2030 CITIES

List of participants

Participant No. *	Participant organisation name	Referred as	Country
1 (Coordinator)	Ca' Foscari University of Venice	UNIVE	Italy
2	EPC - European Project Consulting Srl	EPC	Italy
3	GEMEENTEBESTUUR BRUGGE	BRUG	Belgium
4	VIVES University College	VIVES	Belgium
5	ISTANBUL EUROPEAN RESEARCH ASSOCIATION	IAAD	Turkey
6	INAGRO, PROVINCIAALEVAP	INAG	Belgium
7	EREVNITIKO IDRIMA P.L. (UNRF)	UNRF	Cyprus
8	Razvojna agencije Grada Velika Gorica VE-GO-RA	VEGO	Croatia
9	Inventivna rjesenja	INVE	Croatia
10	VEJLE KOMMUNE	VEJLE	Denmark
11	FUNDINGBOX RESEARCH APS	FBR	Denmark
12	Into Seinäjoki Oy	INTO	Finland
13	PROAGRIA ETELA-POHJANMAA RY	AGRIA	Finland
14	SMART & LEAN HUB OY	SLEAN	Finland
15	Magistrat der Stadt Bremerhaven	BRH	Germany
16	Verein Zur For. Des Tech. An Der Hoch. Bremerhaven Ev	TTZ	Germany
17	BIOZOON GMBH	BIOZ	Germany
18	AYUNTAMIENTO DE QUART DE POBLET	QUAR	Spain
19	SOCIALINNOLABS	SINNO	Spain
20	UNIVERSIDAD POLITECNICA DE MADRID	UPM	Spain
21	WATERFORD INSTITUTE OF TECHNOLOGY	WIT	Ireland
22	MATIS OHF	MATIS	Iceland
23	FUTURE FOOD INSTITUTE	FFI	Italy
24	VIDZEME PLANNING REGION	VPR	Latvia
25	LATVIAN LAUKU FORUMS (LLF)	LLF	Latvia
26	ASSOCIATION GREEN GROWTH PLATFORM SKOPJE	GGP	N. Macedonia
27	AG FUTURA TECHNOLOGIES DOOEL SKOPJE	AGFT	N. Macedonia
28	CITY HALL OF IASI	IASI	Romania
29	Academia Romana – Filiala Iasi	ARFI	Romania
30	ITC – INNOV. TECNOLOGY CLUSTER MURSKA SOBOTA	ICTM	Slovenia
31	Correlate AS	CORR	Norway
32	COMUNE DI VICENZA	VIZ	Italy
33	STICHTING VU	IVM	Netherlands
34	Mestna občina Murska Sobota	MOMS	Slovenia
35	UNIVERSITE DU LUXEMBOURG	UNIL	Luxembourg
36	UNION OF CYPRUS COMMUNITIES	UCC	Cyprus
37	Primelayer, Unipessoal, Lda	PRIM	Portugal
38	UNIVERSITA IUAV DO VENEZIA	IUAV	Italy
39	RIGAS TEHNISKA UNIVERSITATE	RTU	Latvia
40	Cité de l'Agriculture	CITAG	France
41	Gemeente Haarlem	HARL	Netherlands

Abbreviations			
Abbreviation	Description	Abbreviation	Description
CEI-1	Call's expected impact(s) n.º 1, etc.	MUFPP+	A number of good practices
CRFS	City(ies) region(s) food system(s)	RI	Research and innovation
EU	European Union	UFSE	Urban food system(s) and ecosystem(s)
EU-UN11NUA	FOOD2030, SDG11, UN-NUA	UN	The United Nations
IMA	Impact monitoring and assessment	WG	Working group
MUFPP	Milan Urban Food Policy Pact	WP	Work package

1. Excellence

1.1 Objectives

Urban food systems and ecosystems (UFSE) demand immediate action. CITIES2030 proposes consumers must be at the core of solutions. More than 7.7 billion consumers hold the power to shift 100-year old consumption patterns to meet the requirements for a improved future. The challenges: population overgrowth, rapid urbanisation, vast migration phenomena, climate change and resources scarcity. 9 billion people, most living in cities, 3 billion overweight, and 2 billion without enough food. Without action toward transition towards sustainable UFSE, the environment will persist being degraded and diminish the world's capacities to produce quality food for all, whilst decreasing capacities to provide food to all.

UFSE poses a planetary challenge that CITIES2030, a new initiative, addresses at local and regional levels, to generate small steps, systemic, pragmatic, actionable, transferable and sustainable solutions.

CITIES2030 innovative approach have a great opportunity to attract the best researchers, entrepreneurs, civil society leaders, cities and all agents of the UFSE as well.

The main goal of CITIES2030 is to create a future proof and effective UFSE via a connected structure centered in the citizen, built on trust, with partners encompassing the entire UFSE.

CITIES2030 commit to work towards the transformation and restructuring of the way systems produce, transport and supply, recycle and reuse food in the 21st century. CITIES2030 vision is to connect short food supply chains, gathering consumers, strategic and complement industry partners, the civil society, promising start-ups and enterprises, innovators and visionary thinkers, leading universities and research across the vast diversity of disciplines addressing UFSE, including food science, social science and big data.

Over the coming four years, CITIES2030 aim at raising funds and is expected to attract significant funding from diverse sources of private and public sector investments. CITIES2030 actively encourage the participation of citizens by delivering a trusted UFSE, moving consumers from being passive recipients to active engagement and motivated change agents. This objective is achieved via multiple tools delivered by CITIES2030 such as the CRFS Alliance, a community of practice supported by a digital platform, reaching all over Europe and beyond. This approach will enable innovation actions and enhancements on a pan-European scope with a global reach. Cities and regions will improve resilience and sustainability, and their leadership will create short food supply chain and ecosystems enabling local investments, trans-borders and transnational deployment. A blockchain-based data-driven UFSE management platform will secure intelligence and coordination actions by delivering an accurate, almost real-time digital twin of the whole supply chain, e.g. from production to waste management, but also on four key enablers of resilience and sustainability: security, ecosystem services, livelihood (e.g. growth) and equity (e.g. inclusivity).

CE-FNR-07-2020 globally tackles 12 widely challenging scopes of actions which does not leave without recalling the 12 labours of a certain hero. CITIES2030 addresses each of these scopes (see section 1.2) to generate and deploy an actionable roadmap to structure, accelerate and sustain transforming urban food systems and ecosystems (UFSE), and to deliver frameworks for the production of policies (e.g. action plans) and innovations (e.g. supporting instruments), towards the democratization and implementation of sustainable urban food system practice, which will be piloted in real-scale in 10 selected cities. CITIES2030 acknowledges and defines sustainable UFSE as schemes which effectively delivers practical answers to combined FOOD 2030 all four pillars and UN's SDG11 policies, and UN's New Urban Agenda (all policies referred later as EU-UN11NUA).

Also, CITIES2030 acknowledges and defines food systems per the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security¹. CITIES2030 activates, accelerates, structures and generates 10 front-runners EU cities pilots and 2 regions, whilst establishing corresponding numbers of policy and living labs, and further deploys to a total of 50 EU cities pilots by 16.10.2024 on the World Food Day that year. The aforementioned roadmap is co-created and implemented by 500 actors of the food chain and systems arena from 19 countries, abiding an open and participatory process, and framed in policy and living labs.

CITIES2030 acknowledges the definition of the anticipated policy and living labs as "A Living Lab is an orchestrator of open innovation processes focusing on co-creation of innovations in real-world contexts by involving multiple stakeholders with the objective to generate sustainable value for all stakeholders focusing in particular on the end-users"².

¹ <u>Nutrition and food systems</u> (HLPE report #12), 2017

² U4IoT_LivingLabMethodology_Handbook.pdf

The initiative is a cross-sector and multistakeholder effort to assist cities and regions implement sustainable cities and regions food systems (CRFS) and achieve five specific objectives.



Fig. 1.1a – Project's specific objectives integrating current EU-worldwide priorities

CITIES2030 build upon and leverage MUFPP and EUROCITIES WG Food key findings (liaison by the city of Bruges34), and its bedrock is rooted in the policy conceptual approach recently published "Towards a Common Food Policy for the EU" by IPES-Food5. The report argues for a "Common Food Policy" for the European Union: "a policy setting a direction of travel for the whole food system, bringing together the various sectoral policies that affect food production, processing, distribution, and consumption, and refocusing all actions on the transition to sustainability." CITIES2030 uptakes substantial insight from organisations substantially active in the food system and ecosystems arena, e.g. 100 Resilient Cities, C40 Cities, Climate KIC, EIT Food, EUI, ICLEI, IFOAM, IPES Food, FAO, the Future Food Institute, EPI-Agri, the Nordic Food Policy Lab, RUAF, Slow Food Europe, Sustainable Food Cities. This specific group is the source of key insight, building and evolving continuously, and later referred to as the "MUFPP+". To achieve the aforementioned 5 specific objectives CITIES2030 starts by gathering intelligence to secure the establishment of accurate laboratories within which participatory activities will develop to deliver evidence-based answers to identified needs in these 5 specific areas with policies frameworks and innovation pathways. Then, CITIES2030 is organised to generate an actionable and structured knowledge basis to establish and enhance city region food systems (CRFS); establish or enhance existing CRFS policy labs (CRFS-PL) which will pave the way towards sustainable policy frameworks for food systems transition; establish or enhance existing CRFS living labs (CRFS-LL) which will generate innovative systems to support food systems transition; deliver a cradle-to-cradle datadriven CRFS management digital platform based on blockchain technology: Single Click CRFS Platform (S2CP). Rather than systematically creating new developments (that requires a substantial number of resources, CITIES2030 implement small systemic changes at local level and per the specific context of the city/country, effectively implementing changes towards a larger transformation process towards EU-UN11NUA framework of reference. In cities/regions were CRFS does not exist (Alpha Cities, aC), CITIES2030 will create preconditions for CRFS formulation and establishment within a period of two years: Troodos (Cyprus), Velika Gorica (Croatia), Quart de Poblet (Spain), Iasi (Romania), Murska Sobota (Slovenia). Where CRFS is evolving strongly with already consolidated foundations (Beta Cities, β C), CITIES2030 will structure existing resources, accelerate and strengthen current developments: Vejle (Denmark), Bremerhaven (Germany) and Haarlem (The Netherlands).

Where CRFS are already running with a systemic basis (Gama Cities, γ C), CITIES2030 will further enhance, take

stock, adjust for transferability, and generate mechanisms to facilitate knowledge translation and transfer to αC and βC : Bruges (Belgium), Seinäjoki (Finland), Vicenza (Italy), Vidzeme (Latvia). To secure the roadmap implementation CITIES2030 develops on focus groups of 4 key actors of the UFSE with the city/region acting as driver, incorporating one research body, a business and a civil society organisation. Focus group are commissioned to generate the larger group of organisations representing a comprehensive UFSE to engage in the project activities. Key activities are developed according to 10 central thematic that cover the 5 aforementioned specific objectives (see Fig.1.1b).



Fig. 1.1b - CITIES2030 10 key thematic

³ <u>Milan Urban Food Policy Pact</u>

⁴ <u>http://nws.eurocities.eu/MediaShell/media/WG_Food_in_Valencia_minutes.pdf</u>

⁵ <u>http://www.ipes-food.org/_img/upload/files/CFP_FullReport.pdf</u>

1.2 Relation to the work programme

CITIES2030 implements a participatory result-driven roadmap supported by actionable intelligence, functional and deployable instruments, led by influential and competent bodies (see table 1 below). Table 1 – Project's answers to identified needs and rapport with WP

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1.3 Concept and methodology

(a) Concept

(a).1 On the complexity of Food systems and ecosystems (FSE).

"The 19th century was a century of empires, 20th century was a century of nation states and the 21th century will be a century of cities." says former Denver Mayor W. Webb. Key strategic intelligence on urban and cities development under the motto "smart cities" lack too often incorporation of food systems and ecosystems (FSE) as equality critical as infrastructures, transportation, connectivity and security, to name but a few. Yet 1.3 million people are currently moving into cities each week⁶. FSE is a central driver of sustainable development. FSE are proteiform orders and sui generis making it a complex task to integrate research concepts and innovation actions⁷ to support transition toward circularity and sustainability. However, FSE develop on framed economic sectors e.g. agriculture and agri-food, food processing and production, logistics, distribution and markets, waste management, and transversal pillars e.g. the core FSE as such, societal elements, natural elements and governance.

