Food Systems in European Cities

Deliverable D7.20 - FoodE Exploitation Plan

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List of Abbreviations

CRFS	City Region Food System
CRFSI	City Region Food System Initiative
D	Deliverable
EM	Exploitation Manager
ESS	Exploitation Strategy Seminar
FoodE	Food Systems in European Cities
IPR	Intellectual Property Right
LCC	Life Cycle Costing
LCT	Life Cycle Thinking
KER(s)	Key Exploitable Result(s)
HRB	Horizon Results Booster
SAT	Simplified Assessment Tool
S-LCA	Social Life Cycle Assessment
T	Task
TRL	Technology Readiness Level
WP	Work Package

Executive Summary

The current deliverable describes the developments and outputs of the FoodE (Food Systems in European Cities) European research project about the activities carried out in subtask 7.3.1 (Exploitation plan – T7.3.1).

FoodE, funded by the Horizon 2020, was launched in 2020 and will last for 4 years, until the 31st of January 2024. The consortium involves 24 organizations 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 the local level.

In FoodE, special attention has been given to all aspects related to Exploitation, Innovation Management, and Dissemination since the project started, to ensure the impact of project results. For this purpose, FoodE has a WP dedicated to the "Dissemination and Exploitation" (WP7) and a specific Task - 7.3 – Exploitation Strategy that contains two different subtasks – 7.3.1 – Exploitation Plan, and 7.3.2 – Stakeholder network and EU project clustering. FoodE sustainability beyond the project end has been guaranteed through continued management of the community and the network built during the four years of activity as well as through the exploitation activities carried out through the engagement of the interested partners in the last year.

The objective of Deliverable 7.20 is to report the implementation of an exploitation plan including database information, toolkits, and expected future needs of the different stakeholder groups involved in the findings of the research project. Moreover, the exploitation plan aims to identify the main exploitation roadmaps for the Key Exploitable Results identified within the FoodE project to ensure their sustainability after the end of the project. At this stage, four results were selected for their high potential for exploitation.

To this scope, the support of the Horizon Results Booster service has been requested to develop strategies, identify and design clear roadmaps, assess the potential risks, and identify desired outcomes. The methodology and tools developed to carry out these activities can be largely applied to other projects and results to reach the same goal. The final objective is to have a real impact on European society that can be conveyed through FoodE project results exploitation.

1. Introduction

The current deliverable describes the developments and outputs of the FoodE (Food Systems in European Cities) European research project concerning the activities carried out in subtask 7.3.1 (Exploitation plan – T7.3.1).

FoodE, funded by the Horizon 2020, was launched in 2020 and will last for 4 years. The consortium involves 24 organizations 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 the local level. Indeed, the objective of FoodE is to accelerate the growth of citizen-led City/Region food systems (CRFS) by bringing local initiatives across Europe together, as well as co-developing and disseminating a range of tools - co-designed with academia, citizens, and food system start-ups - to ensure that the most up-to-date cross-sectorial knowledge is applied. Start-ups will also provide an in-depth understanding of the needs of the key stakeholders, making resilient citizen-driven food systems happen. The key challenge is then to aggregate the most sustainable models of CRFS and enable the co-creation of innovative pilot experiences, fostering the health and wellbeing of European citizens. This challenge will be tackled by setting a co-created mechanism, based on Citizen Science and Responsible Research and Innovation principles, where public authorities, citizens, business actors, and non-profit organizations share ideas, tools, best practices, and new models, supporting cities in becoming innovative food hubs. The outputs of FoodE will impact job creation, promotion of the local economy, strengthening the role of local communities in complying with Sustainable Development Goals, as well as identifying and strengthening relations between the different actors of the food chain.

The way used by FoodE to achieve these goals consists of the following steps:

- Define an operational methodology for the assessment of CRFS;
- Promote cross-pollination between European CRFS;
- Contribute to increase access to affordable, safe and nutritious food;
- Create a tool mobilizing CRFS stakeholders in sustainability assessment;
- Upscale the output to other EU cities.

The goals and methodologies just mentioned and applied in FoodE have led to a wide range of results achieved and collected in the four years of activities of the project. Project results are an essential arriving point for a European project, but from there, another important moment starts to guarantee its real sustainability. This is why in FoodE, special attention was given to all the aspects related to Exploitation since the project has started to successfully encourage the impact of the results on the European community and contribute to the green and sustainable transition of European cities.

Finally, the main purpose of this deliverable, which is the Final Report on the Exploitation Plan of the FoodE project, is to report on the most relevant innovations and Key Exploitable Results (KERs) delivered from the work performed and to set the scene concerning the envisaged IPR (Intellectual Property Right) protection and exploitation strategy. Therefore, the content of the following paragraphs reporting the work carried out in the last months of activities with the support of the Horizon Results Booster service and with the collaboration of the FoodE partners that have contributed to the achievement of relevant conclusions for the entire project.

1.1 Purpose of the Exploitation Plan for FoodE results

Transforming project results into concrete benefits for society, maximizing the scientific, social, economic, technological, and policy value of the project is a must. This transformation passes through the successful implementation of Dissemination and Exploitation (D&E) activities.

In general, successful Dissemination & Exploitation activities can pave the way to various tangible benefits such as providing international and interdisciplinary collaboration opportunities, contributing to societal goals; attracting new talent to join project teams, improving access to other funding prospects, possibly generating new sources of income thanks to the exploitation of the results and, in the case of policy impact, improving current and/or help shaping future legislation.

In this report, the focus will be on the exploitation activities of the results, that have been carried out by the Exploitation Managers (EM), responsible for the exploitation of the project results and the guidance of the project towards its future. The exploitation activities were coordinated by the EM and supported by the Key Exploitable Result coordinators, who are the partners of the consortium that have achieved the results with the highest potential of exploitability.

The Exploitation Manager's duties were the following:

- Preparing the master plan for the Exploitation Strategy;
- Coordinating the implementation of exploitation activities;
- Contributing to proper exploitation of the results by assisting Partners to prepare adequate actions and roadmaps;
- Planning and maximizing the impact of exploitable results;
- Monitoring the delivery and impact of exploitation measures.

Exploitation is more properly defined by the European Commission "Research and Innovation" website as: "*Means to make use of the results produced in an EU project in further activities (other than those covered by the project, e.g. in other research activities; in developing, creating and marketing a product, process or service; in standardization activities).*" Finally, in FoodE, "exploitation" can be understood as the definition, selection, presentation, market analysis and the subsequent support to the market uptake of exploitable results (such as products, services, processes, and Business Models (BMs)) developed during the project.

1.2 Target groups

The target groups identified for the Exploitation activities of FoodE are closely correlated to the audience of the communication and dissemination activities. The activities carried out aim at spreading information on the project's results and innovations targeted towards a professional and technically interested audience. This ranges from FoodE's own Project Partners, policy-making authorities, city development entities, industries, and service providers involved in the food and agricultural sector (including urban agriculture and vertical farming

1.3 Expected impacts

The activities of exploitation are a value-driven process where value can have different meanings:

- Generate revenues if there are customers available to pay for the new technology/product;
- Fulfill an existing gap;
- increase the organization's/community's distinctive skill set and improve processes, quality (of life, of products, of services, etc.), policies, standards, etc.

Exploitation of project results means "derive a benefit from" or "make use of" project results through different methods and strategies (HRB expert material). In Figure 1 the direct and indirect exploitation processes that can be applied for making use of the project results are presented.

Direct

- using them in further research activities
- developing, creating or marketing a product or process;
- creating and providing services;
- using them in standardization activities

Indirect

- transferring of results
- licensing
- spin-offs

Figure 1: List of direct and indirect use of results (Adapted from Horizon Results Booster – Introductory call ppt)

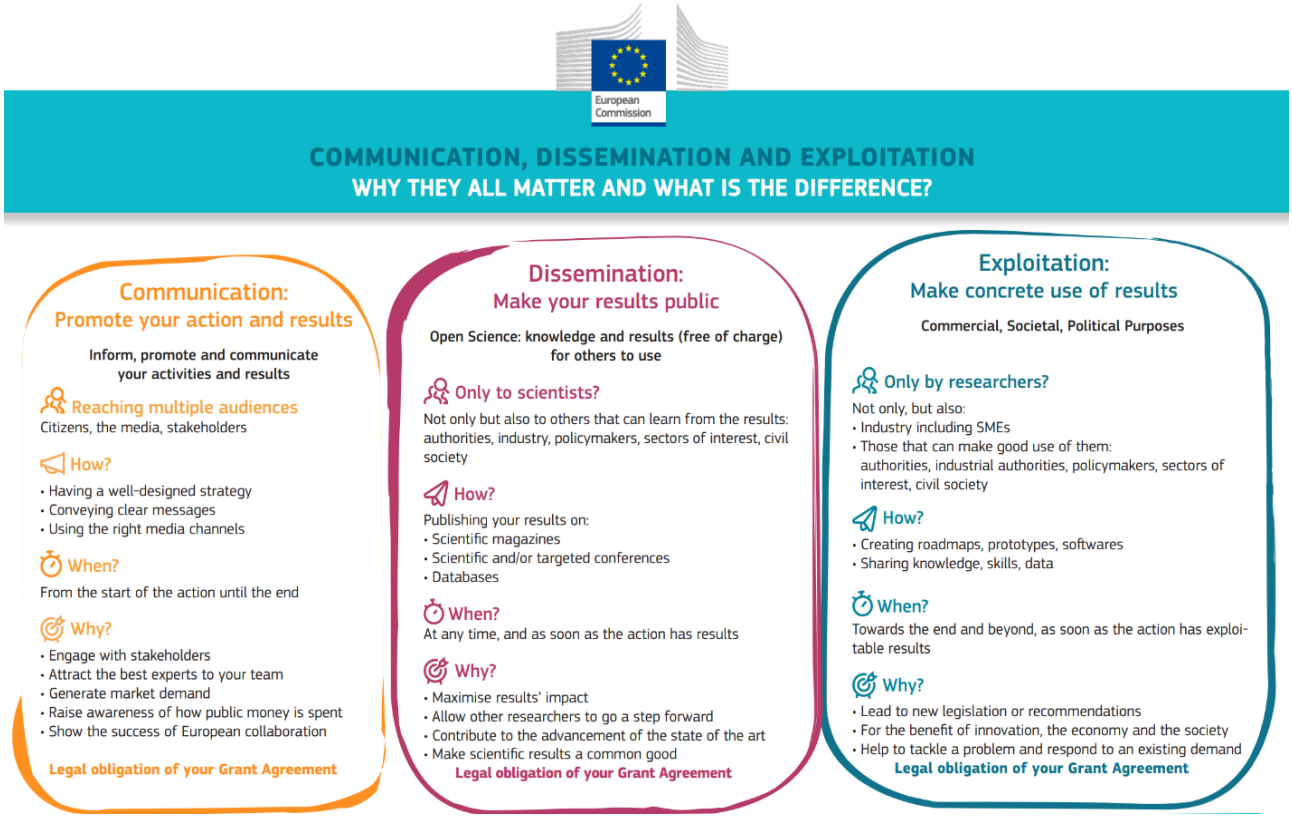

Figure 2: Communication, Dissemination, and Exploitation in a European project (taken from the European Commission website)

Therefore, making use of the project results through one of the just mentioned direct or indirect options means taking the opportunity to make an impact on society through scientific activities. Moreover, communication, dissemination, and exploitation activities are different and have different expected impacts. In Figure 2 their difference and their importance are presented and defined. While communication activities are thought for the promotion of action and results of the project and dissemination activities and to publicly share the results, the exploitation activities are aimed at making concrete use of the results achieved during the project for commercial, societal, and policy purposes. The exploitation must be carried out by researchers as well as industry including SMEs, authorities, industrial authorities, policymakers, sectors of interest, and civil society. Exploitation activities are carried out through the development of roadmaps, prototypes, and software and by

sharing knowledge, skills, and data. Exploitation goes towards the end of the project and beyond, as soon as the action has exploitable results. Exploitation activities might lead to new legislation or recommendations, for the benefit of innovation, the economy, and the society, and to tackle a problem and respond to an existing demand.

1.4 Connections with the Innovation Management Task

The activities implemented within the FoodE Exploitation Strategy well connect with the activities carried out in the past years within the transversal task "T1.4 Innovation Management" which was dedicated to monitoring and controlling the innovation potential generated during the FoodE project. One of the key tools used to identify the innovations emerging in the partnership was the compilation of the Innovation Radar questionnaire. A set of preliminary and complementary activities were also carried out.

Meetings and workshops were conducted at the occasion of Steering Committee or General Assembly meetings to identify the innovation processes emerging during the project. A preliminary information collection instrument was defined by the Innovation Manager in cooperation with the consortium to collect baseline information on FoodE innovation initiatives. After testing it with one of the possible innovations, a consolidated Excel table was the first tool developed to gather the information. All partners were requested to upload and keep updated information in the table, that was uploaded in the project's SharePoint, so all the partners could have access to it.

In addition to this, meetings and workshops were conducted to identify and support the innovation processes developed during the project. Also, bilateral meetings were organized in cooperation with WP4 leaders with single pilots or partners to brainstorm on innovation opportunities to be further developed and in preparation for FoodE exploitation activities. Presentations were carried out by the Innovation Manager on the occasion of GA meetings. Moreover, at the 4th General Assembly in July 2021, an innovation cross-pollination workshop was carried out with seven FoodE pilots who presented their innovations. Besides, an internal consultation meeting on Innovation management was carried out in June 2021 for the identification of the most promising innovations to be monitored in the innovation monitoring tools and for the preparation of the Innovation workshop during the mentioned General Assembly.

