FoodE

D1.4 Data Management Plan (month 48)

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

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List of Abbreviations

App	Application software
CRFS	City Region Food Systems
CRFSI	City Region Food System Initiative
DMP	Data Management Plan
GA	General Assembly
GIS	Geoinformation System
HEI	Higher Education Institution
KPI	Key Performance Indicators
IPR	Intellectual Property Rights
SC	Steering Committee
SNE	Small and Medium Enterprises
WoS	Web of Science
WP	Work Package

0 Scope of the Data Management Plan

This Data Management Plan (DMP) describes how research data is managed throughout the duration of the project "FoodE – Food systems in European Cities Innovation Action" (Feb 2020 – Jan 2024) and beyond. It summarizes procedures and minimum requirements to organise data consistently according to the FAIR (**F**indable, **A**ccessible, **I**nteroperable, **R**e-usable) principles.

Any data or documents produced or processed for governmental procedures are not affected by this data management plan. This plan is a working document and has been regularly updated as necessary during the project time, and all project partners were always informed of any changes to this document.

Please note that agreements on common standards, folder structure and identifiers were updated during project Steering Committee (SC) meetings and internal coordination quality assessments. They were made available via the project management tool SharePoint and in the General Assembly (GA).

1 Data summary

1.1 Data collection purpose and relation to objectives

The purpose of the data collection and data generation within the FoodE project was to involve European local food initiatives in the design, implementation and monitoring of an environmentally, economically and socially sustainable City Region Food System (CRFS). The

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key challenge of the project was to improve the food and nutrition security of European citizens by creating a sustainable environment capable of increasing the accessibility and availability of affordable, safe and nutritious food. This challenge has been addressed by setting up a co-creation mechanism, based on Citizen Science[1] and Responsible Research & Innovation principles[2], where public authorities, citizens, SMEs and non-profit organisations can exchange ideas, tools, best practices and new models to support cities and regions in becoming innovative and sustainable food systems.

FoodE uses both primary data generated during the project and secondary data from existing sources, as well as administrative data. Within the project, qualitative and quantitative analytical methods, such as surveys, interviews, case studies, modelling and simulation were used to generate, collect and process mainly numerical and textual primary data but also to process secondary data from already existing sources. Administrative data was generated through participatory activities and provided by the stakeholders and pilots involved. Specifically, data has been generated or processed in relation to the objectives, tasks and purposes of the project, as explained in Table 1. For each type of data, Table 1 also indicates when the generation or use of the data has taken place.

Table 1. Summary of data collection purposes and type per WP tasks

WP	Purpose of data collection/task	Type of data and data source	Software and databases used

1	T1.4: Innovation management. Data to monitor innovations generated by the project	Primary data generation:
		- survey based on the Innovation Radar Initiative of the European Union, adopted to monitor innovation based on a common and consolidated monitoring framework (conducted and updated);
		- data collected to gather information on the type of innovation, ownership, timeframe, target, and exploitation (conducted and updated);
		- data related to intellectual property rights (IPR) collected from all project partners (conducted and updated);
		- table developed to gather 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 what partners are involved
		  - Timeframe: indicative timing of innovation development
		  - Target: stakeholders and audiences concerned (in line with the dissemination and exploitation strategy)
		  - Exploitation: valorisation routes, including ownership and IPR
			Microsoft Office

[1] https://ecsa.citizen-science.net/wp-content/uploads/2021/05/ECSA_Ten_Principles_of_CS_English.pdf
[2] https://ec.europa.eu/programmes/horizon2020/en/h2020-section/responsible-research-innovation

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2	T2.1 Review and inventory of innovative CRFSI	Primary data generation: - surveys submitted to CRFSI leaders (conducted)	online survey tool (ARCTUR, Sphinx), data stored in secured database on Sphinx, Microsoft SharePoint, Microsoft Office, Google Workspace, audio files
		Secondary data use: - literature review on previous research and databases for CRFSI inventory and internet research for complementary information (conducted)	Scopus, WoS, web browsers
	T2.2 Methodological framework development	Primary data generation: - participatory consultations and interviews with pilot owners and selected CRFS stakeholders on methodological framework indicators and features during cross-pollination events, other events and project meetings and individual contacts (conducted)	Microsoft Office
		Secondary data use: - literature review on existing knowledge and tools for the integrated methodology development (conducted)	Scopus, WoS, Mendeley
	T2.3 Data collection and inventory	Primary data generation by survey: - technical aspects by sampling; - food supply systems and technologies data; - social aspects; - dietary habits, perceptions, values, and attitudes, food offer and food commercialization; - economic and costing aspects (conducted and updated)	online survey tool Qualtrics Microsoft Office, Sphinx, MATLAB, SPSS, RStudio, **EnergyPlus, SimaPro, GaBi,**
		Secondary data use (by literature review) to fill the gaps in: - safety issues and contamination risks and strategies for ensuring product quality; - growing systems used in innovative CRFS; - main social aspects; - dietary habits, perceptions, values, and attitudes, on food offer and food commercialization; - economic and costing aspects	**Scopus, WoS, Mendeley, Endnote, Zotero,** Ecoinvent, GaBi,
	T2.4 Assessment of pilots and identification of best performances	Primary data generation: - environmental, social, and cost aspects of selected pilots by interviews and field research	Google Workspace, Microsoft Office, SimaPro
		Secondary data use to fill the gap in: - technical, environmental, technological, and costing aspects of CRFSI by literature review	Ecoinvent, SimaPro, GaBi Microsoft Office

