

FoodE

D2.3



Data collection protocol

Project Acronym and Name	FoodE – Food Systems in European Cities
Type of action	IA – Innovation Action
Grant Agreement No.	862663
Work package	WP2 Methodological framework development and case studies sustainability assessment
Dissemination level	Public
Document type	Report
Lead partner	UniBO
Authors	Luuk Graamans, Martí Rufi Salís, Mara Petruzzelli, Fabio De Menna, Francesco Cirone, Antonella Samoggia, Francesca Monticone, Kathrin Specht, Runrid Fox-Kämper, Agnès Lelièvre, Vèronique Saint-Ges, Giovanni Bazzocchi, José Pascual-Fernández, Ilaria Braschi, Matteo Vittuari, Xavier Gabarrell Durany
Contributors	Gaia Stringari, Pietro Tonini, Giuseppina Pennisi, Francesco Orsini OTHER CASES UNDER CONSIDERATION
Planned delivery date	
Actual delivery date	
Project website	FoodE
Project start date	01/02/2020
Duration	48 months



Version	
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Project consortium

No.	Institution Short name	Institution Full name	Country
1	UNIBO	ALMA MATER STUDIORUM – UNIVERSITÀ DI BOLOGNA	IT
2	APT	INSTITUT DES SCIENCES ET INDUSTRIES DU VIVANT ET DE L'ENVIRONNEMENT - AGRO PARIS TECH	FR
3	RMN	COMMUNE DE ROMAINVILLE	FR
4	SWUAS	FACHHOCHSCHULE SUDWESTFALEN	DE
5	ILS	INSTITUT FÜR LANDES- UND STADTENTWICKLUNGSFORSCHUNG gGMBH	DE
6	FLY	FLYTECH SRL	IT
7	NOL	NOLDE ERWIN	DE
8	BOL	COMUNE DI BOLOGNA	IT
9	NAP	COMUNE DI NAPOLI	IT
10	UNINA	UNIVERSITA DEGLI STUDI DI NAPOLI FEDERICO II	IT
11	HCA	HAGUE CORPORATE AFFAIRS BV	NL
12	LAN	GEMEENTE LANSINGERLAND	NL
14	WR	STICHTING WAGENINGEN RESEARCH	NL
16	POL	POLAR PERMACULTURE SOLUTIONS AS	NO
17	TAS	TASEN MICROGREENS AS	NO
18	MBI	ASOCIATIA MAI BINE	RO
19	ARC	ARCTUR RACUNALNISKI INZENIRING DOO	SI
20	BEE	DRUSTVO URBANI CEBELAR	SI
21	SBD	AJUNTAMENT DE SABADELL	ES
22	ISL	ORGANIZACION DE PRODUCTORES DE TUNIDOS Y PESCA FRESCA DE LA ISTA DE TENERIFE	ES
23	ULL	UNIVERSIDAD DE LA LAGUNA	ES
24	UAB	UNIVERSITAT AUTONOMA DE BARCELONA	ES
25	METAINST	STICHTING METABOLIC INSTITUTE	NL
26	NBL AS	NABOLAGSHAGER AS	NO

Document Control Sheet

Version	Date	Summary of changes	Author(s)
3	15/6/2021	Final	
2	25/5/2021	First draft	
1	7/5/2021	First draft reviewed by WP2 leaders and task leaders	



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List of Abbreviations

BCRS	Benefit-cost ratios
BMs	Business Models
CBA	Cost-benefit analysis
C-LCC	Conventional Life Cycle Costing
CRFS	City Region Food System
CRFSI	City Region Food System Initiatives
DCP	Data collection protocol
E-LCC	Environmental Life Cycle Costing
FIA	Financial investment appraisal
FU	Functional Unit
GA	General Assembly
GCM	General circulation model
ILCD	International Reference Life Cycle Data System
IRRs	Internal rate of returns
KPI	Key Performance Indicators
LCA	Life cycle Assessment
LCC	Life cycle Costing
LCI	Life Cycle Inventory
LCIA	Life Cycle Impact Assessment
LCSA	Life Cycle Sustainability Assessment
LCT	Life Cycle Thinking
SDGs	Sustainable Development Goals
S-LCC	Societal Life Cycle Costing
SME	Small and medium enterprises

1. Executive Summary

The current deliverable describes the developments and outputs of the FoodE (Food Systems in European Cities) European research project Task 2.2. FoodE, funded by the Horizon 2020, was launched in 2020 and will last for 4 years. The consortium involves 24 partners from 8 European countries (France, Germany, Italy, Netherlands, Norway, Romania, Slovenia and Spain) and aims at accelerating the growth of citizen-led food system initiatives and creating related innovative and inclusive job opportunities at local level.

In this context, Task 2.2 developed a coherent and flexible methodology for the integrated sustainability assessment of City-Region Food System initiatives (CRFSI). This framework will support the evaluation and ranking of the sustainability of diverse existing CRFSI at local and international level. The framework is composed by two main items: a methodological framework (presented in D2.2) and a tailored data collection protocol (DCP - presented here).

The data collection protocol is coherent with the methodological framework, meaning that it shares an integrated Life Cycle Thinking (LCT) approach, the focus on CRFSI, and two layers of protocol, a simplified and an extensive one. The protocol is providing detailed guidance and examples on how to collect, manage, and process the data needed for the methodological framework. In the specific, the simplified DCP describes the process related to the development of a survey for the collection of quali-quantitative information on CRFSI and their subsequent sustainability scoring. The extensive DCP elaborates on the life cycle inventory phase of the extensive assessment layer, to provide more details on what type of data to collect and examples of inventory templates.

While the DCP is developed to be used in parallel with the Methodological framework, it can also be adopted with some modifications for other types of studies. For example, the survey related to the simplified DCP can be easily adjusted for other sustainability assessments. Similarly, the templates of the extensive DCP can be used for other type of LCT studies.



Figure 1 - WP2 Roadmap

2. Background

2.1 FoodE – Food Systems in European Cities - objective

The main objective of FoodE is to involve European Union local initiatives in the design, implementation, and monitoring of environmentally, economically, and socially sustainable City/Region Food Systems. The key challenge of the project is to improve food and nutrition security of European citizens by shaping a sustainable environment able to increase accessibility and availability of affordable, safe, and nutritious food. This challenge will be tackled by setting a co-created mechanism, based on [Citizen Science](#) and [Responsible Research & Innovation](#) principles, where public authorities, citizens, SMEs, and non-profit organisations can share ideas, tools, best practices, and new models, supporting cities and regions in becoming innovative and sustainable food systems.

2.2 WP2 Objective

Considering and integrating all the recent advancements on sustainability assessment of City-Region Food Systems (CRFS), this WP aims at developing a methodological framework and an analytical decision support tool for the development of innovative business models and initiatives to enhance CRFS. More specifically, WP2 aims to:

- Create an inventory of innovative CRFS projects.
- Develop an integrated methodology for the interpretation and analysis of innovative business models and their suitability to apply in specific contexts.
- Apply, validate and refine the integrated methodology on case studies, including a sustainability assessment, also integrating revisions proposed by stakeholders during cross-pollination (WP3).
- Develop business case reports and carry out comparative analyses to identify barriers and key drivers of change.
- Develop an analytical decision support tool, based on the FoodE integrated methodology, to support decision-making of innovative business models and improve their performances and sustainability.

2.3 T2.2 Objective

2.3.1 Aim

An integrated methodology for the interpretation and analysis of more than 100 existing CRFSI has been developed based on crucial KPIs identified in T2.1 and on existing knowledge (i.e.: past H2020 projects and relevant literature) and tools. The methodology includes the analysis of the sustainability of the case studies, allowing to obtain a comprehensive comparative analysis of more than 100 selected CRFSI in Europe, representing the different European contexts and geographical regions, as well as the linkages between them. Coherently with the foundation of circular economy, a LCT approach has been adopted to assess both environmental (e.g.: carbon footprint, land use, etc.), economic (costs, net present value, value added, etc.), and social (labour, health, vitality of regions, innovation, etc.) impacts, in a cradle (biomass supply) to grave (final use) to cradle (re-use / recycle) perspective.

2.3.2 Outputs

The integrated methodology is composed of 2 main outputs:

- **Deliverable D2.2: Methodological framework**

This output presents a coherent and flexible methodology for scoping the evaluation of CRFSI sustainability, with two layers: a **simplified** and ready to use assessment framework, and a detailed guideline for an **extensive** LCT study. The framework includes methodological guidance for the stakeholders and main actors related to the definition of consistent functional unit(s) and system boundaries that can allow a comparative

evaluation, the typology of data to be collected for the assessment, and the appropriate indicators to be used.

- **Deliverable D2.3: Data collection protocol**

This output presents the protocol for the data collection process related to the methodological framework. It provides guidance on the procedures and methods for retrieving coherent and useful information from the various CRFSI to enable both the simplified and the extensive assessment. The data collection focuses on retrieving standardised data with an adequate level of detail for each assessment layer. To this end, several data collection protocols were created: they range from an initial, exploratory survey to a preliminary investigation of key sustainability features to a full LCT assessment.

These two items are complementary and provide a complete methodological and implementation guide for CRFS stakeholders. However, in case of specific needs, they can be used as separate sources of information (e.g.: by using D2.2 to build another type of collection protocol; by adopting D2.3 simplified DCP within the context of other sustainability assessment; by using the extensive DCP for other type of LCT studies).