Today, FSE link diverse interlocked issues and uncertainty⁸ incorporating social economy (poverty, accessibility, equity), security, technology (innovation), nutrition (health and welfare), local/traditional cuisine preservation (culture at large), rural desertification vs urbanisation, employment, circularity and sustainability, climate action (decarbonisation, emissions, bio economy, blue growth), and more.

Essentially current food systems are failing us in terms of livelihoods, human health and the environment IoT and multi-levels digitisation processes are well under way with a variety of benefits regarding cities' FSE needs, and develop in a series of focal points of FSE, from production to waste management, also incorporating security, ecosystem services, economy and social inclusion. Today, UFSE are evolving intelligent systems, from manufacture⁹ to management¹⁰ and social responsibility¹¹.

Also, UFSE are moving beyond business intermediaries and business-to-business provisions and are becoming global, pervasive and inevitable as they increasingly extend into citizens spheres. UFSE currently are a cornerstone of human development recently referred to as "the global standard for sustainability"¹² and framed in "The European Green Deal", encompassing global trade, working life, schooling spheres, public health, where cross border critical infrastructures (e.g. airports, railways, ports, energy, security, logistics, transport, industries at large, ICT systems, etc.) connect with individuals and organisations and link these organisations to consumers across all sectors of the FSE.

The UN-FAO conceptual approach to structured sustainable FSE outlined by the food system wheel framework¹³ and others from a series of influential bodies worldwide calls for the activation and engagement of all actors and stakeholders of FSE the food system (people-centric modus operandi).

It is therefore imperative for all actors of FSE to understand the vulnerabilities and obstacles of UFSE, the risk of third parties and their third parties, from the perspective of sustainable, secure and resilient city region food systems (CRFS), and also how CRFS impacts on the society and the citizens. This intelligence must support a food-systems approach to policy making¹⁴ to foster transitioning towards sustainable CRFS.

CITIES2030 addresses this need via future-proofing CRFS. First, activities focus in generating actionable intelligence. Then, participatory and structured policy life cycle assessments are implemented in Policy Labs (CRFS-PL), and effectively deliver policy blueprints, in parallel with the production of innovation systems frameworks in Living Labs (CRFS-LL). All three activities are supported by a digital platform. Finally, CITIES2030 delivers a data-driven CRFS management platform to assist decision-making processes. (a).2 – On the need for FSE resilience

FSE are composed of complex, fragmented, dynamic, and extensive networks¹⁵ which link already composite interactions among the biological elements to different entities in the value chain, including suppliers, manufacturers, regulatory bodies, public authorities and customers, on a global scale¹⁶. Therefore, progress on policy analysis, governance, and programme delivery for FSE transition to sustainable and resilient food and

⁶ <u>https://www.weforum.org/agenda/2019/01/the-anatomy-of-a-smart-city</u>

⁷ <u>https://www.mdpi.com/2071-1050/11/1/171/pdf</u>

⁸ <u>https://foodsource.org.uk/sites/default/files/chapters/pdfs/foodsource_chapter_1.pdf</u>

⁹ https://www.slideshare.net/netscribes123/blockchain-in-agrifood-industry-adoption-analysis

¹⁰ https://www.emerald.com/insight/content/doi/10.1108/IMDS-09-2016-0391/full/html

¹¹ https://www.axfoundation.se/en/news/blockchain-in-the-food-industry-could-trace-social-compliance-not-just-product-quality-or-origin

¹² https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf

¹³ http://www.fao.org/3/ca2079en/CA2079EN.pdf

¹⁴ https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(18)32754-5/fulltext

¹⁵ 'Today's complex, fragmented, global food supply chains have led to an increase in food fraud', 2019

¹⁶ Market transparency in food supply chain: goals, means, limits, Joint research Centre (JRC113150, EC), 2018

nutrition systems constitutes an immense endeavour¹⁷, linked to a wide range of equally challenging socioeconomic and environmental outcomes. Service oriented structures within FSE provide the city to support various objectives (nutrition flow within the network, pricing, security, etc.) and improve the resilience of the value chain both from a business¹⁸ and public service¹⁹ perspective. Some progress has been made to address specific challenges at specific points of the chain, but it has come at the expense of worsening outcomes in other areas, and maintaining inefficiencies at several points along the chain. Also, these inefficiencies are currently inadequately conceptualized per distinctive need²⁰. FSE are propelled by the advent of pioneering ICT and mobile technologies²¹ that are turning FSE into big data systems, delivering a new paradigm 'digitization augmented with intelligence' in the present-day business models²², which are significantly and increasingly impacting cities and the food supply chain at a global scale.



Fig. (a).2a – Prospective focus points, obstacles, enablers, and impact drivers of food policies²³.

Besides DG Health and Food Safety which governs EU policy on food safety and health²⁴ (FSH) and monitors the implementation of related laws through its Health and Food Audits and Analysis programme, a number of EU bodies are engaged in FSH, such as the European Economic and Social Committee (EESC). Recent studies reveal there are obstacles to, and inconsistencies in, the accessibility and availability of foods that sustain healthy eating lifestyles²⁵. Key barriers and inadequacies are generated by a series of factors such as boosted market dominance of retailers, erroneous assumption in political science and economics, urban development, to name but these few²⁶.

Food poverty and insecurity (FPI) is prevalent in Europe and need to be more accurately defined and framed to generate accurate answers to identified needs.²⁷ The Food Insecurity Experience Scale (FIES) and the prevalence of undernourishment (PoU) are indicators currently practiced for FPI monitoring²⁸. The current situation is characterised by a double problem of malnutrition co-occurring alongside obesity and diet-related non-communicable disorders²⁹.

¹⁷ <u>The future of food and agriculture: Trends and challenges</u>, 2017

¹⁸ Becoming the leader in the food transition for all, Carrefour 2017

¹⁹ <u>Edible Edinburgh wins bronze award</u> (the sustainable food partnership Edible Edinburgh), 2019

²⁰ Food Chain Inefficiency (FCI): accounting conversion efficiencies across entire food supply chains to re-define food loss and waste, 2019

²¹ How IOT will transform the future of the supply chain, 2019

²² Innovation and market power in the food supply chain: challenges for competition policy and regulation, 2019

²³ Handbook of global health policy</sup> (Ashfin et al), 2014

²⁴ Health and food safety key policies in the EU, 2019

²⁵ <u>Promoting healthy and sustainable diets in the EU</u> (EESC), 2019

²⁶ <u>50 trends influencing Europe's food sector by 2035</u> (project FOX), 2019

²⁷ Food Insecurity and Hunger in Rich Countries—It Is Time for Action against Inequality (IJERPH), 2019

²⁸ <u>Regional Overview of Food Security and Nutrition in Europe and Central Asia</u> (FAO), 2019

²⁹ <u>World hunger is still not going down after three years and obesity is still growing</u> (UN), 2019

Food systems prevailing answers to secure sustainability have failed to reconcile its multi-layered features (economic, social, and environmental), and have often traded them off against each other³⁰. Novel approaches are developing, such as ecosystem services which are the direct and indirect contributions of ecosystems to human well-being³¹, and which part in facilitating sustainable food systems is unanimously recognized³². Sustainable intensification and sustainable crop production intensification are developing per different approaches led by agroecology, nature-based solutions, climate-smart and precision agriculture.³³ Today, a global consensus acknowledges that the future of urban food systems (UFS) must be framed in a circular economy (CE)³⁴, e.g. a systemic approach to economic development aimed to value businesses, society, and the environment. Also, developing a sharing economy strategy whilst empowering local communities have been largely promoted by the civil society at large³⁵, pioneering cities³⁶ and by the EC as well³⁷. Still, the CE potential for UFS have been undermined³⁸ due to inaccurate conceptual approaches and primary focus on the agricultural system³⁹. It is paramount to generate sustainable local nutrition flows into the everyday lives of citizens⁴⁰, and a series of pathways are currently developing e.g. accelerating the nutrient cycle, reducing food waste and strengthening the use of renewable energy and nature-based solutions in the whole UFS.⁴¹

Cultural practices, societal norms, and diet preferences plays a key role in promoting more sustainable and healthy lifestyles⁴². Related issues for future research and areas for policy-making and interventions have been well documented and social-cultural approaches to sustainable food systems is paramount.⁴³ In Europe, the current situation is characterised by the erosion of traditional, local and endogenous food cultures⁴⁴, driven by fast-paced urban lifestyle. There are increasing efforts to highlight the value of putting the safeguard of the European food heritage and culture⁴⁵, whilst proofing of multi-faceted links between culture and UFS sustainability are well established⁴⁶.

(a).3 – CITIES2030 dynamic CRFS management solution

Making Europe's food supply chains (production, consumption and commerce) environmentally sustainable is possible, but it calls for a major shift in governments' mindsets, policies and expertise, and seizing developing opportunities for transition⁴⁷. The examination of territorial food development drivers (cultural identity, gastronomy, diets, well-being scores, family oriented alimentation), and particularly those associated to short food supply chain business models (SFSC-BM), facilitates unveiling key enablers and constraints to these developments⁴⁸.

CITIES2030 work plan is structured to focus on regional context (territorial approach) with the city/partner at is core, to generate circular models between cities and their peri-urban areas. To structure pathways towards sustainable cities regions food systems (CRFS) and sustainable policy frameworks for food systems transition, all agents of the UFSE must work together in a participative way. CITIES2030 proposes a novel food system management framework that enables dynamic management of complex interconnected sub-systems considering a cradle-to-cradle approach, and connects all agents and stakeholders across the food supply chain enabling proactive co-creation and management.

Primary research has begun to scrutinize the challenges of dynamic UFSE assessment, still fundamental questions correlated to the accountability and traceability of food systems remain. Innovation driven by a variety of actors of the UFSE have been tackling a series of issues, however there is evidence on the lack of a common matrix and pathway that would lessen inadequacies across the UFSE.

³⁴ <u>The circular economy in detail</u> (Ellen MacArthur Foundation), 2017

³⁶ Sharing Cities Sweden, 2019

- ³⁸ <u>Cities and the circular economy for food</u> (Ellen MacArthur Foundation), 2019
- ³⁹ <u>Circularity in agricultural production</u> (Wageningen), 2019

- ⁴¹ *Finnish road map to a circular economy 2016-2025* (SITRA), 2019
- ⁴² <u>Culture and food traditions</u> (FAO), 2019

³⁰ *Towards a common food policy for the European Union* (CFP), 2019

³¹ <u>Ecosystem Services</u> (TEEB), 2019

³² <u>Ecosystem Services & Biodiversity</u> (ESB, FAO), 2019

³³ <u>Grand challenges in sustainable intensification and ecosystem services</u> (CEH), 2019

³⁵ <u>'It's not really about the food, it's also about food': urban collective action (...) Groningen Free Café</u>, 2019

³⁷ <u>Recipe for change: an agenda for a climate-smart and sustainable food system for a healthy Europe</u> (EC), 2018

⁴⁰ <u>From "rust belt" to "fresh coast": remaking the city through food justice and urban agriculture</u> (AAG), 2018

⁴³ Social-Cultural Processes and Urban Affordances for Healthy and Sustainable Food Consumption (Frontiers in Psychology), 2018

⁴⁴ *Towards a common food policy for the EU*, 2019

⁴⁵ <u>Food is Culture: a multimedia artwork will share stories and traditions behind European food heritage</u> (Food is Culture), 2018

⁴⁶ <u>Slow Food Europe addresses the role of cities in preserving local food heritage in the EU week of regions and cities</u> (Slow Food Europe), 2019

⁴⁷ Europe's current approach to food, agriculture, and the environment is not sustainable, 2018

⁴⁸ The food territory: cultural identity as local facilitator in the gastronomy sector, the case of Lyon, 2017

Precise policy implementation started in a variety of cities across the European Union, led by Nordic states⁴⁹, still the present state of play of Europe's food system against achieving sustainable food and nutrition systems (security, ecosystem health, social and economic well-being) is erroneous⁵⁰. CITIES2030 is structured to deliver and overall UFSE accountability addressing five key outcomes by creating new trusted methods to co-create policies and co-engineer innovation (product, service, mechanisms), that are developed together in full synergy, both built upon evidence from the MUFPP and comparable initiatives (MUFPP+), and both with the engagement and contribution of all actors of the UFSE. Food Smart Cities For Development (FSC4D) is an initiative from the MUFPP in which the city of Bruges in Belgium (P3) develops sustainable food policy through exchanges and training⁵¹. For Bruges the focus is on making a direct link between consumers and local farmers (local products, urban agriculture, food loss. FSC4D activities aim at generating frameworks for comprehensive and sustainable city food policy. CITIES2030 build upon evidence and intelligence gathered by the leading city to generate actionable instruments to deploy and multiply Bruges' good practices to other cities that are aiming at prioritizing their policy agenda on food system transformation. One of these instruments in the CITIES2030 CRFS Policy Lab.

