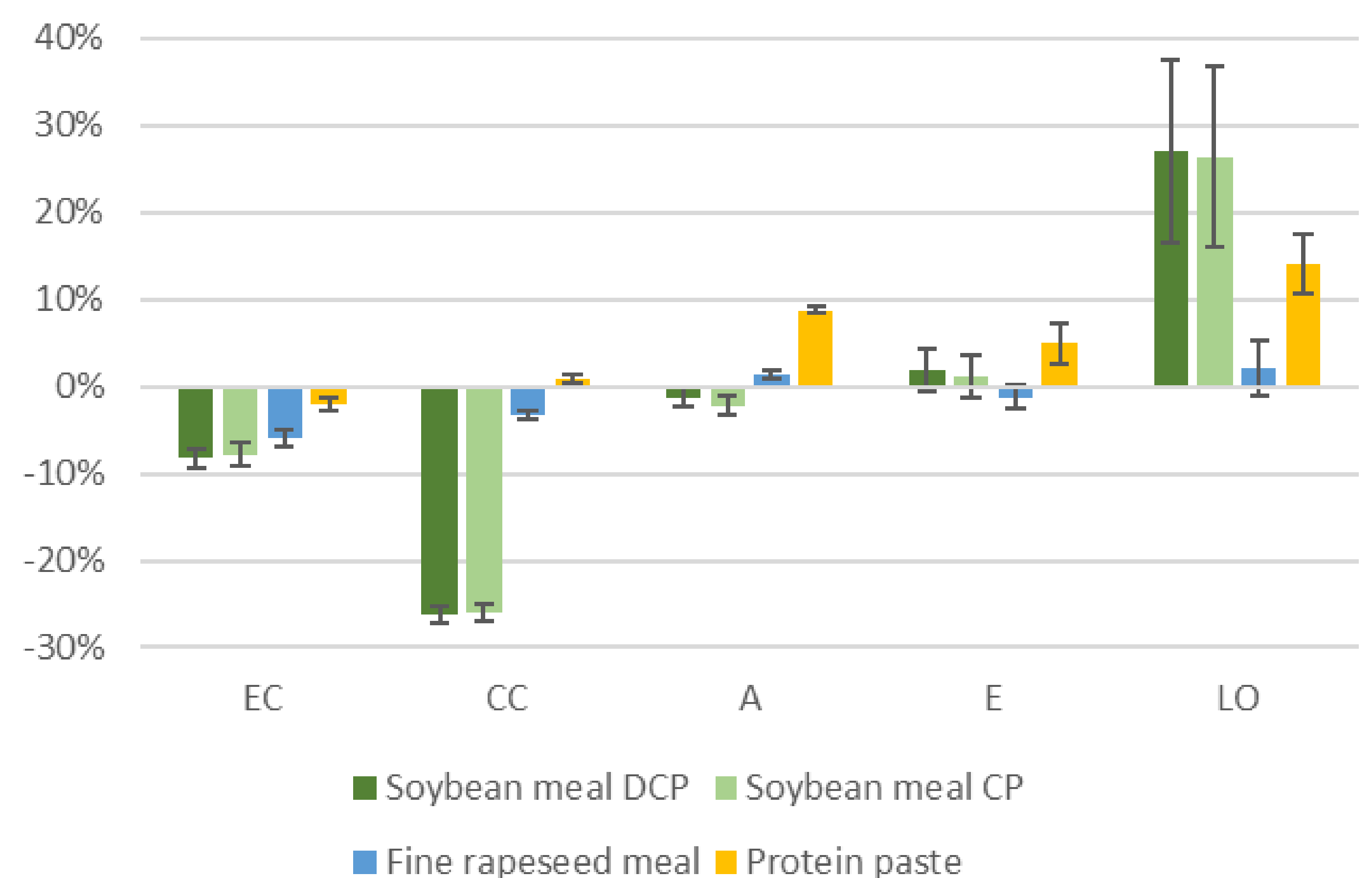


▶ For pig production the baseline with Brazilian soybean meal (12.9% average incorporation rate) is virtual because the current incorporation rates are low (<5% in fattening feed).

▶ Compared to this “virtual” baseline, the use of the innovative feedstuffs reduces the impacts on climate change (8-9%) and energy consumption.

▶ However, the impact on land occupation increases (by 12% for the European soybean meals).

**Poultry production :** Difference of impacts between innovative and baseline scenarios, broiler production



▶ For broiler production, the use of IF could reduce the impacts on energy consumption (2 to 8%) and climate change (3 to 26%, but no change for protein paste).

▶ However, impacts are increased for land occupation, and for acidification for protein paste.

▶ European soybeans seem to be the most promising innovative feedstuffs, but lead to a strong increase in land occupation (>25%).

▶ For egg production, climate change can be decreased by the use of European soybeans (by 25% appr.), but land occupation is increased (8 to 9%). Protein paste increases acidification and does not seem to be a promising feedstuff in our scenarios for egg production.

