The methodological approach of developing the interactive infographic: 'Food System Discovery – Actors and activities in Luxembourg'

An explanatory overview for users

(https://bit.ly/IG2_SFP)

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About Sustainable Food Practices

The Sustainable Food Practices project analyses Luxembourg's food system from a social science perspective. We examine who the actors and stakeholders are within the system and what their role is in the transitions towards a more sustainable food system and culture. The objective of the project is to analyse social practices that have both favourable and unfavourable influences on Luxembourg's food system. An analysis of the current and future opportunities and challenges is an appropriate tool to help interpret and justify perceptions, practices, decisions and arguments from political, economic, ecological and societal perspective. The aim of the project is to understand the global consequences of our food practices by researching the transition processes towards a more sustainable food system.

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The authors listed in the reference here-above should be recognised as contributors of the project.

Content outline

This document gives a brief overview of the research approach used to developing the interactive infographic, “Food System Discovery – Actors and activities in Luxembourg”.

As the interactive infographic will be used by a varied audience, this document aims to guide users to how we undertook the research and how to interpret the infographic, it will:

- give a short overview of the overall infographics project in Sustainable Food Practices at the University of Luxembourg
- provide the reasoning behind the approach to explaining food systems in the project
- describe the use of data visualisation for representing complex systems
- elaborate on the research methods for data collection and analysis
- present the structure behind the interactive infographic
- begin to address the reasoning and decisions around which information needs to be depicted in such infographics, and how we ensure such infographics are encompassing but not overwhelming.

A longer and more thorough academic version of the methodological approach will be published in due course.

Abstract

The methodology behind creating the interactive infographic: 'Food System Discovery – Actors and activities in Luxembourg' included several rounds of literature reviews, other data collection methods, data analysis and data visualisation.

The initial methodological step was a two-fold literature review; the first to find out how food systems are usually conceptualised and depicted in literature, find strengths and gaps in these conceptualisations, and provide a further development to food system approaches. It led to a broad view of the foodscape, made from the food supply circuit actors and the broader food system actors as one inseparable entity or system. The second literature review concerned theories of visualisation of data as well as theories of information and knowledge representation to find a method to depict food system data in an as complete as possible while still accessible way.

Data collection after the initial literature reviews consisted in gathering information on food system actors and their activities, and the specificities of actors and their activities in Luxembourg. We relied on grey and published literature, Internet browsing, media monitoring, and other data collection activities such as interviews, brainstorming, snowballing with food actors as well as feedback sessions with students, food system actors and fellow researchers.

A large database of collected data was created to organise actors and their activities in several classification levels. To do this, we analysed each actor's mission and their main activity, and described their activities by using descriptors (descriptive keywords) for main action, sub-action, refined sub-action, produce/output and in some cases hierarchy. For the interactive infographic, this led to a four-level depiction with each new level refining the previous one (Level 1=Actor categories, each one represented by a different colourful bubble; Level 2=Actor groups, represented as elements composing the bubbles; Level 3=Actor types; Level 4=Actor examples). Regarding transposability to different contexts (other than Luxembourg), levels one and two are mostly transposable to food systems in general whereas level three is more Luxembourg-specific and level four is Luxembourg-exclusive.

This document outlines the methodological approach and creation process of the interactive infographic to a varied audience, with due regard to communicating the approach to the general public. It can be used as an accompanying guide for discovering the infographic interactively.

Visualising Foodscapes – the project

In the project 'Visualising Foodscapes'[1] we create a series of infographics, by beginning to map the existing foodscape of Luxembourg and culminating in mapping the potential transition processes towards a more sustainable food system. The research behind the visual depictions draws on various theories that define, conceptualise and map food systems. The aim of the research is to use the sequential series of infographics to demonstrate interrelationships, pressure points, gaps and opportunities, and the critical pathways for potential improvements towards a more sustainable food system in Luxembourg.

Throughout the project, we use an approach to food systems that is encompassing, systemic and holistic (see Food System Definition for more details and why such an approach is useful).