"Agrotopia" is an initiative by Inagro in Belgium (P6) bringing evidence that agriculture and industry are compatible when it comes to land use with a sustainable approach⁵². Agrotopia is structured to facilitate co-creation processes to innovate with a multidisciplinary and multi-stakeholder approach to ideate and deliver high-tech glass and urban horticultural concepts. Agrotopia gives shape and host a living lab where all agents of the UFSE contribute to deliver tailored solutions for specific needs and facilitates their commercialisation. CITIES2030 draw key learning from the initiative to generate innovation action instruments with a tailored system thinking methodology to facilitate the production of innovative solutions (products, services and mechanisms). One of these instruments in the CITIES2030 CRFS Living Lab.

All cities engaged in CITIES2030 are preliminary categorized per urban food policies design key parameters (e.g. at proposal stage), in correspondence with Nicolas Bricas' approach⁵³ to facilitate situations' examinations. Front-runner cities and anticipated other cities establish together the CRFS Alliance supported by a Memorandum of Understanding, incorporating all agents of UFSE to create preconditions for joining the MUFPP (focus objective), and to contribute and participate in other complementary initiatives, networks, platforms and groups as well, e.g. Ellen MacArthur Foundation (see Fig. (a).3a), IPES Food, Eurocities, C40 Cities, ICLEI, the Nordic Food Policy Lab, IFOAM, the Soil Association, Climate KIC, to name but these few). IBM Food Trust generates an ecosystem of actors from production to consumption, for instance helping raw seafood increase trust across the UFSE from water to restaurant⁵⁴, the blockchain-pilot of the city of Vienna develops on digital food vouchers to secure transparent transactions generate digital credits to be spent in art

and culture facilities⁵⁵. A series of obstacles characterize UFSE such as complexity and length, numerous intermediaries with transparency losses and deficient supporting systems and digitalization, etc. In addition, automated data capture systems are expensive, difficult to realize and challenging to apply to volumes and bulk elements. The path forward is electronic data management structures and digitalization of practices. CITIES2030 addresses the aforementioned obstacles and delivers a data-driven digital management platform supported by a blockchain ledger (S2CP) i.e. ICT elements across pilot UFSE will capture information with unique identifiers (e.g. trade articles, logistic units, parties and locations,) and store these in the chain.



Fig. (a).3a – Example of Circular economy concept⁵⁶

⁴⁹ Nordic Food Policy Lab, 2019

⁵⁰ Food in a green light: a systems approach to sustainable food, 2019

⁵¹ <u>The Bruges Food Lab is a knowledge and networking platform</u>, 2019

⁵² <u>Greenhouse Agrotopia study report design phase</u>, 2017

⁵³ <u>Urbanization Issues Affecting Food System Sustainability</u> (Nicolas Bricas), 2019

⁵⁴ IBM Food Trust. A new era for the world's food supply, 2019

⁵⁵ <u>Blockchain in the City of Vienna</u>, 2019

⁵⁶ <u>Ellen MacArthur Foundation</u>, 2019

To go beyond the above mentioned instruments, CITIES2030 explores small and medium scale bottom-up approaches by smallholders and family farmers from identified local communities to characterize the drivers of sustainable food supply belts business models (e.g. short food supply chains business models - SFSCBM). Functions and operations and behaviors (e.g. enablers) are dynamically determined during execution across the belt, and later scrutinized to enable co-creative policies outlines based on evidence. CITIES2030 uses small and medium scale dynamic adaptive UFSE business models⁵⁷ (e.g. SFSCBM) combined with cutting edge supply chain management technology to generate a food system approach that better reflect the UFSE at a fine-grained level. This approach is combined with recent food-related developments in agroecology, aquaponics, climate-smart, organic and precision agriculture, ecosystem services, circular and sharing economy. This concept is illustrated in Fig. (a)3a. This combined information is then developed to construct and maintain a digital representation



construct and maintain a digital representation Fig. (a)3a – SFSCBM integrated future-proofing (or digital twin) of the food supply belts. The digital representation can then be used to perform different type of situation analysis; depending upon the enablers' types, different situation analysis methods can be employed to identify and score drivers for sustainability. UFSE are complex systems; therefore, CITIES2030 system thinking



⁵⁷ <u>A community-based agro-food hub model for sustainable farming</u>, 2019

⁵⁸ Systems Thinking and the Food System (Food+Tech Connect), 2018

methodology (STM) is built upon Food+Tech Connect⁵⁸ approach and incorporates the agents and relationships between them alongside the actual business courses and supply chain; then rich knowledge-based situation analysis activities observe, identify and categorizes vulnerabilities that may propagate across the food supply chain. Importantly, CITIES2030 STM incorporates data, software components, human actors, network topology and device infrastructure and take a holistic organisational view of these system viewpoints such that situations and operations can be analysed dynamically. As illustrated in Fig. (a)3b CITIES2030 leverage the concept of food supply chain to create a holistic model of the UFSE that can be used to perform a dynamic end-to-end situation analysis in order to identify emerging vulnerabilities that may propagate across enablers and processes. These vulnerabilities are identified using a combination of text mining and intelligent search algorithms (as previously proposed) and identified risks are visualised and presented to the user via the data-driven CRFS management dashboard.

In addition, CITIES2030 assesses risks to the security (staff attendance, redundancies, supplier diversity, etc.) of the enablers in the UFSE, alongside cybersecurity risk assessment of the operational data handled in the chain. Furthermore, product sales in global markets and waste management, business and sector legislation will be investigated. This will facilitate the development of the essential constructs for the effective and efficient implementation of a model and strategy to secure sustainable CRFS policy design, and foster collaborative intelligence within smart digital food supply chain networks. It will also enable the implementation of a readiness framework for the agents o UFSE to develop their business model and strategy per the aforementioned CRFS policies, and assess the readiness of cities and regulatory agencies towards managing food systems in smart environments, efficiently.

All in all, CITIES2030 integrates a set of tools e.g. intelligence (evidence-based), co-creation methodologies, sustainable development key findings, approaches and methodologies, supply chain cutting-edge science and ICT-based technologies to deliver two sustainable CRFS management instruments: the Single Click CRFS Platform and the Cities' Alliance.

(a).4 – Harvesting and structuring CRFS intelligence

The ability to learn from evidence in the real-time via data collection, either analog or digital, can make sustainable processes, responsive, proactive and predictive, thus avoiding operational interruptions, productivity issues, threats to critical infrastructure and loss of the information and resources of a UFSE and more globally the food system and ecosystem (UFSE). The complexity of USFE is growing e.g. heterogeneous structures, volume and variety of products, services, agents, new actors (digitalization, uberisation), and dynamic (not far from real-time) operations mean that cities must grip the next generation of sustainable development (possibly "sustainability 4.0"), to intelligently identify pathways for sustainable CRFS policy development and action to structure such complexity. Over the last few years with the promise of attaining sustainable self-sustaining food systems, a series of approaches from the private sector have made advances in understanding how to carry out complex nutrition flows (e.g. agroecology, climate-smart, aquaponics, organic and precision agriculture, permaculture, etc.).⁵⁹ Similarly, more and more UFSE pilot cities are emerging from these developments already leading to solid evidence. The development of policy labs and living labs to facilitate participative policy and innovation, smart transportation systems and real-scale pilots is expanding.⁶⁰ In addition, a new branch of ICT engineering combined with mobile technologies (ICTM), such as blockchain technology and 5G enabled smart operations environments, has emerged to employ distributed ledgers and smart contracts methods (e.g. blockchain algorithms and digital infrastructures and rotocols), with one goal

and protocols), with one goal to generate transparency, traceability and security thus, there is potential to consider ICTM approaches to frame sustainability and circularity in CITIES2030's nutrition flow models (which are twin representations of the territorial UFSE).⁶¹ Short food supply chains business models (SFSCBM) offers the potential to be structured considering the features of cutting-edge distribution and logistics approaches and innovative ICTM solutions, to eventually deliver greater

Fig. (a)4a - Cradle-to-cradle BPM situation analysis of SFSCBM62

sustainability⁶³. CITIES2030 investigates, examines and explores (under WP3) how the aforementioned developments can be employed to activate, accelerate or enhance SFSCBM ecosystems via business process modelling (BPM), illustrated in Fig. (a)4a, to provide a structured actionable and deployable mechanism and develop larger sustainable CRFS, leveraging tailored system thinking methodologies.

⁵⁹ An agroecological Europe in 2050: multifunctional agriculture for healthy eating, 2018

⁶⁰ <u>What's on the menu? A global assessment of MUFPP signatory cities' food strategies</u>, 2019

⁶¹ *Farm-to-table food traceability on blockchain* (TE-FOOD), 2019

⁶² Solutions for more sustainable distribution in the short food supply chains, 2018

⁶³ Innovation in short food supply chains: creating value together, 2019

One pertinent example of sustainable SFSC can be illustrated by Cargonomia⁶⁴, which is essentially a cargo-bike messenger service, yet combined with a bicycle-building cooperative, a family-scale organic vegetable farm, an organic bakery, a wine distributor and citizen volunteers. However, total reliance on key findings is not viable today, thus even sustainable community-based CRFS management frameworks are far from maturity and still requires substantial research, innovation and pilot testing to achieve satisfactory scores. Hence, CITIES2030 proposes to provide CRFS decision support to policy decision makers, with fully explained system thinking reasoning (incorporating Life Cycle and Risk Assessments), which is underpinned by real-scale pilot cities' incorporating territorial scope, and fully supported by accountable evidence.CITIES2030 delivers an adjusted, tailored and comprehensive taxonomy for the UFSE, FSA and CRFS arena incorporating state-of-the-art research, policy and innovation action frameworks, to facilitate the production of a compendium of definitions that are more representative of the CRFS realities, including novel terminologies from the ICT sphere. This material will be developed with a cloud-based system that will facilitate real-time access and action, and secure long-term developments.

There are a number of observatory platforms at EU level on food and nutrition, e.g. on (including Eurostat), sugar, meat, fruits and vegetable, and also on broader food-related scopes e.g. market globally, agriculture, crops, health systems, etc., and on food transformation⁶⁵ as well. A number of H2020 funded projects propose pertinent data on UFSE (see table section "Synergies and uptakes"), spanning from policy developments e.g. PoliRural⁶⁶ (818496, started 01.06.2019 and ends 31.05.2022) to EU pilot city labs e.g. FoodSHIFT2030⁶⁷ (862716, started 01.01.2020 and ends 31.12.2023). City-based policy and innovation labs develop across the world and the EU, the latter led by Nordic countries and large networks such as the Climate KIC⁶⁸, EU-funded EIT Food⁶⁹ and the MUFPP, and delivers evidence and practice on a vast panoply of food and nutrition related issues. Importantly, the MUFPP gathers 209 cities and building, and proposes a framework of 44 key indicators organised in 6 relevant categories⁷⁰ currently piloted by 3 cities (experiences started in 2019 only). CITIES2030 activate new cities and accelerates MUFPP practices combining with other pertinent insight from key agents of the UFSE at EU level (mentioned earlier), whilst generating synergies with EU funded initiatives (H2020 essentially, ERASMUS+ and Interreg programmes). In particular, CITIES2030 leverage the key findings of 50 selected practices from the MUFPP⁷¹, the Nordic Co-operation (Nordic food policy lab)⁷², Climate KIC and from the Stockholm Resilience Centre⁷³, to structure and generate a CRFS intelligence platform supported by a solid network of UFSE agents, the CRFS Alliance, which mission is to deliver a structured, harmonized and actionable knowledge data repository by 16.10.2021. The CRFS Observatory is open access and users will be able to access information under an open license with no-fee access, use, reworking and redeployment by third parties without limited restrictions. Embracing the idea of "Commodification of Knowledge"⁷⁴ (open source and free access principles), the CITIES2030 results will be offered freely and openly for all agents of the UFSE including educators, students, and self-learners as well as any interested parties, to use and reuse for teaching, learning, and research. The project outputs will be freely accessible abiding an Open Science format through digital hubs of Open Educational Resources such as: OERcommons⁷⁵ and a series of identified platforms as well.

