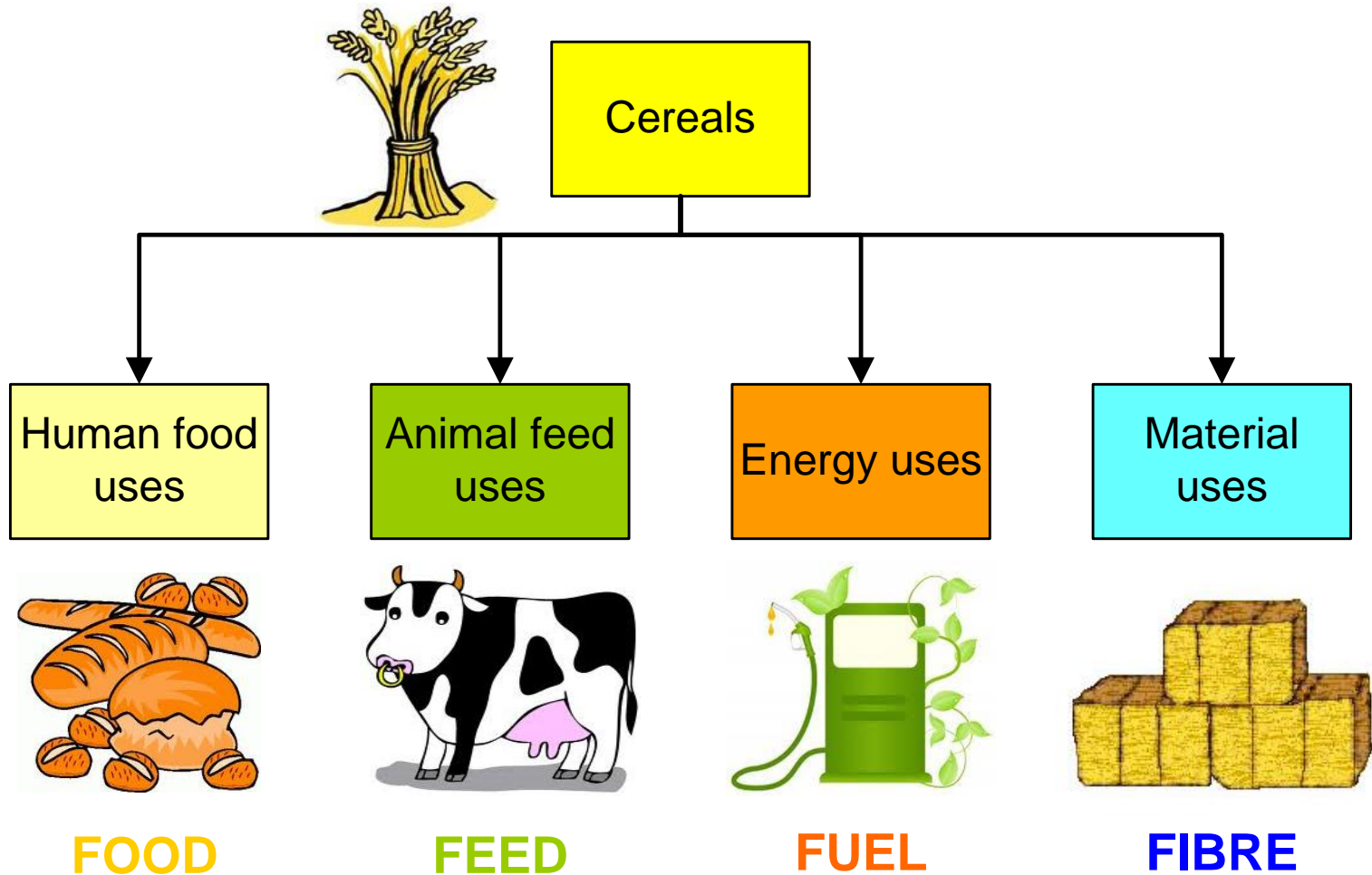


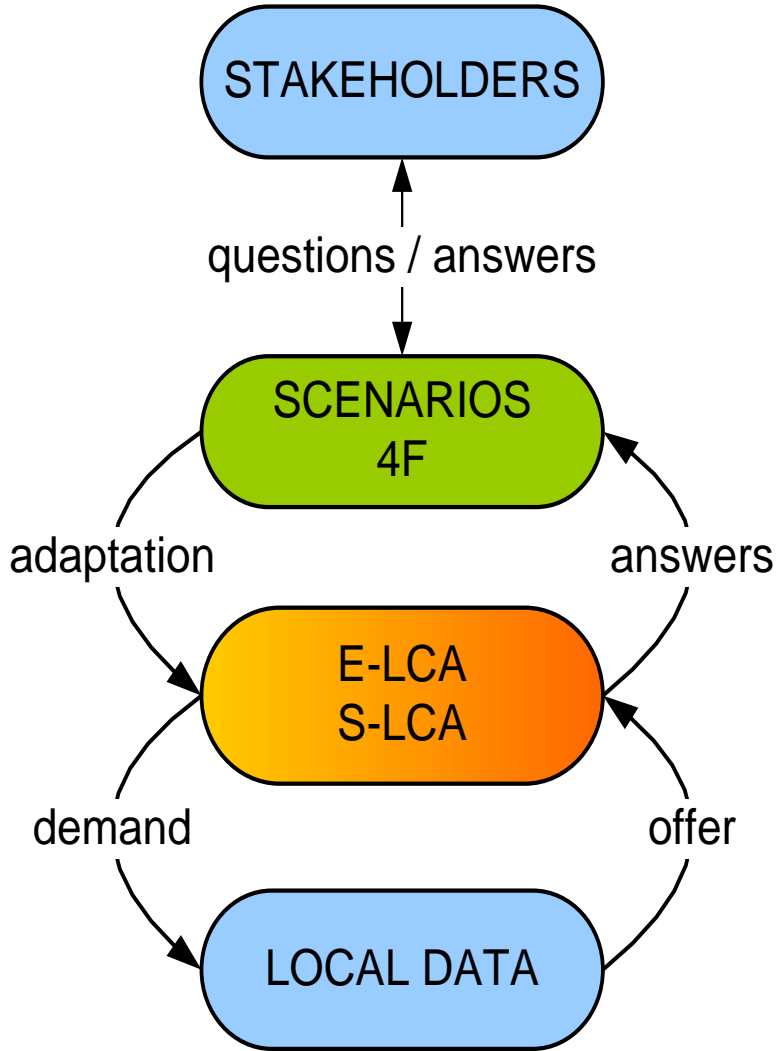
# Assessing existing and potential cereal food and non-food uses by combining E-LCA and S-LCA



