FoodE

D2.7 Pilot Decision Support Tool

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Document Control Sheet

Version	Date	Summary of changes	Author(s)
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List of Abbreviations

BMs	Business Models
CRFS	City Region Food System
CRFSI	City Region Food System Initiatives
D	Deliverable
FU	Functional Unit
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
N	Number
SDGs	Sustainable Development Goals
T	Task
WP	Working Package

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Executive Summary

The current document is used as a supplementary material that describes the process undergone to develop the **Pilot Decision Support Tool** and how this tool is contextualized within a bigger environment involving multiple assessment tools linked to the FoodE project. The Pilot Decision Support Tool, which was developed via Microsoft Excel(R), is stored in the backoffice web for CRFSI from the FoodE App (please see D3.7), from which user can download it and use it after registering. This allows for a better monitoring on the usage of the tool by CRFSI. The tool is mainly automatic for most of the indicators, meaning that the user enters values and gets the value for specific indicators instantly. However, some indicators need furthers processing by experts due to license agreements with background data providers. This case is explained in Section "Pilot Decision Support Tool – Structure"; Subsection "Environmental", along with the procedure on how to get the most out of the tool.

The contribution is related to T2.5 "Pilot decision support tool and self-monitoring" for the Methodological framework development and case studies sustainability assessment (WP2).

The present deliverable and T2.5 are led by UAB with the support of WP partner leader (UNIBO) and the other WP2 partners.

Some content from this deliverable is similar to the prior deliverable from WP2: Extensive life cycle assessment, life cycle costing and social LCA of pilots and self-assessment tool (D2.6). This similarity is related to the link between them, since the Pilot Decision Support Tool (D2.7) is based on the improvements made to the Data Collection Template included in D2.6 and it was validated through its adoption on the FoodE pilots.

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1. Background

1.1 Project Objectives: FoodE – Food Systems in European Cities

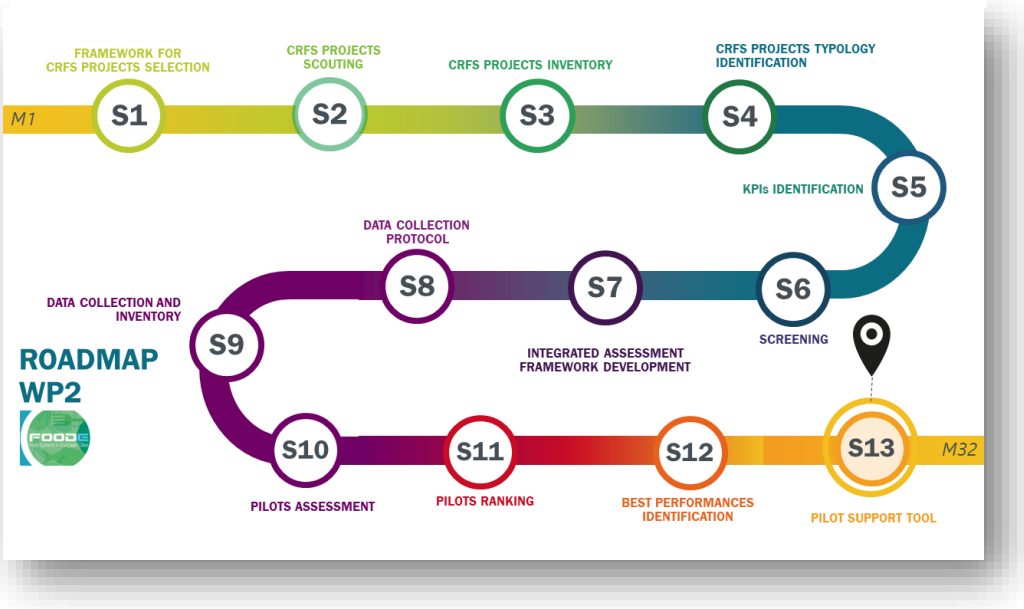
The main objective of FoodE is to involve European Union local initiatives in the design, implementation, and monitoring of environmentally, economically, and socially sustainable City/Region Food Systems (from now on CRFS). The key challenge of the project is to improve food and nutrition security of European citizens by shaping a sustainable environment able to increase accessibility and availability of affordable, safe, and nutritious food. This challenge is 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 developing innovative and sustainable food systems.