The Innovation Radar questionnaire developed by the European Commission has been presented and explained to the partnership to assess innovation developments at different stages of the project. Three rounds of innovation monitoring using the Innovation Radar Questionnaire were carried out in September 2021, October 2022, and April 2023, by sharing the Innovation Radar Questionnaire developed by the European Commission. The tool was explained, circulated to the partnership, and filled in cooperation with the Task leader. A meeting between the Innovation Manager and the Innovation Radar expert from the European Commission in June 2023 allowed for a refinement of the final round of the questionnaire. The aim was to monitor and assess innovation developments at different stages of the project. This task informed the exploitation activities.

The questionnaire included the following information:

- Type of innovation: new concept, knowledge, methods that could be translated into new products/services, standards, etc.
- Ownership: who is responsible for the innovation and which partners are involved;
- Timeframe: indicative timing of innovation development;
- Target: stakeholders and audiences concerned (in line with the dissemination and exploitation strategy);
- Exploitation: valorization routes, including ownership and IPR.

The following eight innovations have been identified through the Innovation Radar questionnaire:

1. FoodE App (UAB - UNIBO)
2. Supply of small-scale fisheries products to school canteens in Tenerife, Canary Islands (ULL)
3. Growing recipes and cultivation protocols for crop production in vertical farming (WUR - UNIBO)
4. Innovative teaching methods in the field of indoor agriculture (WUR - UNIBO)
5. Hive stands for urban beekeeping (BEE)
6. Sustainability Evaluation Tool for Intra Urban Professional Farms (APT)
7. Open-Source Aquaponics Monitoring Software (METAINST)
8. Greywater treatment for reuse as service water and in urban farming (NOL)

1.4.1 The five selected innovations by the Innovation Radar

Among these eight innovations identified through the Innovation Radar Questionnaire, three of them, namely the FoodE App, the growing recipes and cultivation protocols for crop production in vertical farming, and the innovative teaching methods in the field of indoor agriculture (1, 2, 3) were selected by the Innovation Radar for their high potential of exploitability in October 2023, mentioning the partners in charge of the development as "Key Innovators" of the FoodE project. These three innovations have been appointed and selected to be published on the Innovation Radar's public website. Here, the three mentioned innovations are briefly illustrated and presented.

1. Innovative teaching methods in the field of indoor agriculture.

This innovation was developed by ALMA MATER STUDIORUM – UNIVERSITA' DI BOLOGNA (UNIBO) and STICHTING WAGENING RESEARCH (WUR) project partners that therefore were appointed as "Key Innovators" by the Innovation Radar. Vertical farms are not only a space for indoor crop cultivation and research but also a space dedicated to the education of different stakeholders. In particular, more and more students from diverse backgrounds are showing interest in these new technologies. This innovation aims to respond to this growing demand by providing both theoretical and, above all, practical expertise. At AlmaVFarm in Bologna, a FoodE pilot and the first experimental vertical farm in Italy, students from different degree courses are involved in practical activities such as participatory activities and experimental teaching workshops. In this way, students can strengthen their competences (related to plant physiology, data collection, communication, and controlled environment agriculture technologies) and boost their problem-solving skills in this field. At the research facility of "Greenhouse Horticulture" in Bleiswijk (NL), undergraduate and doctoral students are involved in research trials as part of internships or theses. This allows students to work directly in the field and gain practical and theoretical skills. In addition, WUR's greenhouses and vertical farms are used to show the basic processes of growing fruits and vegetables to primary school children. In the latter case, ad hoc languages and dissemination materials are needed.

- This innovation has been assigned to the "**Exploring**" phase of the market maturity and was assessed by the JRC's Market Creation Potential indicator framework as addressing the needs of **existing markets and existing customers**.
- The "Go the market needs" that if addressed, can increase the chances this innovation gets to (or closer to) the market. It includes scale-up market opportunities.
- This innovation contributes to the following SDG(s): **SDG 4** (Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all), **SDG 11** (Make cities and human settlements inclusive, safe, resilient and sustainable**), SDG 12** (Ensure sustainable consumption and production patterns).

2. FoodE App: a multi-environment platform to connect City/Region Food Systems and stakeholders.

This innovation was developed by ALMA MATER STUDIORUM – UNIVERSITA' DI BOLOGNA (UNIBO) and UNIVERSITAT AUTONOMA DE BARCELONA project partners who were appointed as "Key Innovators". For the description of this innovation, more information can be found in the following chapter since this result was also chosen as a KER for HRB support service by the consortium.

- This innovation has been assigned to the "**Business Ready**" phase of the market maturity, which means that is putting concrete market-oriented ideas together and is, for example, pursuing market studies, business plans, and engagements with relevant partners and end-users.
- This innovation was assessed by the JRC's Market Creation Potential indicator framework as having a **"High" level of Market Creation Potential**. Only innovations that show multiple signals of market creation potential are assigned a value under this indicator system. The "Go the market needs" that if addressed, can increase the chances this innovation gets to (or closer to) the market. It includes: preparing for market entry; and scaling up market opportunities.
- This innovation contributes to the following SDG(s): **SDG 3** (Ensure healthy lives and promote well-being for all at all ages), **SDG 11** (Make cities and human settlements inclusive, safe, resilient and sustainable), **SDG 12** (Ensure sustainable consumption and production patterns), **SDG 13** (Take urgent action to combat climate change and its impacts).

3. Growing recipes and cultivation protocols for crop production in vertical farming.

This innovation was developed by FLYTECH (FLY)**,** ALMA MATER STUDIORUM – UNIVERSITA' DI BOLOGNA (UNIBO), and STICHTING WAGENING RESEARCH (WUR) project partners were appointed as "Key Innovators" for the selected innovation by the Innovation Radar. Cultivation protocols are the result of research work carried out by the Universities in collaboration with private companies. Both organizations have experience in this area, therefore the collaboration and research are providing optimized protocols from the point of view of energy consumption (which to date represents the main bottleneck for large-scale implementation of vertical farming systems), resource use efficiency, and product quality, for several crops. The innovative technologies and cultivation strategies are also tested from the point of view of environmental impact to make cultivation protocols as sustainable as possible

- This innovation has been assigned to the "**Tech Ready**" phase of the market maturity, which means that is progressing in the technology development process (e.g. pilots, prototypes, demonstration).
- This innovation was assessed by the JRC's Market Creation Potential indicator framework as having a "**Noteworthy" level of Market Creation Potential**". Only innovations that are showing multiple signals of market creation potential are assigned a value under this indicator system. The "Go the market needs" that if addressed, can increase the chances this innovation gets to (or closer to) the market. It includes scale-up market opportunities.
- This innovation contributes to the following SDG(s): **SDG 11** (Make cities and human settlements inclusive, safe, resilient, and sustainable), **SDG 12** (Ensure sustainable consumption and production patterns), **SDG 13** (Take urgent action to combat climate change and its impact

Given its high potential technology and go-to-market readiness levels, a possible exploitation path might be linked to an Intellectual Property (IP) protection process, in terms of developing a patent. The IP protection for this cultivation protocol requires both FLYTECH and the University of Bologna, as the key innovators, to agree to invest in all the necessary phases for the patent registration, which

require specific standards and conditions. The first step consists of **a prior art analysis**, which is necessary for verifying and confirming the following criteria to be met: the innovation needs to be new, original, and innovative and must have an industrial use. If these conditions are met, the second step would consist of a **patent study**, for which external competent authorities' consultations are needed. The output of this phase consists of a first proposal evaluation analysis which provides feedback on the eventual successful acceptance of the patent proposal. If these steps are accomplished, inventors have different costs to bear related to the registration and maintenance of the patent: in particular, inventors will be asked to cover the costs of the consultancy by the authorities and the annual costs to keep the patent registered. To conclude, a final point of attention concerns the contractual level: when inventors are more than one, they will be asked to stipulate an agreement (e.g., joint ownership agreement) to regulate IP management, exploitation, and eventual commercialization.

4. Supply of small-scale fisheries products to school canteens in Tenerife, Canary Islands.

This innovation was developed by ORGANIZACION DE PRODUCTORES DE TUNIDOS Y PESCA FRESCA DE LA ISTA DE TENERIFE and UNIVERSIDAD DE LA LAGUNA. These Project partners were appointed as "Key Innovators" for the selected innovation by the Innovation Radar. Despite being on an island, most schools in Tenerife consume frozen fish from anywhere in the world. A pilot project to change the situation began to be implemented in 2018 with the support of a Fisher Producer Organization (Islatuna, with over 70 boats) and other stakeholders coordinated by the University of La Laguna under the project Macarofood. It involved school managers and cooks, fishers, researchers, and institutions, trying to define together new ways to process and distribute the fish. Prestigious chefs developed recipes with local fish and trained the cooks, and ten schools (2000 pupils) began to receive fish, processed to facilitate consumption (skipjack tuna and other fishes, refrigerated/speed-frozen) at lower prices than the imports.

- This innovation has been assigned to the "**Tech Ready**" phase of the market maturity, which means that is progressing in the technology development process (e.g. pilots, prototypes, demonstration).
- This innovation was assessed by the JRC's Market Creation Potential indicator framework as having a "**High" level of Market Creation Potential**". Only innovations that are showing multiple signals of market creation potential are assigned a value under this indicator system. The "Go the market needs" that if addressed, can increase the chances this innovation gets to (or closer to) the market. It includes: preparing for market entry; and scaling up market opportunities.
- This innovation contributes to the following SDG(s): **SDG 11** (Make cities and human settlements inclusive, safe, resilient, and sustainable), and **SDG 12** (Ensure sustainable consumption and production patterns).

5. Sustainability Evaluation Tool for Intra Urban Professional Farms (APT)

This innovation was developed by INSTITUT NATIONAL DES SCIENCES ED INDUSTRIES DU VIVANT ST DE ENVIRONMENT – AGROPARISTECH. These Project partners were appointed as "Key Innovators" for the selected innovation by the Innovation Radar.

- This innovation has been assigned to the "**Exploring**" phase of the market maturity. These are innovations that are actively exploring value-creation opportunities.
- This innovation was assessed by the JRC's Market Creation Potential indicator framework as addressing the needs of **existing markets and existing customers**.
- This innovation contributes to the following SDG(s): **SDG 11** (Make cities and human settlements inclusive, safe, resilient, and sustainable), **SDG 12** (Ensure sustainable consumption and production patterns), and **SDG 13** (Take urgent action to combat climate change and its impact.

2. Description of the activities

In this section, the activities implemented for the Exploitation Plan development will be described to present the different steps carried out in the 12 months of subtask 7.3.1 concerning the work with the Horizon Results Booster carried out from April to July 2023. This service aims to strengthen partners' capacity to effectively exploit their research results. Since the core of the work done was with the HRB support, this section presents mainly the activities carried out within this framework.

2.1 Horizon Results Booster service

FoodE requested support from Horizon Result Booster for the Exploitation Strategy service (MODULE C) which aims at supporting single projects in exploiting their research results and enhancing beneficiaries' capacity to improve their exploitation strategy. The Horizon Results Booster is an initiative of the European Commission that aims to bring a continual stream of innovation to the market and maximize the impact of publicly funded research within the EU. It steers research toward strong societal impact, concretizing the value of R&I activity for societal challenges (https://www.horizonresultsbooster.eu/).

The objective of Module C – Assisting projects to improve their existing exploitation strategy – is to provide guidance and training to improve the existing project strategies of projects towards effective exploitation of the results. Project activities and the research work done or to be done are considered in terms of Key Exploitable Results (KERs). The results selected for the discussion during the service are analyzed from a viewpoint that is exploitation only and considering how they will be used to generate, after the end of the project, a real impact. This is the market/customer demand or societal needs/user point of view. The service and the virtual Exploitation Strategy Seminar (ESS) provided the participants with the opportunity to work on:

1. the identification/grouping of key exploitable results;
2. the first definition of the related use;
3. the identification and mapping of risks related to the exploitation;
4. follow-up actions.

In Table 1 all the activities implemented are summarized. The submission of the application was sent directly on 05/04/2023 from the Horizon Results Booster platform by the EM. The expert was appointed on 13/04/2023. The Project Coordinator was contacted on 14/04/2023. The coordinator informed the Expert that the Exploitation Strategy Seminar (ESS) would take place online. On 03/05/2023 a conference call with the Project Coordinator was organized to discuss expectations, get a first insight on the state of the art, present the service, and introduce preparatory activities, it was agreed to have a two-half-day ESS. On the same day, the Expert sent to the Project Coordinator all the info and the Exploitation Summary Table on the HRB platform to be shared with the Project Partners and filled. A Preliminary Report was sent out on 23/06/2023 with the Expert strongly suggesting sharing the document with all the Partners before the ESS to have a common starting point at the ESS. 3 partners out of 26 attended the ESS. The agenda presented in this report is the one run on those months. The ESS for FoodE was conducted remotely, and online.

Table 1: List of activities carried out within the Horizon Results Booster

List of the activities	Date
Submission of the application	05/04/2023
Expert appointed	13/04/2023
Contact of the Project Coordinator	14/04/2023

Conference call with Project Coordinator	03/05/2023
Introductory call	03/05/2023
Selection of the 3 KERs	29/05/2023
Customization ESS Agenda	05/06/2023
Data collection for ESS	19/06/2023
ESS preliminary report shared with project	26/06/2023
ESS Delivery Day 1	05/07/2023
ESS Delivery Day 2	06/07/2023
ESS final report due	**24/07/2023**

The main event among all the different appointments has been the Exploitation Strategy Seminar on 06/07/2023. The agenda of the meeting is to work collaboratively with the partners involved and discuss the work done until that moment. The participants that took part in the event are presented in Table 2.