2.3.3 Linkages with other tasks in WP2

Synergies and/or potential risks of duplication/overlapping with other WP2 tasks and sub-tasks have been largely explored and discussed during the task development. Relatively with the WP2 upcoming tasks, T2.2 has two major collaboration hotspots:

- **Data collection and inventory (T2.3)**

A detailed data collection on the 100+ CRFS was conducted in a separate project section, building on the present simplified assessment framework. These two integrated contributions have been conducted in parallel to ensure adequate collaboration, correct timing and consistent participatory reviews. This collaborative approach ensured a recurrent and iterative dialogue as well as appropriate knowledge sharing. Additionally, literature reviews on specific areas of CRFS conducted in a separate project sections were envisaged to complement the primary data collected within the survey dissemination and deliver a sustainability assessment of the 100+ CRFS.

- **Assessment of pilots and identification of best performances (T2.4)**

Building on the extensive assessment framework, a complete LCT analysis was conducted on the FoodE pilots. The codesign and participatory approach described here was aimed at delivering sustainability assessments with an effective impact on pilots' decision-making and continuous improvement. A dialogue with pilot owners within the consortium was set up to ensure collaboration and constant communication.

2.3.4 Linkages with other tasks in other WPs

The present contribution was expected to provide outputs to and receive inputs from several FoodE WPs. Linkages mostly referred to three areas:

- **CRFS stakeholders (WP3)**

The development of a framework of initiatives to foster **networking of CRFS stakeholders** (WP3). This step which will develop (T3.2.2) and update (T3.2.3) the FoodE app, one of the major outcomes of the project. Apart from the mobile app aimed at improving the interaction between CRFS and citizens, a web app with a back-office and a landing page will also be created to facilitate the data introduction by the CRFS owners. This data will be used as a basis for the calculations for the sustainability assessment of CRFS. During the first stages of the app development, the link with WP2 will strictly be in terms of data collection and inventory processing (T2.3) to gain insight on the best way to proceed. Moreover, at later stages of project, the app will be one of the major tools to collect data

from the CRFSI. Based on this data filled by CRFSI owners through the back-office web, key indicators identified in T2.2, T2.3 and T2.4 will be integrated in the app.

- **Co-design of CRFS pilots (WP4)**

The international challenge for the **co-design of innovative CRFS pilots** (concerning both established and newly implemented projects) (WP4) will generate new data and indicators for the sustainability assessment presented in this report. More precisely, the FoodE Challenge (T4.1) was developed sustainability assessment explored in this report. It was used to launch the open challenge for the design of innovative CRFS pilot projects.

- **CRFS business models (WP5)**

The **business models and validation of CRFS** (WP5) which uses the presented simplified methodology for the CRFSI assessment to select relevant sustainability indicators. The specific environmental, social and economic sustainability indicators identified in WP2 will be integrated within the business models of CRFSI to allow a greater understanding of their sustainability impacts. This integration will allow the development of innovative BMs integrated with the LCT methodology. Furthermore, previous activities of sustainability assessment in existing pilots (WP2) will allow for compiling the simplified dataset of indicators suitable for the online survey tool (T5.3) and certification standard (T5.4).

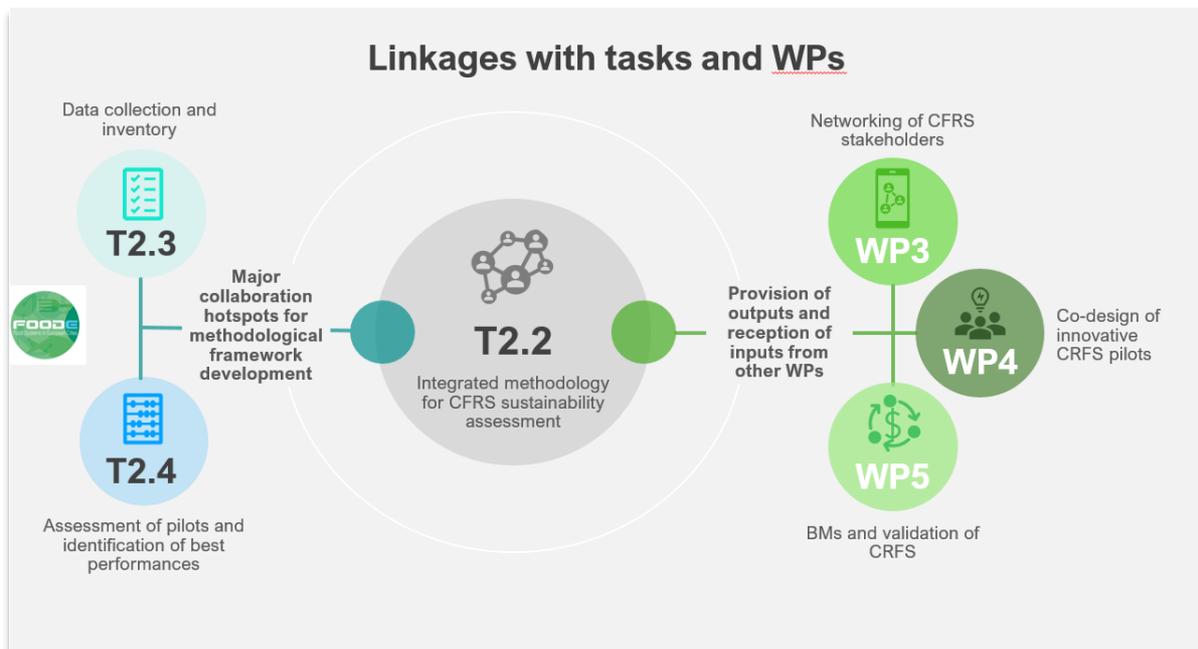


Figure 2 – Linkages between task and deliverable and other tasks and WPs.

3. CRFS Assessment

3.1 Simplified Data collection protocol

Survey glossary

Table 1 - Survey Glossary

Qualitative	Provide any qualitative text as answer.
Quantitative	Provide any quantitative metric as answer. The unit is predetermined.
Selection	Select one answer from a predetermined list of answers.
Multiple	Select one or multiple answers from a predetermined list of answers.
Binary	Select yes or no, in agreement or disagreement with the statement.
Likert	Select one answer on a Likert scale, ranging from 1 to 5. Each number is provided with a description.

3.1.1 General description

The aim of the simplified data protocol is to structure the data collection described in D2.2. A systematic methodology was developed to ensure that data was clear, standardised and adequately covers each KPI and specific indicator. The final simplified data collection protocol will serve as a starting point for any LCT practitioner to assess CRFSI, describing how to collect the needed data from each CRFS.

We discuss the selection criteria for CRFS and the relation of the identified KPI with specific indicators and specific lines of questioning. Afterwards, we outline how data is collected, processed, and formatted.

The **CRFSI selection** ensured the inclusion of all relevant initiatives primarily active in the European urban food system. In applying this simplified framework, the CRFSI were selected in two different stages: starting from the initial inventory of more than 600 CRFS, more than 200 initiatives that replied to the survey in T2.1 were selected in order to reach a minimum target of 100 CRFSI assessed. The selection of CRFSI is bound by quotas to ensure an adequate spread and representation of the different types and locations of the initiatives. Here the geographical proportion of the original sample was used as a base and was adopted as a priority criterion the capacity of the CRFS to deal with multiple activities.

The **KPIs and specific indicators** were formulated in D2.2 to translate the complexity of sustainability to clear and more manageable metrics. These indicators were investigated using targeted questions. Naturally, different types of CRFS present different challenges to standardised data collection. Therefore, the questions were continuously refined and detailed in an iterative process of literature review, insights from previous projects and joint sessions with experts from research and industry.

The **data collection** used two surveys that capture these targeted questions. The surveys collected data on innovative CRFS projects and initiatives all over Europe by means of an online survey. The first survey provided the initial overview of CRFSI starting from the initial 600, and the second survey provided an intermediary assessment of the selected 100 CRFSI. In the first case, questions addressed personal information, the type, main activities, size of the initiative, its relations to other key partners, its impact and the impact of the COVID-19 crisis. In the second case, questions were related to the sustainability of the CRFS. The surveys utilised a range of response types including likert scales, numerical information, predetermined choice options, binary options etc. The data collection was conducted in the native language of the CRFS and was assisted by a local research partner to facilitate collection.

In the **data processing phase** results were translated, refined and quantified by experts from each pillar of sustainability. Qualitative data was analysed, categorised and standardised. At this stage all answers were translated in points accordingly to the sustainability scoring to obtain the final 1-5 assessment. For each question the highest score (5) was assigned to the most sustainable alternative, while the lowest score (1) was assigned to the least sustainable alternative.

The **data format** followed the type of data collected. Quantitative as well as qualitative data was collected and secondary data was used. The numerical or textual data was formatted as comma-separated values using Microsoft office. Additional processing of the data using statistical analysis or numeric modelling was also formatted as comma-separated values using the software Stata or Matlab, respectively.

The **Data Collection Protocol** has been continuously **evaluated and updated** in project steering committee meetings, internal coordination quality assessments and in the FoodE general assembly.



FoodE Advancement

Iterative process for designing the DCP

To ensure the relevance and quality of the Data Collection Protocol it has been continuously evaluated and updated in three committees: the project steering committee meetings, the internal coordination quality assessments and in the FoodE general assembly.