1.2 Objective of WP2 Methodological framework development and case studies sustainability assessment

Considering and integrating all recent advancements on sustainability assessment of CRFS, the WP2 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 roadmap (Figure 1) foresees 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.
- 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.**

Figure 1 - WP2 Roadmap and current status



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1.3 Task and Deliverable objective

Based on the methodological framework and data collection developed in T2.2, T2.3 and the sustainability assessment of pilots conducted in T2.4 a comprehensive simplified informatics tool was developed during the development of T2.5 using spreadsheets (D2.7). The final output of this activities is the Pilot Decision Support Tool that should help decision-making of business models and can be used by relevant stakeholders and pilot owners. The Tool is composed of different modules that will let the user modify selected parameters and evaluate the different options for the assessment of specific CRFS. In particular, the Tool allows assessing different food products, technical and organizational solutions, investments and management options, environmental, economic, and social conditions. It will also enable the environment for the successive creation of a simplified dataset of indicators (T5.2), which will be used by CRFS managers to monitor their sustainability performances.

1.4 Linkages with other activities

Synergies and/or potential risks of duplication/overlapping with other WP2 activities have been explored and discussed. Within WP2 it is important to differentiate between:

- Review and inventory of innovative CRFS (T2.1): No clear relationship is established with this task apart that the innovative CRFSI identified can make use of the pilot decision support tool to assess their economic, social and environmental sustainability.
- Methodological framework development (T2.2): The pilot decision support tool was based on what in the deliverables related to T2.2 is referred to extensive sustainability assessment. A preliminary extensive assessment was provided in D2.2 for the CRFSI that responded to additional questions. Although this data was not a planned part of the deliverable, it allowed the authors to start planning the data collection for the pilots (T2.4) and how to structure it for the pilot decision support tool (T2.5 - D2.7). Also, limitations in terms of data collection observed in this process also contributed to the development of the following tasks.
- Data collection and inventory (T2.3): The pilot decision support tool relationship with T2.3 is mainly through T2.3.5 “Life cycle inventory and economic aspects”. Due to the strict relationship between D2.2 and D2.3, the contribution of T2.3 to T2.5 is similar to the one described in the previous paragraph for T2.2.
- Assessment of pilots and identification of best performances (T2.4): The pilot decision support tool is strictly linked to T2.4 since it is based and designed for pilot’s assessment. The feedback received from the pilots on the Data Collection Template that they received in T2.4 allowed the authors to improve the quality and clarity of the pilot decision support tool described in the present deliverable.

1.5 Linkages with other FoodE activities

Since the Pilot Decision Support Tool will facilitate the interaction between citizens and CRFS initiatives, the present contribution has several linkages with other WPs. These linkages are summarized below:

- WP3 – Cross pollination: The direct link between the Pilot Decision Support Tool and WP3 is through the FoodE App (https://foode.sostenipra.cat/). Both the tool and the app are part of the tangible outcomes of the FoodE Project that are made available for CRFS stakeholders to interact and evaluate their activities from multiple perspectives.

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- WP4 – Pilot implementation: Data from pilots and the feedback they provided to the Data Collection Template from T2.4 were relevant to the current design of the Pilot Decision Support Tool described in the present deliverable.
- WP5 – Business models and validation of CRFS: The Pilot Decision Support Tool can be one of the outcomes to be used as input for the creation of the FoodE label (T5.4).
- WP7 – Dissemination and exploitation: The Pilot Decision Support Tool needs to be disseminated through the official FoodE channels prior to the finalisation of the project, to be accessible also for other CRFSI outside the project.

2. Pilot Decision Support Tool - Structure

The Pilot Decision Support Tool is comprehensive simplified informatics tool developed using spreadsheets. The aim of the tool is to support decision-making of business models and be used by relevant stakeholders and pilot owners from the City/Region Food System. The tool is composed of different modules that let the user modify selected parameters and evaluate sustainability criteria divided among economic, social and environmental dimensions. The Pilot Decision Support Tool is divided in 5 sheets: introduction, general information, economic, social, and environmental.