# Cereals food and non-food uses: « 4F »



# ALT-4-CER: which « F's » of the « 4F » for Wallonia?

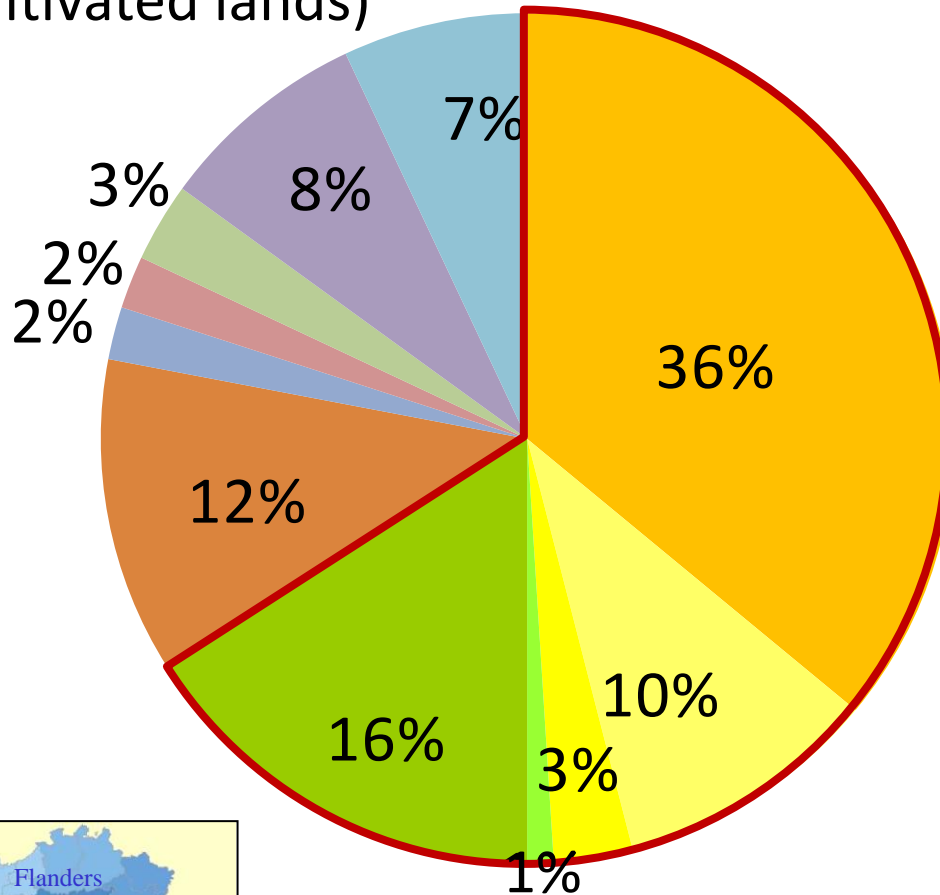


## Key steps:

1. To draw the **portrait** of the Walloon cereals, and their current and future/potential uses
  2. To define several **scenarios 2030** acc. to current trends (B-a-U) and contrasting breaks
  3. To develop **environmental and socio-economic LCA** methodologies fed with **local** data
  4. To integrate environmental and socio-economic aspects through **multi-criteria analysis** with **stakeholders**