The result of the process is a data collection protocol for the simplified analysis of CRFS. It provided the methodology for an initial overview and preliminary assessment of the social, economic and environmental sustainability of CRFS. The data collection protocol can serve as a starting point for any LCT practitioner to collect the data required to assess CRFSI.

3.1.2 Sustainability pillars: Identifying key performance indicators and retrieving information

As described in D2.2, a LCT approach had been adopted to assess the three pillars of sustainability: (1) social impact; (2) economic impact; and (3) environmental impact. As the pillars are interdependent, a single data point may also contribute in other pillars. The various data inputs were still assigned to a specific pillar throughout the data collection protocol, to ensure structure, reduce complexity and to direct the expertise of partners from science and industry.

Firstly, the **general overview from T2.1** was used to create an understanding of the basic function, structure, and operations of the CRFSI. The overview was constructed with demographic details questions (Table 2). Subsequently specific sets of questions were dedicated to each sustainability pillar.

The **Social** pillar focused on the process for creating sustainable, successful places that promote diffused wellbeing. In the initial, simplified survey, an overview is generated on the size of the company, the number of employees and the diversity of staff. On the product side, it investigates key product characteristics, food labels, quality control standards, as well as the main sales channels (Table 3). The second, detailed survey created a more detailed overview of the job creation & quality, community outreach, engagement & education, food quality and safety (Table 6).

The **Economic** pillar represented a broad interpretation of ecological economics where environmental and ecological variables and issues were basic but part of a multidimensional perspective. In the initial, simplified survey, an overview of the corporate and financial structure was created and sales channels were mapped (Table 4). The second, detailed survey built on this by specifying the cost structure and various revenue streams (product, activity, public or private). As such, the KPIs included cost & profitability, market potential and customer profile (Table 7).

Finally, the **Environmental** pillar concerned the human impact on the environment, as well as enhancing ecosystem services. In the initial, simplified survey, an overview of basic technical details that could inform future assessments was generated. More importantly, a scan was made of the availability of data on resource use, waste and transport at the CRFS (Table 5). The second, detailed survey built on this, by including detailed, targeted requests for these data points. In order to minimise the impacts of resource use, non-renewable resources

and waste generation, the KPIs included questions related to primary production, resource use efficiency, waste management and transport. The challenge in this pillar was to retrieve quantitative data to assess the direct and indirect environmental impacts.

Part of the data collection was mandatory and part was optional, depending on the degree of data details the CRFSI were able to provide (Table 8). The collected data was translated to English and processed after each survey to provide a preliminary overview and sustainability assessment of the CRFS.

3.1.3 Data collection protocol: collecting initial data (DCP600+)

In this data collection protocol (DCP600+), we describe how data was collected from 600+ CRFSI. As such, we discuss how the initial CRFSI were selected and how and why specific data was collected. Afterwards, we outline the methods for data collection, processing and formatting.

The key tasks in the DCP600+ were:

- i. Select initiatives to properly represent European CRFS
 - ii. Outline data collection method and key actors: online survey and research partners
 - iii. Structure simplified framework into data collection templates
 - iv. Translate templates to comprehensive survey
 - v. Format data
- i. Select CRFSI: ensure broad database of representative initiatives

Any analysis of CRFS should start with determining what constitutes a representative stakeholder, initiative or company. In this study CRFS were selected based on:

 - Minimum of 1 year operation;
 - Company information mentioned interest or operations in local food networks;
 - Inclusion of already contacted in previous initiatives or in previous studies by researchers;

The survey was also shared using communications channels on CRFS of each partner through a shareable link to enable the snowball effect and to impact even previously unknown initiative. The first questions of the survey made sure the initiative was part of the target audience. A list was made containing the name, location, function, prior involvement in projects, contact person and contact information of each CRFSI, with restricted access to FoodE members and complying with the GDPR requirements.

- ii. Data collection method: contact the CRFS directly

Initial data was collected from the 600+ listed CRFSI directly, using an online survey. A survey enables collection from a larger set of initiatives. Furthermore, data was collected directly from the CRFSI to ensure targeted data input and to prevent any central bias (e.g. from the researchers). The survey utilised a range of response types including quantitative information, multiple predetermined choice, qualitative (text) input and binary (yes or no). The survey was written in the native language of the CRFS and could be taken with the assistance of a local research partner to increase the response rate and quality of collected information.



FoodE Advancement

Direct contact with large number of CRFSI
 Direct contact with 680 initiatives to give a factual overview of European CRFS. The selection of CRFSI ensures a diversity of location, scale, function, and position in the food supply chain.

The CRFS were divided amongst the research partners based on their efforts and previous agreements/projects. UNIBO covered approximately 110 CRFS, APT 80, ILS 80,

SWUAS 80, UAB 40, NBL 80, ULL 40, ARC 30, UNINA 50, WR 50, MBI 40 for an overall total of 680 CRFSI.

iii. Data collection templates: structure the KPIs and specific indicators

The data collection template directly followed the pillars, KPIs and specific indicators developed in the methodological framework (D2.2). The first survey focused primarily on an initial overview of the different initiatives and their primary focus. In the social pillar, the number, age and diversity of employees was investigated. The employees from vulnerable categories were an important distinction within diversity. Furthermore, a number of food quality and security aspects was inquired, such as specific cultivation and livestock types (e.g. biological), as well as primary sales channels.

In the economic pillar, an overview was generated of the cost structure, by specifying the initiative's business status, key stakeholders, turnover and various forms of received support. The primary sales channels were inquired from an economic perspective.

The environmental section was primarily exploratory for the second, detailed survey. The first survey was directed at making an inventory of the tracked resource uses of the different initiatives. Additionally, a general overview of the production systems was generated.

Due to the plurality and diversity of CRFSI, each initiative was guided through the survey questions based on their function, type of production and operations. This reduced the time and effort spent on the survey.

iv. Translate to survey: exploratory, multiple answer questions

This survey relied on exploratory questions. Most of these questions were distributed in specialised segments, pertaining to the CRFSI operation and function. The CRFSI was guided through these segments, without being exposed to irrelevant questions to minimise time and effort spent. Furthermore, the survey was translated into the native language of the CRFSI (English, Dutch, French, German, Italian, Catalan, Romanian, Slovenian and Spanish) and was assisted by a local research partner to facilitate data collection.

This survey primarily used questions with multiple answers to standardise responses but still allow for a variety of answers. This strategy improved data quality by simplifying data collection for a wide variety of initiatives by standardising data points within a predetermined framework. Furthermore, data quantity was improved by clearly structuring questions and answers for the initiatives to reduce the threshold for participation.

Quantitative and qualitative inputs were primarily reserved for data points where there were no practical alternatives. Examples were the several aspects of the general overview, or specific details relating to events organised by the CRFSI, public funding of public engagement. The questions were continuously evaluated in an iterative process between WP2 core partners, experts in research and partners in industry. Selected CRFSI owners were involved in testing the final survey of the simplified assessment. They were asked to answer the various questions and then to provide feedbacks on the following aspects:

- Comprehensibility;
- Duration;
- Ease of response.



FoodE Advancement

Inclusivity in assessment of CRFSI

More than 680 initiatives were contacted from every corner of Europe. In order to promote inclusivity, each survey was circulated in nine languages: English, Dutch, French, German, Italian, Norwegian, Romanian, Slovenian and Spanish.

Furthermore, additional effort was spent to structure the questions and answers as clear and comprehensible as possible and eliminate location-specific or complex terminology.

For specific questions and answer options, please refer to the surveys in [Important note](#). The complete surveys are included in full in Deliverable 2.1 (D2.1).

v. Format data: centralising and standardising data

Once the data was collected, answers followed a standardisation process to make results fully available in a usable format. First, a data cleaning process was conducted, in which missing values and duplicates were identified. All invalid inputs, such as random characters or mismatched values, were identified and cleaned. This included the checking of data labelling to verify whether values were mislabelled, as well as the removal of all unnecessary punctuation characters and capital letters generated by the software used. Second, a structural translation process was performed to convert all answers into English. This step was validated by all country representatives, who checked whether the translation of open answers was correct and appropriate. With respect to the open-ended questions, some were directly translated, while others were clustered into options to aggregate results and confront them.