(a).5 – Policy and living labs to facilitate co-creation and production

Urban food policy frameworks develops since the 1990s (North America and northern Europe)⁷⁶, through urban food planning approaches, brings together academics and experts⁷⁷, to answer to urbanization processes. A vast majority of cities have generated policy-framed successful programmes to address food insecurity, such as Belo Horizonte in Brazil, paving the ways and cooperating with others⁷⁸. Still, it is commonly agreed the 21st century is bringing the most challenging outcomes on food security⁷⁹ and requires immediate, short-term and functional answers. The situation is currently a matter of concern as there is no specific understanding and agreement on how

⁶⁴ Cargo-bikes, conviviality and conscious food: creative partnerships and the circular economy, 2019

⁶⁵ The European Union Observatory for Nanomaterials (EUON), 2019

⁶⁶ <u>*PoliRural*</u>, 2019

⁶⁷ <u>*FoodSHIFT2030*</u>, 2020

⁶⁸ <u>100 climate-neutral cities by 2030: A deep demonstration of rapid urban transformation</u>, 2019

⁶⁹ <u>*EIT Food*</u>, 2020

⁷⁰ <u>Milan Urban Food Policy Pact Monitoring Framework Indicators</u>, 2019

⁷¹ <u>50 Selected Practices from Milan Pact Awards</u>, 2016, 2017, 2018

⁷² <u>The Nordic food policy lab</u>, 2019

⁷³ <u>A Nordic food systems for improved health and sustainability: baseline assessment to inform transformation</u>, 2019

⁷⁴ <u>The "commodification" of knowledge in the global information society</u>, 2002

⁷⁵ <u>OERcommons</u>, 2019

⁷⁶ <u>Planning to eat: innovative local government plans and policies to build healthy food systems in the united states</u>, 2011

^{77 &}lt;u>Sustainable food planning: evolving theory and practice</u> (Wageningen), 2012

⁷⁸ <u>Results from the fact finding mission (...) in Cape Town based on the system of Belo Horizonte</u>, 2011

⁷⁹ Global Food Security in the 21st Century—Resilience of the Food Supply, 2019

to face the question⁸⁰. Food policy frameworks (FPF) which address production and demand and impact food prices (e.g. equality, stability, etc.), is influenced in Europe by the Common Agricultural Policy and a series of national and transnational policies (trade, regulations, rural development, energy, natural resources, businesses, waste, etc.). Thus, FPF as such is embedded within a broaden policy landscape, and therefore liaise with actions on a vast arena of operations (see Fig. (a)5a).

CITIES2030 generates the NATURA2030 CRFS Policy Lab outline, framework, prototype and real-scale validated formation, where all agents of the UFSE address these questions with a participatory approach. The complexity of global food policy is broken-down and scrutinized to futureproof scenarios and impact. First, awareness-raising activities combined with capacity building programmes are

combined with capacity building programmes are Fig. (a)5a – The complexity of global food policy⁸¹ implemented to equip participants with the necessary knowledge allowing them to address the complexity of CRFS, incorporating their own perspective and considering their current and possible new roles in the food value chain. Then, CITIES2030 system thinking methodology CRFS Logic Framework Approach (CLFA) provides a solid and result-oriented instrument to facilitate co-creation processes.

CITIES2030 combines system thinking activities with policy life cycle assessment, co-creation, co-production and real-scale piloting, to deliver 4 CRFS policy briefs and the "NATURA2030 CRFS Policies Blueprint", a compendium of policies provision structured to enter laws' enactment legislative processes. A certain idea that technology and innovation e.g. "a 'simple' technological fix" is still prevalent today in a series of scientific circles, public administrations and business venture discourses⁸². As already referred, concepts and pilots experiments in sustainable intensification of agriculture, precision farming, ICT-based production, food and nutrition science research and education in universities, and also, positive and technology-based policy environments⁸³ towards sustainable urban food production have been efficient catalysts and seedbeds for the aforementioned solutionoriented narratives. Today, contestation is escalating against the above-mentioned developments, questioned recent research and challenged by activists engaged in the food sovereignty-related community movements⁸⁴. Agroecology, nature-based solutions, aquaponics, climate-smart are the new urban, citizen-driven and equitable food system⁸⁵, shifting from production-oriented needs to socio-economic-oriented concerns (e.g. poverty, social exclusion and accessibility). This position resonates widely in many urban food systems policy circles, international fora, academia and business-oriented expert networks, including the EU⁸⁶. Still, there is no agreement or consensus on the framework for sustainable pathways towards urban food systems transition, for instance when tackling sustainable intensification: how to proceed, what to intensify exactly and which are the required fields of proficiency.87 CITIES2030 generates the NATURA2030 CRFS Living Lab outline, framework, prototype and realscale validated formation, where all agents of the UFSE address these questions with a participatory approach. NATURA2030 uptake and leverage existing living labs structures and develop per 2 specific phases. First, outline, framework, prototypes are co-creating in existing facilities, identified during the first year of activities (under WP3). Concepts and ideation exercises, scientific knowledge and research findings, experimentation, technologies, equipment, transformation processes, business models and plans, trade and economics, cooperative mechanisms, management, regulations and more are examined to future-proof scenarios and impact. Then, prototypes are structured with available resources, provided by organisations engaged in the development, and supported by anticipated venture capital identified during the first year of activities. Policy and living labs develops in synergy together with back-to-back examination processes and life cycle assessments.

(a).6 – Future-proofing CRFS in pilot cities

Activating transition to sustainable food systems and ecosystems (FSE) assists meeting the UN SDG. Food is a matrix stringing all 17 UN SDG, considering the interlocked social, environmental and economic facets of FSE. Cities (e.g. policy-makers, regulatory bodies, etc.) have engaged a series of soaring objectives and outcomes in the

⁸⁰ <u>Performing food and nutritional security in Europe: claims, promises and limitations</u>, 2018

⁸¹ Food security and sustainable intensification, 2014

⁸² <u>How new technology could help to strengthen global food security</u>, 2018

⁸³ <u>Policy seminar: the role of science, technology, and innovation in transforming food systems</u>, 2019

⁸⁴ <u>Could social farming be a strategy to support food sovereignty in Europe?</u> 2019

⁸⁵ <u>From food security to food sufficiency: challenging the narrative</u>, 2018

⁸⁶ <u>Knowledge for policy Agroecology</u>, 2019

⁸⁷ Sustainable intensification in agriculture Navigating a course through competing food system priorities, 2012

UN 2030 Agenda. Confronted with a vast number of pledges, policymakers must consider addressing global food systems as a key pathways and opportunity to correct inadequacies. CITIES2030 answers to this need by engaging and activating cities and agents of FSE to establish together the "CRFS Alliance which mission is to create preconditions and mechanisms to foster and facilitate cities' adhesion to the MUFPP, but also to participate and contribute to the development of other pioneering initiatives (MUFPP+). That way, CITIES2030 generate a common mind-set and structured a shared commitment between participants, a sense of belonging and brand ownership via implementing co-creation and system thinking activities (policies, innovation), towards the production of policies together with innovation actions aligned with the MUFPP framework and related FSE sustainable transition. CITIES2030 programme of activities incorporate pertinent enhancement from other key initiatives led by cities and regions (Haarlem, Bruges, Vejle, Vidzeme, Seinäjoki, Vicenza), agents of the UFSE (FFIT, INAGRO), civil society organisations (GGP, IAAD, LLP, ProAgria, etc.), businesses (ICTM, AGFT, etc.), research bodies (UNRF, VIVES, etc.) and EU funded bodies (CKIC, EITFL). CITIES2030 explores pathways and mechanisms towards sustainable CRFS transition in the city (and region), with the city and for the city, incorporating a comprehensive number of factors, illustrated in Fig. (a).2a. To implement urban food policies co-creation processes, front-runner cities initially engaged in CITIES2030 are structured in specific categories according to the approach proposed by Nicolas Bricas' to facilitate situation analysis (see table 2) with specific parameters.

*Table (a)*6.*a* – *Characterisation of front-runner cities for policy system thinking activities* * Density Number of inhabitants per km2; H:high, A:average, L:low

10 cities and 2 regions Geography, climate Köppen climate classification ⁸⁸	Demography*	Resources	Trade	Culture	Industrialization	Inequalities
Bremerhaven (DE), flat, temperate oceanic (Cfb)	1.200	Н	Н	L	Η	Α
Bruges (BE), flat, temperate oceanic (Cfb)	850	Н	Н	Н	Η	Α
Haarlem (NL), flat, temperate oceanic (Cfb)	5.461	Н	Н	Н	Η	Α
Iași (RO), uplands, humid continental (Dfb)	3.092	Α	Н	Η	Η	L
Quart de Poblet (ES), flat, Mediterranean (dry/hot summer (Csa)	1.300	Α	Α	Α	А	L
Murska Sobota (SI), flat, temperate oceanic (Cfb)	806	L	Α	Α	А	L
Seinäjoki (FI), flat, subarctic (Dfc)	44,26	Α	Н	Α	Η	L
Troodos (CY), mountainous, Mediterranean, hot semi-arid (Csa)		L	L	Н	L	L
Velika Gorica (HR), flat, temperate oceanic (Cfb)	190	Α	Н	Н	Η	L
Vejle (DK), flat, temperate oceanic (Cfb)		Н	Н	Α	Η	L
Vicenza (IT), flat, humid subtropical (Cfa)	1.400	Н	Н	Н	Η	Α
Vidzeme region (LV), highlands, humid continental (Dfb)	N/ap	Н	Н	Н	Н	L

CITIES2030 co-creates actionable and deployable CRFS pilots models integrating the local/regional realities and key learning gathered by the CRFS Alliance (CRFS Intelligence) withing system thinking activities implemented within policy labs (WP4) and living labs (WP5). The labs are existing and available physical structures identified during the characterisation of the CRFS landscape under WP3. Cities developing UFSE and partners in the current consortium play a key role to assist structuring the pilots with evidence-based learnings. This contribution is key to secure alignments with other initiatives (MUFPP+) and to understand differences and similarities regarding local and regional realities. The inception of harmonization processes started at proposal stage and cities started examining key areas and connect all cities/regions with one paragraph. Cities (and partners as well) begin cooperating together in 2020 with a certain level of differentiation (comparatively), and achieve greater CRFS likeness by 16.10.2024 whilst developing per the MUFPP+ framework.

Bremerhaven provides a broad range of food-related expertise in the areas of research, education, marketing and product quality. It has traditionally played a significant role as a port and is known in the food industry as the most important location for fish processing and handling in Germany. A cluster of the fishing industry has developed that encompasses the entire value chain of the industry. Bremerhaven provides a broad range of food-related expertise in the areas of research, education, marketing and product quality. With over 3,6000 jobs, the food processing sector is one of the biggest economic sectors in Bremerhaven. As one of Bremerhaven's most relevant research institutes, TTZ is an innovative provider of applied research and development, customer-oriented training and technology transfer services. TTZ was committed in various projects linked to process optimization, resource efficiency and circular economy especially in Germany but also in Europe, Africa and Asia. With the Interreg B project REFRAME, Bremerhaven shares

⁸⁸ Köppen climate classification, 2019

relevant best practice at influencing and supporting large scale urban consumers (public and corporate) to prepare and formalize decision making on urban food policies.

The city of Bruges has set up a sustainable food strategy and a bottom-up food lab. In the food strategy of Bruges, it is included that all inhabitants have the right to a healthy, qualitative and sustainable diet. This is why we want to pay extra attention to this vulnerable target group in this project.