2.1 Tool Introduction

The introduction sheet provides qualitative information about the tool, its context, WP2 and the FoodE Project. It doesn't include any cells to be filled and help users to understand the tool. The sheet describes:

- Aim of the tool: The Pilot Decision Support Tool is comprehensive simplified informatics tool developed using spreadsheets. The aim of the tool is to support decision-making of business models and be used by relevant stakeholders and pilot owners from the City/Region Food System. The tool is composed of different modules that let the user modify selected parameters and evaluate sustainability criteria divided among economic, social and environmental dimensions.
- Structure: name of sheets with a brief explanation for each of them.
- Useful definitions: description of some important parameters or concepts used in the tool such as electricity price, water price, duration of productive cycle, local employees, vulnerable categories, City-Region Food System (CRFS) or City-Region Food System Initiative (CRFSI).

2.2 General information

The sheet serves as the framework of the assessment by providing both qualitative and quantitative information of the system under study. The sheet includes:

- General information: name of the CRFSI, country, location (coastal, urban, periurban, rural) assessment start date, extension of the estate, type of terrain (owned vs rented), land type (artificial vs agricultural vs natural), extension of the lot to be studied, duration of productive cycle, total yearly revenue, total yearly customers/users, number of employees, revenue from sales, typology of sold products (amount), typology of purchased raw material (amount), other useful info.
- Goal and scope definition: supply chain phases to be included - system boundaries (agricultural production, livestock agriculture, fisheries/aquaponic, food processing, food distribution, restaurants and catering, food waste and other waste recovery, education and services), aim of the assessment (footprinting, perspective, or consequential), benefits of the sustainability assessment, function(s) of your initiative,

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reference flow of the analysis (mass, economic, kcal, organisational), functional unit of the analysis.

- Product, service and value provision:
  - Agricultural production: tomato, lettuce, broccoli, spinach, bean, chard, rice, wheat, oats, barley, corn, quinoa, other.
  - Livestock agriculture: cattle, dairy cows, pigs, sheep, goat, chicken, other.
  - Fisheries/Aquaponic: trout, salmon, tuna, cod, tilapia, cuttlesfish, squid, octopus, prawns, mussels, other.
  - Food processing: vegetables, meat, fish, seafood, other.
  - Food distribution: vegetables, meat, fish seafood, other.
  - Restaurants and catering: vegetables served, rice served, legumes served, meat served, fish served, seafood served, other served.
  - Food waste and other waste recovery: vegetables recovered, rice recovered, legumes recovered, meat recovered, fish recovered, seafood recovered, wastewater recovered, other recovered.
  - Education and services: workshops, visits, services, local events, other.

2.3 Economic

The costing impacts have been evaluated with a conventional LCC approach (Hunkeler and Rebitzer, 2003). Such an approach considers "*all costs directly attributable to a product/process starting from production to use and end of life*" (Hunkeler, Lichtenvort and Rebitzer, 2008) and can concretely support decision making at the pilot level. LCC cost categories and their naming change depending on the study. They alternatively account for investment, operation, maintenance, and end-of-life disposal costs (Luttenberger and Luttenberger, 2017), acquisition costs (European Commission, 2019), planning and testing costs (Cook *et al.*, 2022).
Within the present work, costs have been classified in a set of components, able to capture the peculiarity of the analysed pilots and consider the differences among them. Particularly, 5 components have been adopted, namely:

- C_{ac} = Acquisition
- C_{op} = Operation
- C_{mr} = Maintenance and repairment
- C_{di} = Disposal/end of life
- C_{ot}= Others

Acquisition costs include mainly those costs related to acquisition of appliances and infrastructures and material costs. Operation costs relate to those needed for running the activities, such as labour and utilities. Maintenance costs entail costs for the maintenance needs and repairs of the system, and disposal/end of life to the costs occurring for the disposal of any material or infrastructure. The other costs represent an additional category to take into account the diversity of pilots. This includes also the cost of environmental externalities.
Each of the pilot was free to select as much components as possible, considering data availability, and including costs across the entire life cycle of their pilot. Additionally, each pilot was asked to indicate the time span of the analysis, for the LCC evaluation period, and the life expectancy of the infrastructures and appliances. All data were included specifying their date of collection and source.