Table 2 - General overview of the simplified survey for DCP600+

General overview – simplified survey			
Data	Specific indicator	Targeted question	Type
General information on CRFSI	Description	• Descriptive overview of CRFS	• qualitative
	Start date	• Specify start date of operations	• quantitative
	Location	• Specify whether CRFS is located in urban, peri-urban or rural areas	• selection
	Main task	• Specify whether CRFS functions in food production, processing, distribution, services, management, education or others	• multiple
	Scale of operations	• Specify the administrative scale of operation	• selection
	Impact	• Specify the top impact areas of organisation	• multiple
	Innovation	• Specify the key innovations of CRFS	• multiple
General information in light of COVID-19	Improvement	• Specify potential impact categories that could be improved	• multiple
	New initiatives	• Specify whether new initiatives were started in light of COVID-19 • Specify the type of facilitating party • Specify the type of active parties	• binary • multiple • multiple
	Challenges	• Specify the challenges COVID-19 has presented	• qualitative
	Operation	• Specify whether operation has been continuous • Specify which operations were discontinued	• qualitative • multiple
Agriculture & fishing	(Re-)organisation	• Specify potential reorganisations after COVID-19	• qualitative
	Agriculture & fishing	• Specify types of production	• multiple
	Product specification	• Specify specific product	• multiple
Food processing	Cultivation types	• Specify which cultivation type(s) are used	• multiple
	Food processing	• Specify types of food processing	• multiple
Food distribution	Food distribution	• Specify types of distribution operation	• multiple
Food services and consumption	Food services and consumption	• Specify types of provided food services	• multiple

Food waste management	Food waste management	• Specify types of provided food waste management activities	• multiple
Education and services	Education and services	• Specify types of provided educational services	• multiple

Table 3 - Data collection template for social sustainability in the simplified survey

Social - simplified survey			
KPI	Specific indicator	Targeted question	Type
Job creation & quality	Jobs created	• Specify number of employees	• quantitative
	Diversity promotion	• Specify age groups of employees, volunteers and members • Specify employees from vulnerable categories	• quantitative • binary
	Paid jobs	- <i>detailed survey</i> -	
	Average annual salary	- <i>detailed survey</i> -	
	Gender gap employment	- <i>detailed survey</i> -	
	Employee training	- <i>detailed survey</i> -	
	Role and gender salary	N/A	
	Governance transparency	N/A	
Community outreach, engagement & education	Organised events	• Specify participation in events	• qualitative
	Age demographic	- <i>detailed survey</i> -	
	Community training	- <i>detailed survey</i> -	
Food quality	Product characteristics	• Specify cultivation and livestock types	• multiple
	Food labels	• Specify livestock management	• multiple
	Quality control standards	• Specify livestock management • Specify production systems	• multiple • multiple
	Food labels (adopted)	N/A	
Food security	Sales channels	• Specify sales channels and location • Specify use of digital sales channels • Specify type of digital sales channels used	• multiple • binary • multiple
	Sales external products	• Specify sales channels and location	• multiple
	Affordability	- <i>detailed survey</i> -	

Table 4 - Data collection template for economic sustainability in the simplified survey

Economic - simplified survey			
KPI	Specific indicator	Targeted question	Type
Company cost & profitability	Product revenue	• Specify annual turnover total	• Likert
	Public funding	• Specify whether public support has been received • Specify type of public support	• binary • qualitative
	Cost structure	• Specify organisation status • Specify profit/non-profit • Specify key stakeholders	• multiple • binary • multiple
	Activity revenue	- detailed survey -	
	Private funding	- detailed survey -	
	Net profit margin	- detailed survey -	
Market potential	Sales	• Specify sales channels and location	• multiple
	Profits	- detailed survey -	
	Production costs	N/A	
	Competitors	N/A	
Customer profile	Type of direct sales	• Specify sales channels and location	• multiple
	Type of B2B sales	• Specify sales channels and location	• multiple
	Number of direct sales	N/A	
	Number of B2b sales	N/A	

Table 5 - Data collection template for environmental sustainability in the simplified survey

Environmental - simplified survey			
KPI	Specific indicator	Targeted question	Type
Resource use efficiency	Product produced/processed/sold	• Specify production systems • Specify whether data is tracked	• multiple • binary
	Land use	• Specify whether data is tracked	• binary
	Water use	• Specify whether data is tracked	• binary
	Electricity use	• Specify whether data is tracked	• binary
	Natural gas	• Specify whether data is tracked	• binary
	Oil / petrol use	• Specify whether data is tracked	• binary
	Machinery	• Specify production systems • Specify production system location	• multiple • multiple
	Fertilizer use	• Specify whether data is tracked	• binary
	Pesticide use	• Specify whether data is tracked	• binary
	Animal/fish feed	• Specify whether data is tracked	• binary
Waste management	Waste production	- detailed survey -	
	Waste type	- detailed survey -	
	Waste reduction	- detailed survey -	
Transport	Distance from supplier	- detailed survey -	
	Type of transport	- detailed survey -	
	Distance to customer	- detailed survey -	
	Type of transport	- detailed survey -	

3.1.4 Data collection protocol: retrieving detailed information on performance indicators (DCP100+)

In this data collection protocol (DCP100+), we describe how to collect data from 100+ CRFSI (CRFS 100+). An increased level of details was required to assess performance related to specific indicators, particularly to environmental impact. This data was collected in a second survey directed to 100+ representative CRFSI. In this section, we discuss how 100 CRFSI were selected from the initial collection and how specific data was collected. Afterwards, we outline the methods for data collection, processing and formatting.

The key tasks in the DCP100+ are:

- i. Select 100 initiatives for detailed investigation
- ii. Outline data collection method and key actors: online survey and research partners
- iii. Structure simplified framework into data collection templates
- iv. Translate templates to comprehensive survey
- v. Format data

i. Select CRFSI: maintain diversity

CRFSI were selected based on their willingness with further investigation, completeness of response to the first survey and representativeness of the European food system. The aim was to maintain an adequate spread of location, function, production, and (business) structure in the CRFS 100+. The following order of importance was used:

1. Representation of country – Minimum one initiative per country, maintaining the current proportion of country respondents.
2. Representation of supply chain segment – Prioritisation of initiatives functioning in multiple segments of the supply chain.
3. Representation of activities – Minimum of one initiative per specific activity.

ii. Data collection method: targeted questions

Data was collected in a survey, similar to the DCP600+. However, the second survey had to enable an intermediary assessment of the initiatives. Therefore, this survey relied on more targeted questions. These questions were divided into specialised segments, pertaining to the CRFS operation and function.

iii. Data collection templates: covering missing data points

The second survey focused primarily on complex data points that were considered too detailed for the first survey. In the social pillar, the job creation & quality was investigated in greater detail by gathering data on job and employee characteristics, as well as training opportunities. Details on community training opportunities and organised events further elucidate the role of the CRFSI in the community. Finally, food security and quality were further investigated by specifying the importance of affordability, locality, quality and safety characteristics.

In the economic pillar, the company cost structure was investigated in greater detail by gathering data on the initiative's various revenue and funding streams, as well as their profitability. This assessment included the general trends and developments during COVID-19 and in the future. Furthermore, the initiative was asked to provide a



FoodE Advancement

Detailed assessment of CRFSI

The most promising 100+ initiatives were contacted for a more detailed assessment in the form of a second survey. An adequate spread of location, function, production, and (business) structure was maintained in the CRFS 100+.

Additional effort was spent to structure the questions and answers to extract as much information as possible in an effective manner.

profile of their primary customers and the related sales channels.

The environmental pillar built on the reported availability of data tracked in the first survey. Data on resource use (water, electricity, fossil fuels, fertilizers, pesticides, etc.) and waste management (waste production, type and reduction strategies) is valuable for life cycle assessments but proved difficult to collect. Therefore, this survey aimed to guarantee an adequate response rate on environmental aspects, by translating the motivation and focus of initiatives to a Likert scale. This clear structure of questions and answers was aimed to reduce the threshold of commitment required for participation and increase engagement. Initiatives were free and welcome to provide quantitative insight in their food production, resource use, waste production and transport, when they were confident in their own data.

iv. Translate to survey: targeted questions and Likert scales

This survey relied on more targeted questions. In a similar fashion with the first survey some of these questions were distributed in specialised segments, pertaining to the CRFS operation and function. The CRFSI was guided through these specialised segments, without being exposed to irrelevant questions to minimise time and effort spent.

This efficiency was further improved by limiting the style of answers: this survey largely



FoodE Advancement

Collecting and scoring of CRFSI responses

The scoring and assessment of the sustainability of CRFSI is facilitated by relying on a Likert or binary scale.

The quality and availability of additional data is increased by inviting the CRFSI to provide quantitative insight in their food production, resource use, waste production and transport, when they are confident in their own data.

requires answers on a binary or a Likert scale (see D2.2). This scale illustrated the level of agreement or commitment of the respondents on a symmetric scale for a series of statements. This strategy improved data quality through scaling potential answers for a wide variety of initiatives and by standardising data points within a predetermined framework. Furthermore, data quantity was improved by clearly structuring questions and answers for the initiatives to reduce the threshold for participation. Finally, it facilitated

the quick assessment of responses.

Quantitative inputs were primarily reserved for data points where there were no practical alternatives. Examples were determining resource use efficiency of food production and profit margins. On one hand, these questions were valuable to a detailed performance assessment, On the other hand, these questions were left optional for the completion of the survey as they may require excessive effort from the (volunteering) CRFSI (Table 8).

For specific questions and potential answers, please refer to the second survey in the [important note](#). The complete surveys are included in full in Deliverable 2.1 (D2.1).

v. Format data: centralising and standardising data

There were two main types of survey questions to determine an initiative's sustainability: one used the Likert-scale (score 1 through 5 points) and the other a binary scale (score 1 or 5.). The Likert-scale was scored from the least sustainable solution (1 point) to the most sustainable solution (5 points). For the binary scale, the yes option corresponded to the lower sustainable solution (1 point), and the no option to the most sustainable one (5 points).

The overall sustainability assessment was then obtained by aggregating the points. Initially, an equal weight was allocated to each question, KPI and sustainability pillar. The points of each question were weighted accordingly to the number of questions in the relative KPIs.

Results were then interpreted both on individual sustainability pillars and on the overall integrated sustainability degree. Weighting of questions may be finetuned for specific questions in future, more detailed assessments.