- To provide clues for most **sustainable** and **pertinent** uses of the cereal resources in Wallonia

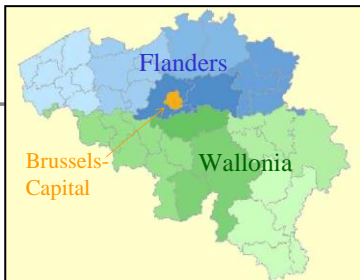
# Walloon context: main crops

(% cultivated lands)



- Winter wheat
  - Winter barley
  - Spelt
  - Grain maize
  - Forage maize
- Cereals: 66%**

- Sugar beet
- Chicory
- Linseed
- Rapeseed
- Potato
- Temporary meadows



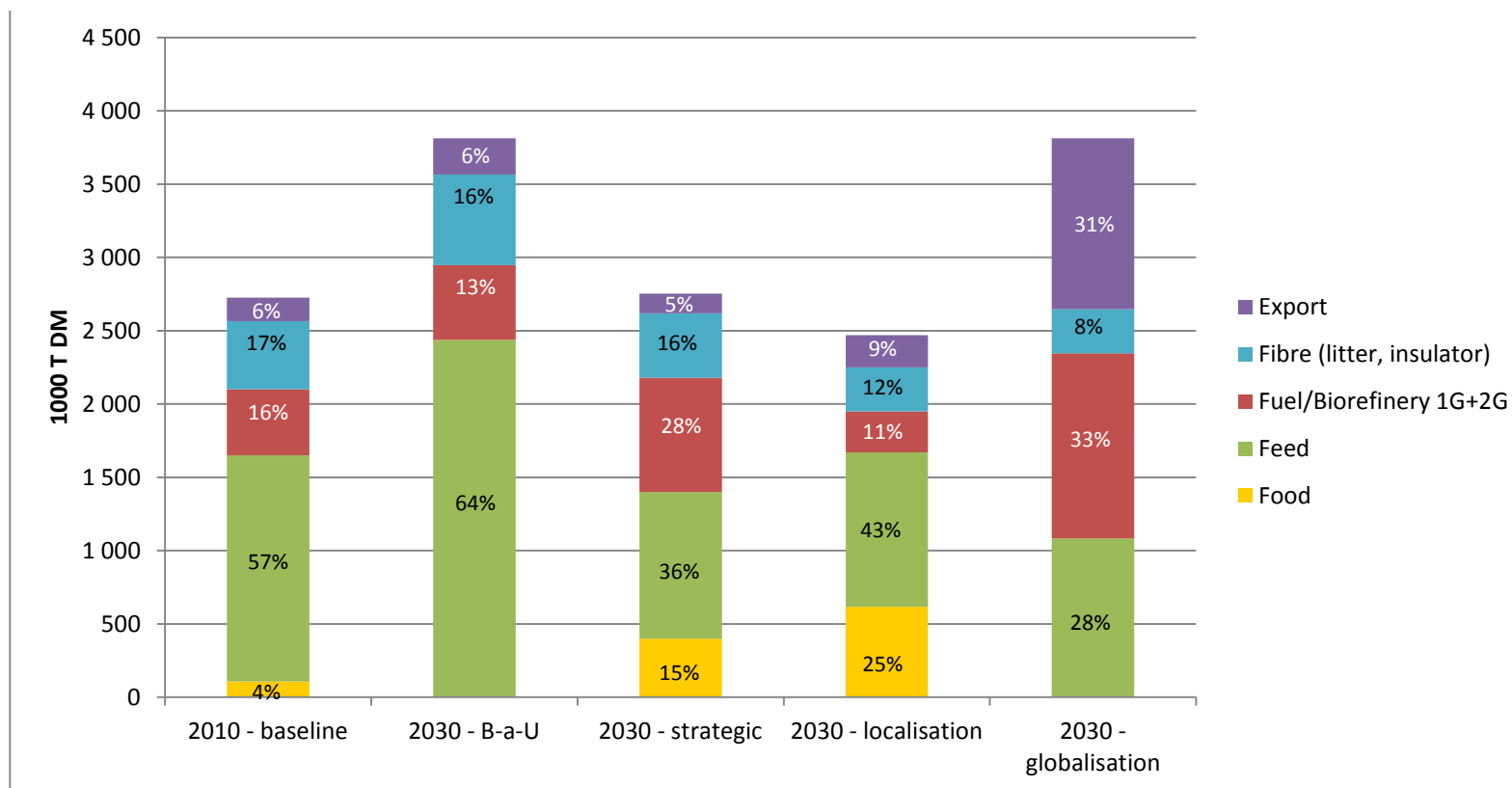
Source: DGSIE (INS)- Recensement agricole 2010