Table 2: Name of partners and of people that contributed

No. Partner	Organization	Name and Surname
1	ALMA MATER STUDIORUM – UNIVERISTA' DI BOLOGNA	Valeria Musso (EM)
2	NOLDE - INNOVATIVE WASSERKONZEPTE GMBH	Nicolas Dehmel Erwin Nolde
3	UNIVERSITAT AUTONOMA DE BARCELONA	Xavier Gabarrel Durany
		Anna Petit Boix
		Pietro Tonini

2.2 Key exploitable results

As mentioned in the Final Report delivered by the expert to the EM after the duration of the support service, a result is defined as: "*Any tangible or intangible output of the action, such as data, knowledge, and information whatever their form or nature, whether or not they can be protected, which are generated in the action as well as any attached rights, including intellectual property rights*".

A Key Exploitable Result (KER) is an identified main interesting result (as defined above) that has been selected and prioritized due to its high potential to be "exploited" – meaning to make use and derive benefits - downstream the value chain of a product, process or solution, or act as an important input to policy, further research or education. The following criteria were used to select the KERs as suggested by the expert:

- degree of innovation
- exploitability
- impact.

The selection process of the KER has been done through the following steps:

1. Proposal of three selected KERs by the EM and Coordination group of the UNIBO team;
2. The selected KERs have circulated among the Consortium partners: all partners of the consortium were able to propose their innovation/result to be one of the KERs to benefit from the HRB support service;
3. In total, five results were interested in taking part in the activities with the HRB;
4. Three out of four proposed KERs were finally selected by the EM and Coordinators to undertake the HRB service.

In Figure 2 the four final KER selected are presented: three of them were involved in the HRB service activities, while the last one (the simplified assessment tool) was not included in the HRB, but was selected as one of the main results. The first three results were chosen by the consultation of the EM and the Coordinators and have undergone the pathway with the HRB service. However, a fourth result (Simplified Assessment Tool, sustainability scoring tool developed by the University of Bologna in WP2) has been considered relevant within the FoodE project and an exploitation plan has been developed also for this result, even if without the consultancy of the expert from the HRB.

The four final KERs are reported in Figure 2.

Final selected KERs	KER 1 - FoodE Label (HRB)
	KER 2 - Greywater treatment plant (HRB)
	KER 3 - FoodE App (HRB)
	KER 4 - Simplified Assessment Tool

Figure 3: Final selected KERs of the project

At the beginning of the activities, the Intentions Table was completed by the partners to collect the interest in participating as a KER to the support service of the HRB. In Table 3 the Intentions Table is reported. Here, the description of the KERs is also included.

Table 3: Exploitation Intension table (Adaptation from the Final Report)

Partners	**KER**	**Brief description of the KER**	**Your interest** (exploitation intention of this KER, intended market/customers)	**Your organization's contribution to the generation of this KER**	**Role of each organization** according to **the Grant and Consortium Agreement**
UAB, SWUAS, APT, UNIBO	FoodE Label	FoodE Label is a certification that promotes local and sustainable initiatives within the City Region Food System	Private (Retailer/Foodservice) and Public (Municipality)sector	Developer	WP leaders and contributors

		(CRFS). The FoodE Label is built through a co-creation process that has included owners/members of CRFS businesses, users of CRFSs, experts from higher education institutions (HEIs), public authorities (PAs), and non-governmental organizations (NGOs). The indicators and thresholds of the FoodE Label are defined based on state-of-the-art knowledge and the results of the FoodE project.			
NOL	> 50% Water saving through recycling and digitalization	As a contribution to climate adaptation using new treatment technology and digitalisation 4.0 (control, online supervision, and monitoring via the internet), more than 10,000 litres of high-quality process water can be produced daily from highly contaminated grey water, which is used to irrigate the greenhouse, to improve the microclimate of the surrounding green spaces and to flush the toilets of the surrounding buildings.	Housing associations, hotels, sports facilities, urban farming projects ...	Developer and Owner	SME

UAB, UNIBO	FoodE App	The FoodE app is a tool created to mobilize and connect users and stakeholders to promote the sustainability of Community-Based Food Systems (CRFS) across Europe	Municipalities, consumers, farmers, SMEs	Developer and Owner	WP leaders and contributors
UNIBO,	Simplified Assessment Tool	A digital tool consisting of a simplified assessment method built to provide a final sustainability score for each CRFS initiative, aiming for a more synthetic and rapid appraisal of generic hotspots of impact.	Digital software implementation	Developer	WP leaders and contributors

2.3 Description of the implemented tools

The expert from the HRB asked the beneficiary partners to fill in four tools to collect the necessary data to produce the final report where comments, suggestions, advice, and consultancy could be done. In this section, all the tools are presented and described (Figure 4).

Figure 4: Presentation of the implemented tools

2.3.1 The characterisation table

The first tool to be completed by the beneficiary partners of the KERs is the Characterisation table. It is designed to start the collection of information that will be then reviewed and further integrated during the project life. Partners in charge of the Key Exploitable Result (KER) filled in the content and discussed it with the ones involved in the finalisation of the KER. In Table 4 the Characterisation Table is presented.

Table 4: Characterisation table (Courtesy of HRB)

KER name	**Input from the Beneficiary**
Problem	*Describe the problem you are addressing (the problem your potential users have).* *Potential users are the people, companies, organisations, etc. that you expect will use the result (and generate an impact). They are your "Customers".*
Alternative solution	*Describe how your "customer" has solved the problem so far.*
Unique Selling Point USP - Unique Value Proposition UVP	*Describe the competitive advantages and the innovative aspects. What does your solution do better, what are the benefits considering what your user/customer wants, how does your solution solve his/her problem better than alternative solutions, and what distinguishes the KER from the competition / current solutions?*
Description	*Describe in a few lines your result and/or solution (i.e., product, service, process, standard, course, policy recommendation, publication, etc.). Use simple wording, avoid acronyms, and make sure you explain how your UVP is delivered.*
"Market" – *Target market*	*Describe the market in which your product/service will be used/can "compete by", answering the following questions:* *- What is the target market?* *- Who are the customer segments?*
"Market" – *Early Adopters*	*Early adopters are the "customers" you are willing to address first. They are usually the ones who feel the problem harder than all the others (they are not the project partners).*
"Market" - Competitors	*Who are your "competitors" (note: they are the ones offering "alternative solutions")?* *What are their strengths and weaknesses compared to you?*

2.3.2 Exploitation roadmap

The Exploitation Roadmap is a tool designed to help the consortium identify and plan activities to be performed after the end of the project. The highest risk a consortium faces is not being able to

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implement the exploitation and dissemination plan and increase the Technology Readiness Level (TRL) level or go to market, due to a lack of resources. The exploitation roadmap is designed to address this risk, mitigate it, and pave the way toward use and a stronger impact (Table 5).

Exploitation roadmap	
Actions	*Briefly describe actions planned to be executed 3-6 months after the end of the project.* *Make sure you do not just focus on technical activities (realisation of a prototype, software interface, etc) but also consider the finalisation of a business plan, the protection of intellectual property, the collection of authorisations, all that will be needed to start implementing what is in your exploitation plan*
Roles	*Roles of partners involved in the actions defined above.*
Milestones	*List the milestones and KPIs to be used for monitoring the implementation of the actions listed above. Add timeline.*
Financials **Costs**	*Cost estimation to implement planned activities (1 year, 3 years).* *Provide information on the costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, in the realisation of a prototype, etc.).*
Revenues	*Projected revenues and eventual profits once the KER will be used (1 and 3 years after use)* *Consider revenues you will expect to collect by licensing, or thanks to service provision or sale of devices. They generate the cash flow that will make the use of the result sustainable over time (provide an estimation concerning the first year and what is expected after 3 years, if possible). It is recommended that you estimate the revenues according to your early adopters and potential customers and include the information in the draft exploitation plan.*
Other sources of coverage	*Resources are needed to bridge the investment needed to increase TRL and ensure the result is used.* *Financial resources to cover costs incurred before collecting the first revenues (during the "time to market" – see costs) and their sources. Sources can be partners` budgets, other project grants, national/regional incentives, risk capital, loans, etc. Make sure to obtain them at the right time.*
Impact in 3-year time	*Describe the impact in terms of growth/benefits for the society* *Impact is the objective of H2020. Impact should mobilize measurable changes in terms of growth/benefits for the society (i.e. jobs created, investments mobilized, turnover generated).*

Table 5: Exploitation roadmap (Courtesy of HRB)

2.3.3 Use options

This step aims at the identification of the KER's exploitation route, which is essential information that needs to be decided at the beginning of the process. This is a relevant decision given that it clearly states how the KER will be further exploited. When the Exploitation route is decided, then also the exploitation roadmap can be designed. In Table 5 all the different routes are reported and described. Based on the specific KER and the partner's intentions and interests, the selected route might be different (Table 6).

Table 6: Use options (Courtesy of HRB)

1. **KER's Exploitation route (how the KER will be further exploited) Note: only one option is to be selected**			
Selected route		**Implementing actor**	**Yes**
DIRECT USE	Commercialisation: *deployment of a novel product/service (offered to the target markets)*	One partner[1]	
		A group of partners[2]	
	Contract research (*new contracts signed by the research group with external clients*)	A partner	
		A group of partners	
	A new research project (*application to publicly funded research programs*)	A partner	
		A group of partners	
	Implementation of a new university – course (*Note that a training course is a service*)	A partner	
		A group of partners	
		A new partnership	
INDIRECT USE	Assignment of the IPR	A partner	
		A group of partners	
	Licensing of the IPR	A partner	
		A group of partners	
	Development of a new legislation/standard	A partner	
		A group of partners	
	Spin- off	A partner	
		A group of partners	
		By assignment	
		By licensing	
	Other (*please describe*)		

2.3.4 Risk Assessment and Priority Map

The Risk Matrix helps the partnership identify for each KER, the type of risk, its level of importance related to the use of the concerned KER, the probability for such a risk to happen, remedy actions, and their probability to succeed. The Risk Matrix analyses six different categories of risks:

- **Partnership Risks:** internal risk factors related to the composition of the partnership or specific behaviors of the partners, conflict of interests, etc.
- **Technological Risks**: external factors related to the feasibility of the technology, its level of development, the presence of other emerging technologies, etc.
- **Market Risks**: external risk factors related to fulfillment of marked needs, presence of competitors or alternative products, etc.
- **IPR Risks**: factors related to the presence of similar previous patents, the possibility to protect the developed technology/product, patent counterfeit, etc.
- **Environmental risk factors**: are external factors related to the presence or changing in legislations, standards, etc. Special attention will be given to the regulatory environment and standardisation issues.
- **Financial risk factors**: factors related to financial availability.

The risk grade coupled with the probability of success will position the risk in the Priority Map; the four scenarios are presented below:

- A high-risk grade and a low probability of success of the intervention identify a situation where we may consider discussing stopping the project (Warning).
- A high-risk grade with a high probability of success for the remedy action defines a situation where there is the need for immediate action to ensure exploitation (action).
- A low-risk grade coupled with a high probability of success of the planned remedy defines a situation where it would be preferable to keep an eye on what is happening (Control) to be ready to act.
- A low-risk grade and a low probability of success for the remedy is a situation that does not call for immediate action (no action).

The Priority Map provides a snapshot of the main risks identified by the partners. It is based on risks selected in the Risk Matrix assessment tool (Risk Matrix) and the proposed remedy actions. It is automatically generated from the different risk grades (from 1 to 10) and the estimated Feasibility/Success of Interventions 1 to 10. Consequently, the different risks can be labeled as “Control”, “Action”, “No Action”, or “Warning” based on the fact that, respectively, the risk need control, needs action, doesn’t need action, or requires attention because of the high rate of warning.

3. Exploitation plan implementation

In this chapter, the tools completed by the beneficiary partners and previously shown are presented. This step was implemented in May, June, and July 2023 thanks to the collaboration of the PM, the beneficiary partners, and the expert. The objective of this step of the exploitation strategy has been to trace a path, through a step-by-step analysis, which in the end can be collected in a final and comprehensive exploitation roadmap where the main information on the actions and milestones needed to successfully exploit the results are identified. This process helped the beneficiaries collect ideas, clarify the main purpose of their KER, and build a real pathway towards the period after the end of the FoodE project based on the information achieved from the activities carried out during the work on their tasks within the WPs. The information as well as the comments by the expert in the tables have been adapted from the Final Report delivered by the HRB expert.

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A summary of the Exploitation routes selected by the KERs Coordinators is reported in Table 7.

Table 7: Direct use of the selected KERs (Adapted from the Final Report of the HRB)

Selected route		Implementing actor	KER 1	KER 2	KER 3	KER 4
DIRECT USE	Commercialisation: *deployment of a novel product/service (offered to the target markets)*	One partner				
		A group of partners				
	Contract research (*new contracts signed by the research group with external clients*)	A partner				
		A group of partners				
	A new research project (*application to publicly funded research programmes*)	A partner				
		A group of partners				
	Implementation of a new university – course (*Note that a training course is a service*)	A partner				
		A group of partners				
		A new partnership				
INDIRECT USE	Assignment of the IPR	A partner				
		A group of partners				
	Licensing of the IPR	A partner				
		A group of partners				
	Development of a new legislation/standard	A partner				
		A group of partners				
	Spin- off	A partner				
		A group of partners				
		By assignment				
		By licensing				
	Other (*please describe*)					

3.1 FoodE Label

The beneficiary partner that worked on the exploitation plan of the FoodE Label is UAB and the FoodE Label has been implemented within WP5. During the activities mentioned in this report, the task designed for the implementation of the FoodE Label was not yet concluded (to be concluded in M48). Therefore, the exploitation activities have helped the beneficiaries to reason about their intentions directly looking at the possible exploitation solutions and visions. The FoodE Label is a certification driven by citizens, which evaluates the sustainability of initiatives based on economic, social, and environmental factors.