The aim of the pilot is to involve both the service centers and the final consumers more in the meal event. It's about their meals, their health, so we want to explore new paths in both meal preparation and meal delivery through co-creation. There are several themes that can be addressed in the pilot, depending on the needs and questions we are going to detect. (innovation in meal preparation and delivery with a focus on sustainable ingredients.). The group Bruges (city and its care institutions: Ruddersstove and Mintus) will act as a living lab for the VIVES partner. Also, the city of Bruges and its foodlab can provide expertise on the development of a bottom-up food strategy and how to work with local stakeholders. The city has also experience on food loss in the care sector, the organisation of feeding the 5000, food challenges. The city has invested over 4 million euros to structure the agri-food system. The city aim to further efforts on the previous programme framework to support the city overcome existing barriers to food system transformation, develop sustainable and resilient urban food system policies. The city aim to address food-related needs creating partnerships between public and private entities across regions and nations. Selected projects: *Green Weekend Market* (promoting local products), *Made in Moldova* (promoting the potential of local products internally and internationally), *Slow Food Youth Network* (debates on local products and traditions).

The municipality of Quart de Poblet has sustainable urban strategies such as the Action Plan for Sustainability, corresponding to Agenda 21, and the Integrated Sustainable Urban Development Strategy (EDUSI) 2014-2020 (ERDF). This has allowed a great development in the urban-natural integration of the municipality. Regarding food systems, the city has carried out the installation of a Municipal Ecological Garden (MEG) to promote environmental education, encourage citizen participation in sustainable development processes, to connect with the diverse traditional and indigenous horticultural species, and to know how to grow crops (e.g. interaction with production: soil, water, seeds, tillage). Additional MEG will be deployed within the present project, throughout the promotion and training of local unemployed people to enter the food industry. The City Council and citizens are constantly developing awareness-raising events on sustainability and ecological agriculture.

Murska Sobota cooperates closely with Green Point (Zelena točka) Short Food Supply Chain (SFSC) incorporating more than 70 local farmers, food producers and cooperatives, covering the production process in greenhouse and open-air fields, with logistics from own distribution centre and different means of sales such as public bodies (schooling sphere, retirement homes), private (restaurants, health resorts), own retail stores and online shops. Green Point continuously implements innovative business models and technologies, to increase the proportion of local and safe food. The city also promotes local cuisine by implementing different events to increase visibility and raise awareness on local/healthy food.

The Seinäjoki pilot implements the themes 'Nutrition for sustainable and healthy diets' and 'Innovation and empowerment of communities'. The pilot relates to Healthy Kids of Seinäjoki concept, which implements Health in All Policies approach. With the activities of the pilot we influence the growing generation that are young or young adults in 2030. They will form a generation of knowledgeable, aware and competent food consumers who value the origin of food. In addition, the activities aim to promote the health and well-being of children and youngsters. The target group of the pilot is children and their stakeholders (families, schools, kindergartens, etc.).

The region of Troodos enjoys a unique traditional culture and lifestyle with distinct characteristics (climate, less polluted environment, local food, agriculture and processed agricultural products). People in the area live longer and lead healthier lives than people living in other parts of the island, but very much like other rural and mountainous areas, in Troodos, there was a 50% reduction in population. The Government has started some actions to promote sustainable development in the Troodos region, in an effort to revert the migration of the population in the region. Objective: To explore the unique diet and lifestyle of the Troodos region and export good practices to the urban areas and support the sustainable development and boost the economic environment and livelihood of the Troodos region.

Velika Gorica is historically the centre of a region Turopolje, and known as self-government district for more than 7 centuries. The city promotes awareness-raising of young population on local food production (cultivation, tradition, waste), healthy diet (organically grown food), environmentally friendly supply chains (low CO2 footprint) and "know your food producer" (food selection and traceability). These objectives are supported by policy measures via different stakeholders (e.g. schooling sphere, sport clubs, etc.). Local media, study-visits to local producers are key to support these initiatives.

Vejle provides an ample infrastructure for CRFS innovation in existing complementary living-labs for food innovation, urban resilience and community engagement which will be bridged conceptually and mutually dynamized through CITIES2030 framework and activities. Vejle builds from established capacity as one of 100 Resilient Cities globally and brings deep experience and global network for city resilience. The Vejle pilot activities will showcase circular economic innovation across industrialized UFSE, enhanced with the concept of urban metabolism for truly closed loops.

Vicenza develops a pilot innovative action involving La "VELOCE" (Vicenza EcoLOgistic CEnter) to advance the food distribution chain, improving Km0 delivery services and testing new models for food waste management, including a fast reuse cycle from school canteens. The Living Lab "ORTOBOOK" is established at the International Library La Vigna, and refer to "Orto" e.g. "vegetable market" in Italian, to cultivate a culture of innovation in the urban region food system. The lab designs and activate training and awareness raising activities to stimulate entrepreneurship start up along the food value chain, thus contributes to enhance biodiversity in sustainable business and urban agri-food system innovation.

Vidzeme Planning Region lies in the North East of Latvia, and several significant international transport corridors are crossing its area, thus a strategic development area. The high concentration of natural resources provides the region's economic competitiveness (agriculture, forestry). The manufacturing industry (wood, food businesses) is the second most competitive sector. Natural resources ampleness facilitates tourism, health and rehabilitation services. Diverse bioeconomy areas shape the region' economic development. A vast number of public and private research bodies are located in Vidzeme, including the Latvian High Added Value and Healthy Food Cluster, concentrating products, technologies and services developments, and sustained by natural resources abundance.

(a).7 – Securing efficient learning environments

Education is simultaneously one of the key drivers (teaching and training) and beneficiary (schooling) of the food system transition towards sustainable settings, considering for example children and Youth⁸⁹. The vast majority of educational programmes on food tackles a specific part of the UFSE e.g. production (agriculture, aquaculture and farming, dairy production, etc.), transformation, distribution and markets, consumption (e.g. nutrition, diets, etc.), food science and technology, health and wellbeing, waste management, safety and quality, ICT, innovation and entrepreneurship, social sciences and humanities, business (hospitality, etc.), to name but these few⁹⁰. Educational programmes providing a holistic approach to UFSE and incorporating key fields of proficiency such as policy and technology are developing swiftly and can be found at tertiary level in universities and research bodies, and are also led by food related worldwide covering bodies such as the UN-related FAO⁹¹. The EC gives impetus to education and training via a vast panoply of initiatives targeting specifically UFSE such as the EIT Food Academy⁹², which provides a particular interest as they focus on transformation of the food system. CITIES2030 explores the aforementioned educational programmes combining examinations with recent studies and research on UFSE transitions mechanisms towards sustainable schemes, incorporating policy, innovation and related spheres (climate, transport, energy, natural resources management, etc.) to generate guidelines for educational programmes. Developed under WP3, WP4 and WP5 activities, this provision will be part of the CRFS Alliance Programme which also encompasses instruments (e.g. taxonomy compendium, the system thinking methodology "CRFS Logic Framework Approach", the "CRFS SeedInvest" investment action programme, etc.). CITIES2030 especially build upon EIT Food Latvia (RTU, P39) educational frameworks to deliver the aforementioned guidelines, liaising with the digital learning environment offered by EIT Food Latvia (MOOC, SPOC, etc.) and most importantly with the practical instruments for co-creation Summer Schools, Workshops, the RIS Venturing School.⁹³ CITIES2030 explores and develops on both digital environments to generate an actionable and deployable educational package. First, enhancement of empirical learning in real-scale environment provided by both the policy and the living labs. This is an essential component of CITIES2030 suggested educational programme that is planned to be outlined, and which encompasses activities such as volunteering, job shadowing, apprenticeships, personal projects developments, and entrepreneurship ventures (focusing on social entreprises). Then, CITIES2030 digitizes the instructional engineering to generate virtual tools additional to available MOOC, SPOC and comparable instruments. Within labs, either under the lenses of policy outlines or innovation actions, CITIES2030 ideates and pilots Augmented, Virtual and Extended Reality pathways to deliver the CRFS Virtual Mobility Space, to provide experiential learning and practice. Finally, CITIES2030 further draw learning from the partnership mechanisms practiced by EITF and its outstanding capacity to attract the best researchers, students and entrepreneurs and significant funding from private and public sector investment as well. Likely fostering cities to join the MUFPP, and rather than creating a new educational network, CITIES2030 leverages its partners networks and synergies to promote adhesion to the EIT Food ecosystem. All in all, CITIES2030 makes available complementary tools that are proposed on open access to all agents engaged in the UFSE, such as the labs and evidently the Single Click CRFS Platform. (a).8 – Setting accurate CRFS indicators

There are a number of indicators assisting governing bodies (private or public) monitor and assess food systems and ecosystems (FSE), most of them related to food security. A number of bodies actively contribute to delivering these indicators such as the UN-related World Food Programme, World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), the World Bank and most of nations' governing agencies⁹⁴.

⁸⁹ The EU school fruit, vegetables and milk scheme, 2017

⁹⁰ Educational programmes on food in Europe, 2020

⁹¹ <u>Sustainable Food Systems Masters Programme</u> (FAO), 2020

⁹² <u>The EIT Food Academy</u> (EIT Food), 2018

⁹³ EIT Food educational programmes for co-creation, 2020

⁹⁴ <u>Diet and nutrition, The Norwegian Institute of Public Health</u>, 2020

The UN-related Food and Agriculture Organization (FAO) develops the Food Insecurity Experience Scale (FIES)⁹⁵ and the prevalence of undernourishment (PoU, SDG 2, indicator 2.1.1)⁹⁶. The FAO together with aforementioned bodies delivers the Food Security Outcome Monitoring⁹⁷ and a series of supporting reports such as the yearly State of Food Security and Nutrition in the World (SOFI)⁹⁸. CITIES2030 draws from the mechanisms and approaches practised by these organisation to frame food-related needs to generate a food system and ecosystem taxonomy that will feed the project observatory The "CRFS Intelligence Lab", established at UNIVE (P1). Today, an increasing number of bodies contributes to defining and structuring food indicators with a more holistic approach incorporating a larger number of impact areas such as production, behaviours and waste. Such bodies are distributed in the society at large and represent government agencies and the private sector. For example (non-exhaustive) the International Panel of Experts on Sustainable Food Systems (IPES-Food), an independent panel of experts, the Local Governments for Sustainability (ICLEI) an international organization of governments (local, regional, national), the Economist Intelligence Unit (EIU) with the Barilla Center for Food and Nutrition, an initiative from the private sector, Eurocities and EU-funded structures such as Climate KIC and EIT Food hubs (to mention but these two). CITIES2030 engages these bodies to creates synergies with developing and anticipated activities, examines frameworks, approaches and methodologies to uptake all pertinent information and experience, and to secure accuracy and result-driven mechanisms for the production of the project's system thinking framework. The MUFPP provides a monitoring framework (MMF) organised in 6 categories, outcomes areas (impact), recommended actions and 44 indicators that may be compared to other factors practiced by comparable initiatives. Both UN's SDG 1199 (to simplify for other SDG are applicable) indicators 11.3 (urbanisation, land consumption), 11.4 (heritage) and 11.6 (waste) and UN's New Urban Agenda¹⁰⁰ comparable indicators are represented in the MMF, however could be subject to more inclusive integration, namely in terms of urbanisation as such. Urbanisation is partially represented in the category governance, production (land e.g. soil consumption) and waste.

GV: food governance | DI: sustainable diet and nutrition | SE: social and economic equity | PR: food production | DI: food supply and distribution | WA: food waste SC: food security | RE: resilience | CI:eircularity | CL: culture and education | IT: digitalization and connected environments

Fig. (a).8a – Summary comparative table of food-related indicators

*ICLEI 5 Pathways¹⁰¹ (extrapolation).