Table 6 - Data collection template for social sustainability in the detailed survey

Social - detailed survey			
KPI	Specific indicator	Targeted question	Type
Job creation & quality	Jobs created	<ul style="list-style-type: none"> Specify number of waged employees Specify origin of waged employees 	<ul style="list-style-type: none"> quantitative Likert
	Paid jobs	Specify contract type of employees	Likert
	Average annual salary	Specify monthly average gross wage	Likert
	Gender gap employment	Specify share of female employees	Likert
	Employee training	Specify number of workplace trainings	quantitative
	Diversity promotion	- <i>simplified survey</i> -	
	Role and gender salary	N/A	
Community outreach, engagement & education	Organised events	<ul style="list-style-type: none"> Specify frequency of events Specify type of events 	<ul style="list-style-type: none"> Likert binary
	Age demographic	Specify customer profile	Likert
	Community training	Specify type of events	binary
Food quality	Quality control standards	Specify importance of quality and safety characteristics	Likert
	Product characteristics	- <i>simplified survey</i> -	
	Food labels	- <i>simplified survey</i> -	
	Food labels (adopted)	N/A	
Food security	Sales channels	<ul style="list-style-type: none"> Specify production location of products Specify online sales channels 	<ul style="list-style-type: none"> binary binary
	Sales external products	Specify online sales channels	binary
	Affordability	Specify importance of affordability	Likert

Table 7 - Data collection template for economic sustainability in the detailed survey

Economic - detailed survey			
KPI	Specific indicator	Targeted question	Type
Company cost & profitability	Product revenue	Specify share product revenue	Likert
	Activity revenue	Specify share activity revenue	Likert
	Public funding	Specify share public funding revenue	Likert
	Private funding	Specify share private funding revenue	Likert
	Net profit margin	Specify net profit margin	quantitative
	Cost structure	- <i>simplified survey</i> -	
Market potential	Sales	<ul style="list-style-type: none"> Specify customer characteristics Specify development in 3 years 	<ul style="list-style-type: none"> Likert Likert
	Profits	Specify development in 3 years	Likert
	Customers	Specify customer profile	Likert
	Production costs	N/A	
	Competitors	N/A	
Customer profile	Type of direct sales	- <i>simplified survey</i> -	
	Type of B2B sales	- <i>simplified survey</i> -	
	Number of direct sales	N/A	
	Number of B2b sales	N/A	

Table 8 - Data collection template for environmental sustainability in the detailed survey

Environmental - detailed survey			
KPI	Specific indicator	Targeted question	Type
Resource use efficiency	Product produced/processed/sold	<ul style="list-style-type: none"> Specify recyclability and compostability of packaging material Specify type of product produced 	<ul style="list-style-type: none"> Likert multiple
	Water use	<ul style="list-style-type: none"> Specify importance of water saving Specify importance of reducing or reusing water 	<ul style="list-style-type: none"> Likert Likert
	Electricity use	<ul style="list-style-type: none"> Specify renewability of electricity sources Specify importance of reducing or reusing energy 	<ul style="list-style-type: none"> Likert Likert
	Natural gas	<ul style="list-style-type: none"> Specify renewability of heating sources Specify importance of reducing or reusing energy 	<ul style="list-style-type: none"> Likert Likert
Optional questions*	Product produced/processed/sold	Specify units of product produced per type of product	quantitative
	Land use	Specify total production land area	quantitative
	Water use	Specify total water use	quantitative
	Electricity use	Specify total electricity use	quantitative
	Natural gas	Specify total natural gas use	quantitative
	Oil/ petrol use	Specify total oil / petrol use	quantitative
	Machinery	<ul style="list-style-type: none"> Specify technical characteristics of machinery or systems Specify fuel consumption of machinery or systems 	<ul style="list-style-type: none"> Likert Likert
	Fertilizer use	<ul style="list-style-type: none"> Specify fertilizer usage of nitrogen, phosphorus and potassium Specify manure management 	<ul style="list-style-type: none"> quantitative quantitative
	Pesticide use	Specify total pesticide use	quantitative
	Animal/fish feed	<ul style="list-style-type: none"> Specify total animal/fish feed use Specify feed composition 	<ul style="list-style-type: none"> quantitative quantitative
	Disposables	Specify total use of disposables for various categories	quantitative
Waste management	Waste production	Specify importance of reducing or reusing organic waste / production material / construction materials	Likert
	Waste type	Specify type of waste production	Likert
	Waste reduction	Specify recycling per waste type	Likert
Transport	Distance from supplier	Specify distance of sourcing products	Likert
	Type of transport	Specify fuel source of transport	Likert
	Distance to customer	N/A	N/A
	Type of transport	Specify fuel source of transport	Likert
Optional questions*	Type of transport from supplier	Specify type of transport	multiple
	Type of transport to customer	Specify type of transport	multiple

3.1.5 Data management

In order to ensure guidelines for selection, quality assurance and data protection, all project partners were informed about the details of the Data Management Plan (D1.2). Data was managed following the FAIR principles (Findable, Accessible, Interoperable and Re-useable).

Research data in FoodE was therefore organized in a transparent and standardized way in order to make it retrievable over a long period of time.

The data set creators were responsible for the data management, in this case the WP2 leaders directly involved in the data generation and collection. This included the conversion of data files into open-source formats, gaining permission for re-using data from other contexts, and deposit procedures.

Data collected for analyses was recorded and anonymised so that individual identification of participants is not possible, securing data protection and privacy. The data collected will remain confidential and will only be used for research. Contact information for actors willing to share their experiences will only be made available when stakeholders explicitly agree to this.

It was made clear that the participation of an initiative to the questionnaire would not bind them to the involvement in any further steps. They were free to withdraw from the survey at any point. They were also appropriately informed about their access to data by contacting the person responsible.

All participants were invited to provide feedback on participatory events, and provide summaries on the project outcomes. Those participants who contributed substantially, e.g., by describing innovations in detail, will be directly acknowledged with their consent.

3.2 Extensive data collection protocol

3.2.1 General description

The aim of the extensive data collection protocol is to structure and process the data collection described in D2.2. General guidelines were developed to guide LCA practitioners in the process of collecting data to perform complete LCA, LCC and S-LCA of CRFSI.

In this data collection protocol, we describe how to collect data from CRFSI to perform a complete LCA, LCC and S-LCA of these initiatives. The data collection used multiple sources to collect different kinds of data. The use of multiple sources allowed the data collection process to be adapted to the data availability of each of the systems under study.

The result of this process is a data collection protocol in the form of general but CRFSI-focused guidelines to tackle the different phases of the data collection process and the main difficulties and limitations that a LCA practitioner aiming to assess CRFSI performances may face.

3.2.2 Life Cycle Inventory (data collection)

Primary data can be collected through multiple sources and considering different levels of engagement from CRFS owners and stakeholders:

- **Template sent to the CRFS:** the LCA practitioner elaborated an LCI template with the information that the CRFS representative should fill. This option required the adaptation of the template content to a language that the CRFS representative would easily understand to avoid confusions, mistaken data or the CRFSI resigning from the study. Additionally, a supplementary document was provided with instructions on how to fill the data with information on the units to use and the contact person to address if further clarifications were needed. It was strongly suggested that an in-person or online meeting was undertaken prior to the start of the data collection process to highlight the main aspects and the main critical points of the process, such as reference year for already collected data or the more time-demanding components of the LCI.
- **Template filled by the LCA practitioner:** the LCA practitioner elaborated a LCI template with the information that they will collect through visits to the CRFSI or interviews with CRFSI stakeholders, among others. This option does not require the adaptation of the template to a plain language since the LCA practitioner will be responsible for adapting the information received to the template.

An example of a spreadsheet that could be used for the data collection of a hydroponic agricultural system is shown in **Error! Reference source not found.** In this example, the operational data to be collected in the CRFSI was divided in five subsystems: substrate, fertilizers, pesticides, electricity and water. This organization of the spreadsheet could be achieved due to a previous exchange of information between the LCA practitioner and the CRFSI owner regarding the type of fertilizers, irrigation system, pesticides or number of pumps used in the system. This preliminary exchange of information was critical if the template will be sent to the CRFSI, since an imprecise and disorganized spreadsheet could trigger the person CRFSI owner or the person responsible for the data collection to overlook some important processes. Likewise, if the spreadsheet sent to the CRFSI included processes that the owner may find confusing, other data from relevant processes may have been affected. This could be the case of **Error! Reference source not found.** and the processes regarding emissions to air and water. It is unlikely that the CRFSI owner records this kind of information that would usually be obtained through analytical methods or the application of emissions factors to the total amount of fertilizers. Therefore, it was more practical to keep this type of information out of the template sent to the CRFSI.

Although **Error! Reference source not found.** already contains information on five different subsystems, additional data is required to complete an extensive LCI: data for other subsystems, reference year for the data, clarification comments if the template is sent to the CRFSI, origin and destination of input and outputs to quantify transport distances and suitable transport means, etc.

Table 9 - Example of a spreadsheet for the data collection of a hydroponic agricultural system

Subsystem	Element	kg	Cost (€)
SUBSTRATE	Rockwool	-	-
	HDPE	-	-
Subsystem	Element	kg	Cost (€)
FERTILIZERS*	KPO ₄ H ₂	-	-
	KNO ₃	-	-
	K ₂ SO ₄	-	-
	Ca(NO ₃) ₂	-	-
	CaCl ₂	-	-
	Mg(NO ₃) ₂	-	-
	Emission to air - Ammonia (NH ₃)	-	-
	Emission to air - Nitrous oxides (N ₂ O)	-	-
	Emission to air - Nitrogen oxides (NO _x)	-	-
	Emission to water - Total Nitrogen	-	-
Emission to water - Total Phosphorus	-	-	
Subsystem	Element	g	Cost (€)
PESTICIDES*	Potassium soap	-	-
	Wettable sulphur	-	-
	Other Pesticide 1	-	-
	Other Pesticide 2	-	-
Subsystem	Element	kWh	Cost (€)
ELECTRICITY	Water pump 1	-	-
	Water pump 2	-	-
	Water pump 3	-	-
	Artificial Lighting	-	-
Subsystem	Element	m ³	Cost (€)

WATER	Tap water	-	-
	Rainwater	-	-
	Drained water	-	-
Subsystem	Element	Amount (h)	Cost (€)
LABOUR	Setting up the system	-	-
	Agric operation	-	-
	harvesting	-	-

* The listed elements are not exhaustive but provide an example of potential elements to be collected.