3.1.1 Characterisation of the result

Table 8: Characterisation of KER1

KER name	Input from the Beneficiary	Output and comments/suggestions for improvement by the Expert
Problem	In recent years, there has been a significant increase in the number of food labeling elements available in the market. This situation and the growing variety of food products have exposed consumers to more information about their purchases. Nevertheless, the difficulty of identifying and comprehending sustainable food labeling information has been acknowledged by several studies as a critical barrier to sustainable consumption. Misusing information and consumer distrust can negatively impact the food chain, discouraging sustainable production practices and impeding necessary transformations toward sustainability in food systems. Addressing these challenges is essential to ensure genuine consumer empowerment in making informed purchasing decisions. This commitment requires interventions or controls to guide the application of sustainable food information, benefiting all stakeholders involved.	Difficulties in promoting the commercialization of local (regional) products and preserving collective gastronomic heritage as well as certifying the sustainability of products, value chains, and services. *Identifying the key problem is crucial to ensure the impact of the result. Problems addressed are at the basis of the characterization of the solution and identification of customers. Being able to solve problems the "customers" face is key to ensuring the result is used and that the envisaged impact is achieved. For the future consider the possibility to update and validate the problems.*

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Alternative solution	Private certification entities, such as the International Organization for Standardization, and the European Union, provide several certifications. The European certification aims to promote the unique characteristics of one product linked to its geographical origin and traditional know-how. The strength of the European certification is related to the fact that it is well-known by the consumer and clearly defines the concept of a typical local product. On the other hand, private certifications are more directed toward evaluating environmental, social, and economic aspects generated by a company. In some cases, certification serves to prepare the company to achieve a criterion that will become mandatory in the future, while in others it demonstrates the pioneering aspect of a company.	Through certification schemes that report quality standards. *Alternative solutions are important to benchmark the novel solution and to get an insight into the competition. Collecting information on the weaknesses and strengths of the alternative solutions helps to compare and quantify the added value of the proposed solution and investigate who is providing them and under which conditions.*
Unique Selling Point USP - Unique Value Proposition UVP	The FoodE Label is a certification driven by citizens, which evaluates the sustainability of initiatives based on economic, social, and environmental factors. This inclusive approach effectively mitigated conflicts of interest and facilitated the advancement of European, national, and regional sustainability objectives. The certification encompasses various value chain stages, from production to consumption. By focusing on regional contexts, the label aims to enhance consumer awareness of the tangible impacts of purchasing certified products.	The FoodE Label Certifies City Region Food System initiatives based on sustainability scoring from environmental, social, and economic perspectives. *The UVP is crucial to ensure the use and approach of the early adopters. Your strength points highlight your uniqueness compared to the alternative solutions. The UVP is the reason why your solution will be adopted. Please further validate the UVP by stressing your element of uniqueness and highlighting the quality of the solution. Please consider linking the mentioned features to the identified problem.*
Description	The FoodE label offers a certification basis to strengthen the promotion of local and sustainable regional initiatives and value chains. The inclusion criteria of the FoodE Label can be modified according to the region's needs, making them more exclusionary and restrictive. Every year a report	*Make sure it is clear and easy to be understood by a third party. Make sure it helps to visualise your KER.*

	will be produced to quantify the impact generated by the FoodE label in individual territories to make the positive impact tangible at the consumer level	
"Market" – *Target market*	Initiatives in horticulture market their products within a limited geographical area (i.e. region) and non-profit initiatives that support creating a local and sustainable food system (i.e. NGO). The target market would be the initiatives localized in a metropolitan area (i.e., a City with more than 1 M inhabitants). In these municipalities are expected higher interests due to the highest presence of consumers sensitive to socio-economic and environmental concepts. In particular, the northern European consumer seems more interested in sustainable food than other consumers in the southern part. Indeed, the consumer in the southern part seems more interested in traditional food products linked to food cultural heritage than sustainable concepts.	Municipalities and local governmental entities and organizations interested in certifying the sustainability of city region food systems initiatives. *To finalise the exploitation plan and prepare the use of the KER, is needed a clear identification of the target market, with its segmentation. It should include both a qualitative and quantitative description in terms of size and features.*
"Market" – *Early Adopters*	Urban agriculture and peri-urban agriculture initiatives that commercialize their product within a limited geographical area. Initiatives in metropolitan areas that signed any bold commitment related to the promotion of sustainable food systems such as C40 cities, Milan Policy Pact, and Cities for Agroecology Network. Initiatives that use technological solutions and innovations to decrease their environmental impact (i.e., hydroponic production) as well as increase their socio-economic impact (i.e., fair pay, inclusion of people at risk of inclusion	*Early adopters are the ones who feel the identified problems the most. Make sure the identification is aligned with the problem/customer fit. Consider integrating information on early adopters with their size, where they are located, etc. To develop the exploitation model, it is important to look at early adopters and how to go from early adopters to the "early majority". Note that innovators are the ones that "use" the "alpha" version (2,5%, often partners in the R&D project); early adopters are the customers ready to "use" the "beta" version (13,5%). New initiatives fail because they are not able to reach early adopters. You should be as precise as you can. Being the early adopters, the first ones you would like to reach out*

		to with your innovative solution, it will be important to be able to connect with them. Make sure your early adopters are consistent with the target market (customers).
"Market" - Competitors	**European Certification** Quality schemes of the European Union are linked to their geographical origin and traditional know-how. (DOP, IGP, IG, TSG Product of the mountain). As well as the quality scheme related to organic production (Organic Label) at the European and country level. Weakness: Doesn't take into consideration the entire value chain. This certification embraces just one of the sustainability pillars, and most of the time the environmental one. **Private certification** Private certification: entities certify the economic, social, and environmental aspects of a specific enterprise. The most important entity is the International Organization for Standardization. Weakness: Doesn't take into consideration the entire value chain. This certification embraces just one of the sustainability pillars, and most of the time the environmental one. The consumers' criticism of these certifications is related to the perceived lack of tangible results and greenwashing practices. Finally, certifications with similar or stricter criteria than the FoodE Label in Europe are considered potential allies.	Other labels at the European level that certify products and services along the supply chain (e.g. DOP, IGP, IG, TSG Product of Mountain). *Competitors are connected to the use model. Weaknesses and strengths of the competitors might be presented to stress the uniqueness of your solution. Take also into consideration that a collaboration with the competitors might be useful.*

Go to Market – Use model	Selling the certification scheme. The certification scheme is composed of three steps: 1 consultancy to gather the data 2. Assessment 3. Inclusion in the list of firms certified.	Selling of a certification scheme composed of 3 steps. *The use model should be consistent with the target market and customers' needs.*
Go to Market - Timing	2-3 years This time is required to make partnerships with other certification schemes and obtain approval as a certification	*During the development of the project keep a continuous attention to the market timing to be ready to adapt the exploitation and dissemination actions. Please consider that the estimated time to market might affect the plan needed to ensure proper resources for further developments.*
Go to Market – IPR Background	Expert in sustainability assessment and Life Cycle Thinking approach in Urban agriculture. In addition to this, the partners have significant experience in citizen science and co-design processes.	
Go to Market – IPR Foreground	Provide information considering also what was already agreed on in the Consortium Agreement. Increase expertise in sustainability assessment in economic and social aspects within a Life Cycle Thinking approach. Indeed, the sustainability assessment in these two areas is still not as homogeneous as the environmental aspect.	

3.1.2 Exploitation Roadmap

ACTIONS

- 3 months
  - Integration of the FoodE Label in the FoodE App
  - Finalization of the ownership agreement
  - Identification of the market segments
  - Definition of the financial strategy
- 6 months
  - First draft of the certification scheme
  - Engage possible external collaborators

ROLES

- ICTA-UAB - Environmental sustainability
- SWUAS - Economic sustainability
- APT - Social sustainability
- UNIBO - Project management

MILESTONES

- 0-3 Months [Partner agreement and Financial plan]
- 3-6 Months [Presentation of the certification]
  - Draft presentation in English to the European Union
  - Engage possible external collaborators

FINANCIAL COST

- Human resources
- 2 Pre-Doc (half day) 6 months [2.000 Euro]
- 1 Post-Doc(¼ day) 3 Months [3.000 Euro]
- 1 PI (1/12) 1 month/person [5.000 Euro)
  - Consultancy - 20.000 Euro
  - Travel costs - 5.000 Euro

REVENUES

- Revenues will be calculated based on the number of initiatives and municipalities that will be certified.
  - Number of initiatives (x150)
  - Municipalities (x2)
- Cost for each certification: 2.500 Euro.
- Total revenue: 375.000 Euro

OTHER SOURCE OF COVERAGE

- European funds and internal funds from the partner 100.000 Euro.
- Money supporting the project until will turn profitable.

IMPACT IN THREE-YEARS TIME

- Job creation (x5 consultant)
- Creation of new city region food system initiatives
- Increase the trust on the certification
- Create a consortium of municipalities aimed to promote sustainable food systems
- Inspire new policy at European level

Figure 5: Exploitation roadmap of the KER1 (See Annex)

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3.1.3 Risk assessment and priority map

Table 9: Risk assessment of KER1

	Description of Risks	Risk Grade	Potential intervention	Estimated Feasibility/Success of Intervention Please rate from 1 to 10 (1 low- 10 high)	Conclusion
	Partnership Risk Factors				
1	Some partners may leave	**10**	Involve other partners	*3*	**No Action**
2	Disagreement on ownership rules	**8**	Signing contracts with roles and ownership division	*8*	**Control**
	Environmental/Regulation/Safety risks:				
6	Earlier patent exists	**24**			**No Action**
7	Better methodology exists	**56**	Ask for scientific/entrepreneurial consultancy	*5*	**Between Action & Warning**
8	Result aiming at replacing existing solutions	**40**	Find and invest in innovative solutions	*4*	**No Action**
	Market Risk Factors				
11	Performance lower than market needs	**63**	Find niche markets	*5*	**Between Action & Warning**
12	Partners with divergent interests	**15**	Act to find a common agreement	*7*	**Control**

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13	Too expensive	**42**	Ask for funds from the public	*3*	**No Action**
14	Nobody needs it	**63**			**Warning**
	IPR/Legal Risk Factors				
16	the patent application is rejected	**21**	Work on critical aspects of the innovation	*6*	**Control**
	Financial/Management Risk Factors				
21	Lack of endorsement from top management	**14**	Signing of contracts	*8*	**Control**
22	Inadequate business plan	**20**	Taking time and effort to implement an adequate business plan	*6*	**Control**
23	No resources to ensure the next step toward exploitation	**48**	Involve the consortium of the project and ask for funds	*3*	**No Action**
	Environmental/Regulation/Safety risks:				
26	Influence of laws and regulations	**0**			**Not Filled**

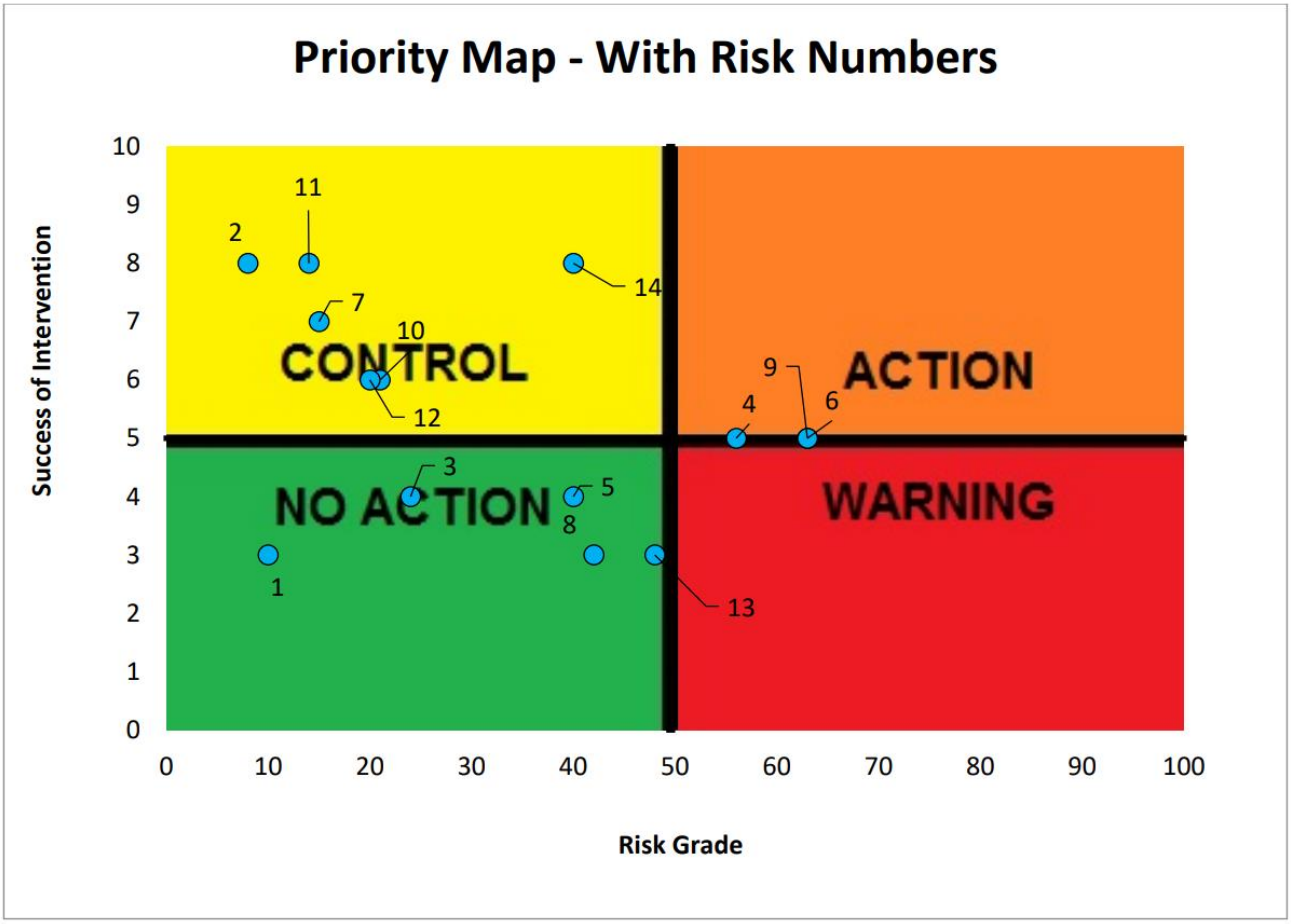

Figure 6: Priority map – KER1

The analysis identified 14 risks. The great majority of them present a low to medium risk grade coupled with a medium-high probability of success of the planned remedy. This is defined as a situation where it would be preferable to keep an eye on what is happening (Control) to be ready to act. Only three of them are positioned in the Action area due to their high-Risk Grade but also high feasibility of success on intervention.