# Scenarios 2030: Grains + straw + forage maize



1. **Business-as-Usual**: current trends extrapolated from past 15 years
2. **Strategic**: environmental, economic and social optimization of current system
3. **Localisation**: development of new cereal conversion units in Wallonia + increased autonomy
4. **Globalisation**: massive export + focus on high added-value products (biorefinery, bio-based chemistry)



→ Cover the 3 pillars of sustainable development

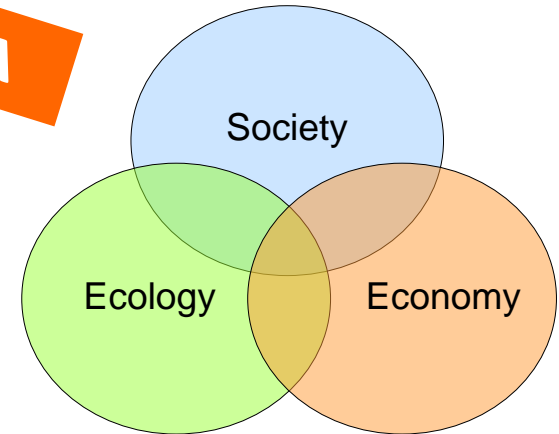
→ **Common objective:** evaluate environmental and socio-economic **consequences** of potential changes in the uses of Walloon cereals by 2030, in comparison with current situation (2010)

→ **Consequential LCA**

→ **E-LCA & S-LCA specific objectives:** assess influence of cereal use chains on environmental & socio-economic performances within a given scenario → **Attributional LCA**