After the data collection templates are filled, the use of an online-based tool that gathers spreadsheet data can be useful when multiple CRFS are included in the analysis to mitigate potential differences among them.

When primary data is not enough to complete the foreground processes in the LCI, the use of secondary sources of data is a common practice in LCA. Secondary data can be collected through previous research literature, reports, software or existing models, among others. For example, if we are lacking primary data on amount of nitrogen fertilization on our greenhouse tomato crop, we will look for previous research also assessing greenhouse tomato crops. If we only find data on greenhouse tomato production in one country and open-field tomato production in another country, the decision on which data to use relies on the LCA practitioner.

Key actors in data collection

The relevant actors in the data collection can be divided in three main groups:

- LCA practitioners. Actor or group of actors responsible for designing and carrying out the four steps of an LCA. They should have knowledge on how to perform an LCA of the system under study. They are also responsible for the secondary data collection to fill the remaining gaps of the LCI.
- CRFS owners/representatives. Actors or group of actors that own or manage the CRFS under study. This group of actors is relevant because they are the person with extensive knowledge of the system under study and therefore can provide data and guidance, especially in the data collection process.
- All other CRFS stakeholders. Group of actors independent from each other that are relevant for the data collection process since their activities also affect the sustainability performance of the CRFS. For example, companies that provide materials to the CRFS have the information regarding the origin and methods of obtention for these materials. On the other hand, consumers that buy the products from the CRFS have the information on potential product loss such as food waste.

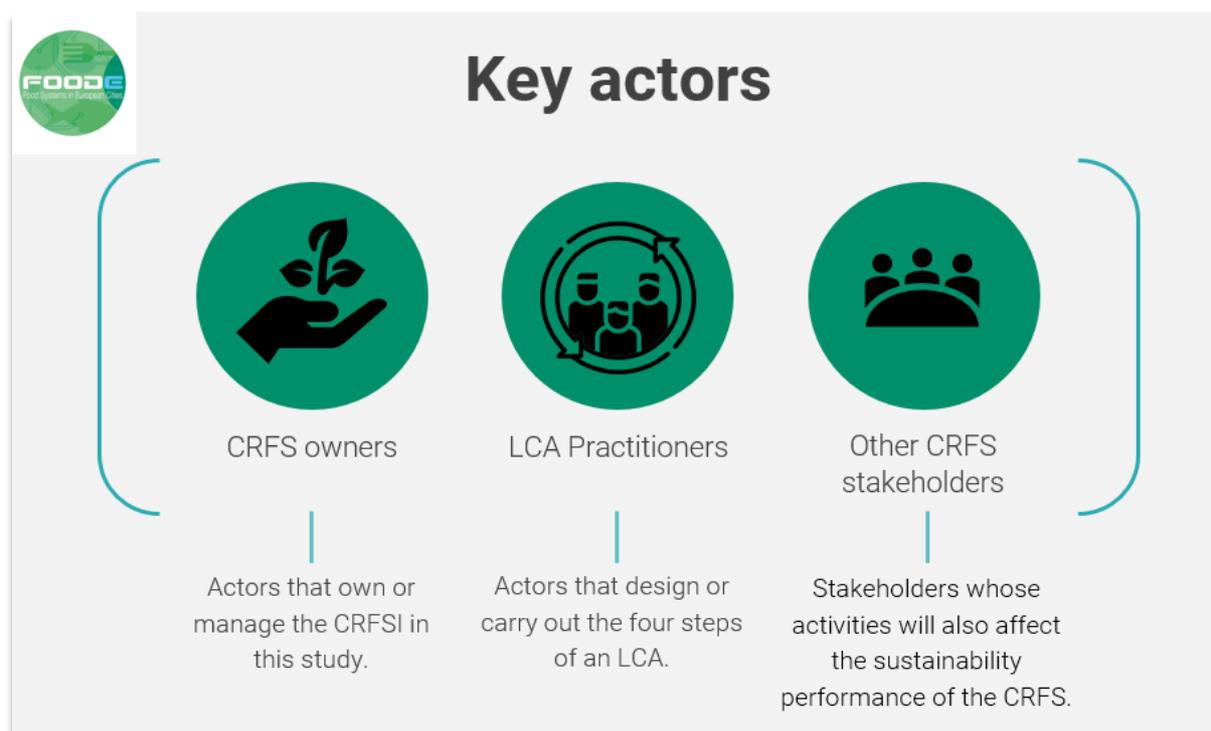


Figure 3 – Key actors in data collection

Data processing

Although LCIA results are usually seen as the major outcomes of an LCA, ISO (2006) highlights the importance of the LCI results, even as a standalone analysis. Thus, data should be processed also in the LCI phase to increase the consistency of the overall analysis. Even though sometimes the data collection may result in clean and tidy data that does not require for any further processing, there are cases where absence of data processing in the LCI phase does not allow the analysis to move forward. This is specially the case when the data collection process is done by a CRFS owner or representative, since this actor doesn't have the knowledge on the type of data required to fully perform the LCIA. Considering the example of an agricultural facility that uses water pumps, the isolated electricity consumption of the water pumps may turn out not to be easily accessible. Instead, we will be likely having data on the total electricity of the facility (which will be difficult to split and downscale), the power of the pump and possibly the irrigation regime. In this sense, data processing in the LCI phase entails the calculations required to get the electricity consumption of the water pumps with other kinds of data that are more feasible to acquire. Other examples of data processing could be related to the calculation of nutrient balances or the time allocation of infrastructure items when different lifespans are gathered in the same LCI.

The same data processing applies to secondary data. Since data coming from secondary sources will be collected from systems that are similar but not necessarily the same of the one under assessment, the data processing required may vary.

Key actors in data processing

The relevant actor in data processing in the LCI phase is the LCA practitioner, who is in charge of carrying out this part of the LCA by processing LCI data to be ready for the LCIA phase.

3.3.3 Life Cycle Impact Assessment (calculation)

After the collection and processing of data in the LCI, data is processed in the LCIA phase to obtain the environmental performance of the CRFS across different previously selected impact categories. This process includes the classification and characterisation steps from LCIA and is usually done through a software that already stores the characterization factors for multiple impact methods. Examples of software are Simapro, Gabi, OpenLCA, Umberto, etc. Since the impact methods provide values for impact categories that were not previously selected (e.g. Recipe provides 18 midpoint impact categories), we can save the LCIA results in case the iterative characteristic of LCA makes them relevant at later stages of the analysis.

The relevant actor in data processing in the LCIA phase is the LCA practitioner, who is in charge of carrying out the LCIA to obtain the environmental performance of the system under study. However, the other actors highlighted as relevant in the data collection process are indirectly relevant in the data processing due to the link between LCI and LCIA results. Additionally, they can engage at different levels in the data processing step to increase the transparency of the analysis but not to influence it, since the data processing step is adhered to what is already stated in the goal and scope phase.

4 Conclusions

The described contribution represents an innovative basis supporting CRFSI in assessing the sustainability of their activities. Building on the methodological framework to develop life cycle, the data collection protocol is providing detailed guidance and examples on how to collect, manage, and process the data needed for the methodological framework. More specifically, the simplified DCP describes the process related to the development of a survey for the collection of quali-quantitative information on CRFSI and their subsequent sustainability scoring. The extensive DCP elaborates on the life cycle inventory phase of the extensive assessment layer, to provide more details on what type of data to collect and examples of inventory templates.

While the DCP is developed to be used in parallel with the Methodological framework, it can also be adopted with some modifications for other types of studies. For example, the survey related to the simplified DCP can be easily adjusted for other sustainability assessments. Similarly, the templates of the extensive DCP can be used for other type of LCT studies.

Research outcomes from the present report will serve to nourish comprehensive LCA, E-LCC and S-LCA assessments to be performed in future project steps, undertaking a methodology refinement and adaptation. Additionally, it will serve to define the indicators for the CRFSI online survey tool and to create the CRFSI FoodE label certification standard. Finally, a comprehensive simplified tool, will be developed from the present results to support the decision-making processes of innovative and codesigned business models in the FoodE pilots.



References

ISO 14040:2006 Environmental management – Life cycle assessment – Principles and framework

Appendices

Important note: The complete surveys are included in full in Deliverable 2.1 (D2.1).

Appendix 1 - Survey 2 (DCP100+)

Outline text

This survey is delivered by the FoodE European research project funded by Horizon 2020. The main objective of FoodE is to involve European Union local initiatives in the design, implementation and monitoring of environmentally, economically and socially sustainable City/Region Food Systems. It was launched in 2020 and will last for 4 years. The consortium involves 24 partners from 8 European countries (France, Germany, Italy, Netherlands, Norway, Romania, Slovenia and Spain).