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	T2.5 Pilot decision support tool and self-monitoring	No specific data collection was used in this task, as data from other tasks were used to develop a tool	
3	T3.1.MyLocalFoodE initiative creates a catalogue of networking and cross-pollination initiatives in CRFS, creates stakeholder panels in partner cities and launches the MyLocalFoodE initiatives	Primary data generation: - survey distributed by email and webform to collect experiences and create a catalogue of initiatives (conducted) Secondary data use: - literature/web review for the catalogue (conducted) Administrative data generation: - personal data (names, e-mail addresses, phone numbers, social media accounts, personal views and opinions) provided by stakeholders and generated from MyLocalFoodE events (conducted and updated); - contact list of local and national stakeholders and participants in MyLocalFoodE events; consent forms for taking photographs during events (conducted and updated)	Microsoft Office, Google Workspace WoS, Google Scholar, Scopus, Endnote Microsoft Office, Google Workspace
	T3.2 FoodE App intends to mobilise and interconnect users and stakeholders. Its development builds on a theory-based framework development for a CRFS-oriented App. It will be regularly updated and improved by evaluation of App data used	Primary data generation by - data stemming from T3.1, T2.1, T2.2 and T2.3; - from the use of the App and its environment Secondary data use by: - generation through extensive literature review; - "market research", study of existing applications Administrative data generation: - personal data of registered users (registered users, consent-based)	Qualtrics, FoodE App, Èdit, iOS and Android Markets, SQL Scopus, WoS, Mendeley, iOS App Store and Google Play Store Microsoft Office
	T3.3 FoodE KidScience uses data to create awareness of school pupils, raise interest to engage in the MyLocalFoodE initiative and in the FoodE e-book for young minds	Primary data generation: - interviews and questionnaires applied to teachers; - email and forms to collect experiences; - interviews of stakeholders and experts and photography - publishing articles by FoodE partners and interactive ebooks (visuals, designs, text) Secondary data use: - literature review, visual content from our archives, partners archives and other creative commons licensed resources; - extensive literature review and other WP results; - educational tools: photos, drawings and other infographics Administrative data generation: - list of schools	Microsoft Office, Google workspace, audio files Microsoft Office, online journal, HAL repository search engines such as Ecosia, online databases (scientific and kid literature, photo databases), Adobe Photoshop, GIMP or similar Microsoft Office, Google Workspace Microsoft Office

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4	T4.1 FoodE "Calls for ideas" An open challenge for participatory co-design activities will be launched and selected CRFS project ideas will be awarded in a ceremony	Primary data generation: - surveys or questionnaires submitted to pilot owners about project status; participatory activities and target stakeholders (conducted and updated); - publishing the results from the open challenges (conducted and updated) Administrative data generation: - from pilots, relevant for internal communication (e.g., mailing list) and for public communication (e.g., address and coordinates of the pilot site) (conducted and updated); - from participatory activities (e.g., participant list) organised at the pilot locations/cities	Microsoft Office, Google Workspace Microsoft Office Microsoft Office
	T4.2 Executive project finalisation	Secondary data use: - from data gained in T4.1	Microsoft Office, Google Workspace
	T4.3 Pilot implementation	Primary data generation: - of scientific value (e.g., yield, resource use, whether data etc.) on field research (manual collection, measurement devices such as sensors) based on each specific pilot case; - by surveys and interviews on technological upgrades in the different pilot categories; - by multimedia data on pilots and on site-activities (photos, videos) for the public; - by surveys submitted to FoodE partners for collecting information on previous activities linked to and/or relevant to pilot projects (e.g., size of the activities, type of service provided, number of beneficiaries) for comparative data before and after FoodE Secondary data use: - literature/web search and other WPs' results and databases for CRFSI inventory (for complementary information)	MATLAB, Microsoft Office, Google Workspace, online survey tools, CRFSI' official web pages, web browsers Scopus, WoS, Mendeley, Endnote, Microsoft Office
	T4.4 Participatory pilot monitoring	Primary data generation by - user rating: user-experience indicators from the use of the App and its environment, pilot monitoring process - sets of performance indicators (based on FoodE framework) for each pilot case and results from the actual monitoring and data collection	Foode APP, and online survey, (EUSurvey)
5	T5.1 Classify CRFS business models and conduct SWOT analyses	Secondary data use: - by desktop research (state-of-the-art and developments on CRFS beyond FoodE: scientific literature, reports, other projects); - data from T2.1 review and inventory; - data from WP4 pilot implementation	Microsoft Office, WoS, Scopus, web browsers

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	T5.2 Definition of simplified dataset of indicators used for the online survey tool and certification standard	Secondary data use: - literature review; - data from T2.4 CRFSI sustainability assessment, T2.5 Pilot decision support tool and self-monitoring and T3.2 FoodE App development	Microsoft Office, WoS, Scopus
	T5.3 Development of the online survey tool on the FoodE App for different user groups	Primary data use: - survey submitted to pilot owners, scientific networks about selected indicators - Analysis of results Secondary data use: - data from T2.5 Pilot decision support tool and self-monitoring, T.3.2 FoodE App development and T5.2 simplified dataset	Sphinx Online, Microsoft Office, Microsoft Office, FoodE App,
	T5.4 The FoodE label serves as a standard certification scheme for CRFS	Secondary data use: - data on T2.4 CRFSI' sustainability assessment; - data from T4.3 and T.5.2 (simplified dataset of indicators); - state-of-the-art literature review on labels	FoodE App, WoS, Scopus, web browsers Microsoft Office
6	T6.1 Analysis of EU and national framework conditions and policies and identification of constraints and challenges	Primary data generation: - collection of publicly available policy and planning documents by online survey - qualitative interviews for content analysis - Online workshop with pilots Secondary data use: - analysis of publicly available policy and planning documents and literature by desktop research	Google Workspace, online survey tool (1KA-One click survey), audio files, MaxQDA, Microsoft Office, Miro Board WoS, Scopus, Zotero
	T6.2 Analysis of the roles and relationships of different actors in the food system	Primary data generation: - workshops for participatory network analysis - interviews (individual or in groups) with FoodE stakeholders using the "Net-Map" tool - data generation - visualisation of Net-Maps - SWOT analysis Secondary data use: - data from T4.3, T6.1 and T7.2.1 - Visualisation of actors´ networks	audio files, MaxQDA, Microsoft Office, interview-based mapping tool (Gephi 6.0), Miro, Mural Microsoft Office, Software for creating visual maps (e.g., InDesign)
	T6.3 Framework development for the replication of best practices	Primary data generation: - additional interviews and observations in case study cities; - Workshop with pilots Secondary data use: - data from T.2.5, T4.3, T6.1, and T6.2 was used to identify factors of success or failure and to get general information about the pilots	Audio files, MaxQDA, Microsoft Office
	T.6.4 Development of scenarios for upscaling and creation of a guidebook	Primary data generation: - Workshops with FoodE partners + pilots Secondary data use:	Microsoft Office, Miro Board,