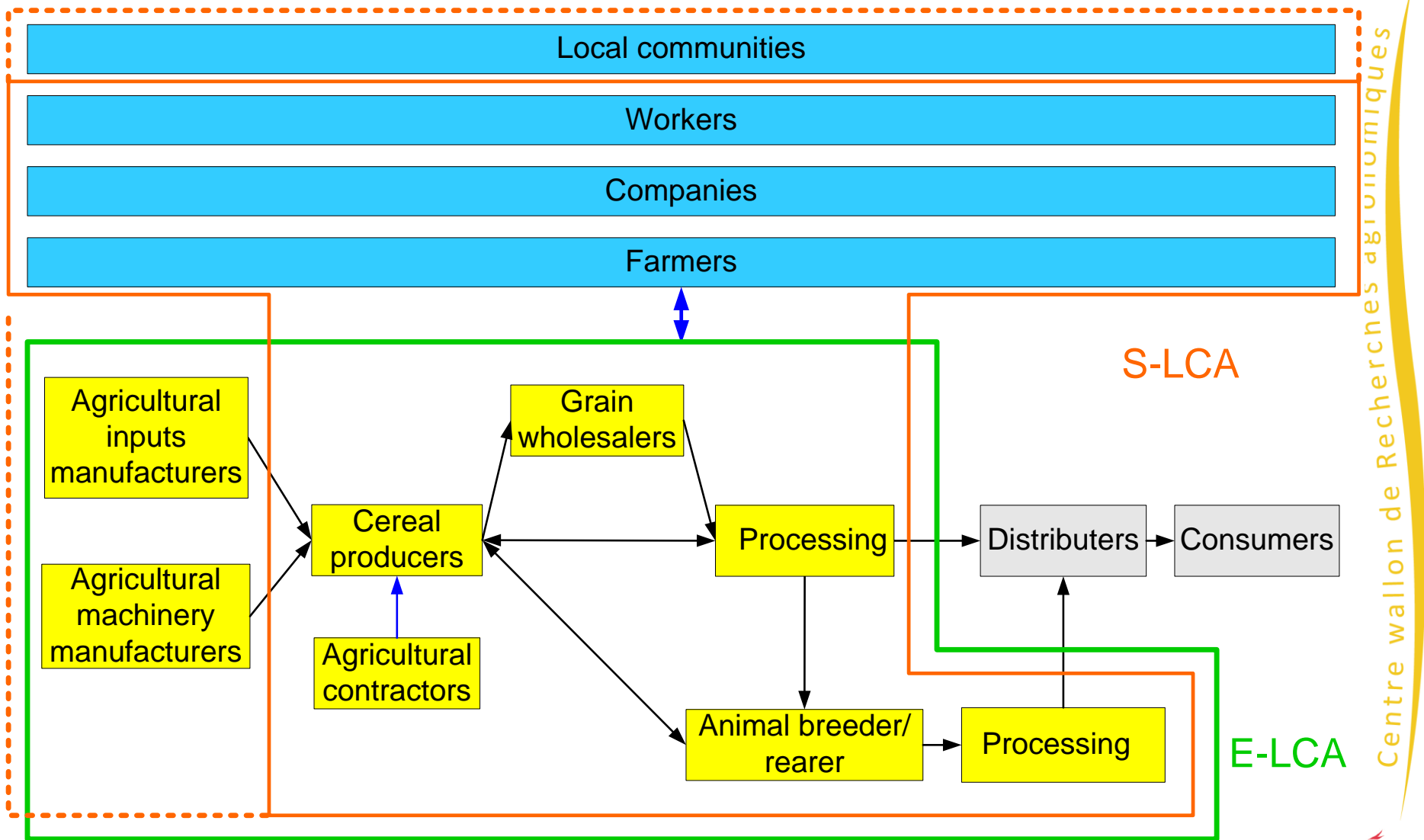
→ **Common « 4F » functional unit = 1 ha**

**LCSA**



**LCSA**

# System boundaries in E-LCA & S-LCA



→ Physical flow between actors (transport)  
 ⇄ Influence between actors

**Environmental LCA** → identify **regional** differences regarding the **cultivation** step:

- (New) cropping practices;
- Machinery characteristics & fuel consumption;
- Direct field emissions assessment;
- Inputs management;
- Animal feeding & husbandry;
- etc...

+ **Conversion** processes based on existing facilities



# Scenarios analysis with S-LCA

- **Stakeholders categories**

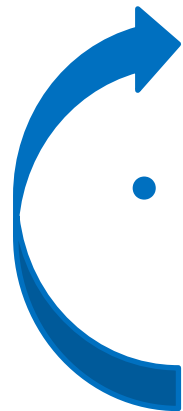
- Workers
- Companies
- Farmers
- (Local communities)

- **Impact subcategories**

- Workings hours
- Health and safety at work
- Local employment
- Added value creation