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3.2 Greywater treatment plant

The beneficiary partner that worked on the exploitation plan of the greywater treatment plant is the company Nolde – innovative Wasserkonzepte GmbH (NOL) based in Berlin. The exploitation activities have helped the beneficiaries to reason about what are the necessary steps to implement a business plan for their company to be more economically sustainable. Briefly, the company gives a contribution to climate adaptation using new treatment technology and digitalisation 4.0 (control, online supervision, and monitoring via the internet). Using this technology, the treatment plant produces more than 10,000 litres of high-quality processed water per day from highly contaminated grey water collected from the kitchens, sinks, and showers of 250 people. The service water is then used to irrigate the greenhouse, to improve the microclimate of the surrounding green spaces, and to flush the toilets of the surrounding buildings.

3.2.1 Characterisation of the result

Table 10:Characterisation of KER2

KER name	Input from NOL	Output and comments/suggestions for improvement by the Expert
Problem	Depending on the customer: **(Cooperative) Housing Society** - Rising water costs (we need to calculate and estimate) - Death of trees on property due to lack of water **Funding or legislative authority:** - Overheated cities - Heat-related deaths due to lack of cooling in cities, especially at night - Death of trees due to lack of water - Falling water tables/water shortages/water rationing - Damage to flora and fauna **Customers in other countries:** - almost no water available The actual user has different problems.	*Identifying the key problem is crucial to ensure the impact of the result. Problems addressed are at the basis of the characterization of the solution and identification of customers. Being able to solve problems the "customers" face is key to ensuring the result is used and that the envisaged impact is achieved. For the future, consider the possibility of 'measuring' the problems with objective parameters to be able to easier define KPI for your solution.*

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Alternative solution	Continue to use the city's difficult-to-maintain and expensive-to-operate sewage system that produces no water or heat energy from grey water.	Decentralised water recycling for domestic reuse and irrigation. *Alternative solutions are important to benchmark the novel solution and to get an insight into the competition. Collecting information on the weaknesses and strengths of the alternative solutions helps to compare and quantify the added value of the proposed solution and investigate who is providing them and under which conditions.*
Unique Selling Point USP - Unique Value Proposition UVP	Our technology is durable, low maintenance, low energy, and chemical-free. In combination with heat recovery, it also generates up to 10 times more thermal energy than the total energy required for the entire technology, while the central drinking water supply and wastewater disposal systems are among the largest electricity suppliers in the city. A very important unique selling point compared to other greywater recycling plants is that our plants, as shown in the pilot, can also process highly contaminated greywater from washing machines and kitchens. This allows us to serve additional applications, such as urban agriculture and irrigation of open and green spaces, in addition to toilet flushing. Our systems are largely resistant to contaminants that do not normally belong in wastewater but are regularly discharged, such as paint residues after a house renovation. Digitalisation is another unique selling point, not only for reasons of transparency to the customer but also to save us a lot of work and travel time to the grey water recycling plant (control and maintenance). Digitalisation not only provides intelligent plant control but also plant monitoring, automatically reporting irregularities and errors to the plant operator, something that has not been the case with similarly large wastewater treatment plants in the past. Furthermore, the discharged product, the service water, has better values than the	The technology is durable, low maintenance, low energy, and chemical-free. In combination with heat recovery, it also generates up to 10 times more thermal energy than the total energy required for the entire technology. *The UVP is crucial to ensure the use and approach of the early adopters. Your strength points highlight your uniqueness compared to the alternative solutions. The UVP is the reason why your solution will be adopted. Please further validate the UVP by stressing your element of uniqueness and highlighting the quality of the solution. Please consider linking the mentioned features to the identified problem.*

	clear water from normal wastewater treatment plants, which is not suitable for further use due to insufficient treatment (urban farming) and is released into the environment, causing ecological and economic damage.	
Description	Separating grey water from black water (toilet waste) opens up huge recycling potential, which our technology is exploiting for the benefit of the environment and urban populations. Savings of 30 to 60% can be made on drinking water, as well as significant energy and chemical savings. The process water produced is close to drinking water quality and can therefore be used for almost all applications where drinking water quality is not required by law. It has been used in buildings (flushing toilets, washing clothes, etc.) and especially in vegetable growing and fish farming.	*Make sure it is clear and easy to be understood by a third party. Make sure it helps to visualise your KER.*
"Market" – *Target market*	We already had early adopters - operators of student residences, housing associations, hotels, and around 8 running treatment plants treating 10 million litres of grey water a year. The market for single household plants would need new early adopters but we don't see a way to address this market.	*To finalise the exploitation plan and prepare the use of the KER, is needed a clear identification of the target market, with its segmentation. It should include both a qualitative and quantitative description in terms of size and features*
"Market" – *Early Adopters*	Urban agriculture and peri-urban agriculture initiatives that commercialize their product within a limited geographical area. Initiatives in the metropolitan area that signed any bold commitment related to the promotion of sustainable food systems such as C40 cities, Milan Policy Pact, and Cities for Agroecology Network. Initiatives that use technological solutions and innovations to decrease their environmental impact (i.e., hydroponic production) as well as increase their socio-economic impact (i.e., fair pay, inclusion of people at risk of inclusion	*Early adopters are the ones who feel the identified problems the most. Make sure the identification is aligned with the problem/customer fit. Consider integrating information on early adopters with their size, where they are located, etc. To develop the exploitation model, it is important to look at early adopters and how to go from early adopters to the "early majority". Note that innovators are the ones that "use" the "alpha" version (2,5%, often partners in the R&D project); early adopters are the customers ready to "use" the "beta" version (13,5%). New initiatives fail because they are not able to reach*

		early adopters. You should be as precise as you can. Being the early adopters the first ones you would like to reach out with your innovative solution it will be important to be able to connect with them. Make sure your early adopters are consistent with the target market (customers).
"Market" - Competitors	Our competitors are clearly and currently still the water suppliers who, regardless of the water crisis, want to sell as much water as possible. They are well organised through their lobbying associations and have been making it very difficult for us to survive for years. The responsibility of the water suppliers ends at the property line, while we offer our product for the property. As soon as water recycling is required by the authorities and politicians, we would probably very quickly get several competitors who would take up the issue without having seriously dealt with it beforehand and possibly displace us with poorly made cheap systems, which would be detrimental to the market as a whole (there are already examples of this). Our strengths are that we have over 30 years of experience - we have paid a lot of dues and are now well positioned professionally and can design systems for our customers. In addition, we offer plant monitoring (digitalisation 4.0) to all our customers for whom we have designed the plants. We also offer plant operation and maintenance to customers in the Berlin area, which would be difficult for external competitors due to the distance to the customer. Now we should do international competitors research to see what is needed and what is working in different regions.	- Mainly the water suppliers' companies. *Competitors are connected to the use model. Weaknesses and strengths of the competitors might be presented to stress the uniqueness of your solution. Take also into consideration that a collaboration with the competitors might be useful*

Go to Market – Use model	It would help us a lot if the HRB would help us search for suitable licensees - especially by showing us what a good contract with the licensee should look like and what one has to pay special attention to contractually. We, as a planning office, do not have the capacity - neither in terms of personnel nor money - to start our production, but we are looking for partners who produce our technology as a franchise. For this, we are looking for suitable support from the Horizon Results Booster. The same applies to the design of a contracting model. Now, after the workshop, it became clear that we should prepare a pitch-like presentation to define for us / the customers our USPs: how long much money to save, how the return on investment is, and the environmental benefits. Putting these numbers in a presentation will also help us with possible customers. Tip from the expert: don't talk about costs – talk about savings	The model is to use licensees to leverage the access to the market. *The use model should be consistent with the target market and customers' needs.*
Go to Market - Timing	The time is right, the conditions have never been better. Water scarcity and high energy costs are making our technology increasingly attractive, as recent press releases have shown. Here we need to develop a new timetable with certain milestones: When we have 10 plants running – what is the next step and what is needed now? - Need a new employee, e.g. electrician, and update our radius around Berlin to 100km When we have 20 plants running – what is the next step and what is needed now? - Need a company car, update radius to 200 km. Overall it got clear that we need an external consultant for some time to develop these steps and our business model ideas regarding licensing.	*Please consider that the estimated time to market might affect the plan needed to ensure proper resources for further developments. Please also try to define better the timing.*

Go to Market – IPR Background	The partner should have production and sales experience in the field of water technologies.	

3.2.2 Exploitation roadmap

ACTIONS

- Build a clear business model and the resulting roadmap.
- Regardless of this:
  - Drafting of model agreement with licensee and search for licensee
  - Continue product optimization
  - Offer contracting for grey water recycling with integrated heat recovery

ROLES

The company will manage all part of the project by itself

MILESTONES

- 10 plants running:
  - Need a new employee, e.g. electrician and update our radius around Berlin to 100km
- 20 plants running:
  - Need a company car, update radius to 200 km.

FINANCIAL COST

- Prototype realized as part of the FoodE project; a budget of around €150,000 would be well spent for optimisation on the process and production costs.
- Need for a new calculation with updated material and personal costs and be explicit about the numbers.

REVENUES

- New contracts planned so that 3 engineers can generate 500,000 € in revenue. For the following years:
- Aim for a growth (turnover) of 5% per year.

OTHER SOURCE OF COVERAGE

- 150,000 € for ourselves, used for product optimization, which we will raise ourselves or with the partner still to be found.

IMPACT IN THREE-REAYS TIME

- Adaptation to climate change
- Protecting the environment
- Reducing costs in the water sector.

Figure 7: Exploitation roadmap for the KER2 (See Annex)

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3.2.3 Risk assessment and priority map

Table 11: Risk assessment of KER2

	Description of Risks	Risk Grade	Potential intervention	Estimated Feasibility/Success of Intervention (1 low- 10 high)	Conclusion
	Partnership Risk Factors				
1	*Partners break out and create competitive products*	**64**	Have well-drafted contracts with partners	*8*	**Action**
2	*Disagreement on ownership rules*	**54**	a suitably formulated contract between the partners and good protocols for meetings	*7*	**Action**
3	*A business partner leaves the market because the profit margin for the partner is not high enough or because of expensive manufacturing and water prices are still too low*	**56**	Try to make the whole treatment process cheaper in planning, construction, and maintenance.	*5*	**Between Action & Warning**
4	*No manufacturer for the exploitable result*	**25**	Continue the search for possible manufacturers	*5*	**Between Control & No Action**
	Technological Risk Factors				
6	*Our product with a long life cycle and low maintenance costs which has its price. Cheap suppliers can get customers and discredit water recycling*	**54**	To have well-functioning treatment plants with satisfied customers and to make this a standard for the whole sector.	*7*	**Action**
7	*It is difficult to patent our product after we have presented it to the public (tours, lectures, etc.).*	**81**	Develop products without publishing them - while pushing the topic forward in public	*5*	**Between Action & Warning**