"Food System Synopsis – The Foodscape in Luxembourg"[2], our primary infographic was first published in July 2020. It depicts the various direct and broader activities related to food undertaken by actor groups in Luxembourg. Based on real practice in Luxembourg, it aims to unravel the complexity of food systems, and avoid the downfalls of simpler depictions, which tend to focus more unilaterally on food supply circuit actors thus leaving aside wider influences and interrelations. The food supply circuit includes the activities of input-supply, farming, processing, wholesale and retail, gastronomy, and waste treatment. While the food circuit actors are more straightforward related to activities in the food domain, this narrower approach only taking food circuit actors into account can overlook actors in the broader foodscape. However, these latter actors influence, or are influenced by, the inner circuit activities and actors and are therefore essential for understanding the food system as a whole. They typically are involved in activities such as governance, finance, education, media and culture, research, marketing and advertising, operational services and those representing business and professional interests.

The interactive infographic "*Food System Discovery – Actors and Activities in Luxembourg*" is a more detailed depiction of the specific actors within each of the actor groups identified in the primary infographic, by describing their *main* activity.[i] There are three specific reasons for deciding to focus on the description of their main activity rather than all their activities combined. Firstly, to show the diversity of the main activities in Luxembourg, secondly to accurately define them into a specific actor group, and thirdly to avoid creating a 'spaghetti plate', an overwhelming and perplexing graphic of lines and content – which is useful for showing complexity visually, but it cannot depict clarity in the sense of attributing a core activity to different actors. The zooming in on the main activity presents a more focussed view of an actor, as actors widely get involved in a variety of activities within the food system, both in the food supply circuit and on the fringes. By identifying their main activity, it is possible to construct the actor groups of a food system in their entirety, a main goal of this infographic.

[1] https://food.uni.lu/projects/research-projects/visualising-foodscapes/

[2] https://food.uni.lu/projects/research-projects/visualising-foodscapes/infographic-1/

Additionally, this focus allows for gaining a deeper understanding of where their *key* influence exists, a precondition for analysing barriers and gaps in the food system in a second time. For the food system actors of Luxembourg, this depiction may also be useful as it provides an overview of actors which exist around them in the foodscape. We will return to the actors' other food activities in future infographics[3].

Literature reviews

At the outset of this project, we undertook two primary literature reviews.

The primary literature review covered existing approaches to food systems, as well as food system related graphics and depictions to gain an understanding on how food systems are defined, what has been depicted and how.

The secondary literature review included the theories of visualisation of data as well as theories of information and knowledge representation. This enabled us to understand what methods are useful when depicting large amounts of data, such as the use of various techniques to depict data through colours, images etc.

Data collection

In order to create the infographics, we needed to collect data on the actors and their activities in Luxembourg.

We used a number of data collection methods to gather data on food system actors and activities, and the specificities of actors and their activities in Luxembourg, using a variety of literature search techniques, including searching for data in grey[4] and published literature, through Internet browsing, media monitoring, and other data collection activities such as interviews, brainstorming, snowballing with food actors as well as feedback sessions with students, food system actors and fellow researchers.

As there are many actors scattered around undertaking activities related to food, and in some areas more than others, we agreed to an inclusion/exclusion method of where we selected up to ten most visible actors in the field. We did not at the outset intend to create a 'phonebook' of example actors.

The selection process was twofold: firstly, to provide illustrative examples for clarity, so that the infographic can be transposed to other contexts, and secondly, that it can be read with the perspective of Luxembourg specific actors.

[3] For future infographics, visit our website for detailed information https://food.uni.lu/projects/research-projects/visualising-foodscapes/

[4] The term grey literature is used to describe a wide range of different information that is produced outside of traditional publishing and distribution channels, and which is often not well represented in indexing databases.