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		- data from T6.1, T6.2 and T6.3 was used for upscaling and recommendations	
7	7.1 Planning and coordination of internal communication and dissemination activities including visual identity, dissemination and communication strategy, website	Primary data generation: - visuals and texts designed by HCA and all FoodE partners - website technology was developed by HCA, and was provided for external users, no sensitive personal data was included within the website Secondary data use: - images, photos and videos be provided by partners and collected from free-to-use sources on the internet	Illustrator, Microsoft Office, video recording software iMovie, WordPress free photo repositories (Pixabay, Pexels, Unsplash, Canva, etc.)

	T7.2 The visibility and participation strategy generates strategic texts and visuals. It builds on stakeholder mapping and analysis, press communi-cation and social media activities, assures a long-term run of the MyLocalFoodE and launch the final event	Primary data generation:
		- visuals and social media posts, news items, blogposts event descriptions, newsletters, press releases designed by HCA based on desk research and inputs provided by partners
		
		Secondary data use:
		- images, photos, and videos provided by partners and collected from free-to-use sources on the internet
		
		Administrative data:
		- personal data (names, e-mail addresses, phone numbers, social media accounts, personal views and opinions) from
		  - Stakeholders;
		  - participants in MyLocalFoodE initiative events;
		  - organizations from the inventory of innovative CRFS (T2.1);
		  - participants in the final event
			Illustrator, Photoshop, Microsoft Office, Canva
			
			Free photo repositories (Pixabay, Pexels, Unsplash, Canva, etc.)
			
			Google Workspace, social media account,

	T7.3 Exploitation strategy generates strategic texts and visuals, collects contact details and information from stakeholders	Primary data generation: - visuals and texts designed by HCA Secondary data use: - images and photos provided by partners and collected from free-to-use sources on the internet Administrative data: - personal data (names, e-mail addresses, phone numbers, social media accounts, personal views and opinions) provided by stakeholders	Illustrator, Microsoft Word, Canva Free photo repositories (Pixabay, Pexels, Unsplash, Canva, etc.) Microsoft Office
	T7.4 Practice abstracts will generate strategic texts and visuals	Primary data generation: - visuals and texts designed by HCA Secondary data use: - images and photos provided by partners and collected from free-to-use sources on the internet	Illustrator, Microsoft Word Free photo repositories (Pixabay, Pexels, Unsplash, Canva, etc.)

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8	Ethic requirements	No data was used or generated	-

1.2 Type and formats of data

FoodE generated primary quantitative as well as qualitative data, re-used secondary data, and organised administrative data. The preferred data file format has been a commonly accepted format (Table 2). Export or conversion to standard file formats were aimed at.

Table 2. Summary of data formats

Type of data	Formats used	Formats for sharing, re-use, and preservation
Numerical or textual data	Microsoft Office (.xls/.xlsx; .doc/.docx; .ppt/.pptx) google docs etc.	numerical: comma-separated values (.csv) Rich Text Format or text (.rtf/.txt) document with fixed formatting (.pdf) Google Workspace formats
Video data	mp4 format (.mp4)	format for videos
Visual data	jpeg, .png, .svg, .tiff, gif, RAW (nef, orf, or similar)	photo material (.jpeg, .png, .svg, .tiff, gif, RAW (nef, orf, or similar))
Audio data	mp3 format (.mp3)	audio recordings will be deleted after their transcription and only the processed transcripts will be shared and preserved
Statistical data	Stata format (.dta)	comma-separated values (.csv); Stata format (.dta); R scripts (.R)
Database	MySQL	SQL
Modelling data	MATLAB (.mat)	numerical: comma-separated values (.csv) Rich Text Format or text (.rtf/.txt)

Documentation files explaining all relevant details regarding data collection, processing methodologies, and quality assurance have been deposited in institutional or public repositories along with the data sets in .odt, .rtf, .xls, .doc or .pdf formats. Spatial (GIS) data, and any non-standard file formats, have been stored together with the information about the appropriate software to guarantee long-term data access.

1.3 Data re-use

The FoodE project capitalized on efforts to integrate existing knowledge and therefore re-used existing data for stocktaking. Existing data has been used where appropriate as part of state-of-the-art analysis related to all relevant thematic contexts of CRFS, e.g., business models, social inclusion, urban regeneration, community building, ecosystem services, and sustainability assessment. The backbone of FoodE's objectives is derived from key projects and initiatives conducted by the project partners in recent years and on which the project can build (see Table 3).

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Table 3: Key projects conducted by FoodE project partners in recent years

Title	Timeline	Focus
EUPHOROS	2008 - 2012	Environmental impact of greenhouses
Ecotech Sudoe	2011 - 2013	Social and Environmental LCA
FertileCity	2014 - 2019	Integrated rooftop greenhouses
UrbanGreenTrain	2015 - 2017	Urban agriculture training curriculum
SUSTURBANFOOD	2016 - 2018	Urban food systems methodological framework
Groof	2017 - 2023	Integrated rooftop greenhouses
FEW-meter	2018 - 2021	Circular urban metabolism
Newbie	2018 - 2021	Innovative business models
VALUMICS	2018 - 2021	Sustainable food supply chain drivers

1.4 Origin of data

Different types of datasets were generated in FoodE (see Table 1). In addition to data collected from existing quantitative databases (secondary data), primary data was generated from social-empirical research, such as surveys, interviews, or events. Additional data was generated by conducting experiments and assessments of innovative CRFSI and the use of the FoodE app.

1.4.1 Survey data

Various surveys have been conducted to collect information on innovative CRFSIs, stakeholder mapping, and governance analysis. In July 2020, a first survey was prepared to collect data from more than 600 potentially innovative CRFSIs and initiatives across Europe (WP2, Task 2.1) using an online questionnaire. In addition to personal information, the questions covered the type, main activities, size of the initiative, its relations to other key partners, its impact, and the impact of the COVID-19 crisis.

