9.1 Developing a best practice LCA to assess and compare the environmental and nutritional impacts of food

What problem is your proposition addressing?

Life Cycle Assessment (LCA) is an important tool that food system actors use to assess the environmental impacts of food items, and consumers and policymakers use to compare the sustainability of different foods and diets. However, LCA methodological issues are undermining the ability of consumers and other food system actors and policymakers to make robust, evidence-based choices to encourage sustainable food systems from healthy diets from sustainable production systems. Key problem areas include that most food item LCAs:

- only focus on one environmental impact, usually climate change contribution, and often do not include impacts for other environmental areas such as water use, which prevents LCAs from providing a clear picture of the overall environmental sustainability of food items;
- compare different food items on a mass or volume basis (e.g. tonne of GHG emissions per kg of unit product), which can mean the contribution of different foods to nutritional outcomes may be overlooked or mis-represented; and
- only use the climate change metric GWP100, which can underestimate the short-term and over-estimate the long-term global warming potential of short-lived gases such as methane (which is prevalent in ruminant livestock and rice production foods systems).

In addition, different indicators (with different levels of accuracy) are often used in LCAs to assess the same environmental impact, and results are often presented as a single integrated value. This makes it difficult to compare LCA impacts across similar and different food items, and over time.

How does your proposition address the problem?

This project will use research on ways to make LCA more robust and multi-dimensional to develop an internationally recognised best practice guide for assessing and comparing the environmental and nutritional impacts of different food items. The guide will:

- identify and propose solutions for the key LCA food item methodology issues;
- include recommendations on how to use LCA to represent a range of internationally agreed key environmental and nutrition impacts in a way that can be compared across food items common to diets across the world; and
- be developed by a group of independent internationally recognised LCA experts from a range of FAO member countries and be reviewed and published by the FAO.

This FAO-led approach to developing a best-practice LCA guide will gain the international recognition needed to encourage food system actors across the world to use more accurate LCAs to measure and compare environmental and nutrition impacts of food items. This will equip consumers and policymakers to make more robust, evidence-based choices to encourage sustainable food systems from healthy diets (and could be used as a tool to underpin several game changing solutions within AA2.1). Assisting food system actors and policymakers to make more sustainable and healthy choices will play a critical role in achieving the SDGs, especially the nutrition and environmental sustainability goals.

Is this a new solution or an existing solution that needs scaling?

While there is published research that outlines potential ways to address LCA methodological issues, there is no internationally agreed best-practice methodology for developing an environmental and nutritional LCA for food items. As a result, most food item LCAs do not address the key methodology issues identified in this paper. This project is unique in its aim to gain agreement about a best-practice LCA approach across researchers from a range of countries (who study a range of food systems and impacts) and in having this approach endorsed and promoted by the FAO. We consider it is important to use this new approach to successfully drive a global shift to consumers and other food system actors and policymakers using more robust and accurate environmental and nutritional information.

Which organisation/s, institution/s or groups of individuals are associated with the solution?

The FAO is leading this proposal with support from a group of approximately 30 researchers. The FAO short-listed researchers based on subject matter expertise (Food LCA, Environmental LCA, Food systems and Nutrition Science), and ensuring good gender balance and geographic representation. New Zealand has provided (and Ireland will soon give) funding to run the project, and each researcher is providing in-kind contributions (with the support of their host countries).

What is the scientific evidence that supports your proposition?

There is a large body of research which identifies the key LCA methodology issues and potential solutions outlined in this paper. Some of the key papers are referenced below.[1]

Is this idea applicable to a particular geography, demography, landscape or other type of setting?

This project will provide an LCA guide which could be used to assess the environmental and nutritional impacts of foods from a wide range geographies, landscapes and demographics i.e. to assess the impact of most meat (including livestock and fish), plant, and dairy products.

Who are the main actors that would put this action into place?

The FAO is leading this project and will be promoting and gaining buy-in for the research findings.

Source and process

- Don Syme, New Zealand (AT2 Leadership Team member)
- Jamie Morrison, FAO (AT2 Leadership Team member)
- Feedback from the AT2 Leadership Team members has indicated that the EU, Lucia Reisch, and Emiline Fellus would be interested to work on this solution.

We suggest that this proposal is merged with other key game-changing data improvement proposals. While making these LCA improvements will encourage consumers and other food

[1] Nutritional LCA: *Heller et al., 2013; Van Kernebeek et al., 2014; Hallström et al., 2015; Nemecek et al., 2016; Hallström et al., 2018*. GHG metrics: *IPCC, AR5; UNEP, 2019*; *Lynch et al., 2020; Allen et al., 2018, Cain et al., 2019; Frischknecht and Jolliet, 2016; Balcombe et al., 2018; FAO, 2019; Muñoz et al., 2010*. Wider environment impacts: *Eme et al., 2019; Payen et al., 2018; van Dooren et al., 2018; Bayart et al., 2010;Strassmann et al., 2008; Mottet et al. 2017; Frischknecht and Jolliet, 2019; Huijbregts et al., 2016; Azevedo et al. 2013*. LCA harmonisation: *Finkbeiner et al., 2006; Poore and Nemeck 2018; Drew et al. 2020; Clune et al. 2017; OECD, 2020*.

system actors and policy makers to use more accurate nutritional and environmental data, there are also other key data improvements and programmes needed to encourage a global shift to using more robust and accurate information to encourage sustainable food systems from healthy diets.[2]

[2]For instance countries will need to also promote leading LCA research through platforms such as this EU LCA initiative