Privacy Statements

give consent deny consent

for the processing - REQUIRED for the purpose of participating in the study in question – of my personal data for scientific research and statistical purposes in the manner and for the reasons described in the section entitled “Purposes and methods of processing” of the ‘Information on the processing of personal data’.

give consent deny consent

to the storage and further use - NOT NECESSARY for the purposes of participating in the study in question - of my personal data for the purposes and in the manner set forth in point (B) of the ‘Information on the processing of personal data’.

give consent deny consent

to the participation in the research, in the knowledge that such consent is freely expressed and can be revoked at any time without this leading to any disadvantage or prejudice.

Demographic details

Name of your organisation*:

Country of the organisation:

Website (OPTIONAL ANSWER):

Phone number (if you accept being contacted- OPTIONAL ANSWER):

Email contact (if you accept being contacted- OPTIONAL ANSWER):

**In the survey you will find the word ‘organisation’ as a general term to indicate a project, or/and an activity or/and an initiative, enterprise, cooperative etc.*

S-LCA: Social impact

- Job (quantity, quality, diversity)

1. How many waged employees do you have?

- a) Full-time [Please indicate a number]
 b) Part-time [Please indicate a number]

2. Which contract type have you arranged with your waged employees?

- c) All fixed term/temporary

- d) More than 50% fixed term/temporary
 - e) 50% fixed term/temporary
 - f) Less than 50% fixed term/temporary
 - g) None fixed term/temporary
3. Could you indicate the monthly average gross wage (figured before any state and federal taxes, social security, and health insurance) in your organisation (including both full and part time employees)?
 - a) <1.000 €
 - b) 1.001- 2.000 €
 - c) 2.001 - 3.000 €
 - d) 3.001-4.000 €
 - e) >4.000 €
 4. How often does your organisation provide workplace trainings to each waged employee?
Please indicate the estimated hours/year
 5. What is the share of female waged employees over the total number of employees?
 - a) <10%
 - b) 11-20%
 - c) 21%-30%
 - d) 31%-40%
 - e) >50%
- **Community: Outreach, engagement, education**
 1. Frequency of events (either in person or online) organised for the local community¹?
 - a) Less than 5 /year
 - b) 6-10 /year
 - c) 11-15 /year
 - d) 16/20 year
 - e) More than 24 /year
 2. Is your organisation running activities for the disadvantaged people of your community?
 - a) Yes
 - b) No
 3. Do you sell products that you buy from other local producers?
 - a) Yes
 - b) No
 4. Do you involve people from your communities in any volunteering activities?
 - a) Yes
 - b) No

¹ Local community is intended as (groups of) people from your geographical area not already involved in your organization as staff (via employment or volunteering); they might be people from your consumer audience, your stakeholders and supply chain, your municipality, etc.

- Food quality and safety:

How important are the following product characteristics for your customers?

1. Taste and freshness
 - a) Very unimportant
 - b) Unimportant
 - c) Neither Important or Unimportant
 - d) Important
 - e) Very Important
2. Healthiness and nutritional quality
 - a) Very unimportant
 - b) Unimportant
 - c) Neither Important or Unimportant
 - d) Important
 - e) Very Important
3. Affordability and fair price
 - a) Very unimportant
 - b) Unimportant
 - c) Neither Important or Unimportant
 - d) Important
 - e) Very Important
4. Food chain fairness
 - a) Very unimportant
 - b) Unimportant
 - c) Neither Important or Unimportant
 - d) Important
 - e) Very Important
5. Animal welfare
 - a) Very unimportant
 - b) Unimportant
 - c) Neither Important or Unimportant
 - d) Important
 - e) Very Important
6. Improved food safety
 - a) Very unimportant
 - b) Unimportant
 - c) Neither Important or Unimportant
 - d) Important
 - e) Very Important
7. Variety of food offer
 - a) Very unimportant
 - b) Unimportant
 - c) Neither Important or Unimportant
 - d) Important

- e) Very Important
8. Being local
 - a) Very unimportant
 - b) Unimportant
 - c) Neither Important or Unimportant
 - d) Important
 - e) Very Important
 9. Environmental sustainability
 - a) Very unimportant
 - b) Unimportant
 - c) Neither Important or Unimportant
 - d) Important
 - e) Very Important

LCC: Economic impact

- **Organisation costs, profitability and outlook (revenues, profits, costs)**

1. What is your annual net profit margin (ratio of net profits to revenues)?
[please indicate (negative or positive) percentage]
2. What are your estimated revenues per year?

a) Revenues from product sales	[0-20%; 21-40%; 41-60%; 61-80%; >81%]
b) Revenues from other activities	[0-20%; 21-40%; 41-60%; 61-80%; >81%]
c) Public funding	[0-20%; 21-40%; 41-60%; 61-80%; >81%]
d) Private funding	[0-20%; 21-40%; 41-60%; 61-80%; >81%]
3. How do you expect your business to change in the next 3 years?
 - a) Product sales
 - Consistently Lower
 - Lower
 - The same or not relevant
 - Higher
 - Consistently higher
 - b) Other revenues
 - Consistently Lower
 - Lower
 - The same or not relevant
 - Higher
 - Consistently higher
 - c) Profits
 - Consistently Lower
 - Lower
 - The same or not-for-profit
 - Higher
 - Consistently higher

- d) Number of customers/clients/users
 - Consistently Lower
 - Lower
 - The same
 - Higher
 - Consistently higher

- **Local economic development**

1. On average, where do your waged employees come from?
 - a) Mostly from your municipality
 - b) Mostly from your region
 - c) I don't know
 - d) Mostly from your country
 - e) Mostly from external countries
2. What is the percentage of supplies sourced locally (from suppliers within a distance of maximum 50km from your venue)?
 - a) less than 20%
 - b) 21-40%
 - c) 41-60%
 - d) 61-80%
 - e) More than 81%
3. Do you implement any specific fair practice towards suppliers?
 - a) Yes
 - b) No

- **Customers and users**

1. On average, how many new customers (both end consumers and business buyers) or users do you have yearly?
 - a) None
 - b) Almost none
 - c) Few/a little bit
 - d) Quite a lot
 - e) Many/a great deal
2. Do your 1st time customers or users then come back?
 - a) Never
 - b) Almost never
 - c) Occasionally/Sometimes
 - d) Almost every time
 - e) Every time
3. Do your single customers or users tend to increase their total expenditure?
 - a) Never
 - b) Almost never
 - c) Occasionally/Sometimes
 - d) Almost every time
 - e) Every time
4. Do your new customers come because recommended by others (friend/colleague)?
 - a) Never



- b) Almost never
- c) Occasionally/Sometimes
- d) Almost every time
- e) Every time

5. Direct sale: on average, how many end costumers per month do you sell to? (optional)
[Please provide an indicative number]

6. What is the average age of your customers/clients/users?

- a) <20 years old
- b) 20-35 years old
- c) 36-50 years old
- d) 51-65 years old
- e) >65 years old

7. What is the most common household composition of your customers/clients/users?

- a) With children
- b) Without children

8. What are the primary interests of your customers/clients/users?

- a) Healthy food and diet
 - Very Low interest
 - Low interest
 - Neither/Nor interest
 - High interest
 - Very High interest
- b) Taste
 - Very Low interest
 - Low interest
 - Neither/Nor interest
 - High interest
 - Very High interest
- c) Fresh and seasonal food
 - Very Low interest
 - Low interest
 - Neither/Nor interest
 - High interest
 - Very High interest
- d) Variety of food offer
 - Very Low interest
 - Low interest
 - Neither/Nor interest
 - High interest
 - Very High interest
- e) Local food
 - Very Low interest
 - Low interest
 - Neither/Nor interest

- High interest
 - Very High interest
 - f) Animal welfare
 - Very Low interest
 - Low interest
 - Neither/Nor interest
 - High interest
 - Very High interest
 - g) Environmental issues
 - Very Low interest
 - Low interest
 - Neither/Nor interest
 - High interest
 - Very High interest
 - h) Value for money
 - Very Low interest
 - Low interest
 - Neither/Nor interest
 - High interest
 - Very High interest
 - i) Food chain fairness
 - Very Low interest
 - Low interest
 - Neither/Nor interest
 - High interest
 - Very High interest
9. What is the main interest for your customers among the following healthy food and diet options?
- a) (healthy) processed food
 - b) nutrition-focused educational activities
 - c) food calories information
 - d) (healthy) recipes
 - e) nutritional profile of the food (vitamin, protein, etc.)
10. Do you sell online through your own or third party platform?
- a) Yes
 - b) No

LCA: Environmental impact

Compulsory part (for all respondents)

- Food production/supply
1. Regarding the crops you produce, manage and sell, how many of the following list of technologies do you use? List:
- a) Renewable energy production
 - b) Closed-loop strategies to reduce wastewater
 - c) Natural ventilation without active cooling nor heating
 - d) Natural lighting (absence of artificial lighting)

