



**HAL**  
open science

## Environmental impacts of innovative sustainable agri-food value chains: rights, duties and potentialities of Life Cycle Assessment

Samuel Le Féon, Caroline Pénicaud, Gwenola Yannou-Le Bris, Joël Aubin, Karin Östergren, Kavitha Shanmugam

► **To cite this version:**

Samuel Le Féon, Caroline Pénicaud, Gwenola Yannou-Le Bris, Joël Aubin, Karin Östergren, et al.. Environmental impacts of innovative sustainable agri-food value chains: rights, duties and potentialities of Life Cycle Assessment. EFFoST International Conference 2022, Nov 2022, Dublin, Ireland. hal-03866705

**HAL Id: hal-03866705**

**<https://hal.inrae.fr/hal-03866705>**

Submitted on 22 Nov 2022

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution| 4.0 International License

## **Environmental impacts of innovative sustainable agri-food value chains: rights, duties and potentialities of Life Cycle Assessment**

**Samuel Le Féon<sup>1</sup>, Caroline Pénicaud<sup>1</sup>, Gwenola Yannou-Le Bris<sup>1</sup>, Joël Aubin<sup>2</sup>, Karin Östergren<sup>3</sup>, Kavitha Shanmugam<sup>3</sup>**

<sup>1</sup> *Université Paris-Saclay, INRAE, AgroParisTech, UMR SayFood, 91120, Palaiseau, France*

<sup>2</sup> *UMR SAS, INRAE, Institut Agro, 65 rue de Saint Brieuc, 35042, Rennes, France*

<sup>3</sup> *RISE-Research Institutes of Sweden, Agrifood and Bioscience, Ideon Gateway, SE-22370 Lund, Sweden*

### **Aim**

Life Cycle Assessment (LCA) is often used to claim sustainability in food innovation projects. Sometimes, its power is overestimated by stakeholders when they define their expectations leading to deceptions and possible mistakes. Sometimes, its capacities are underestimated and LCA is not part of the innovation process but only used for a posteriori validation. This is emphasized by the increasing diversity of innovations (e.g. technological/organisational) and the expansion of LCA in response to this diversity (e.g. organisational/territorial LCA). Facing with the diversity of innovations in Fairchain EU project, we aim to analyse what should reasonably be expected from LCA for each of the 5 case studies (CS) of agrifood value chains.

### **Method**

By crossing initial expectations of CS stakeholders with potentialities of LCA and first results, we expect to answer the following questions: (1) is LCA suitable to help meeting the claimed sustainability objectives, (2) is it suitable to assess the consequences of their realisation and (3) how LCA should be supplemented or adapted to fulfil these objectives. By doing this on various CS, we define recommendations of usage of LCA by food innovators giving them information on what they can expect – or not – from LCA, in what conditions (e.g. supplemented with other methods).

### **Results**

Based on Fairchain CS, we discuss LCA capacities and requirements to meet the expectations of stakeholders and the role they should play into LCA process. It comes to recommendations such as, for example, (i) defining adequately the goal and scope of the study in order to produce fair comparisons between current situations, generally optimized, and future situations, non-optimized during development of the innovation and (ii) complementing LCA by other methods when insufficient to evaluate all the environmental impacts, and furthermore the sustainability.

### **Conclusion**

LCA is a powerful method with multiple possibilities when being involved in research and innovation of food projects. However, initial expectations and choices can lead to impaired usages (missing opportunities, asking wrong questions, not giving answers, giving wrong answers, greenwashing). Based on innovation CS, this work aims to well involve LCA and stakeholders during a project.

*Contacts: Samuel Le Féon & Caroline Pénicaud*