In July 2021, a second survey was designed to collect data for the simplified sustainability assessment of over 100 CRFSIs across Europe (WP2, Task 2.2, 2.3) using an online questionnaire. In addition to details on the name and location of the CRFSI, questions covered characteristics related to job creation & and quality, community outreach, engagement & and education, food quality and safety, costs & and profitability, market potential and customer profile, environmental details on primary production, resource use efficiency, waste management and transport.

Surveys have also been used to involve all FoodE stakeholders in the App development process. A description of these can be found in Deliverable D3.7. For example, online questionnaires were used to collect information on the planning and type of co-design activities organised in the 15 CRFS pilot projects (WP4, Task 4.1) and to compile a catalogue of local initiatives (WP3, Task 3.1). Questions covered the type, description, and number of activities, type and number of participants, evidence of participation, and main outcomes. The information collected can be found in Deliverables D4.1, D4.2 (concluded), and D3.6.

Other surveys followed, using a range of response types, including numerical information, pre-defined options, text, etc. For example, WP4 used questionnaires to monitor the progress of

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pilots on a regular basis (e.g., 3 – 6 months) against pre-defined targets. The information collected depends on the pilots' initiatives and includes, for example, the number of vulnerable people involved, the number of citizens/farmers/schools involved, the number of training and educational activities organised, the amount of food produced, etc. This will allow progress to be tracked over time and ensure that the objectives are met at the end of FoodE (D4.4).

In WP 5 an online survey tool was developed to evaluate the Key Performance Indicators (KPIs) (developed in WP5.2) by different stakeholder groups to ensure that these KPIs were understood by the stakeholders/users of the tools and that they are valid and relevant. The results can be found in Deliverable 5.3 and were used by WP3 to improve the FoodE app, by WP4 to monitor the pilot projects, and by WP5 to develop the FoodE label in T5.4.

Surveys were also used to collect publicly available policy and planning documents (WP6, T6.1). An online survey tool was used to map the legal frameworks and policies of the EU and Member States and the related constraints and challenges for CRFS in the partner countries. In addition, different policy measures with positive and negative impacts as well as current policy gaps were compiled from both a theoretical and practical perspective. The results can be found in Deliverable 6.1 and were also used for the preparation of the seven factsheets on The Policy Environment for Sustainable City Region Food Systems.

1.4.2 Interviews

Several consortium project partners conducted qualitative face-to-face, telephone or video interviews. For example, in WP6 interviews were conducted with policymakers and other stakeholders to identify supportive and hindering policies for sustainable CRFS (D6.1).

Most of the interviews were semi-structured. Interviewees were informed in advance (by email, phone, or face-to-face) about the purpose and context of the interviews, and were asked to sign and return an informed consent form (scanned pdf) or to give verbal consent during the recording of the interview. The transcripts of the qualitative interviews were sent to the interviewees for comment and approval upon request.

Neither the recordings nor the individual interview summaries as interview datasets are public research material but can be made available in anonymised form for future needs, e.g. for academic peer review purposes. Syntheses of clusters of interviews may be considered for publication in academic articles, but also in policy, business, and management briefs. The basic set of questions for the interviews may also be published. Synthesising interpretations of the interviews have been presented in various WP deliverables.

Within WP6, several interviews were conducted to analyse the roles and relationships of different actors in the food system (D6.2) or to identify success and failure factors for different business models of CRFS (D6.3).

1.4.3 Events and Workshops

A number of dissemination and awareness-raising events were carried out within WP3 (MyLocalFoodE initiatives). Open science events organised by universities, roundtables with CRFS managers and NGOs, initiatives dedicated to young people and organised by students were organised. Partly, and due to the COVID-19 crisis, these events were held online and recorded with the consent of the participants. Programmes, activities and summaries can be published on the website and copies can be sent to third parties.

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Data collected from dissemination activities involving school children has been used to support research activities on raising awareness among young people. The data was used in public events within the MyLocalFoodE initiatives to: i) give feedback on the classroom experience to the participating children and their families; ii) involve students in the presentation of sustainable CRFS concepts; and iii) develop innovative strategies (e.g. within hackathons) to develop innovative CRFS in their regions. Awareness-raising activities for students have been included in the European Guidebook on Sustainable CRFS.

Within WP4, e.g., different types of online or on-site events and activities (including workshops, discussion groups, student projects, and student competitions) have been organised by the CRFS pilot initiatives to involve citizens and other relevant stakeholders in the co-design and co-creation of their pilot projects. A description of these events and activities can be found in Deliverable D4.1. The information gathered was used to design pilot projects or to improve and integrate already existing projects with innovative food production systems, technologies, business models, and social innovations.

Different types of online or on-site events and activities (including workshops, discussion groups) were organised within WP6. In Task 6.2, several workshops on the Net-Map methodology were organised with the participation of many project partners. In Task 6.4, two major workshops were organised in the GAs of Tenerife and Paris to develop and produce scenarios for the European Guidebook. The descriptions of these workshops can be found in reports D6.2 and D6.4. Workshops were also organised to involve all FoodE stakeholders in the App development process. A description of these events can be found in Deliverable D3.7.

1.4.4 FoodE App

The FoodE App is a core element of the project. By actively participating in the development of the FoodE App, users are not only aware of local initiatives but also engage in the cross-evaluation of existing CRFSI, thereby accessing benefits and services provided by CRFSI catalogued in the database. The App was continuously evolved during the project, collecting inputs from both the pilot implementation (WP4) and the indicators´ identification and validation phase (WP2 and WP5). Additionally, the FoodE App was linked to the exploitation strategy and exploitation plan to develop the App considering all CRFS stakeholders (WP7).