- e) Rainwater harvesting and use
 - f) Drought-resistance crops,
 - g) Biosolarization,
 - h) Crop rotation and
 - i) Composting residual biomass
 - j) Organic fertilizers and biological control
 - k) Biological pesticides, plant bio stimulants, macerates and extracts
2. Regarding the meat, dairy and/or eggs and/or fish you produce, process or sell, do you prefer the ones being nourished by fed mostly coming from a distance of:
- a) I do not produce, manage or sell any dairy and/or eggs and/or fish
 - b) More than 60km
 - c) 41-60km
 - d) I don't know
 - e) 21- 40km
 - f) Less than 20km
3. Regarding the fish you produce, manage, sell, what are the gear types used by these boats?
- a) I do not produce, manage or sell any fish
 - b) Trammel nets, demersal trawl, beam trawl, shrimp trawl
 - c) Gillnets, Seine net, beach seine, Pelagic trawl
 - d) I don't know
 - e) Traps, pots, longlining, handlining, purse seine
 - f) Spear, harpoon
4. Do you cultivate, manage or sell any ancient cultivar or raise any local breed?
- a) Yes
 - b) No
5. Regarding the food you produce, manage or sell, how important is for you to cultivate or select products which:
- preserve the characteristics of the soil or fishstock?
 - a) Very unimportant
 - b) Unimportant
 - c) Neither Important or Unimportant
 - d) Important
 - e) Very Important
 - increase the functional biodiversity of the surrounding area?
 - a) Very unimportant
 - b) Unimportant
 - c) Neither Important or Unimportant
 - d) Important
 - e) Very Important

- comes from organisations caring of the diversity of their crops or breeds or fishstock?
 - a) Very unimportant
 - b) Unimportant
 - c) Neither Important or Unimportant
 - d) Important
 - e) Very Important

- Resource use
 1. How important is for you to work on water saving practices:
 - a) Very unimportant
 - b) Unimportant
 - c) Neither Important or Unimportant
 - d) Important
 - e) Very Important

 2. Which type of electricity sources do you use?
 - a) All non-renewable
 - b) Less than 50% renewable
 - c) 50% renewable
 - d) More than 50% renewable
 - e) All renewable/ I don't use any

 3. Which type of heating sources do you use?
 - a) All non-renewable
 - b) Less than 50% renewable
 - c) 50% renewable
 - d) More than 50% renewable
 - e) All renewable/I don't use any

- Waste management and circularity
 1. How much waste are you able to recycle?

a) Organic solid waste	[<20%;21-40%;41-60%;61%-80%; >81%]
b) Inorganic solid Waste >81%	[<20%;21-40%;41-60%;61%-80%; >81%]
c) Water	[<20%;21-40%;41-60%;61%-80%; >81%]
d) Other waste [Please specify >81%]	[<20%;21-40%;41-60%;61%-80%; >81%]

 2. For each category, to which extent is your organisation committed to improve its sustainability?
 - a) Reduce or reuse energy (electricity and heat)
 - Very uncommitted
 - Quite uncommitted
 - Committed

- Quite committed
 - Very committed

 - b) Reduce or reuse water
 - Very uncommitted
 - Quite uncommitted
 - Committed
 - Quite committed
 - Very committed

 - c) Reduce or reuse organic waste
 - Very uncommitted
 - Quite uncommitted
 - Committed
 - Quite committed
 - Very committed

 - d) Reduce or reuse production materials
 - Very uncommitted
 - Quite uncommitted
 - Committed
 - Quite committed
 - Very committed

 - e) Reduce or reuse construction materials
 - Very uncommitted
 - Quite uncommitted
 - Committed
 - Quite committed
 - Very committed

 - f) Reduce or reuse packaging
 - Very uncommitted
 - Quite uncommitted
 - Committed
 - Quite committed
 - Very committed
3. The packaging and materials I use are:
- a) All Non-Recyclable and non-compostable
 - b) Less than 50% recyclable and compostable
 - c) 50% recyclable and compostable
 - d) More than 50% recyclable and compostable
 - e) All recyclable and compostable
4. The packaging and materials I use are:
- a) All Non-reusable
 - b) Less than 50% reusable
 - c) 50% reusable
 - d) More than 50% reusable
 - e) All reusable

- Transport
 1. How close are you approximately to your main clients/customers(km) – on average?
 - a) More than 40km
 - b) 39-30km
 - c) 29–20km
 - d) 19-10km
 - e) Less than 10km

 2. How is your product typically transported to your clients/customers?
 - a) All by using fossil fuelled vehicles
 - b) More than 50% by using fossil fuelled vehicles
 - c) 50% by using fossil fuelled vehicles
 - d) Less than 50% by using fossil fuelled vehicles
 - e) None by using fossil fuelled vehicles

 3. How are your supplies typically transported?
 - a) All by using fossil fuelled vehicles
 - b) More than 50% by using fossil fuelled vehicles
 - c) 50% by using fossil fuelled vehicles
 - d) Less than 50% by using fossil fuelled vehicles
 - e) None by using fossil fuelled vehicles

Optional part

Dear CRFS, the information below will greatly help us analyse the environmental behaviour of your system. Thank you for providing it! Please only fill those spaces that you may have data on. Take into account that all spaces come with a predefined unit (kg, m³, tones, kWh).

1. If you are into agriculture and fisheries, which type of production systems does your company use?
 - a) Livestock farming
 - b) Fisheries
 - c) Crops growing
 - d) Others

If A (livestock farming):

1. Please indicate the number of animals you have:
 - a) Cattle
 - b) Pork
 - c) Sheep/goat
 - d) Chicken
 - e) Dairy cows
 - f) Others [Please specify]
 - g) I don't know
2. What is the total extent of farm land you specifically use for animals?
 - a) [Enter estimated ha]
 - b) I don't know
3. What is the yearly use of synthetic fertilisers per hectare for forage and pasture purposes?
 - a) Enter estimated Kg Nitrogen fertilizer
 - b) Enter estimated Kg Phosphorus fertilizer
 - c) Enter estimated Kg Potassium fertilizer
 - d) I don't know
4. What is the feed composition you use in mass percentage to the total food income?
 - a) Grass [Enter %]
 - b) Maize silage [Enter %]
 - c) Triticale [Enter %]
 - d) Concentrates [Enter %]
 - e) I don't know
5. Manure management
 - a) Kg of produced manure
 - b) Kg of used manure
 - c) Manure application method
 - d) Manure storage time
 - e) I don't know
6. How many resources do you use per year?

Water [Enter estimated amount in m³]



Grid electricity	[Enter estimated amount in kWh]
Renewable electricity	[Enter estimated amount in kWh]
Natural gas	[Enter estimated amount in m ³]
Oil / petrol	[Enter estimated amount in m ³]
Disinfectant	[Enter estimated amount in kg]
Antibiotic	[Enter estimated amount in kg]

If B (fisheries):

1. How many fishers work in total in these boats (crewmen and skippers)?
2. Average fuel consumption of the boats / year
 - a) Average fuel consumption of the boats under 9 meters
 - b) Average fuel consumption of the boats between 9-12 meters
 - c) Average fuel consumption of the boats between 12-15 metres
 - d) Average fuel consumption of the boats over 15 metres
3. What is the average catch per year for each boat category?
 - a) Average catch of boats under 9 meters
 - b) Average catch of boats between 9-12 meters
 - c) Average catch of boats between 12-15 metres
 - d) Average catch of boats over 15 metres
4. How many resources do you use per year?

Water	[Enter estimated amount in m ³]
Ice for cooling	[Enter estimated amount in tonnes]
Grid electricity	[Enter estimated amount in kWh]
Renewable electricity	[Enter estimated amount in kWh]
Natural gas	[Enter estimated amount in m ³]
Disinfectant	[Enter estimated amount in kg]
Antifouling	[Enter estimated amount in kg]
Nets	[Enter estimated amount in m ²]
Rope	[Enter estimated amount in m]
Chain	[Enter estimated amount in m]
Packing	[Enter estimated amount in Kg]
Diving suit	[Enter estimated amount in number]

If C (crop production):

1. How many square meters of production area is your company?
 - a) [Enter estimated m²]
 - b) [Enter estimated ha]
 - c) I don't know
2. How much product do you produce per year? [Enter estimated amount of product in kg]
 - a) Leafy greens (e.g. lettuce, arugula, etc.)
 - b) Tomato

- c) Soft-fruits
 - d) Tuber vegetables (e.g. potatoes)
 - e) Root vegetables (e.g. carrots)
 - f) Bulb vegetables (e.g. onions)
 - g) Flower vegetables (e.g. broccoli)
 - h) Grains
 - i) Others [Please specify]
3. Which type of production systems does your company use?
- a) Open field
 - b) Greenhouse: plastic
 - c) Greenhouse: glass
 - d) Closed: vertical farm
 - e) None
4. What is the yearly use of synthetic fertilisers per hectare for agricultural production?
- e) Enter estimated Kg Nitrogen fertilizer
 - f) Enter estimated Kg Phosphorus fertilizer
 - g) Enter estimated Kg Potassium fertilizer
 - h) I don't know
5. How many resources do you use per year?
- Water [Enter estimated amount in m³]
- Grid electricity [Enter estimated amount in kWh]
- Renewable electricity [Enter estimated amount in kWh]
- Natural gas [Enter estimated amount in m³]
- Oil / petrol [Enter estimated amount in m³]

General

1. How are your supplies typically delivered to you? (MAP)
- a) By bicycle
 - b) By electric vehicle
 - c) By car
 - d) By truck
 - e) By boat
 - f) By plane
 - g) We do not track this type of information
2. Is your product typically transported to your clients? (MAP)
- a) By bicycle
 - b) By electric vehicle
 - c) By car
 - d) By truck
 - e) By boat
 - f) By plane
 - g) I don't transport them, customers always come to the CRFS.
 - h) Others [Please specify]
 - i) We do not track this type of information



Further Remarks

Please write any additional indicators on the social/economic/environmental dimensions you track/have, which you reckon as important for your organisation;