2.4 Social

The social impacts have been evaluated with a S-LCA approach based on the Guidelines for Social Life Cycle Assessment of Products and Organizations (Norris et al., 2020). S-LCA methodology adopts a stakeholder approach, as the social impacts assessed are allocated to stakeholder categories involved in the life cycle of the product or service under study.

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Impact (sub)categories, which are measured through quantitative or qualitative indicators, are determined to identify key social aspects deriving from each stage of the life cycle and associated with the selected stakeholder categories. Following Norris et al. (2020) classification, five main categories of stakeholders were identified: workers, local community, society, consumers, and value chain actors. According to the scope of the assessment, the abovementioned stakeholder categories have been adjusted to the needs of the analysis, hence the following four stakeholder categories have been considered: workers and producers, consumers, local community, and society. One of the key themes debated about the S-LCA methodology is the selection of impact sub(categories) and the corresponding indicators. As clearly stated by the Guidelines, the list of impact categories and subcategories is not exhaustive and it is only meant to provide examples, as additional categories can be defined according to the goal and scope of the study and depending on the specific social context. Within the extensive assessment of FoodE pilots, Appendix 2 reports indicators used in the general DCT, according to the presented structure.
Each of the pilot was free to select as much categories as possible, considering data availability. Hence, some indicators, sub-categories and categories were out of the scope for some pilots, and, thus, the related data was not included for their specific assessment. All data were included with their date of collection and source.
In the Impact Assessment phase, that aims at "*calculating, understanding and evaluating the magnitude and significance of the potential social impacts of a product system throughout the life cycle of the product*" (Norris et al., 2020, p.80), inventory data are linked and aggregated within impact subcategories (classification), and results for the subcategory indicators are calculated (characterization) (UNEP-SETAC, 2013). Given the nature of social phenomena, the impacts assessed through a S-LCA analysis are necessarily linked to a certain degree of uncertainty, as it is difficult to identify deterministic cause-effect relationships when dealing with social issues.
For the impact assessment phase, a reference scale assessment approach (Type I) was applied. The reference scale approach is based on the calculation of the social performance by establishing a scoring system for each inventory indicator and by associating the inventory data with a corresponding reference scale level, in order to describe how the initiative under study contributes to or deviates from the standard. Reference scales are defined as ordinary scales in which each level corresponds to a performance reference point (PRP), which set different levels of social performance (Norris et al., 2020, p.82). The reference scales used to define a scoring system for each indicator are generally based on defined international or national benchmark. Due to the high variability and heterogeneity of FoodE pilots, it was not possible to find a common international or national benchmark system. To deal with this specific aspect, and also be consistent with the nature of the different pilots, the strategy chosen was to use the results of the FoodE simplified sustainability assessment (D2.5) as a social benchmark reference for the pilots. Such procedure allows to compare the results of pilots with a broad spectrum of similar initiatives active in the same context. Appendix 3 highlights linkages underlying the benchmark system. Since some indicators in the DCT for the self-assessment were not directly linked with results of the simplified assessment, a set of questions were used as a proxy for the indicators. Pilot data were compared with the average value registered in the European average values. The scoring system applied to the survey results (for the simplified sustainability assessment) was also applied to the pilots' results (with some exceptions and adaptations). Results for the social impact assessment are expressed in percentage with respect to the national average, which can be interpreted following the rationale:

- 100% is the same level as of the national average,
- more than 100% means that the pilot has higher social performances than the national average,
- less than 100% means the pilot has lower social performances than the national average.

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2.5 Environmental

The environmental impacts are determined through attributional LCA (ISO 2006). LCA is a widely used methodology to assess the environmental performance of products and systems by accounting for their entire life cycle. The methodological framework used for the assessment was based on D2.2, detailing the four phases of an LCA (goal and scope, LCI, LCIA and Interpretation).