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8	*The result aims at replacing existing and well-entrenched technologies of the water suppliers but water utilities do not have core competence at the property level, which we have*	**40**	Always seek contact with individual water suppliers who are willing to talk and who think in progressive terms	*4*	**No Action**
	Market Risk Factors				
11	*The lobby of the water suppliers is well-positioned and networked, they still want to sell as much water as possible and work against us*	**80**	The water suppliers see the potential for their business and start to recycle and reuse water	*3*	**Warning**
12	*New not so easy topic for the sales staff*	**49**	Over time, the technology becomes more widely known	*6*	**Control**
13	*Our licensee is overstretched and does not take advantage of its exclusive license.*	**56**	Do not commit exclusively to the first partner who shows interest. Have well-drafted contracts and more than one partner	*5*	**Between Action & Warning**
	IPR/Legal Risk Factors				
16	*Our work is no longer patentable due to publications and guided tours during the FoodE project period*	**81**	Future developments (detailed solutions) can be patented	*10*	**Action**
	Financial/Management Risk Factors				
21	*Know-how risks: there are leaks of confidential information*	**56**	Have well-drafted contracts and trustful communication	*8*	**Action!**
22	*Multiple changes to original objectives.*	**36**	Trying to be flexible as an engineering office.	*5*	**Between Control & No Action**
23	*Inadequate communication among partners.*	**36**	good and trustful communication between partners	*6*	**Control**
24	*No resources (human and/or financial) are secured to make the next step toward exploitation*	**72**	Develop a business plan with licensees and partnerships	*5*	**Between Action & Warning**
	Environmental/Regulation/Safety risks:				

26	*Influence through laws and regulations. Water conservation could be included in building regulations*	**36**	Lobbying	*8*	**Control**

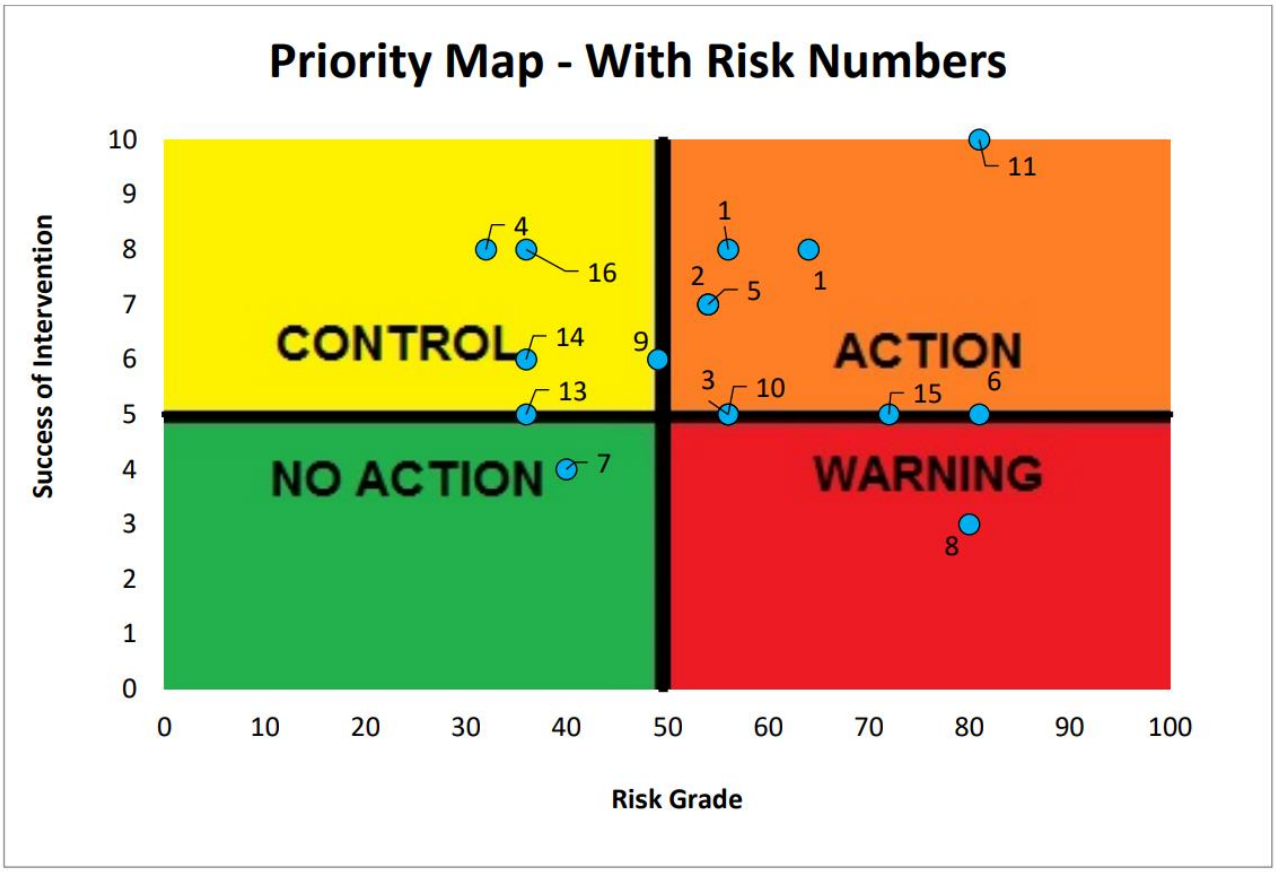

Figure 8: Priority Map – KER2

The analysis found 16 risks and all of them present a distributed risk grade coupled with a medium-high probability of success of the planned remedy. Most of the risks are distributed in the Control and Action area but one of them is the Warning one. The Partnership risk factors present a situation between low to moderate-risk grades with a moderate or high probability of success. It is a situation that does require immediate action to keep it under control. The Technological Risk Factors present a situation of distributed-risk grade and a moderate probability of success of the planned remedy. It shapes a situation where it would be preferable to act to avoid moving to the Warning area. The Market Risk Factors situation has a moderate to high-risk grade with a low to moderate probability of success. Attention has to be paid to the actual water suppliers that are not interested in saving water because this might reduce their sales. The Financial/Management risk factors present a situation of moderate risk grade and a medium to high probability of success. This last case is defined as a situation where it would be preferable to keep an eye on what is happening to be ready to act. The Environmental/Safety risk factors present a low-risk grade coupled with a high probability of success of the planned remedy. It is a situation that does not call for immediate action but that has to be kept under control.

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3.3 FoodE App

In this section, the exploitation Plan of the KER 3 - FoodE App is reported. The beneficiary partner for the HRB support service is UAB and the FoodE App was developed within WP3. This result was in the phase of implementation while the exploitation activities were carried out. Therefore, the exploitation phase was crucial for the work related to the Business Model development needed to guarantee the sustainability of the result. Briefly, the FoodE App is a tool created to mobilize and connect users and stakeholders to promote the sustainability of City Region Food Systems (CRFS) across Europe.

3.3.1 Characterisation of the result

Table 12: Characterisation of KER3

KER name	Input from UAB	Output and comments/suggestions for improvement by the Expert
Problem	Current local food initiatives are forerunners in community-building, self-sufficient, and innovative food production systems. However, the lack of recognition of their efforts hinders a wider implementation of these innovations. At the same time, consumers are increasingly more interested in buying local sustainable foods, but information about where to buy or where to contribute to local communities is mostly lacking. For this reason, our society demands an accessible tool that helps connect local sustainable food initiatives with potential consumers or visitors and that allows them to report on and get rewarded for their efforts	*Identifying the key problem is crucial to ensure the impact of the result. It is advised to describe the problems rather than illustrate the proposed solution. Problems addressed are at the basis of the characterization of the solution and identification of customers. Being able to solve problems the "customers" face (regional authority) is key to ensuring the result is used and that the envisaged impact is achieved. For the future consider the possibility to update and validate the problems.*
Alternative solution	Various platforms at the national and regional levels promote the connection between producers and consumers. Indeed, several apps give information related to the sustainable aspect of the product (i.e. Setai), and the nutritional information of the product (i.e. Yuka), and connect the initiative with the consumer (TripAdvisor). There isn't anyone that joints locally and sustainable	• *various platforms that promote the connection between producers and consumers.* *Alternative solutions are important to benchmark the novel solution and to get an insight into the competition. Collecting information on the weaknesses and strengths of the alternative solutions helps to compare and quantify the*

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	Weakness - Sustainability assessment is only based on Carbon, Water, or Land footprint. - No criteria for the inclusion or exclusion of the initiative in the App - Customer review based on one indicator (Stars) **Strength** - A high number of users spread around Europe.	*added value of the proposed solution and investigate who is providing them and under which conditions.*
Unique Selling Point USP - Unique Value Proposition UVP	The App is promoting local and sustainable initiatives within the food system. The App's strengths lie in its assessment of enterprise sustainability based on indicators of environmental, economic, and social aspects. Additionally, consumers' ability to evaluate initiatives enhances the platform's dynamic and participatory nature using 10 different indicators. The sustainability assessment is based both on the initiative evaluation and the user reviews. Gamification is an integral part of the FoodE App, aiming to enhance user engagement by incentivizing its usage and encouraging the submission of reviews. Users are rewarded with points based on the frequency of their visits and the number of reviews they provide. This approach fosters active participation and motivates users to explore more, ultimately creating a vibrant community within the app.) Strength **Strength** • A high number of users spread around Europe.	*The UVP is crucial to ensure the use and approach of the early adopters. Your strength points highlight your uniqueness compared to the alternative solutions. The UVP is the reason why your solution will be adopted. Please further validate the UVP by stressing your element of uniqueness and highlighting the quality of the solution. Please consider linking the mentioned features to the identified problem.*

Description	The FoodE App is a platform enabling the digitalization of data concerning various stakeholders at a territorial level. These data can be utilized to: • Localize initiatives • Promote initiatives • Develop tailored territorial policies. • Facilitate the emergence of new initiatives	*Make sure it is clear and easy to be understood by a third party. Make sure it helps to visualise your KER.*
"Market" – *Target market*	Initiatives in horticulture market their products within a limited geographical area (i.e. region) and non-profit initiatives that support creating a local and sustainable food system (i.e. NGO). The target market would be the initiatives localized in a metropolitan area (i.e. City with more than 1 M of inhabitants). In these municipalities are expected higher interests due to the highest presence of consumers sensitive to socio-economic and environmental concepts. In particular, the northern European consumer seems more interested in sustainable food than other consumers in the southern part. Indeed, the consumer in the southern part seems more interested in traditional food products linked to food cultural heritage than sustainable concepts.	*To finalise the exploitation plan and prepare the use of the KER, is needed a clear identification of the target market, with its segmentation. It should include both a qualitative and quantitative description in terms of size and features.*
"Market" – *Early Adopters*	Metropolitan cities that signed any bold commitment related to promoting sustainable food systems such as C40 cities, Milan Policy Pact, Cities for Agroecology Network, and cities where the Foode project has a pilot. The early adopters are identified among the countries with the highest use of Apps (i.e., the highest number of APP downloading per person), the countries with the highest potential interest in local and healthy food (i.e., the highest	*Early adopters are the ones who feel the identified problems the most. Make sure the identification is aligned with the problem/customer fit. Consider integrating information on early adopters with their size, where they are located, etc. To develop the exploitation model, it is important to look at early adopters and how to go from early adopters to the "early majority". Note that innovators are the ones that "use" the "alpha" version (2,5%, often partners in the R&D project); early*

	consumption of Organic products per capita) as well as the countries with the most significant number of vegetarians/vegans within the population. Based on that, 5 "early adopters" would be: Berlin (Germany), Paris (France), Amsterdam (Netherlands), Milan and Bologna (Italy), and Barcelona (Spain) In the case of the research institute, early adopters would be partners involved in the FoodE project as well as in the "sister" project FoodShift2030.	*adopters are the customers ready to "use" the "beta" version (13,5%). New initiatives fail because they are not able to reach early adopters. You should be as precise as you can. Being the early adopters the first ones you would like to reach out to with your innovative solution, it will be important to be able to connect with them. Make sure your early adopters are consistent with the target market (customers)*
"Market" - Competitors	The FoodE App presents significant distinctions compared to other platforms in the market. Specifically, it relies on an objective assessment of sustainability through indicators carefully selected in collaboration with diverse stakeholders. Unlike other platforms, the FoodE App does not exclude any initiative, whether commercial or non-commercial, that intends to provide data and demonstrate its environmental, economic, and social impact. Furthermore, the FoodE App incorporates consumer ratings, making it a participatory and self-powered platform based on several indicators.	*Competitors are connected to the use model. Weaknesses and strengths of the competitors might be presented to stress the uniqueness of your solution. Take also into consideration that a collaboration with the competitors might be useful*
Go to Market – Use model	The strategy to sell the APP to municipalities involves offering customization services tailored to their specific needs and interests. Customization is essential to provide each city with a unique application that incorporates specific operational features such as voting, indicators, and gamification. Additionally, the presence of a European community within the FoodE APP increases interest in initiatives featured on the platform and encourages users to seek out local and sustainable initiatives. The APP's business model revolves around selling the platform to municipalities, along with associated customization	*The use model should be consistent with the target market and customers' needs. Use model and target market, customers need to be consistent. In the case of licensing, consider that several different types of licensing agreements could be used.*

	services, and providing ongoing maintenance, updates, and modifications to the featured initiatives.	
Go to Market - Timing	2-3 years	*During the development of the project keep a continuous attention to the market timing to be ready to adapt the exploitation and dissemination actions. Please consider that estimated time to market might affect the plan needed to ensure proper resources for further developments*
Go to Market – IPR Background	Expert in sustainability assessment and Life Cycle Thinking approach in Urban agriculture. In addition to this, the partners have significant experience in citizen science and co-design processes.	
Go to Market – IPR Foreground	Provide information considering also what was already agreed on in the Consortium Agreement. Increase expertise in sustainability assessment in economic and social aspects within a Life Cycle Thinking approach. Indeed, the sustainability assessment in these two areas is still not as homogeneous as the environmental aspect.	