During the project, participants' data (both from initiatives and regular users) was collected in the FoodE App after an acceptance of informed consent. The data collection through the App and its processing and use have been validated by the Data Protection Delegate and the Ethical Committee from UAB (December 2021) following the regular institutional procedures. Data collected has been used for two main purposes:

- first, data has been used for reports, articles, and infographics with research purposes linked to the FoodE project;
- second, data has been used for the App itself to power a strong network of initiatives involved in the CRFS. This data allows the App to calculate the sustainability performance of the initiatives and other Key Performance Indicators (KPIs), and the social perception of the CRFS by the users (user experience)

Other objectives of the data gathering through the App were dissemination of information, promotion of CRFSI products and services, promotion of events at the CRFSI level, engagement in the environmentally-oriented loyalty program, engagement in promoting special benefits and awards and sharing FoodE research findings.

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All elements described below (Database, back office, and additionally the landing page and FoodE App) have been stored in a commercial server rented by the Sostenipra research group (UAB), therefore storing all data relevant to the FoodE App.

The Foode App data managed by UAB has been stored first at the server hosted at Nominalia.com (the hosting service, where the MySQL database is stored), and from there at the UAB repository (ICTA NAS), ensuring data security measures. Datasheets with their content as a table format were shared with the research group ResCUE-Ab at UniBo through the TEAMS platform. The full datasets in the database can only be accessed by the responsible members from the UAB Sostenipra research team (Gara Villalba and Xavier Gabarrell) as well as the supporting team from UAB (Oriol Baeza), and the hosting administrator (Nominalia).

The repository database from Nominalia hosting was connected to the App Backoffice, which serves as the dashboard for the CRFS sustainability assessment and data introduction by initiatives. This dashboard can be accessed by the App administrator through a login and password to check all information and doesn't have tools to export the information.

Defined administrators with access to the back office are the following:
- gr.sostenipra@uab.cat, (managed by the Sostenipra team)
- Ecoavantis (App programmers)*
- Xavier Gabarrell as IP of Sostenipra group
- ResCUE-AB research group

*Will not have access from December 2023 on.

The data collection for users has been minimized, consisting on:

- Name
- Surname
- Email Address
- Postal Address

Once data is managed through the edit (only CRFS information for the environmental score) personal information of the users undergoes pseudo-anonymization through a user ID number which is further referenced in the CRFS.

The data collection for CRFS initiatives starts with basic contact information on the initiative as well as its locations and typology of CRFS:

- Identifying information: name, location, category, picture, contact name, e-mail, etc. Mandatory fields are expressed with a "*" symbol.
- Categories linked to the categorization: Agriculture, Fisheries, Livestock Farming, Food processing, Food distribution, Restaurants and catering, Food waste, Education and services, and Others.

The data obtained through the Simplified Sustainability Assessment was defined by the chosen KPIs on the social, environmental, and economic pillars of the scoring system. The KPIs are presented within 5 specific impact categories:

Impacts Category:
- Jobs:

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  - Waged jobs: number of employees that receive financial compensation, considering both full-time and part-time contracts.
  - Contract typology: the prevalent typology of contract within the organization evaluated by the degree of fixed term / temporary contracts.
  - Average gross monthly salary: the average monthly gross wage received by employees.
  - Workplace training: the frequency of workplace training per employee based on the number of hours per year and per employee.
  - Gender gap: percentage of female wage employees over the total number of employees.

- Community, outreach, engagement and education:
  - Frequency of events: number of events per year organised by the initiative for the local community that promotes its engagement.
  - Disadvantaged people: whether the initiative organises activities for the disadvantaged people of the local community or not.
  - Connection with local producers: whether the initiative manages food or resources from local producers or not.
  - Volunteering activities: whether the initiative involves local people in volunteering activities or not.

- Food quality:
  - Product characteristics for the following qualitative variables: taste, freshness, healthiness and nutritional quality, animal welfare, food safety, food chain fairness, variety of food offered, being local, and environmental sustainability.

- Organisation profitability and outlook:
  - Annual net profit margin: evaluated by a range of negative and/or positive percentages.
  - Income diversification: how diversified are the income sources for the initiative considering sales revenue, activity revenue, public funding, and private funding?
  - Business future: expectancy of the change of the business for the upcoming 3 years relative to product sales, other revenues, profits, and number of customers/clients/users.

- Local economic development:
  - Provenance of employees: area (administrative levels) of origin of the waged employees.
  - Locally sourced supply: percentage of supplies sources locally, understanding local as within a maximum distance of 50km from the location of the initiative.
  - Suppliers' practices: whether the initiative applies specific fair practices towards suppliers or not.

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- Customers and users:
    - Customers/user acquisition: degree level of new customers or users per year.
    - Customers/users return degree level on the number of customers coming back after the first experience with the initiative.
    - Customers/users expenditure: degree level on the expenditure increases of each customer/user.
    - Customers/users return reason: degree level on the number of customers/users coming back because recommended by others.
    - Online selling: whether the initiative includes online selling channels or not.

- Food production/supply:
    - Technology used for crops: in this case, the initiative encompasses crop management, typologies of technologies used for the crops produced, managed, or sold.
    - Animal feed provenance: in this case, the initiative encompasses livestock management, the distance of the animal feed produced, managed, or sold.
    - Fishing gear types: In this case, the initiative encompasses fishing activities, typologies of gear types used for the fish produced, managed, or sold.
    - Ancient cultivar or local breed: either the initiative cultivates, manages, or sells ancient cultivars and local breeds or not.
    - Characteristics of the products: importance degree related to the preferences on some specific characteristics of the food produced, managed, or sold.

- Resource use efficiency:
    - Water saving practices: degree of importance of water saving practices.
    - Electricity sources: a typology of electricity used evaluated through the degree of renewable sources.
    - Heating sources: a typology of heating used evaluated through the degree of renewable sources.

- Waste management and circularity:
    - Waste recycling: percentage of recycled waste according to each waste typology.
    - Sustainability commitment: commitment degree towards the adoption of a set of practices regarding energy, water, organic waste, materials, and packaging.
    - Packaging and materials recyclability and compostability: usage of compostable and recyclable packaging and materials.

- Transport:
    - Distance from clients/customers: the distance range between the initiative and key clients/customers.
    - Type of transport to clients/customers: degree of fossil fuel usage by the transport between the initiative and clients.
    - Type of transport of supplies: degree of fossil fuel usage by the transport between the initiative and their suppliers.