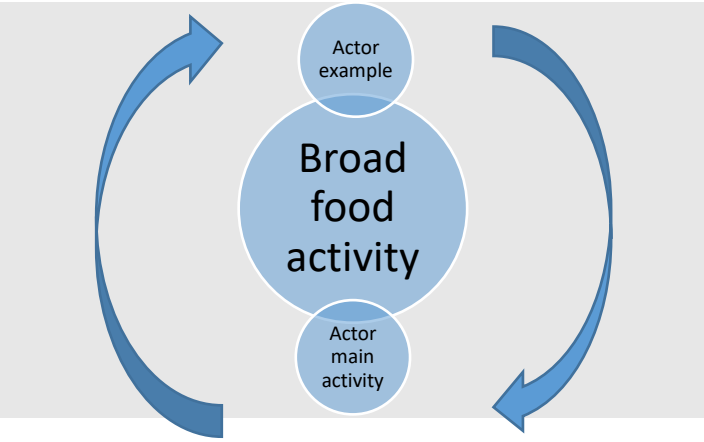
Data analysis

We used exploratory data analysis (EDA) to analyse all the descriptors of our actors, to make sense of them before we determined how best to visualise the data. In other words, what could the data that we collected about the actors tell us about our actors? The data that we collected about the actors came from primary sources, e.g. information provided on their websites, publications, reports and some statistical sources as well as secondary sources, e.g. media reports and word of mouth. By grouping data together, we were able to create logical datasets, a classification, that could be visualised, e.g. the actor groups, types and their main activities.

We used various validation techniques through data collection and analyses of datasets to ensure scientific rigour. Whilst collecting and refining data we used a two-way collection method: first by noting food actions that take place in food system, we could explore and identify what example actors undertake that as a main activity, and secondly, by *reverse identification*, we analysed known actor examples, to then define their activities (Figure 1). This also worked as a validation technique to make sense of data from two different viewpoints, that of the example actor and that of the activity.

Other validation methods used were re-iterative rounds to discuss and decide on terminology, data quality, descriptions and definitions. This was done weekly within our team and more occasionally with colleagues, students and stakeholders outside of academia during workshops, teaching units and meetings. We also presented the infographic, the main actors and broad activities at workshops and lectures for feedback from researchers and food system experts.

Figure 1: Two-way validation technique for identifying actors and activities



An interactive infographic: model structure and data representation

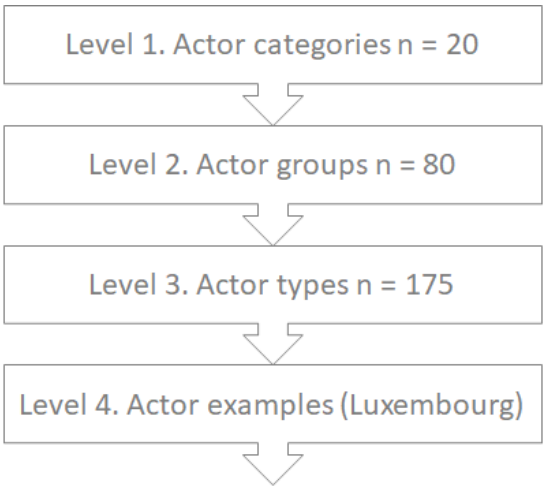
Behind the interactive Infographic exists a comprehensive database, which we structured with a number of fields to classify actors and their activities from a broader description to narrower descriptions where possible. To do this, we analysed each actor's mission and their main activity, meaningfully described their activities by using *descriptors* (descriptive keywords) for main action, sub-action, refined sub-action, produce/output and in some cases hierarchy, other relation (in the food system), the name of the actor and relevant URL (see Table 1).

Table 1: The structure of the database: fields that define each actor group and type, and their main activity

Actor types & actions						**Hierarchical link**	**Additional categorisation**	**Example actor**
General food system category	Main actor action	Actor action refined	Sub-action	Sub-action refined	Produce & output			

For the interactive Infographic, we then proceeded to simplify the database, in order to arrive at a categorisation system with four levels that would lend itself for visual interactive depiction and would be easily enough understood visually (Figure 2).

Figure 2: Four levels of categories for the Infographic



When navigating through the infographic, it is possible to explore the different levels, as is illustrated in Figure 3 below. When clicking on an actor category on the infographic, it opens the bubble providing the different actor groups that can also be clicked on. By doing this, a description of the group, and the actor types that exist within the group, are provided. By clicking on "Examples from Luxembourg" there will be further description of the actors and their activities with example actors from Luxembourg.