The software used to perform the life cycle impact assessment (LCIA) was Simapro 9.3 by PRé Consultants. All impact categories included in the ReCiPe 2016 v1.1 Midpoint (H) method (Huijbregts et al. 2016) were assessed, encompassing the mandatory classification and characterization steps (see Table 1). Background environmental information was retrieved from Ecoinvent 3.8 (Wernet et al., 2016), using the system model "APOS - Allocation at the point of substitution". More than 200 background processes can be used to analyse the environmental impacts of all pilots. These processes were classified in 17 subsystems: Substrate for soilless cultivation, Beekeeping, Seeds and Seedlings, Synthetic Fertilizers, Organic Fertilizers, Pesticides, Electricity, Other energy sources, Water and Ice, Fuel Consumption for Boats, Transport, Construction materials, Packaging materials, Waste, Cooking ingredients, Catering materials and Kitchen Appliances and Other Appliances. The design of these subsystems was based on the input provided by the pilots related to D2.6. The data collection template was changed right after the data collection to cover consistently the different type of CRFSI that the pilots represent.

The current version of the pilot decision support tool does not automate the results since this would violate the End User Licence Agreement (EULA) from the background data provider (Ecoinvent Association). To get data from environmental indicators, the user needs to fill the inventory data as indicated in the tool and send the document to foode@sostenipra.cat. After a brief processing, the user will get back via the same email, the total value of 18 environmental midpoint indicators as well as the relative contribution to each of them per subsystem defined above.

Table 1 - Impact categories included in the Recipe 2016 (H) Method

Impact Category	Abbreviation	Units
Global warming	GW	Kg CO2 eq
Stratospheric ozone depletion	SODP	Kg CFC11 eq
Ionizing radiation	IR	KBq Co-60 eq
Ozone formation, Human Health	OFHH	Kg NOx e
Fine particulate matter formation	FPMF	Kg PM2.5 eq
Ozone formation, Terrestrial ecosystems	OFTE	Kg NOx eq
Terrestrial acidification	TA	Kg SO2 eq
Freshwater eutrophication	FE	Kg P eq
Marine eutrophication	ME	Kg N eq
Terrestrial ecotoxicity	TET	Kg 1,4-DCB eq
Freshwater ecotoxicity	FET	Kg 1,4-DCB eq
Marine ecotoxicity	MET	Kg 1,4-DCB eq
Human carcinogenic toxicity	HCT	Kg 1,4-DCB eq
Human non-carcinogenic toxicity	HNCT	Kg 1,4-DCB eq
Land use	LU	M2a crop eq
Mineral resource scarcity	MRS	Kg Cu eq
Fossil resource scarcity	FRS	Kg oil eq
Water consumption	WC	m3

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2.5.1 List of assumptions

Either due to lack of data in the foreground system or in the background environmental database, relevant assumptions had to be taken. Find below a summary of the assumptions:

- Lifespans: although most of the elements included in the system boundaries for all pilots would serve their purpose within the lifespan of their productive cycle, the impact of some elements in the inventory had to be readjusted since their lifespan was longer than the productive cycle of assessment. This specifically applies for infrastructure elements and appliances.
- Nitrogen emissions to air: NH_3, N_2O and NO_x emissions from nitrogen fertilization were calculated by quantifying the amount of nitrogen in all the organic and inorganic fertilizers and applying the corresponding Tier 1 emission factors as done in previous research (Sanjuan-Delmás et al., 2018).
- Humidities, densities and compositions of various elements: different available sources were used to convert the units of data provided to the units used by the background database, related to manure humidity, light fuel oil, compost, peat moss and liquid carbon dioxide densities and other compositions.
- Size of kitchen and other appliances: to decrease the confusion from the pilot side, 3 different sizes were added (small, medium, big) for pilots to fill the number of units. To differentiate the impact between these three sizes, medium-size impact was set at 100%, small-size impact was set at 50% (of the medium-size impact) and big-size impact was set at 150% (of the medium-size impact).
- Lack of background processes: when a specific background process for an element in the foreground system was not found, the most appropriate proxy was selected based on author's expertise. Whether this choice represents a high impact on the life cycle impact assessment or not was discussed in each pilot assessment.