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Since January 2024 the FoodE Label minimum standard's assessment has been integrated into the FoodE App domain containing an extensive questionnaire aimed at the sustainability self-evaluation of CRFS. This data follows the same management and security procedures as defined for the FoodE App Simplified Sustainability Assessment.
The questionnaire envisions the following different typologies of CRFS:

- Horticulture (Low Tech) Includes: urban allotment gardens; extensive farms; urban community gardens
- Horticulture (High Tech) Includes: vertical farms; rooftop farms; greenhouse farms
- Arable Farming Includes: cereal and oil-seed production
- Livestock and/or Beekeeping
- Fishery
- Processor
- Retailer
- Food service

Collecting information on the 3 pillars of sustainability with targeted KPI for each typology and system.
Environmental:

- Food Production
- Waste Management
- Distribution

Social:

- Job
- Community outreach

Economic:

- Business Sustainability
- Customer orientation

All data has been stored and managed by UAB and UniBo until up to 5 years after the finalization of the FoodE project.

1.5 Size of data

The expected size of data does not exceed 50 GB. This does not include the size of the data of the App which still cannot be calculated at this stage.

1.6 Data utility

The generated data produced can be relevant for different user groups. They include practitioners (management, policy, stakeholders) who may benefit from data generated on how to improve interactions within actors of the food chain, for empowering local communities, and for cities interested in becoming sustainable food hubs.

The scientific community may benefit from data generated to develop and test methods for assessing the sustainability of CRFS: The data could also be used as a source for further studies, comparisons, and different analyses e.g., in other spatial contexts in Europe and beyond.

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2 FAIR Data

This DMP follows the EU guidelines[3] and describes the data management procedures according to the FAIR principles. The acronym FAIR identifies the main features that the project research data must have to be **f**indable, **a**ccessible, **i**nteroperable, and **r**e-useable, allowing for maximum knowledge circulation and return on investment.

2.1 Making data findable, including provisions for metadata

Research data in FoodE has been organised in a transparent and standardised way to make it retrievable in the long term. Minimum file format agreements ensure meaningful data storage.

2.1.1 Findability and Metadata Provision

Data collected/generated by FoodE, either as intermediate or final products such as deliverables, reports, factsheets, training guidelines, etc., has been made available to all project partners for practical use within the project. For this reason, the 4 PM data management system provided by ARCTUR was used until the exit of ARCTUR from the project at the end of July 2021. Since then, all the information collected in FoodE by the consortium partners as part of the WPs and task activities has been migrated to SharePoint, a Microsoft web application, which served as the central means for internal data storage and information exchange between all consortium partners. This platform was regularly updated, and the data quality was controlled by the UNIBO coordination team, with oversight from the Steering Committee (SC). SharePoint is password-protected and accessible only to assigned project partners. It has been used throughout the life of the project. After the end of the project, the data will be archived for at least one more year.

If there are no objections from the point of view of the Grant Agreement and the Consortium Agreement, and if the considered data is not subject to sharing restrictions due to EU regulations, collected and processed data have been and will be made available as open access to third parties beyond the consortium through data publications and will be promoted and linked via the FoodE website www.foode.eu and other means of dissemination in social media. An exception can be made for those data of which a majority of the consortium believes that there is no value added for third parties or if the data generator is not interested in facilitating access to the broader public.

To make availability meaningful to third parties, the information should be easy to find and identify. At the time of publication of project results, each research team will deposit and describe the corresponding underlying data set(s) in institutional or public data repositories that can assign persistent unique identifiers to the deposited item. Partners are strongly encouraged to use persistent unique identifiers (DOI or Handle[4]) to cite the datasets as underlying data within their research publications.

Table 4 provides an overview of the institutional repositories that have been used so far to deposit publications and data to date. As a general rule, Zenodo[5] has been used for open dissemination and preservation of research data by all research teams that do not have suitable institutional, national, or disciplinary data repositories.

[3] Guidelines on FAIR Data Management in Horizon 2020 (Version 3.0, 26 July 2016), http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf
[4] https://www.doi.org/factsheets/DOIHandle.html
[5] Zenodo, https://www.zenodo.org

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Table 4: List of repositories used by FoodE partners (status as of M24)

Partner	Repository
UNIBO	AMS-Acta (http://amsacta.unibo.it/) for internal publications CRIS (https://cris.unibo.it/) for scientific publications
APT	HAL (https://hal.inrae.fr/)
UAB	DDD (https://ddd.uab.cat/)
WUR	Research output of Wageningen University & Research staff (https://library.wur.nl/) for scientific publications Zenodo (https://www.zenodo.org)for data depositions

For data that cannot be shared, meta-information will be made available to third parties as far as possible following the OpenAIRE 3.0 requirements for data archives[6]. As a consequence, the project datasets will be visible through the OpenAIRE portal[7], facilitating project reporting procedures. Standards are likely to be used in a similar way to, for example, the Dublin Core Metadata Element Set (ISO Standard 15836) as a basic standard that is widely used, well understood, and implemented[8].

[6] OpenAIRE Guidelines for Data Archives https://guidelines.openaire.eu/en/latest/data/index.html
[7] OpenAIRE https://www.openaire.eu/
[8] Dublin Core Metadata Initiative http://dublincore.org/

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The provided metadata will include the following variables:

- Original purpose, project WP/task
- Data type (qualitative or quantitative; primary or secondary)
- Data collection method
- Data analysis method
- Creation date/period
- Creator (name, email)
- Owner(s) (organisation(s) + prime contact)
- Data product
- Author of data product
- Kind of quality check (e.g., none, peer-reviewed)
- Level of openness; allowed types of re-use (incl. licenses)
- Link to the content of work packages.

Specific keywords, derived where possible from Thesaurus[9] and controlled vocabularies, are associated with each record to enhance semantic discoverability.

2.1.2 Naming conventions

All FoodE documents should have been provided with a unique filename to ensure effective version control and data storage. So far, naming conventions have been proposed for the following items (see Table 5).