Actor category, actor group, actor type and actor example are defined as follows:

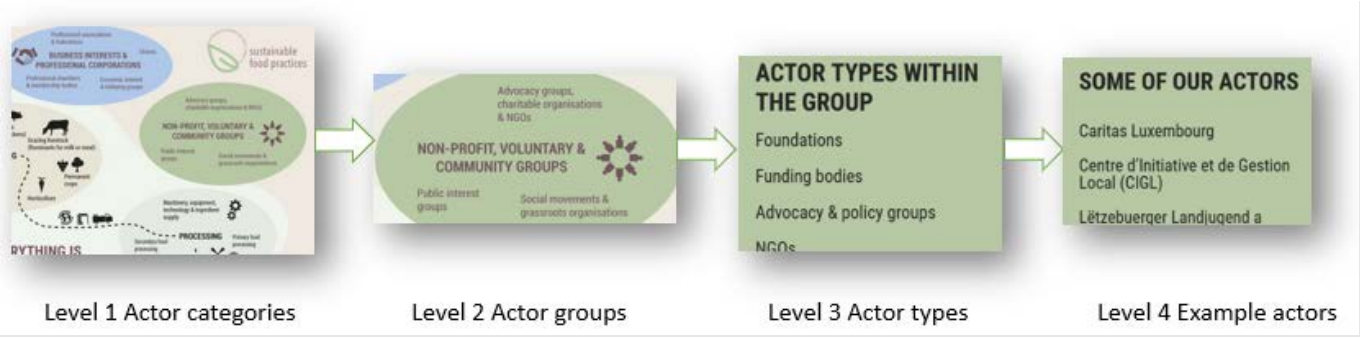
Actor category
The actor category is the broadest categorisation of actors in the infographic. These actor categories are broadly grouped into two different kinds, based on the way they interact with the food system: actor categories that operate in the food supply circuit assemble actors that work directly 'with' food. Actor categories that operate at the broader food system level assemble actors that operate 'around' food.

Actor group
Each actor category is composed of its various actor groups. Actor groups are a refinement of the respective overarching actor category, reflecting their main activity in the food system.

Actor type
Each actor group is again refined by dividing it into different actor types. Actor types are defined by their specific activity in the food system, wherever possible leading to examples from Luxembourg.

Example actor
Example actors illustrate the descriptions of food system actor groups and actor types. Example actors are placed in the actor group/type reflecting their main activity for illustrative purposes. In reality, some actor examples may undertake multiple activities in the food system. Not all groups/types display actor examples for various reasons, nor are the lists of examples exhaustive or aimed to be a directory. Example actors with several main activities may be shown in more than one actor group or type, if no other example actor was found or if an example actor has two or more main economic activities. There may be, and probably are, more example actors than the ones provided. In some cases, we have refrained from providing example actors, where examples are not needed for illustration, or where we are unable to in terms of data protection or other reasons. In the particular case of 'Natural environment', no actor examples are provided for the entire actor category for the reason that the Natural Environment provides the natural resource base for all other food systems activities.

Figure 3: The levels described



Transposability to different contexts

Looking at the infographic, there are groups of actors that can be found in the majority of food systems. However, the deeper dive into further levels, the likelier it is that there will be national and regional specificities as well as differences between countries. Of course, depending on country size, national food priorities, or types of food activities that take place, the example actors and their numbers will differ. More, less or different food systemic activity, e.g. food shortage or specific food production, will create a different pattern of actors and activities.

Access the infographic and more information

To find out more about the infographic, visit our project pages:

- Visualising foodscapes https://food.uni.lu/projects/research-projects/visualising-foodscapes/
- The Research Team behind the project: https://food.uni.lu/about/
- To access the infographic: https://bit.ly/IG2_SFP

The interactive PDF of the infographic can be downloaded to use for personal use or educational purposes link here https://food.uni.lu/projects/research-projects/visualising-foodscapes/infographic-2/

[i] Note that in some cases, actors have several main activities that are not necessarily hierarchical in their importance and need to be considered as several main activities. Also, defining a main activity may need a more thorough methodological approach for economic actors as their main activity is usually defined as the one contributing most to their economic output. Yet, accessing this data for each example actor is not possible. Therefore, especially in the case of the food supply circuit actors, some actors may be found in different actor categories and/or actor groups.