DRESDEN NEXUS CONFERENCE
DNC 2022 | BIODIVERSITY Stewardship for vital resources

Assessing the social sustainability of agri-food systems: a review of indicators

Ramoudane Orou Sannou, UNU-FLORES
Sabrina Kirschke, UNU-FLORES
Edeltraud Günther, UNU-FLORES

Background & Objective

The scientific community agrees on the importance of the social dimension of sustainability in addition to the environmental and the economic ones (Latruffe et al., 2016; Stylianou et al., 2020). There is, however, a greater need to agree on what it means and how to measure it (Lebacq et al., 2012).

Based on a stepwise approach this study systematizes relevant indicators at different geographic scales, for different agri-food systems, at different levels of the impact chain, and at different points in time.

Methodology

This study combines a content analysis of 130 papers retrieved from Scopus and the application of Natural Language Processing (NLP) techniques to their corpora.

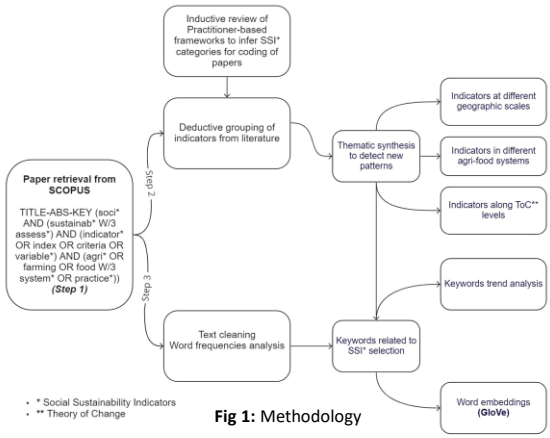

Fig 1: Methodology

Results

Thirty-six indicators of social sustainability in eight domains (food security, healthy and safe products, health and safety, labor and employment, livelihoods, farmer training, social cohesion, security and conflict, land and property rights) were extracted from the content analysis. Participation is the most frequent indicator in all the papers considered.

Indicators by geographic scale

- Indicators are primarily used at the farm level (248 times), followed by the community level (60 times).
- However, there are a significant number of standalone indicators related to labor and employment in most scales.

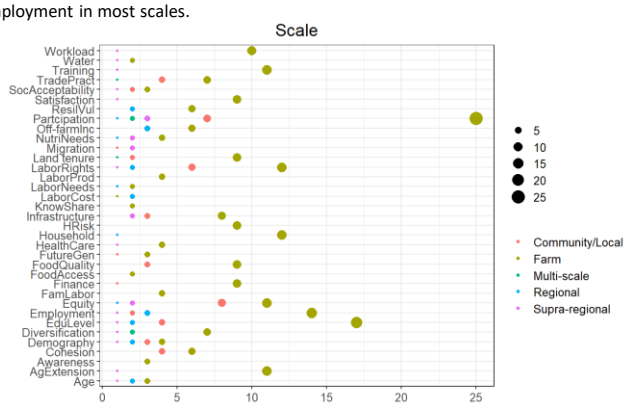

Fig 2: Indicator frequencies by spatial scale

Indicators in different Agri-food systems

- There is no universal set of indicators that can be found in all systems.
- Most of the papers focus on integrated systems or a combination of systems and, as such, present the largest number of social sustainability indicators.

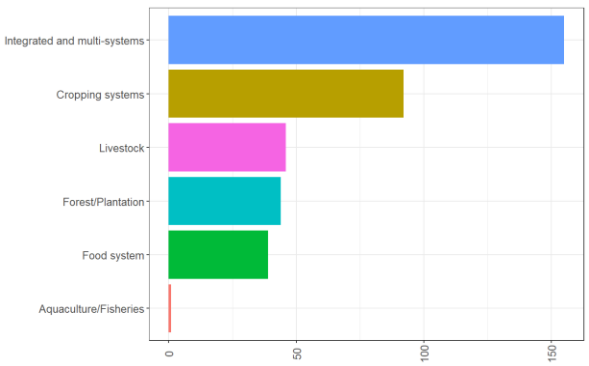

Fig 3: Agri-food systems with most indicators

Indicators along the Theory of Change

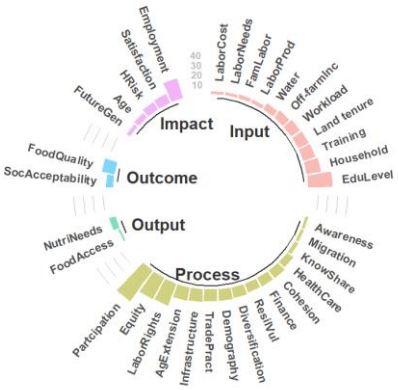

Fig 4: Indicator frequencies along Toc levels

- The ToC is a model used for structuring indicators in evaluation research as well as for integrated reporting .
- Majority of the indicators relate to processes, followed by input and impact indicators, respectively.

Indicators at the temporal scale

- Historical trend analysis of the top 8 social indicators-related keywords shows these are used more often since the advent of the SDGs in 2015 and mostly peaked in 2019.
- The keyword "food", often related to food security indicators, is by far the most frequent among those social indicators-related keywords, followed by land, water and gender.

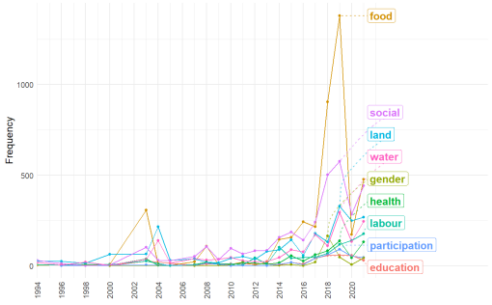

Fig 5: Top keywords related to social sustainability assessment indicators

Prominent social indicator keywords pre- and post-SDGs

- Changes of conceptual meaning in the literature pre- and post-SDGs was captured by computing the cosine similarity between the vectors of the selected keywords using GloVe algorithm. Comparison was done in a semantic scale denoted as <Difficult – Easy>.
- The word embeddings reveal that four out of eight keywords evolved towards <Difficult> after the SDGs. The keywords "water", "participation", "gender" and "education" moved closer to <Difficult>. The other four moved in the opposite direction. These are "labour", "land", "food" and "health", which was nearly neutral after the SDGs.

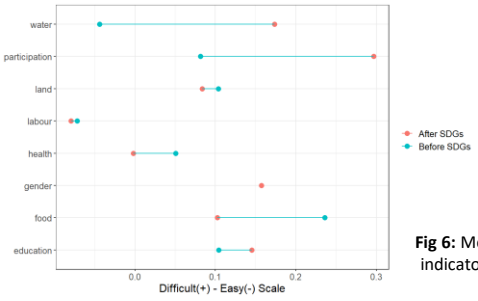

Fig 6: Measurement of prominent social indicator keywords in <Difficult - Easy>

Key Messages

- This study contributes to the literature by systematizing for the first time indicators of social sustainability in agri-food systems at different spatial scales, in different agri-food systems, along the ToC levels and at different times.
  - Disaggregation by spatial scale shows a dominant usage of indicators related to participation while studies on integrated and multiple agri-food systems allow for a greater number of indicators to be selected.
  - Obvious relationships have emerged between the levels of a ToC and the indicators underlying the social sustainability of agri-food systems. This approach could allow for a diverse set of indicators to be covered in both conceptual and empirical analyses.
  - The social sustainability indicators-related keywords "education," "participation," "water", and "gender" have shifted more towards "difficult" in the literature. This suggests their importance and their complexity.