Table 5: Naming conventions for files

Document status	File name
Meeting agendas and minutes	
Draft	FoodE_WP<WPno.>_<Type>_<Date of meeting>_<Agenda or Minutes>_V<version no.> e.g. FoodE_WP1_kickoff_20200213_Agenda_V3
Final	FoodE_WP<WPno.>_<Type>_<Date of meeting>_<Agenda or Minutes e.g. FoodE_WP1_kickoff_20200213_Agenda
Deliverables, Milestones, and Reports	
Draft	FoodE_WP<WPno.>_<Del. Or Mil. Or Rep.no.>_<YYMMDD>_V<version no.> e.g. FoodE_WP1_D1.6_200310_V1
Final	FoodE_WP<WPno.>_<Del. Or Mil. Or Rep.no.>_<resp. beneficiary> e.g. FoodE_WP1_D1.6_ILS
Presentations	
Draft	FoodE_<conf. title>_<authors>_<YYMMDD>_V<version no.> e.g. FoodE_SURE2020_Specht_etal_200515_V1
Final	FoodE_<conf. title>_<authors>_<Date of conf.> e.g. FoodE_SURE2020_Specht_etal_200706
Conference and Journal Papers	
Draft	FoodE_<journ. or conf. title>_<authors>_<YYMMDD>_V<version no.> e.g. FoodE_Sustain_Specht_etal_20200515_V1
Final	FoodE_<journ. or conf. title>_<iIssue or Conf. date>_<authors> e.g. FoodE_Sustain_15_Specht_etal
Images	
Photos	FoodE_<location>_<YYMMDD>_<author>_<copyright restricted or free> e.g. FoodE_Bologna_191020_Specht_restricted
Others (diagrams, etc.)	FoodE_<title>_<authors>_copyright restricted or free e.g. FoodE_GattChartDeliverables_Orsini_free

These naming conventions were mandatory for all data stored on SharePoint and in repositories. It was advisable to follow the suggested naming conventions for all data created in FoodE. For the storage of data within the SharePoint, sections were provided for each WP.

[9] https://www.thesaurus.com/

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The subfolders were named according to the WP tasks. All contributors to the FoodE project were instructed to take advantage of the SharePoint as much as possible.

2.2 Making data open accessible

In general, all data has been accessible to all consortium partners via Microsoft's password-protected SharePoint web application. Partners were able to access all areas of the WPs in which they have been involved.

As a guiding principle, FoodE has sought to make research data openly available whenever possible to enable the dissemination, validation, and re-use of research results. To achieve this, FoodE has been following the "Guidelines to the Rules on Open Access to Scientific Publications and Open Access to Research Data in Horizon 2020 in order to comply with the Open Access rules for peer-reviewed scientific publications and research data generated during the project[10]. For this purpose, all files have been converted into standard and well-documented open formats and the datasets have been deposited together with all relevant documentation and explanations.

Restrictions on access to data or inability to share data were only considered in the following cases:

- Collected data belonging to third parties who have refused permission to share it for reasons of confidentiality and ownership;
- Protection of personal data of key informants involved in surveys, events, interviews and case studies;
- when the availability of the data meant that the main objective of the project could not be achieved (in this case the reasons were explained in the metadata description).

As a result, all possible and legitimate measures and strategies have been adopted to enable data sharing, including

- Conversion of files to standard open formats;
- Providing all relevant documentation and explanations for the data and datasets;
- Obtaining consent from stakeholders involved in events or interviews to use anonymised and aggregated data from statements or interviews;
- Obtain copyright permission from third-party data owners to reuse, reproduce and distribute the collected data;
- in the case of copyrights on raw data derived, collected or edited from pre-existing databases or other sources (e.g. papers, journal articles, book chapters, reports, video and audio sources), the collected data were made available where reproduction and dissemination were permitted by explicit permission from the rights holders or by applicable copyright exceptions and exemptions.
- In particular, reproduction and communication of short extracts from texts and other protected works were permitted for illustrative purposes for scientific research, provided that the source, including the author's name, was acknowledged and that the use did not conflict with the exploitation of the source and did not unreasonably prejudice the legitimate interests of the right holders. Otherwise, only aggregated data resulting from the analysis was published.
- Where the sources were freely available online in their original repositories, but direct reproduction was not permitted, a detailed account of how the dataset was created from

[10] https://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-pilot-guide_en.pdf

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the original data was provided, together with an indication of the open repositories from which the original datasets are available. Full-text raw data has not been made available without the permission of the copyright holder.

Final products as defined in the GA (e.g. policy/business briefs, manuals, journal articles, etc.) will be publicly available via the website. Information to be made available to third parties has been reviewed for data quality and privacy prior to dissemination to institutions / third parties and has been anonymised in accordance with the principles of research integrity, the responsible conduct policies of partner organisations and the European Code of Conduct for Research Integrity (ALLEA 2017[11]).

Each different dataset was deposited by the team that is responsible for the data collection and management in the repository of their choice (see Table 4). The selected repositories had to be indexed in OpenAire[12] or listed in the Registry of Research Data Repositories.[13] In general, Zenodo[14] has been used for the open dissemination and preservation of research data by all research teams that did not have suitable institutional, national, or disciplinary data repositories.

For ease of understanding and re-use, the datasets have been deposited in the data repositories together with all relevant documentation explaining the data collection and analysis procedures.

In general, there was no need to use specific software to access project data, as the researchers converted the data into open formats. Where specific software was used for data processing, full explanations and instructions were included in the deposited documentation (tools and software required for re-use of datasets are described in 1.2 and Table 2).

All data containing personal or sensitive data were released only in anonymised form and in accordance with Deliverables 8.1 and 8.2. In the case of specific requests for access to restricted data from individual researchers, research institutions, reviewers, and committees, for example, to check the quality of research results and to reproduce them, UNIBO acted as a contact point and evaluated each request by consulting the partner(s) that produced the data requested.

2.3 Making data interoperable

FoodE used common data formats as described in sections 1.2 and 2.2. All datasets were described using standard descriptive metadata, as described in section 2.1 and the DataCite Metadata Schema[15] to ensure metadata interoperability for indexing and discoverability. All relevant documentation explaining codebooks, user manuals, data collection procedures, and analysis have been made available along with the data to ensure comprehensibility, reproducibility, and validation of the project results.