2.6 The Functional Unit

As described in previous deliverables of WP2, the functional unit choice for inputs, outputs and impacts depends on the function that a specific product or system (or in this case, a CRFSI) is providing, which will be in turn based on the goal of the assessment. A great variety of functions can be identified from CRFSI (e.g. produce kg of crops, generate economic revenue, make a positive social impact, etc.). Additionally, previous work within WP2 together with FoodE pilots suggested that most CRFSI have a multi-functional nature, i.e. they have more than one function at a time. To deal with this multifunctionality and consistently with D2.6, we opted to choose an organisation-based LCSA (Martínez-Blanco et al., 2015; Dantas et al., 2022). The FU that we designed for this type of LCA was defined as "*the activities of a FoodE Pilot in a defined timeframe*". The FU states "*a defined timeframe*" instead of "*on a yearly basis*" because data for specific dimensions from a few pilots were based on other timeframes related to their activities (e.g., a specific productive cycle).

The main limitation of an organisation-based FU is that "*absolute impacts are highly dependent on the size of the activities*", as stated in D2.2. However, since the aim of the present deliverable is to assess the sustainability performances of pilots and not to compare them, the fact that absolute impacts across pilots may differ doesn't affect their isolated interpretation.

To provide fertile ground for future research development, for some of the pilots we included a section on potential complementary FUs that may be used to communicate the results with the goal to compare their performance with similar CRFSI.

2.7 Data processing and data storage

Since data is introduced and interpreted by the user, there is no data storage by third parties. However, since the calculation of environmental impacts is not automatic, the users have to

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send their inventory data to foode@sostenipra.cat to have the respective impact figures and tables back. Nonetheless, this data is not stored after sending it back to the user.

3. New data based on T2.4

As mentioned earlier, the Pilot Decision Support Tool is a more complete version of the Data Collection Template used in T2.4 to collect data from the FoodE Pilots. During the data collection process in T2.4, a specific instruction was given to the FoodE Pilots related to the Data Collection Template: if you have relevant data that you can't relate to any information of the spreadsheet, please add it. Therefore, after all data from the pilots was collected, new data items were added to the spreadsheet, along with its respective information (e.g. with background life cycle data for the environmental sheet). The most important changes per sheet are detailed below:

3.1 Economic

The economic sheets from the DCT and the Pilot Decision Support Tool is the same. No modifications were needed after the pilots assessment since all the new proposed data could be labelled under existing cell categories.

3.2 Social

Items students: a) internship students, b) bachelors and master thesis students, c) visiting PhD students were added to subsystem Job creation & quality and skills development and item Collaborations with companies/Companies interested in the topic who visited the Pilot was added to the subsystem Community outreach, education & development as a contribution from AlmaVFarm.
Item vulnerable categories participation rate was added to the subsystem Community outreach, education & development as a contribution from Prison Honey.
Item internships was added to the subsystem Job creation & quality and skills development and items children participation rate, institutional collaborations, and workshops were added to the subsystem Community outreach, education & development as a contribution from Cité Maraichere.

3.3 Environmental

Item polyvinylchloride was added to subsystem construction materials as a contribution from Metabolic.
Items pellets and briquettes for heating were added to subsystem other energy sources as a contribution from Cité Maraichere and CUIB, respectively.
Subsystem beekeeping was added along with items sugar, formic acid and oxalic acid as contribution from Prison Honey.
Items honey extractor, wax melter and sublimator were added to subsystem electricity as a contribution from Prison Honey.
Item class was added to subsystem to packaging materials as a contribution from Prison Honey.
Item refrigeration was added to subsystem electricity as a contribution from Isla Tuna.
Item compost substrate was added to subsystem substrate for soilless cultivation as a contribution form Cité Maraichere.

4. Conclusions

The Pilot Decision Support Tool is a practical outcome of the FoodE Project. As such, it aims to be used by specific CRFS stakeholders to measure and communicate their performance. Couple with this document deliverable, the Pilot Decision Support Tool is expected to be used

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by pilots or CRFSI owners on their own, without any further assistance apart from the instructions in the text and spreadsheet documents.
The Pilot Decision Support Tool is the last deliverable (from a time point-of-view) from WP2. Although being a demonstrator deliverable that is based on knowledge created through previous WP2 tasks, all deliverables from WP2 contribute to a specific function and develop a methodological framework to guide CRFS stakeholders on how to measure their sustainability performance.

5. Future work

Although this deliverable is the last related to WP2 work, some future work lines can be outlined:

- Integration of the Pilot Decision Support Tool with other relevant tools available for CRFSI to create an "environment of tools", easy and free-to-use for CRFSI.
- Further research to allow comparability between CRFSI sustainability assessment results.