- **Impact categories**

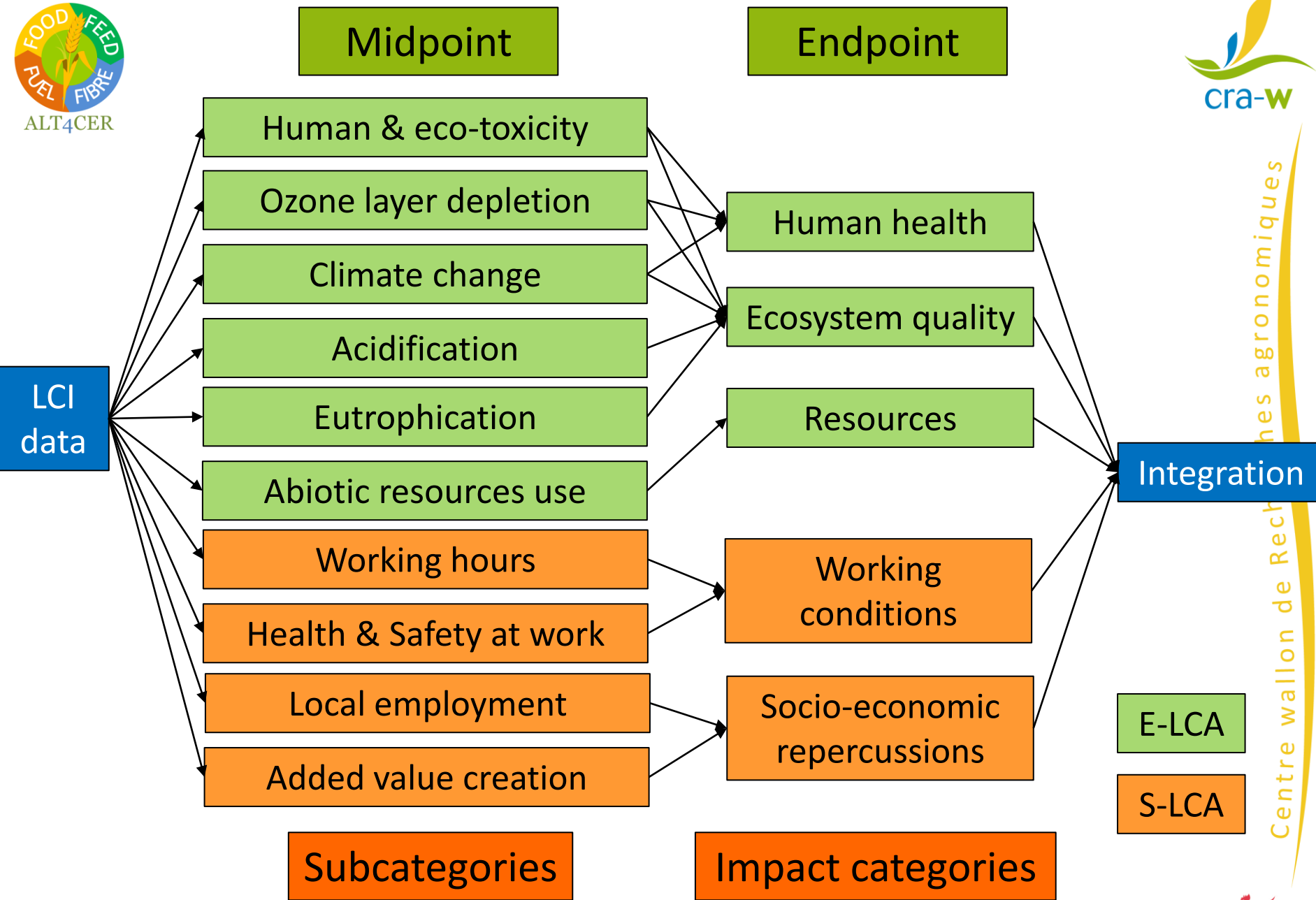
- Working conditions
- Socio-economic repercussions



- Working conditions: interviews:
  - Using methodology **Bilan Travail** (labor balance for production step):
    - Developed by INRA & Institut de l’Elevage in order to assess **work types** and **share** for animal rearing systems
    - To be adapted for cropping systems
- Use **farms’ accounting data** collected at the Walloon Region level (FADN-like) (production step)
- Transformation step: data collection from existing **facilities**

- Detailed costs balance of cereal chains is not the objective of our project → not a traditional LLC but a valuation of distribution of added value
- **Objective:** compare best value chain by studying distribution of costs according to chain link rather than an accurate estimation of their evolution in absolute value
- Are included: stocks, sales, raw materials, labour force costs, etc.
- Could be distributed according to working hours for example

- **Integrate** environmental and socio-economic impacts (E-LCA & S-LCA results)
- **Involve stakeholders** (producers, policy makers, consumers):
  - **Identify** most relevant impact categories, group/prioritize
  - (**Weight** into a global performance indicator?)



# ALT-4-CER: Expected results

## → Key features of the project:

- To involve local **stakeholders** in all steps (scenario building, data collection, impact weighting)
- To use **local data** → for local issues

## → Answer key questions raised today in human Societies:

*“What type of agriculture do we want for tomorrow?  
Is it ethically, environmentally and economically  
sustainable to dedicate cereals resources to other uses  
than human food?”*

End of project: **February 2014**

*Thank you for your attention!*



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