Categories of official data relative to EU-funded projects included in Annex II of Commission Regulation (EC) No 1828/200611[16] were used to name the variables analysed within the project. Similarly, variable names of data derived from other official sources, such as Eurostat, were

[11] https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/european-code-of-conduct-for-research-integrity_horizon_en.pdf
[12] OpenAIRE https://www.openaire.eu/
[13] Re3data, https://www.re3data.org
[14] Zenodo, https://www.zenodo.org
[15] https://schema.datacite.org/meta/kernel-4.0/doc/DataCite-MetadataKernel_v4.0.pdf
[16] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02006R1828-20111201

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consistent with the source names. The variable names of data derived from surveys were as close as possible to the survey items.

2.4 Increase of data re-use

FoodE supported the European 2020 strategy by stimulating and enabling innovation at the European level. Through their consortium organisations and individual members, the partners have close links to related national and international projects, and policy and innovation initiatives carried out by different partners within the project consortium.

When FoodE data is re-used in another project or working group, a link from the original project folder to the new project should be provided. In principle, datasets should never be duplicated and/or transferred to another project without reference to the FoodE project. When duplicating datasets for reanalysis or new visualisations within other projects, the original dataset will be kept in a date-stamped folder. The duplicate is stored in a new folder with a date stamp and the reason for duplication.

Files to be made accessible for third parties have been declared under the Creative Commons Licensing[17] system, the recommended options are:

- Attribution-ShareAlike 4.0 International (CC BY-SA 4.0)
- Attribute 4.0 International (CC BY 4.0)

The CC BY 4.0 license allows users to freely share, modify, and use the data provided that full credit is given to the author(s). As an exception, CC BY NC 4.0, which requires full credit but limits reuse for commercial purposes, has been chosen when the data was collected from pre-existing sources that limit their free reuse (for example, when an exception for illustration for scientific research was applied, the reproduction of short excerpts has been possible only for non-commercial purposes).

3 Allocation of resources

Data management was the responsibility of the dataset creators, who were generally the leaders of the WPs directly involved in data generation and collection. All project partners had to be aware that making the data FAIR would require a certain proportion of man-months. This included, for example, the conversion of data files into open source formats, obtaining permission to re-use data from other contexts, and deposit procedures. All WPs producing or using data were involved in this task and had to contribute to the FAIR data management as part of the allocated budget.

The cost of implementing and running the data management on the SharePoint platform until one year after the end of the project was included in UNIBO's budget.

At the partner level, all FoodE partners who intended to publish scientific papers included costs for Open Access publications in their budgets. The costs of setting up and maintaining the Foode.eu website for at least three years after the end of the project was covered by the ARC budget and has been transferred to HCA, which now maintains the website after ARC's exit.

There were no costs for the deposit of publicly shareable data, as the chosen repositories do not charge for data storage.

[17] https://creativecommons.org/about/cclicenses/

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The costs of coordinating the data generation and use by the partners, preparing and updating the DMP, and providing guidance on data management and open access issues amount to 5 person-months for the entire duration of the project and were included in the ILS budget.

4 Data security

The costs for coordinating the data generation and use by the partners, for preparing and updating the DMP, and for guiding on data management and open access issues, account for 5 person-months for the whole duration of the project and were included in the budget of ILS.

Backup procedures have been implemented and controlled by the coordinator (UNIBO). At each institution, research data has been stored on computers, laptops, intranets or hard disks, accessible via institutional passwords, regularly changed following national data security legislation, and protected by regularly updated antivirus software. None of the project data was inadvertently made available.

Long-term preservation of public data has been ensured by the selected repositories, which have specific preservation policies. For example, Zenodo's policy ensures that items are retained for the lifetime of the repository and, in the event of closure, every effort has been made to integrate all content into suitable alternative institutional and/or subject-based repositories.

5 Ethical aspects

Each partner involved in the project fully complied with the principles and standards sanctioned by the General Data Protection Regulation (GDPR), which provides a common legal framework for all EU member states and sets guidelines for the collection and processing of personal data of individuals within the European Union (Regulation 2016/679 EU).

All FoodE activities followed the guidelines of the German Research Foundation[18]. This included all authors of publications agreeing on the sequence of authorship and acknowledging that authorship itself was based on a substantial contribution to the design of the research, the collection of relevant data, or the analysis or interpretation of the results.

In addition, all FoodE partners followed their organisations' Responsible Care policies, as detailed in D8.2 - Protection of Personal Data. D8.2 provides detailed information on the procedures implemented in each partner organisation for the collection, storage, protection, retention, and destruction of data by national and EU legislation. Deliverable D8.1 - Human Subjects details the procedures and criteria used to identify and recruit research participants, and provides information on the informed consent procedures implemented for the participation of human subjects before the commencement of research activities. In all forms of stakeholder interaction, participants were informed that participation was voluntary, that consent could be refused and that withdrawal was possible at any time.

The data collected for analysis was recorded and anonymised so that the individual identification of participants cannot be identified, thus ensuring data protection and privacy. Contact details of actors willing to share their experiences have only been made available with the explicit consent of participants. In order to safeguard the rights of participants and to recognise their contributions, all participants in the Innovation Action were invited to provide feedback on the participatory events and summaries of the project outcomes. Those

[18] https://www.dfg.de/download/pdf/foerderung/rechtliche_rahmenbedingungen/gute_wissenschaftliche_praxis/kodex_gwp_en.pdf

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participants who made substantial contributions, e.g., by describing innovations in detail, were directly acknowledged with their consent.

The project SC raised the question of ethical issues, including data collection/generation, at every meeting of the consortium to keep all partners aware of their sensitivity, particularly when it came to assessment approaches and initiatives involving school children.

6 Other issues

To ensure guidelines for selection, quality assurance and data protection, all project partners were informed about the details of this Data Management Plan. In addition, the coordinator and the SC monitored the appropriate implementation of open data availability through the website and other means.

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