**Climate KIC Food value chains strategy ¹⁰² (extrapolation).

**EIT Food Strategic Innovation Agenda (2021- 2027)¹⁰³ (extrapolation).

CITIES2030 draw key learnings from the MUFPP and leverage developing experiences from pilot cities to secure accuracy and result-driven mechanisms for the co-creation of the policy and living labs, and for the co-creation of the S2CP. However, CITIES2030 develops beyond the 6 categories enhancing the framework (outcomes, impact, indicators, recommendations, etc.) with two key pathways: nature based solutions (NBS) and urbanisation as such. Still CITIES2030 plans to keep the same number and nature of categories, only further fine-tune indicators and relates with novel outcomes, impact and recommendations. A number of NBS approaches already deliver evidence¹⁰⁴ and urbanisation is at the very core of cities thus well documented and piloted. Finally, CITIES2030 proposes to digitise the MUFPP framework, whilst deploying pilots in cities per the MUFPP approach, to transform

⁹⁵ <u>The Food Insecurity Experience Scale</u>, 2020

⁹⁶ <u>the Prevalence of Undernourishment</u> (PoU, SDG 2, indicator 2.1.1), 2020

⁹⁷ *Food Security Outcome Monitoring Q3 2019*, 2019

⁹⁸ State of Food Security and Nutrition in the World 2019, 2019

⁹⁹ SDG 11 Make cities and human settlements inclusive, safe, resilient and sustainable, 2020

¹⁰⁰ <u>The New Urban Agenda (Habitat III), UN</u>, 2017

¹⁰¹ <u>ICLEI 5 Pathways</u>, 2017

¹⁰² <u>Climate KIC "Food value chains strategy</u>, 2019

¹⁰³ <u>EIT Food Strategic Innovation Agenda (2021- 2027)</u>, 2018

¹⁰⁴ <u>*Cities with Nature*</u>, ICLEI, 2019

this framework in an actionable mechanism, the Single Click CRFS Platform (S2CP). The S2CP key function is to assist cities governing bodies secure the management of sustainable CRFS. To that end, S2CP delivers FSE indicators that will be displayed in a dashboard (visualisation) adaptable to all pertinent devices and media: smartphones, tablets, laptops, and last but not least digital monitors throughout the city, to secure transparency and inform citizens on the status of their city's food system in real-time. S2CP serves two key purposes, first provide a collective information gathered from all points of the FSE, delivered by all agents of the FSE, second data-driven management instrument to assist in decision-making processes by all agents of the FSE, thus cities as well. (a).9 - Blockchain-based technology

Blockchain technology for food security. CITIES2030 contributes to engage the agri-food community in the development of solutions to remove the barriers to adoption of digital technologies, providing a data-driven ICT platform which derives value for multiple actors from the data collected throughout the food chain: the Single Click CRFS Platform (S2CP). S2CP is a data-driven CRFS management platform for data collection, analysis and representation in multiple interfaces. This platform provides a key technological asset in *data capture and storage* and *information analysis*, and allows stakeholders to use a more optimal *collaboration* and *monitoring of processes* and data following the maximum of privacy and integrity.

In relation to *data capture*, data mining techniques are provided to handle structured data (highly formatted data such as in databases or ERP systems) and text mining to deal with unstructured textual data (text that is not predefined or organized in any way such as in social media feeds). The objective is to adapt the information found in known data sources to a common CRFS model considering the sectors of production, processing, distribution, retail, consumption and waste.

The *data storage* will follow the current storage standards of cloud computing. Cloud computing is used as a data storage hub, to aggregate data, providing enough storage, speed, and computing power to analyze the collected data and package it in a form useful to public and private stakeholders. The convenient integration between current cloud systems and Big Data-based analysis tools allows us to apply this type of analysis techniques directly to information repositories, in the style of data lakes¹⁰⁵ of Amazon AWS, as a new and increasingly popular way to store and analyze data, allowing companies to manage multiple data types from a wide variety of sources, and store this data, structured and unstructured, in a centralized repository. Cloud storage also facilitates the incorporation of new processing techniques such as in-memory processing¹⁰⁶ (for example, through the Amazon Cloud solution ElastiCache) to increase the speed of simulations and forecasting.

Information analysis provided by S2CP will make possible to transform available data into valuable insights and knowledge. Learning and prediction techniques with performance indicators, such as casual and conformal prediction, will be identified, investigated and, if appropriate, integrated in S2CP toolbox, along with all necessary tools and services for rendering the datasets, performing spatial operations or complex analysis. These techniques can be particularly useful in case of important decision-making despite of possible precision decrease.

Collaboration services will be implemented to enable S2CP decision support system to report increases in stakeholder's collaboration performance levels and decision-making accuracy. Particularly, a service-based open collaboration space will be incorporated, to be used by CITIES2030 participants to improve their multi-stakeholder dialogue processes. In this space, blockchain technology will be employed to provide some proof of concepts of token-based monetization processes, and reflect multi-stakeholder interaction in a reliable and transparent way. Blockchain technology, in these sense, has opened the door to new applications and paradigms to rebuild trust in decentralized data governance in the form of digital authentication, tracking of data property rights and distribution of goods, reliability of information and the provision of digital incentives to food stakeholders.

The blockchain technology provided by Hyperledger Fabric¹⁰⁷ will be employed in the collaboration services. Fabric provides a modular architecture with a delineation of roles between the nodes in the infrastructure, execution of Smart Contracts (called "chaincode" in Fabric) and configurable consensus and membership services. Also, Hyperledger Composer¹⁰⁸ will be integrated into S2CP as a set of collaboration tools for building blockchain business networks that make it simple and fast for business owners and developers to create smart contracts and blockchain applications to solve business problems in the food domain.

Finally, *process monitoring* will allow to verify the successful fulfilment of the security premises from which the S2CP platform is designed. Privacy and integrity will be studied from the perspective of the latest contributions in the state of the art and will make use of the breakthrough characteristics of the permissioned blockchain infrastructures (such as Fabric), regarding the authorization mechanisms for the execution of business processes. Process monitoring will be integrated in a multimodal interface in the form of a dashboard with the aim that

¹⁰⁵ https://aws.amazon.com/es/solutions/data-lake-solution

¹⁰⁶ <u>https://aws.amazon.com/es/nosql/in-memory</u>

¹⁰⁷ https://www.hyperledger.org/projects/fabric

¹⁰⁸ <u>https://www.hyperledger.org/projects/composer</u>

stakeholders can use this environment to compare the results of applying different processes or techniques to their data, and to monitor the performance of their solutions.

(a).10 – Citizen-driven

CITIES2030 is citizen-driven and therefore secures a solid and extensive citizen engagement, globally led by the cities via commonly practiced channels (e.g. public information boards, local Media, etc.).

The project develops a framework for inclusiveness and diversity in societal engagement under the header of foodrelated ethics, gender balance and equality, and RRI. Citizens are engaged and involved in all pertinent activities for the development of anticipated outcomes, in particular under work packages n. 2 (WP2 to WP7. In broad terms the targeted audience incorporates unorganized public globally. The unorganized public is subject to information campaigns and educational measures per the programmed activities such as the capacity building programmes (WP3, WP4 and WP5), the system thinking working groups under 10 anticipated thematic, to secure more dialogic procedures. When activating the unorganized public, a balanced representation of principles, education and cultural background is ensured via distributed socio-demographic diversity. In formal engagement activities and processes partners practise a layered random selection strategy to account for gender, seniority, occupation, education and geographical diversity. Measures taken to engage citizens are covered by "Task 3.1 – Engage agents and stakeholders of the food system arena" under WP3 where detailed information on processes, strategy and activities can be found. (*a*).11 Positioning

The CITIES2030 project target to deliver innovations from 4 to 7 overall. As an innovation project we seek synergies with current CRFS-related projects and the IoT and ICT technologies that are being validated. Via the project, we provide an environment for the scaling up of the technology to achieve a greater integration across the supply chain and other actors in the system and wider geographical range. The following table provides a list of technology concepts and the potential TRL that we seek to achieve

	Current	Potential	
Technology and concept	TRL	TRL	Justification
	(number)	(number)	
CRFS common data model	2	5	In terms of data interoperability CITIES2030 builds a Single
			Click CRFS Platform in which data management and
			integration are crucial. The difficulty of achieving a common
			data model for CRFS has been revealed in many previous
			projects. An accurate modelling of food system actors and
			domains can allow us to reach the launch of common CRFS
			models in relevant environments.
Service interoperability			CITIES2030 builds a service-based open collaboration space
			that facilitates interoperability between various stakeholders
			and services across systems. The starting point for this
			innovation is a set of technical interoperability components
	4	7	that have been prototyped and validated in controlled
			environments and applied to data volumes within CRFS.
			CITIES2030 uses a structured process that converts an
			individual or relevant need to a challenge to be solved in a
			collaborative way.
Blockchain in food information			Technologies to ensure the availability, integrity and
security			confidentiality of data are implemented, along with
			authentication and authorization tools. Some of the reference
	5	7	technologies of CITIES2030 such as blockchain have been
	5	/	validated in relevant environments, but its application to
			CRFS in operational environments is considered to be a key
			technological challenge in the field of access policies and
			data management permissions.
CITIES2030 holistic concept			While the individual components of CITIES2030 are based
			on technologies already proven in lab environments, the
	3	8	integrated CITIES2030 concept is a research and innovative
			concept. Therefore, the project advances the TRL from level
			3 (Technology proof of concept) to level 5 (System).

Table (a).11a - Positioning of the project 'idea to application' and or from 'lab to market'

TRL 1 – Basic principles observed

TRL 2 – Technology concept formulated

TRL 3 – Experimental proof of concept

TRL 4 – Technology validated in lab

TRL 5 – Technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)

TRL 6 – Technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies)

TRL 7 – System prototype demonstration in operational environment

TRL 8 – System complete and qualified

TRL 9 – Actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

(a).12 Synergies and/or	r links with	international	research and	innovation d	activities

Table (a).12a – Miscellaneous developments

National/International RI	Description	Potential uptake	Partners
ERFD Flanders Crop on	Aims to realize innovative techniques	WP3 and WP5 can learn from the	INAG (P6)
Top 2017-2020	and technology for urban farming by	projects approach to a technology	
	applying co-creation in a living lab.	oriented living lab and the experience	ce
	The Agrotopia rooftop greenhouse will	of designing and building a	
	be the unique location where	greenhouse for vegetable production	n
	stakeholders can meet and cocreate	in an urban environment	
Science Foundation Research	VistaMilk - Milk by Design - specifically	Cities will have access to the	WIT (P21)
Centre - VistaMilk -	address pasture-based dairy production,	development of improved	
supported by the Department	improved processability and the	processability and the generation of	
of Agriculture, Food and the	generation of novel, higher-value-added	novel, higher-value-added products	
Marine, Ireland.	products. In addition to the creation of	into the agri-food Sector under WP4	
	new sensing and actuation paradigms,	and WP5 activities.	
	particular focus will be given to		
	developing state-of-the-art analytical		
	techniques applied to largescale, sensor		
	data-sets delivered by advanced network		
	and communication technologies.		
Table (a).12b – H2020 devel	opments		
National/International RI	Description	Potential uptake	Partners
H2020 "DIVERSIFOOD"	Evaluate and enrich the diversity of	Innovation (production) can be	Not applicable
2015-2019	cultivated plants within diverse	accelerated within WP5, and	
ID: 633571	agroecosystems so as to increase their	further support at policy level	
	performance, resilience, quality and use	under WP4	
	through a multi-actor approach.		
H2020 "REFRESH"	Aim at reducing food waste across	Innovation (waste) can be	Not applicable
2015-2019	the EU by 30% by 2025.	accelerated within WP5, and	
ID: 641933	5 5	further support at policy level	
		under WP4	
H2020 "PROSO"	Foster societal engagement under the	Key learnings to support WP2	Not applicable
2016-2018	terms of RRI in the research and innovation	development towards RRI	
ID: 665947	systems in Europe through generation of a	frameworks for CRFS	
	policy guide for developing governance for		
	the advancement of societal engagement		
	under RRI in relation to three fields of R&I.		
H2020 "PROMISS"	Aims to turn the challenge of tackling	Key learnings to support WP4	VIVES (P4)
2016-2021	malnutrition in community-dwelling	and WP5 development towards	
ID:	older persons into an opportunity for	equity/inclusion frameworks for	
	healthy ageing for the future	CRFS	
H2020 "FIT4FOOD2030"	Aims to strengthen research and	In WP1 to WP5 we use the	IVM (P33)
2017-2020	innovation policy coherence and	roadmaps for breakthroughs. and	(100)
ID: 774088	alignment, build competences of	also add to this by adding the city	
	current and future actors in society	perspective. In WP3 we use and add	
	and raise awareness of the FOOD	to the mapping of trends in food	
	2030 policy framework and food-	systems by adding the perspective of	
	related challenges.	how cities deal with food-related	
		issues. In WP4 we use the roadmans	
		issues. In the two use the rotalings	