3.3.2 Exploitation Roadmap

ACTIONS

- 1. Identification of universities and research institutes
  2. Identification of municipalities signatory of the MUFPP
  3. Level of satisfaction of the users about the APP and improvements. Evaluate the willingness to pay of the different target groups.
  4. Select the primary targets (Municipalities/Universities) for the first years of operation. Targets: Stakeholders, Country/ies.

ROLES

ICTA-UAB: Provide the technical support for the App and develop the test (Satisfaction, willingness to pay)

UNIBO: Coordinate the meeting with the potential early adopters

MILESTONES

- 1 month
  - 75% of the municipalities
  - Contact 10 Universities
- 2-4 Months
  - Meet with 50% of the selected stakeholders and test the willingness to pay, level of satisfaction
- 5-10 Months
- Business model for each stakeholder group and evaluation based on an economic assessment

FINANCIAL COST

- Total (213.000 Euro) [1-year]
- Human Resources (208.000 Euro)
  - Social networks and media (45.000 Euro/Year)
- 1 Administration (40.000 Euro/Year)
- Resource - e.g. travel, bibliography (5.000 Euro)
- Platform fee - still to be decided
- Total (266.000 Euro) [3-year]
- Expected cost increase of 25% in year 3.

REVENUES

- The FoodE App will start generating revenue starting from the 2nd year. The most
- important revenue will be on the provision and the maintenance of the APP.
  - 2-year 21.250 Euro
  - 3-year (127.500 Euro)

OTHER SOURCE OF COVERAGE

- Until the APP is generating revenue, it would be supported by National and European grants.

IMPACT IN THREE-REAYS TIME

- Job creation for 5 people (FoodE App)
- Increase the data availability related to the local food system
- 100 new City Region Food System initiatives, 20 policy strategies
- 1 new quality certification related to the food system based on the input of the FoodE APP

Figure 9: Exploitation roadmap of the KER3 (See Annex)

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3.3.3 Risk assessment and priority map

Table 13: Risk assessment of KER3

	Description of Risks	Risk Grade	Potential intervention	Estimated Feasibility/Success of Intervention (1 low- 10 high)	Conclusion
	Partnership Risk Factors				
1	Some partners may leave	**6**	Split the activities among several partners.	*3*	**No Action**
2	Disagreement on ownership rules	**24**	Signing contracts with roles and ownership divisions. Keep the highest amount of capital between a few partners	*8*	**Control**
3	Partner declares bankruptcy	**15**			**No Action**
	Environmental/Regulation/Safety risks:				
6	Better technology/methodology exists	**40**	Involve key partners within the project		**No Action**
	Market Risk Factors				
9	Performance lower than market needs	**40**	Increase the feature of the APP	*5*	**Between Control & No Action**
10	Partners with divergent interests	**15**	Act to find a common agreement	*7*	**Control**
11	Unsuitable sales force	**35**	Change business strategy	*3*	**No Action**

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12	Rejected by end-users	**54**			**Warning;**
	IPR/Legal Risk Factors				
14	The patent application is rejected	**28**	Work on critical aspects of the innovation	*6*	**Control**
	Financial/Management Risk Factors				
20	Lack of endorsement from top management	**14**	Signing of contracts	*8*	**Control**
21	Inadequate business plan	**40**	Taking time and effort to implement an adequate business plan	*6*	**Control**
22	No resource to ensure sure next step toward exploitation	**54**	Involve the consortium of the project and ask for funds	*3*	**Warning**
	Environmental/Regulation/Safety risks:				
25	Influence of laws and regulation(Privacy)	**40**			**No Action**

Figure 10: Priority Map – KER3

The analysis found 13 risks and the great majority of them present a low to medium risk grade coupled with a medium-high probability of success of the planned remedy. This is defined as a situation where it would be preferable to keep an eye on what is happening (Control) to be ready to act. One of them is positioned in the Action area due to its moderate risk grade but also high feasibility of success on intervention. Another one is positioned in the Warning area due to its moderate Risk Grade but also low feasibility of success of the intervention. This area identifies a situation where you may consider discussing to stop the project.

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3.4 Simplified assessment tool

In this section, the results of the exploitation activities of the Simplified Assessment Tool developed in WP2 by UNIBO and UAB are reported. These activities were performed by the coordinators (UNIBO) without the support of the HRB service. However, this is a useful exercise to develop an exploitation roadmap for this result. Briefly, the Simplified Assessment Tool is a digital tool consisting of a simplified assessment method built to provide a final sustainability score for each CRFS initiative, aiming for a more synthetic and rapid appraisal of generic hotspots of impact.

3.4.1 Characterisation of the result

Table 14: Characterisation of the KER4

KER name	Input from UNIBO
Problem	The City Region Food Systems (CRFS) approach has been proposed to achieve food system resilience and nutrition security while promoting the urgent ecological transition within urban and peri-urban areas, especially after the COVID-19 pandemic. However, the great diversity of the initiatives composing CRFS in Europe poses barriers to the assessment of their integrated sustainability.
Alternative solution	There is a set of Apps which are scoring the sustainability of food products. However, these apps are product-based (i.e., they provide a sustainability scoring at the product level) and do not have different dimensions of sustainability scored at once.
Unique Selling Point USP - Unique Value Proposition UVP	A digital tool consisting of a simplified assessment method built to provide a final sustainability score for each CRFS initiative (CRFSi), aiming for a more synthetic and rapid appraisal of generic hotspots of impact.
Description	The simplified framework aims to provide a rapid quali-quantitative appraisal tool for the evaluation of CRFSi that builds on Life-Cycle-Thinking (LCT) approaches, but that can be applied by LCT practitioners for a preliminary scoping and also by non-LCT practitioners for a generic analysis and understanding. The goal of this simplified framework is to analyze the sustainability of CRFSi through a single synthetic but comprehensive and coherent tool that can be easily managed by non-LCT practitioners (such as CRFSi owners or relevant stakeholders) and provide reliable quality-quantitative information about CRFSi general performances. Results can be used to identify aspects needing improvement or attention and valorise efforts towards increased sustainability in an

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	effective and communicable way. As such, it is not intended to substitute for a full LCA, LCC, and S-LCA assessment, but it can be used as a scoping tool by LCT practitioners in the design phase of a complete study comparing scenarios. The scope of the simplified framework is constituted by the CRFSi as defined within the FoodE project. Such initiatives are characterized by a wide diversity of functions, products, and processes, making it difficult to identify a unique function and related reference flow. In addition, the framework has a mixed quali-quantitative nature. Therefore, it adopts an organizational perspective, focusing on the yearly operation as a common functional unit. Similarly, since CRFSi might deal with various stages or activities within the food supply chain, the system boundaries and related data collection are cradle-to-gate, including food production (either farming, animal husbandry, fishing), inputs for processing and/or service, transport to consumers. The selection of impact categories and KPIs (see following section) was limited to focus on the relevant hotspots, based on previous knowledge and the open consultation. Therefore, the preciseness and completeness of data are forcibly reduced in comparison with a full LCT study. The simplified framework is built to provide a final sustainability scoring for each initiative. The KPIs measured on collected data are converted to a comprehensive, integrated sustainability scoring for the three spheres of sustainability (social, economic, and environmental).
"Market" – *Target market*	- CRFSi aims to assess their degree of overall sustainability, on top of investigating their main hotspots and challenges through the 3 sustainability spheres; - consumers interested in collecting information on the sustainability of the CRFSi; - public authority in public procurement processes, aiming to provide funding according to the participant's sustainability;
"Market" – *Early Adopters*	LCT practitioners aiming to assess the sustainability of CRFSi, active in a wide variety of activities and food supply chain stages
"Market" - Competitors	Digital tools focusing on simplified sustainability assessment tools, such as e.g., scoring tools for food products. **Yuka App** scores products from 0 to 100 based on their health impact and provides a detailed data sheet for their evaluation. <u>Weaknesses:</u> The App evaluates only the health dimensions of products, excluding other sustainability dimensions. The App evaluates the single products rather than the food initiative itself.

	Weeshop App evaluates food products based on their health, environmental, and social impacts and provides a detailed data sheet for their evaluation. Weaknesses: The App evaluates the single products rather than the food initiative itself.
Go to Market – Use model	The go-to-market strategy involves several steps: • A sampling of CRFSi and data collection for testing the digital tool. At the current state, the tool is tested on 100 CRFSi across Europe which are selected through convenience sampling. A random sampling, representative of the European context, would be needed and a subsequent data collection on the new sample would need to be conducted. • Technology implementation for making the tool ready-to-market. At the current state, the tool is implemented in Excel only. To make it ready for the market a technology transfer from Excel to other user-friendly tools would be needed. • License agreement (IPR). The development of a license agreement would be needed to define and protect the individual property rights of the tool.
Go to Market - Timing	2-3 years
Go to Market – IPR Background	Expertise in sustainability assessment and LCT approaches across the multiple steps of the food supply chain and sustainability dimension (I.e., social approach, environmental approach, economic approach). In addition to this, the partners have significant expertise in data collection and data analysis.
Go to Market – IPR Foreground	Broaden and improve expertise in social, economic, and environmental sustainability assessment through an LCT approach.

3.4.2 Exploitation roadmap

ACTIONS

- Sampling of CRFSi and data collection for testing the digital tool
- Test it on 100 CRFSi
- Technology implementation for making the tool ready-to-market – at the current state the tool is implemented in Execel only.
- License agreement (IPR).

ROLES

UNIBO: Development of the license agreement
UAB: technological development of the digital tool
WUR: sampling strategy and data collection

MILESTONES

- Market study to understand the challenges and potentialities for the proposed result to be valorised at a commercial level.
- Investigation of the potential monetary value for the digital tool

FINANCIAL COST

- Attainment of the license
- Personnel costs – Human resources
- Quantification of the costs determined after the market analysis

REVENUES

- Revenues will consist in the selling of the digital tool licence to app developers or other stakeholders. The quantification will be determined after the market analysis.

OTHER SOURCE OF COVERAGE

- Two research contracts to implement the foreseen activtities. On partners' own budget

IMPACT IN THREE-REAYS TIME

- Awareness raising on environmental, social, economic impacts of the food systems at urban-rural level.

Figure 11: Exploitation roadmap of the KER4 (See Annex)

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3.4 3 Risk assessment and priority map

Table 15: Risk assessment of KER4

	Description of Risks	Risk Grade	Potential intervention	Estimated Feasibility/Success of Intervention Please rate from 1 to 10 (1 low- 10 high)	Conclusion
	Partnership Risk Factors				
1	Disagreement on ownership rules	**25**	Legal representation of the parties	*5*	**Between Control & No Action**
2	Disagreement on further investments	**42**	Signing a contract with roles and ownership division	*8*	**Control**
	Technological Risk Factors				
6	Lack of integration with existing methodologies	**24**	Investments in the improvement of the tool	*6*	**Control**
7	Significantly dependent on other technologies	**28**	Make agreements with the technologies	*5*	**Between Control & No Action**
	Market Risk Factors				
11	Entry into the market of an improved and better-integrated methodology	**64**		*4*	**Warning**
12	Partner with divergent interests	**10**	Separate from the partner	*3*	**No Action**
13	Nobody needs it and no use options	**56**	Improve the market research	*5*	**Between Action & Warning**
14	Performance lower than market needs	**30**	Improve the tool through consultancy if needed	*6*	**Control**
	Financial/Management Risk Factors				
21	Multiple changes to original objectives	**28**	Investigate the reasons and adapt to the changes	*4*	**No Action**
22	Lack of endorsement from the top management	**56**	Create the conditions for engagement	*5*	**Between Action & Warning**
23	Inadequate business plan	**40**	Ask for consultancy	*6*	**Control**
24	No resources secured to go toward exploitation	**64**	Ask for funds	*3*	**Warning**
	Environmental/Regulation/Safety risks:				
26	Influence of laws and regulation (Privacy)	**15**	Modify the approach to comply with the regulation	*5*	**Between Control & No Action**

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Figure 12: Priority map - KER4

The analysis found 13 risks and the great majority of them present a low to medium risk grade and a couple of other risks with a medium-high probability of success of the planned remedy. It might be preferable to keep an eye on the market and financial risk factors considering that the majority of the medium-high risk grades are concentrated in this area. These risks mainly have to do with the fact that already existing or new entries in the market of improved and better-integrated methodology or technology might occur, which would highly threaten the successful exploitation of the result. Moreover, partnership and technological risk factors are under control and no action or warning is specifically needed in case of their occurrence.

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5. Conclusions

To conclude, the FoodE exploitation strategy of the selected KERs has the main objective to have an impact on the European urban food environment keeping the purpose of raising awareness and spreading among the selected stakeholders and target groups the desired outcomes. Therefore, the tools that will be exploited to reach the mentioned target objective are the following: an App, a label, and a digital tool. These three tools share a common objective which is the evaluation of the sustainability of CRFSI, engagement of stakeholders at the urban level (particularly citizens and municipalities), and activation and promotion of innovative food businesses at an urban level that has to do with local and short food supply chains, food education, production of healthy food for citizens and urban food production through vertical farming and urban gardens. Moreover, the KER2 – greywater treatment plant – aims to improve water recycling in urban areas helping in the advancements of circular economy principles, and reduction of the use of water in cities, especially in urban agriculture activities.

The tools reported in this Exploitation Plan were developed for these primary objectives, and the exploitation activities were and will be crucial also after the end of the project to reach those objectives. Therefore, all the necessary evaluation, consideration, decision-making, and monitoring processes engaging the partners in the exploitation will be extremely relevant in defining and designing the future of the project.