Appendix *1* - Pilot Decision Support Tool

The Pilot Decision Support Tool is available as a complementary document in the form of a spreadsheet file. This file is uploaded to the backoffice for CRFSI, available through the following link after a registration process: https://foode.sostenipra.cat/crfs/crfs

Appendix *2* - S-LCA assessment system from categories to inventory data

Stakeholder category	Subsystem	Element	Data needed
Workers and producers	Job creation & quality and skills development	Jobs creation	N of jobs created every year
		Contract typology	N of non-fixed term contracts
		Income level	Euros of average gross monthly salary per employee
		Trainings	Hours of training
		Gender Balance	N female waged employees
		Social inclusion	N people belonging to vulnerable categories
Consumers	Food security	Online platform usage	Annual euros of products sold through online platform
		Presence across the CRFS measured via	Annual euros of products sold in the city
		Purchase frequency	N purchses per week
		Average expenditure	Average sale amount
	Food quality	Customers return rate	N of customers per year coming back after the first time
		Tend to increase the total expenditure	N of customers per year increasing their total expenditure after the first time

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		Availability of products information	N of certified food products
Local community	Community outreach, education & development	Digital channels for activity dissemination	N of channels
		Frequency of events for local community	N of events per year
		Participation rate	N of people participating per event (average)
		Educational events	N of events specifically targeting education on food system per year
		Volunteering activities in the community	N of activities per year
		Local collaborations	N of collaboration with other local CRFSIs and actors
		Collaborations with activities and projects	N of research activities and projects collaborating with the initiative
	Local economic development	Local selling	Euros of local products sold (bought from other local producers)
		Provenance of employees	N of local employees
Society		Raw materials traceability	N of food labels indicating the origin of products
		Ethical purchases	N of fair trade certified products
Others			

Appendix *3* - S-LCA benchmark system pathway

Indicators for the self-assessment tool (pilot)	Survey question (Directly comparable)	Survey question (proxy used)
N of jobs created every year		
N of non fixed term contracts	Q3.2 Which contract type have you arranged with your waged employees?	
Euros of average gross monthly salary per employee	Q3.3 Could you indicate the monthly average gross wage (figured before any state and federal taxes, social security, and health insurance) in your organization (including both full and part time employees)?	
Hours of training	Q3.4 How often does your organization provide workplace training to each waged employee? Please indicate the estimated hours/year	
N female waged employees	Q3.5 What is the share of female waged employees over the total number of employees?	
N people belonging to vulnerable categories		Q3.7 Is your organization running activities for the disadvantaged people of your community? (yes/no)
Annual euros of products sold through online platform		Q4.11 Do you sell on line through your own or third

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		party's own- or third-party platform? (yes/no)
Annual euros of products sold in the city	Q4.2 What are your estimated revenues per year?	Q6.13 How close are you approximately to your main clients/customers on average?
N purchases per week	Q5.1 Direct sale: on average, how many end customers per month do you sell to? [Please provide an indicative number]	
Average sale amount		
N of customers per year coming back after the first time	Q4.8 How often do your 1st time customers or users come back?	
N of customers per year increasing their total expenditure after the first time	Q4.9 Do your single customers or users tend to increase their total expenditure?	
N of certified food products		
N of channels		
N of events per year	Q3.6 What's the frequency of events (either in person or online) organized for the local community?	
N of people participating per event (average)		
N of events specifically targeting education on food system per year		
N of activities per year		Q3.9 Do you involve people from your communities in any volunteering activities? (yes/no)
N of collaboration with other local CRFSIs and actors		Q3.8 Do you sell or manage products that you buy from other local producers? (yes/no)
N of research activities and projects collaborating with the initiative		
Euros of local products sold (bought from other local producers)	Q4.5 What is the percentage of supplies sourced locally (from suppliers within a distance of maximum 50km from your venue)?	Q3.8 Do you sell or manage products that you buy from other local producers? (yes/no)
N of local employees	Q4.4 On average, where does your waged employees come from?	
N of food labels indicating the origin of products		
N of fair trade certified products		Q4.6 Do you implement any specific fair practice towards suppliers? (yes/no)

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