		for breakthroughs, and also add to this by adding the city perspective. In WP4 we furthermore aim to take up	
		elements from building competences in the FIT4FOOD project.	
H2020 "IoF2020" 2017-2020 ID: 731884	Accelerate adoption of IoT for securing sufficient, safe and healthy food and to strengthen competitiveness of farming	Key findings and learning to support WP6 development on software and blockchain	ICTM (P30)
H2020 "ROBUST"	and food chains in Europe	technology Communities of practices	
2017-2021 ID: 727988	governance systems and practices that can contribute more effectively to smart, sustainable and inclusive growth, along rural – peri-urban – urban trajectories.	Living labs concept	
H2020 "C-VoUCHER" 2018-2021 ID: 777773	Develop new circular (cradle to cradle) value chains, disrupting traditional linear (cradle to waste) business models by means of cross- fertilization with Design Thinking experts and Circular Disruptors.	The concept of Regional Innovation Hub (regional authorities and clusters and industry partners) to support circular innovations (WP4+ WP5) Bottom-up challenge definition with ecosystem stakeholders (barriers identification) WP3. The sustainability plan via Marketplace to commercialize and scale circular solutions. Dissemination of approach via guide for regions + fund of funds (regional funds allocation for scaling)	VEJLE (P10)
H2020 "RUBIZMO" 2018-2021 ID: 773621	Identify business models with high potential for empowering rural communities to take advantage of the opportunities arising from improved value chain optimisation	Researchers with ARFI (also employed in ARAD association)	ARFI (P29)
H2020 "TOKEN" 2020-2022 ID: 870603	TOKEN aims at developing an experimental ecosystem to enable the adoption of Distributed Ledger Technologies (DLT) as a driver for the transformation of public services towards an open and collaborative government approach	Access to the TOKEN ecosystem that will enable the adoption of Blockchain technologies	FBR (P11)
H2020 "AI4EU" 2019-2021 ID: 825619	The main goal is to efficiently build a comprehensive European AI-on- demand platform to lower barriers to innovation, to boost technology transfer and catalyse the growth of start-ups and SMEs in all sectors through Open calls where 120 promising projects from outstanding researchers, developers and high- growth Start-ups will be selected (100 AI Prototypes and 20 Technology Transfer Experiments)	Access to the European community in AI including researchers, industry, SMEs, start-ups. Access to the European AI on demand platform that will include algorithms, software tools and access to data to be applied in several sectors like the ones addressed in Cities2030	FBR
H2020 "DIHNET" 2019-2021	DIHNET aims to build a pan EU network of networks that ensure	Access to the European network of DIHs that includes	FBR
ID: 825640	collaboration and quality among hubs, competence centres, and	DIHs in different sectors like the ones addressed by	

	regional and national programmes and infrastructures. The final objective of this EU DIH network is to ensure the best possible support to SMEs and midcaps	Cities2030	
H2020 "RURALIZATION" 2019-2023 ID: 817442	Development towards a new rural frontier where new generations find economic and social opportunities	Use of patterns of land access in EU member states and knowledge of the innovative practices to favour access to land key to WP4	Not applicable
H2020 "NextGenProteins" 2019-2023 ID: 862704	Optimise the production of three alternative proteins and verify their use in various feed and food applications, in order to meet customers' needs and ensure consumer acceptance	Improve our understanding of new protein sources and how they interact with society, stakeholders, e.g. economy, politics, social welfare, ethics and consumer acceptance).	MATIS (P22)
H2020 "SHERPA" 2019-2023 ID: 862448	Gather relevant knowledge and opinions that contribute to the formulation of recommendations for future policies relevant to EU rural areas	Engagement approaches and mechanisms to activate citizens, stakeholders, policy-makers and scientists in the development of policy and innovation action frameworks	ARFI (P29)
H2020 "DEMETER", 2019-2023 ID:	Demonstrate the real-life potential of advanced standards-based interoperability between IoT technologies	Cities will have a direct link into DEMETER through its partners and will understand and take learnings from the knowledge exchange mechanisms that DEMETER will build to deliver an interoperability space for the agri-food domain, presenting technologies and data from different vendors, ensuring their interoperability, and using (and enhancing) a core set of open standards (adopted across all agri- food deployments thereby) coupled with carefully-planned security and privacy protection mechanisms (also address business confidentiality).	WIT (P21) UPM (P20) ICTM (P30)
H2020 "PoliRural 2019-2022 ID: 818496	"To advance rural policy development in the age of disruptive data and technologies in order to deliver a trusted, scalable and transferable solution for policy co-creation.	Text mining application in WP6 The principles and models of Dynamic System Thinking in WP5. CITIES2030 exploits PoliRural approach and findings to deal with policy and governance aspect in WP5.	AGFT (P27) LLF (P25) GGP (P26) SLEAN (P10) VPR (P24)
H2020 "SmartAgriHubs" 2019-2023 ID: 818182	The project aims to realise the digitisation of European agriculture by fostering an agricultural innovation ecosystem dedicated to excellence, sustainability and success.	WP4 - capacity building of Digital Innovation Hubs (DIH) and Competence Centre (CC) in regions across Europe. Cities can access the SAH platform and take learnings for DIH's and CC's, that are working in the FOOD sector.	WIT (P21)
H2020 "AgROBOFood" 2019-2023 ID: 825395	agROBOfood builds the European ecosystem for the effective adoption of robotics technologies in the European agri-food sector.	Access to an already established network in AgROBOFood connecting 49 Digital Innovation Hubs and 12 Competence Centers; connecting the world of Robotics and Agriculture, and R&D	WIT (P21)

(b) Methodology

(b).1 Lean, agile and result-driven production approach

To design, develop and future-proof integrated CRFS models proposed by CITIES2030 the work plan delivers a set of practical activities for policy framework development and innovation action which engages and activates all agents of

the urban food supply chain. WP2 is a central component of the structure and provides a comprehensive framework to secure the project development and results are aligned with the European Union idea of an inclusive, innovative and reflective society. WP3 generates an actionable blueprint to create sustainable CRFS and to provide to all agents of the food system arena an interactive approach for food supply chain planning, production, monitoring and improvement, to meet the EU-U11NUA objectives. The gathered intelligence is then applied to ensures an adequate activation of all involved participants of the UFSE under WP4, building capacities to facilitate an efficient policies cocreation process. It is also practiced to deliver a structured environment to unlock cities' innovation potential, driven by the same comprehensive and diverse set of agents of the UFSE, to future proof food systems. Activities under all three WP3, WP4 and WP5 assist gather, design and develop the main components and technological tools to generate a data-driven CRFS management platform for data collection, analysis and representation in multiple interfaces, the Single Click CRFS Platform (S2CP).

Platform (S2CP). Fig. (b).1 – Lean, agile and result-driven production approach (b).2 WP2: CRFS PHILOSOPHY: ethics, RRI and gender approach

<u>*RRI General Approach.*</u> The activities run within the project should have in view the societal impact upon urban life and ecology and rural socioeconomics and ecology too, as the latter is the main source of agri-food suppliers for the urban environment. Therefore, the following courses of action will be taken under consideration: CRFS beneficiaries, CRFS key players, and academic environment will need to realize the responsibilities that lie on their shoulders on matters such as environment impact, transparency of economic and non-economic activities, possible negative effects of research on societal environment concerning alimentation. The same awareness/ responsibility should be embraced by the urban communities on matters such as the rights of rural food suppliers, stimulation of open access behaviour in directing information about food phenomenon and supporting the women's role in the food socioeconomics.

Gender considerations. CITIES2030 is a gender-neutral initiative. CITIES2030, through the activities run, will bring contributions to the gender discrimination reduction both in the rural and rural environments. Although the urban environment has come up with solutions for gender discrimination and it is on a solving trend, the rural women are not fully recognized for the significant part played as creators of agri-food knowledge, food production, food security, and food distribution (Nyeleni Declaration). The project activities will forever support the women's assertion and their role played in the urban food supply chains. Within WP2 will be organized workshops with women entrepreneurs involved in urban food supply chains. Based on the cooperation of all partners involved in the project, a guide of good practices will be made for reducing and, hopefully, eradication of gender discrimination. It will be important to ensure that men and women are equally represented within groups of stakeholders and to ensure that their respective needs and interests are taken into account109. The partner countries within the project have different experiences about CRF ethics, RRI, and gender approach. For this purpose, there will be exchanges of good practices concerning the insurance of project ethics framework. Therefore, a constant communication among partners is necessary as it will enable sharing cultural experiences of their own countries. That will provide a solid framework of the project and allow to formulate models of good practices and possible directions for implementing these principles.

<u>Open Science</u>. Open Science can be firstly viewed as Open Access. The concept of open access is directly linked to the following purpose: "make the primary outputs of publicly funded research results — publications and the research data — publicly accessible in digital format with no or minimal restriction as a means for accelerating research¹¹⁰.

¹⁰⁹ http://www.fao.org/3/a-i6808e.pdf

¹¹⁰ OECD. https://www.oecd-ilibrary.org/docserver/5jrs2f963zs1-

en.pdf?expires=1578565196&id=id&accname=guest&checksum=49F8B30DC889F400941C3D64E9C92E3D

<u>Utility and Scientific Value of the Knowledge</u>. The research activities (data collecting and analysis, identifying patterns and models) within CITIES2030 will have in view the scientific utility and value. Thus, the implementing activities of the research results will have a lasting impact upon both direct and indirect beneficiaries. <u>Quadruple Helix Approach</u>. The stakeholders will be selected in accordance with the particular principles of Quadruple helix approach¹¹¹. Thus, it will be ensured the representativity for the entire societal panel. (b).3 WP3: CRFS INTELLIGENCE: structured and actionable knowledge

WP3 main aim is to gather agents representative of the food system arena in one single network, the CRFS Alliance, supported by a digital collaborative platform. Activities take place in both physical locations and digital environments, hosted by existing structures and facilities inside which a few number of open spaces are especially tailored to host developing prototypes of policy and living labs. The CRFS Intelligence Lab (CIL), an observatory on sustainable urban food policies is established in the facilities of UNIVE (P1) in Italy. The CIL is built according to the global concept and approach of the Future Food Institute (Italy), a center of excellence for food intelligence combined with a training platform and EIT Food (Latvia). Also, similar development developing in partners' cities are substantial sources for uptake. The Future Food Institute plays a key role liaising CITIES2030 and the FAO arena (FFI/FAO joint programme), and sustains efficient synergies also with other UN's related spheres as well, such as the World Food Programme. The CIL will be deployed at regional level with cities as drivers during the project and beyond until 2030. Activities developed in WP3 aim at gathering and categorizing data and insight on food chain systems integrating urban and peri-urban realities as perceived by local and regional actors of the food system arena. Evidence-based knowledge specific to local and regional CRFS from the EU sphere is assembled to implement benchmark processes and deliver a structured and actionable knowledge repository. This intelligence is the core material that will be used, updated and labelled (taxonomy) to generate CITIES2030 working instruments that will be implemented to assist deliver solutions for the production of sustainable CRFS production. The data is structured in 10 key thematic by dedicated working groups (see Fig. 1.1b), which are defined per the FAO approach. 6 categories reflects the supply chain as such (e.g. From production to waste), and 4 on correlated key arenas. The planned activities generate preconditions for the establishment of laboratory structures for policy life cycle assessment and innovation examination, real-scale pilots and a deployment programme. Also, the CIL is the central site for the creation and management of CITIES2030 synergies together with other WP (2, 4, 5, and 7). The synergies action plan outlines a framework (objectives, resources and calendar) especially created to maximize all possible opportunities for the project effective impact, e.g. on the most comprehensive spheres e.g. academia (research, education), businesses (innovation, employment, clusters, etc.), civil society (community-based and family-based developments), the schooling sphere, sport and wellbeing, social affairs and government action, and last but not least ICT (possibly incorporating the IoT). Structured activities generate a digital set of actionable knowledge (compendium/vademecum, community of practice, networks, labs, white papers, policy briefs, blue prints, methodologies, action plan) incorporating trends and megatrends on CRFS policy development and future policy outlook, innovation action frameworks which will be validated and/or tested through piloting activities under WP4, 5 and 6.