To the benefit of the FoodE project, these objectives are shared among the “sister” projects of FoodE included in the Food2030 “project family” including the following H2020 European projects: FOOD TRAILS, FOODSHIFT2030, FUSILLI, CITIES2030. The four-year activities of the mentioned EU projects that through different methodologies, and approaches and involving additional European countries have worked for the expansion of sustainable city region food systems and urban food systems have the power of achieving a big impact towards sustainability of European food systems. This is possible thanks to the creation of new living labs, collection of best practices, engagement of diverse enterprises and businesses, social initiatives, innovative municipalities practices and food policies, and more, which was the work carried out in the 48 months (from January 2020) of the project. FoodE was part of this extremely ambitious project and program and the results created aim at adding only a few of the many steps and actions already taken in this long process towards the transition to sustainable urban food systems, although consciously thinking, many more still must be taken.

Annex

Exploitation roadmap	Input from the Beneficiary	Output and comments/suggestions for improvement by the Expert
Actions	**3 months** - Finalization of the ownership agreement with other partners - Identify the market segmentation that should be prioritized in the first year - Define the financial strategy **6 months** - Finalize the first draft of the certification scheme - Engage possible collaborators (i.e. certificatory firm and sustainable consultancy enterprise)	*The roadmap helps to have a clear vision of what will happen after the end of the project to enable the use and adoption of the KER. Focus should be put on actions to be performed the first 6 months after the project ends and on what is needed to prepare them during the last 3-6 months of the project. Possible actions to be taken are:* - *Finalise the business model* - *Define the financial strategy* - *Finalisation of ownership agreements with other partners….*
Roles	- ICTA-UAB Environmental sustainability - SWUAS-Economic sustainability - APT-Social sustainability - UNIBO- Project management	*Focus on who, within the partnership, will be responsible for implementing the planned actions. Describe who will do what. Each role must be consistent with the actions to avoid any criticalities in the implementation phase. Reflect if the partners will be keen to support you in acting for a common scope.*

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Milestones	**0-3 Months** [Partner agreement and Financial plan] - Finalization of the ownership agreement with other partners - Identify the market segmentation that should be prioritized in the first year **3-6 Months** [Presentation of the certification] - Draft presentation in English to the European Union - Engage possible collaborators (i.e. certificatory firm and sustainable consultancy enterprise)	*The milestones focus on what needs to be checked to monitor advancements in the implementation of the roadmap. This allows you to control if the roadmap is properly implemented. Make sure the timing is consistent and include a set of KPIs for monitoring the achievement of the milestone. If the timing of the actions is not defined also milestones are undetermined.*
Financials **Costs**	**Human resources** - 2 Pre-Doc (half day) 6 months [2.000 Euro] - 1 Post-Doc (¼ day) 3 Months [3.000 Euro] - 1 PI (1/12) 1 month/person [5.000 Euro) **Consultancy** 20.000 Euro **Travel cost** 5.000 Euro	*You must estimate the costs to be sustained for implementing each action in the "Actions" box. If different partners are responsible for the activities, you should dedicate part of the consortium meeting to establishing the budget for the exploitation plan. Costs deal with expenses necessary for taking project research forward. These include both human resources taking part in research activities and costs for equipment, as well as internal R&D resources of some partners.*
Revenues	The revenue will start from the third year. Our revenue will be calculated based on the number of initiatives and municipalities that will be certified. Number of initiative (x150) Municipality(x2) The cost for each certification would be around 2.500 Euro. Thus, at the end of the third year, the total revenue would be 375.000 Euro	*Estimation of revenues is important for the finalization of the exploitation plan. Estimate potential revenues according to your use/business model, early adopters, and expected customers, and include the information in the draft exploitation plan. Please consider that fundings are not revenues.*

Other sources of coverage	European funds and internal funds from the partner 100.000 Euro. This amount of money is required to support the project until will turns profitable.	*Estimate the resources needed to bridge the investment needed to increase TRL and ensure the result is used. Review the action plan to make sure to obtain the funds at the right time to cover the costs incurred before collecting the first revenue.*
Impact in 3-year time	Job creation (x5 consultant) Generation of new city region food system initiative Increase the trust in the certification+ More awareness of the sustainable system. Create a consortium of municipalities aimed at promoting a sustainable food system Inspire new policy at the European level promoting sustainable production and consumption	Please explain what you mean by 350k€.

Table 16: Exploitation roadmap of KER1 taken from the Final Report of HRB

Exploitation roadmap	Input from beneficiaries	Output and comments/suggestions for improvement by the Expert
Actions	Getting clear about our business model and the resulting roadmap. Regardless of this: • Drafting of model agreement with licensee and search for licensee • Continue product optimisation • Offer contracting for grey water recycling with integrated heat recovery	*The roadmap helps to have a clear vision of what will happen after the end of the project to enable the use and adoption of the KER. Focus should be put on actions to be performed the first 6 months after the project ends and on what is needed to prepare them during the last 3-6 months of the project. Possible actions to be taken are:* • *Finalise the business model* • *Define the financial strategy* • *Finalisation of ownership agreements with other partners…*
Roles	The company will manage all parts of the project by itself	*Focus on who, within the partnership, will be responsible for implementing the planned actions. Describe who will do what. Each role must be consistent with the actions to avoid any criticalities in the implementation phase. Reflect if the partners will be keen to support you in acting for a common scope.*
Milestones	We need to define milestones. In the format of When we have 10 plants running – what is the next step and what is needed now? - Need a new employee, eg electrician, and update our radius around Berlin to 100km When we have 20 plants running – what is the next step, and what is needed now? - Need a company car, update radius to 200 km. So far, we did not have enough time to talk through this internally	*The milestones focus on what needs to be checked to monitor advancements in the implementation of the roadmap. This allows you to control if the roadmap is properly implemented. Make sure the timing is consistent and include a set of KPIs for monitoring the achievement of the milestone. If the timing of the actions is not defined also milestones are undetermined*
Financials **Costs**	We have largely realised the prototype as part of the FoodE project; a budget of around €150,000 would be well spent on optimising the process and production costs. But here we need to do a new calculation with	*You must estimate the costs to be sustained for implementing each action in the "Actions" box. If different partners are responsible for the activities, you should dedicate part of the consortium meeting for establishing the budget for the exploitation plan. Costs deal with*

	updated material and personal costs and be explicit about the numbers.	*expenses necessary for taking project research forward. These include both human resources taking part in research activities and costs for equipment, as well as internal R&D resources of some partners.*
Revenues	There are new planning contracts so that 3 engineers can generate 500,000 € in revenue. For the following years, we are aiming for a growth (turnover) of 5% per year.	*Estimation of revenues is important for the finalisation of the exploitation plan. Estimate potential revenues according to your use/business model, early adopters, and expected customers, and include the information in the draft exploitation plan. Please consider that fundings are not revenues.*
Other sources of coverage	The already mentioned 150,000 € for us, used for product optimization, which we will raise ourselves or with the partner still to be found.	*Estimate the resources needed to bridge the investment needed to increase TRL and ensure the result is used. Review the action plan to make sure to obtain the funds at the right time to cover the costs incurred before collecting the first revenue.*
Impact in 3-year time	Our product is an excellent building block for adapting to climate change, protecting the environment and reducing costs in the water sector.	*Please explain what you mean by 350k€.*

Table 17:: Exploitation roadmap of KER2 taken from the Final Report of HRB

Exploitation roadmap	Input from beneficiaries	Output and comments/suggestions for improvement by the Expert
Actions	Get in touch with the various universities working on the analysis of the sustainability of local food systems and with the different municipalities that have signed the Milan Policy Pact (over 1 million inhabitants). 2. Identify the level of satisfaction of these users in using the APP and the features that should be modified/added. Evaluate the willingness to pay of the different target groups. 3. Select the primary target of the FoodE App (Municipalities/Universities) for the first years of operation. Target: Stakeholder, Country/ies.	*The roadmap helps to have a clear vision of what will happen after the end of the project to enable the use and adoption of the KER. Focus should be put on actions to be performed the first 6 months after the project ends and on what is needed to prepare them during the last 3-6 months of the project. Possible actions to be taken are:* • *Finalise the business model* • *Define the financial strategy* • *Finalisation of ownership agreements with other partners…*
Roles	• ICTA-UAB -> Provide the technical support for the App and develop the test(Satisfaction, willingness to pay) • UNIBO -> Coordinate the meeting with the potential early adopters.	*Focus on who, within the partnership, will be responsible for implementing the planned actions. Describe who will do what. Each role must be consistent with the actions to avoid any criticalities in the implementation phase. Reflect if the partners will be keen to support you in acting for a common scope.*
Milestones	**1 month** - Contact 75% of the municipalities involved within the Milano Policy Pact (> 1 million inhabitants) - Contact 10 University working on the sustainability assessment of the food system. **2-4 Months** - Realize the meeting with 50% of the selected stakeholders (Municipalities/Universities) and test the willingness to pay, level of satisfaction and identify potential changes. **5-10 Months**	*The milestones focus on what needs to be checked to monitor advancements in the implementation of the roadmap. This allows you to control if the roadmap is properly implemented. Make sure the timing is consistent and include a set of KPIs for monitoring the achievement of the milestone. If the timing of the actions is not defined also milestones are undetermined*

	Based on the information gathered, select one stakeholder group and divide them into subgroups. Prepare a business model related to this stakeholder group and evaluate the feature that should be changed based on an economic assessment (Cost and Benefit ratio)	
Financials **Costs**	Total (213.000 Euro) [1-year] Human Resources (208.000 Euro) 1 Senior Researcher and/or CEO (120.000 Euro/Year): Equiv 0,3 during the first year 2 Researcher (90.000 Euro/Year) = Equiv 1 during the first year 1 Developer (45.000 Euro/Year)) = Equiv 1 during the first year Social networks and media (45.000 Euro/Year)) = Equiv 0,5 during the first year 1 Administration (40.000 Euro/Year) = Equiv 0.3 Total human resources first year: 36 + 90+ 45 + 23+13 =208 k Resource (5.000) Platform fee Total (266.000 Euro) [3-year] Expected cost increase of 25% in year 3.	*You must estimate the costs to be sustained for implementing each action in the "Actions" box. If different partners are responsible for the activities, you should dedicate part of the consortium meeting to establishing the budget for the exploitation plan. Costs deal with expenses necessary for taking project research forward. These include both human resources taking part in research activities and costs for equipment, as well as internal R&D resources of some partners.*
Revenues	The FoodE App will start generating revenue starting in the 2 years. The most important revenue will be based on the provision and maintenance of the FoodE APP to the selected stakeholders. 2-year 21.250 Euro The revenue of the second year should cover the administration fee (10.000 Euro) and 25% of the developer salary (11.250 Euro)	Estimation of revenues is important for the finalisation of the exploitation plan. Estimate potential revenues according to your use/business model, early adopters, and expected customers, and include the information in the draft exploitation plan.

	3-year (127.500 Euro) The revenue of the third year should cover the 50% salary of the project manager (60.000), Researcher and developer (67.500 Euro	
Other sources of coverage	Until the APP is not generating revenue would be supported by National and European grants.	*Estimate the resources needed to bridge the investment needed to increase TRL and ensure the result is used. Review the action plan to make sure to obtain the funds at the right time to cover the costs incurred before collecting the first revenue.*
Impact in 3-year time	The impacts generated by the FoodE APP are: - Job creation of 5 people (FoodE App) - FoodE App will allow to increase the data availability related to the local food system helping in the implementation of investment plans and policies [100 new City Region Food System initiatives, 20 policy strategies implemented through the FoodE APP information] - FoodE APP will set a benchmark in the sustainability assessment framework realized at the territorial level. [1 new quality certification related to the food system based on the input of the FoodE APP)	*Please explain what you mean by 350k€.*

Table 18:: Exploitation roadmap of KE3 taken from the Final Report of HRB

Exploitation roadmap	Input from UNIBO
Actions	• Sampling of City-Region Food System Initiatives and data collection for testing the digital tool. At the current state, the tool is tested on 100 City-Region Food Systems initiatives across Europe which are selected through convenience sampling. A random sampling, representative of the European context, would be needed and a subsequent data collection on the new sample would need to be conducted. • Technology implementation for making the tool ready-to-market. At the current state, the tool is implemented in Excel only. To make it ready for the market a technology transfer from Excel to other user-friendly tools would be needed. • License agreement (IPR). The development of a license agreement would be needed to define and protect the individual property rights of the tool.
Roles	UNIBO is responsible for the development of a license agreement to protect individual property rights. UAB is responsible for the technological development of the digital tool to be ready-to-market. WUR is responsible for the sampling strategy and data collection to reach a representative outlook of the European context.
Milestones	Market study to understand challenges and potentialities for the proposed result to be valorised on a commercial level, including investigation on the potential monetary value to be assigned to the digital tool to assess CRFSI sustainability.
Financials **Costs**	Attainment of the license for the digital tool and personnel cost (I.e., researchers and software engineers) to get the digital tool ready to market. The quantification of these costs will be determined after the market analysis to be conducted during the exploitation phase.
Revenues	Projected revenues will consist of the selling of the digital tool license to app developers or other interested stakeholders. The quantification of these revenues will be determined after the market analysis to be conducted during the exploitation phase.

Other sources of coverage	The coverage of two research contracts to implement the foreseen activities. Sources: sources will be covered by be partners` budget.
Impact in 3-year time	The long-term impact of the project is to improve diffused awareness of the environmental, social, and economic impacts of the food systems, with an urban-rural lens.

Table 19:: Exploitation roadmap of KER4 taken from the Final Report of HRB