<u>1. Examination and assessment of the food chain/system (FCS) and CRFS landscape.</u> A comprehensive study of common (current) and developing (research) terminologies (definitions), solutions (products and services), and frameworks (collaborative mechanisms, ecosystems) is conducted to generate a landscape syllabus with a focus on three key elements: short food supply chain, indigenous frameworks and digitisation processes. Mining is conducted with a desk and field research form, with and by all agent of the food system and ecosystem, and collects: online records from scientific papers databanks, patent registries, EU funded initiatives (H2020, Interreg, etc.), material from civil society and community-based organisations, reports and studies from international bodies (WHO, UN-FAO, etc.), the MUFPP, also Eurocities, the FAO, iPES Food, ICLEI, C40 Cities, IFOAM, the Soil Association, EIT Food, Climate KIC, to mention but these few), businesses and market intelligence reports (PwC, Accenture, Deloitte, etc.). The research practices a systemic back-to-back analysis between the contradictory aims of food chain systems current policies, and the potential for new synergies to be generated[1]. The wide-ranging survey focusing on the abovementioned food chain systems setting will cover:

a) policies (laws, regulations, protocols, norms, etc.) and government agenda (strategic plans, recommendations, best practices);

b) mechanisms incorporating livelihoods, accessibility, indigenous foodways (food city belts, etc.), ecological resilience and societal sustainability;

c) vulnerabilities and obstacles per agents' specific perspectives;

d) contractual public private partnerships and social bond systems, investment action and related venture capital developments systems;

e) trends and megatrends driving innovation (citizen and open science, RRI, gender approaches, etc.);

¹¹¹ https://www.igi-global.com/article/triple-helix-quadruple-helix-quintuple/41959

f) businesses (models, new and unusual actors, trust and security, best practices);

g) systems and devices research and development (IoT, AI, AR/VR/XR, machine learning, blockchain, optical character recognition, virtual reality viewing, online intelligent identity authentication, biometrics); h) EU funded projects and other funding schemes generated by recent calls (2017 onwards).

To secure accuracy with past and current developments from the European Commission's strategy, e.g. FOOD2030, and its related framework (bioeconomy, digital single market, etc.), CITIES2030 build upon the taxonomy, classification structure and development approach from the MUFPP. The study will identify existing vulnerabilities in the food system arena, drivers and capabilities of the involved actors and their level of 'preparedness' to engage in transformation processes towards sustainable and circular frames. The outcomes of this activity is a white paper to assist organisations assess risks related to their operations, to the operations of associated entities and the impact these risks may have on their activities.

The data collection process aims at analysing the food system arena agents' motivation, the conditions and mechanisms allowing them to tackle identified vulnerabilities, and ascertain the implications of these vulnerabilities to sustainable CRFS development. In addition, as both quantitative and qualitative responses will be captured, the survey will also support the assessment of the propagation effect of vulnerabilities and the drivers behind the changing nature of the food system arena.

2. Gather insight from all actors of the food system arena. Starts with building the CRFS Alliance community stakeholders across the food system arena, the inception of synergies with other networks and initiatives to plan a hosting programme for the upcoming project's labs, and the set up and activation of the project digital collaborative platform. Organisations that are representative of the food system arena will be approached via an online benchmarking survey to provide key data on obstacles to activate and implement transformation processes. The survey will assess both trends and impact regarding food system arena developments, particularly those driven by cities from the MUFPP. Responses will be sought from a series of bodies representative of the food system arena targeting a comprehensive array of audiences representative of a 'cradle to cradle' biological and technical nutrients framework e.g. from "food producers, processors, retailers, procurers, food service industry, nutritionists, universities, SMEs and local/regional business, educators, behavioural and social scientists, museums/science centres, professional associations, innovative ICT companies, banks, venture capitalists and other sources of investment, NGOs, media and citizens". Special attention will be given to regulatory bodies and standardisation authorities (focusing on statutory bodies with sectoral responsibilities) and non-traditional actors which are characteristic of the mobile/IT technology environment e.g. small appliance manufacturers, local and regional governments employing diverse security, grids and city-wide monitoring operations. The survey questions will be built around understanding the perspectives of the food system arena, how knowledgeable actors of the food chain are about FOOD2030 policy, their ability to develop food systems related competences from internal resources, and their willingness to adapt their operating model to enhance food security and related needs. Again, the data collection process aims at analysing the food system arena actors drivers, the conditions and mechanisms allowing them to overcome identified obstacles, and ascertain the impact of these obstacles to sustainable CRFS development. Qualitative feedback will be captured, the survey will also support the assessment of drivers and obstacles behind the changing nature of the food system arena. The survey will be hosted online using the established digital survey tool SoGoSurvey. Questionnaires will also be designed to test the accuracy and potential for reliability of anticipated pilot lab developments, with 100 actors per country in 15 countries (Ireland, Luxembourg and Portugal not included). The results of the survey will be evaluated for possible enhancements to improve the quality and accuracy of pilot lab developments, and consequently validated with the establishment of prototype labs. The outcomes of the survey will be cross-referenced with the results of the desk research to provide a comprehensive insight on drivers and obstacles to sustainable CRFS development.

<u>3. Establishment and activation of policy and living labs.</u> Create preconditions for the system thinking activities that will take place in policy labs (WP4) and living labs (WP5) which aim at enhancing foresight and consolidating development scenario analysis on food systems, e.g. future-proofing sustainable and resilient food systems. WP3 implements the participatory (multi-agents) design and production of policy and living labs. It structures ten (10) working groups (see Fig. 1.1b), with a solid management framework supported by the project's Google Sites platform "Connected CRFS Alliance". The working groups tackle key thematic of the food system arena and corresponding operations, within result-oriented workshops activities to compile stakeholder requirements elicitation and deliver pathways towards sustainable CRFS developments, building upon key findings provided by the aforementioned activities (global collection of data). The anticipated system thinking framework is constructed with a combination of evidence-based methodologies created and still under full practice in different spheres, including under developing H2020 projects, see section (a12).

<u>4. Requirement for an ICT framework.</u> Ideation of a data-driven CRFS management system based on a comprehensive study of the ICT arena to screen available technologies, incorporating the promising 5G mobile environments, that can be tailored to generate a data-driven CRFS management system. WP3 develops with the

mapping of data-driven urban management systems landscape for possible uptake and leverage. It also develops and implements a quantitative and qualitative survey of end-user requirements with respect to cybersecurity across the food system arena. Based on the outcomes of the survey, a focus group will be conducted to explore selected insights from the survey and discuss them in more detail providing an in-depth understanding on the needs and requirements of end users, and how CITIES2030 can meet their expectations. This activities provide necessary preconditions for the comprehensive engineering and technological development and production of the Single Click CRFS Platform under WP6. P3 liaise with WP4 within which documentation and software repositories will be available for policy labs and to develop scenarios with assistance from WP6. WP3 liaise with WP5 specifically, within which a marketplace for optimization of multi-stakeholder dialogue processes will be provided, in which blockchain will be employed to provide some proof of concepts of token-based frameworks and processes, in a reliable and transparent way.

(b).4 WP4 > CRFS ALLIANCE: cities' empowerment and synergies

WP4 ensures an adequate activation of all involved participants from the food systems and ecosystems, building capacities to facilitate an efficient co-creation process. WP4 substantially leverage learnings from the MUFPP+ securing synergies and correspondence with key findings. WP4 delivers policy life cycle assessments within labs, to design, pilot in real scale, validate and deploy sustainable CRFS policies which meet the EU FOOD2030 and UN-SDG11 policy framework. WP4 explores policy-framed and technology-based scenarios, build competences at city level, and deploy policies at regional level towards compliance with the aforementioned policy framework. Likely WP1-6, WP4 foster synergies with comparable developments. All in all, WP4 generates an overarching development paradigm driven by resilience, focusing on re-framing policy areas within the methodological framework of city resilience, up-taking from the MUFPP+. WP4 Generates the CRFS Educational Programme (WP3). Implement training activities to equip participants for the development of policy co-creation processes, based on 10 identified thematic (see Fig. 1.1b), understood as Learning Outcomes under the present learning process. 2 onsite event with 30 participants takes place completed with 5 online events and supported by the CRFS Alliance Google Site platform were learning material is made available and fully accessible.

Implement the project's system thinking methodology CRFS Logical Framework within 5 on site and 5 online events, a solid and result-oriented instrument to facilitate co-creation mechanisms in 10 identified thematic and corresponding working groups (see Fig. 1.1b). Leverage development from the MUFPP+ and selected pertinent sources as well (e.g. research, civil society and businesses). Generate synergies with similar developments targeting cities and regions. Implement 4 pilot cities e.g. BRUG (P3), VEJLE (P10), VIZ (P32) and HARL (P41) and 1 pilot region e.g. UCC (P36). Creates a group of facilitators composed by an expert with seniority in practices in each country except Ireland and Luxembourg. All activities are implemented in the established policy labs. Finally, WP4 Co-creation and implementation of a deployment action programme to reach 50 pilot cities by 16.10.2024. Production of a series of actionable instruments which core is structured by a multiplier team in all participating countries. The programme also encompasses material for training and a practical roadmap transferable to a vast majority of settings (climate, typography, etc.) yet tailored for specific CRFS setting depending on the characteristics of the food system arena. This provision will be accessible online. Three deployment levels are anticipated, national level on year 3, transnational (boarder countries and the EU+) and international on year 4

(b).5 WP5 > "CRFS ANGELS: innovation, synergies and investment action"

WP5 executes participatory innovation procedure (Fig. (b).5a) to explore and develop improvements, best practices and innovations on CRFS value chain. Some pilots will involve the schooling sphere (INTO, P12) and therefore CITIES2030 structures a solid framework for ethics self-assessments being children among foremost "sensitive group". To fully exploit the outcomes, WP5 seeks realistic funding options and formulates viable, profitable and scalable business models.

Fig. (b).5a - Participatory innovation procedure

The Participatory innovation procedure has three main phases which are outlined below:

- 1. Prepare the participants to seek in collaboration responses on the challenge and innovate successfully; provide knowledge, build capacity and bond cooperation relationships.
- 2. Innovate successfully: Give direction, provide method and empower
 - Firstly, identify and explore the challenge which states the direction for the innovation activities. The challenge at CITIES2030 is a description of success 48 months in the future. It describes in a sentence where you want to be. The CITIES2030 challenges are tightly linked with the CRFS value chain.
 - Secondly, apply the Innovation Pattern (Fig. (b)5b) which merges long-term strategic challenge, practiceoriented research, capacity building, goal-oriented approach and experimental discovery towards innovations.

Fig. (5)b - Innovation Pattern

The Innovation Pattern follows following steps which are carried out by every pilot:

- Grasp the Current Condition on the challenge scope;
- Pick up max. three (3) SMART Goals during the project period to reach the Challenge;
- Execute 2-4 rapid experiments for each SMART Goal, and document the most remarkable and exploitable findings.
- Thirdly, WP5 ensures that the participants have adequate knowledge, skills and tools to achieve their full innovation potential.
- Scale out the results by securing the pilot outcomes exploitation

WP5 secures long-term development via marketplaces and the "CRFS SeedInvest" investment action programme. The objective of this task is to define a route for continuing the operations of Cities2030 exploiting selected most promising Key Exploitable Results (KERs) through a new entity, potentially a foundation, created and run by the Cities2030 project partners. In this task, the interest of project partners to participate as shareholders in the newly created entity, will be defined. For the new entity, concrete responsibilities and future roles of the interested partners will be identified. Furthermore, underlying IP ownership status will be and IP transfer conditions from the owners of the KERs to the new entity will be provided with a practical "go-to-market" strategy and plan that is outlining the most promising target segments, additional development and financial needs associated to the exploitation of the KERs, together with a concrete timeline. Furthermore, an IPR Protection Strategy will be developed, that recommends the most appropriate IP protection means (patenting, trademark protection, trade secrets, copyrights etc), providing a long-term competitive advantage through strong IP protection.

(b).6 WP6 > "CRFS BLOCKCHAIN: Single Click CRFS Platform (S2CP)"

The improvement of food systems through the seamless integration of ICT technologies is a current challenge that aims to optimize production processes and connect small supply and distribution points to make them more competitive in cities. Considering that, for example, the agriculture sector in the European Union is mostly made up of an aging population, with little access to technology, and which mostly manages small businesses. According to Eurostat, about 9.7 million people working¹¹² in agriculture in the EU in 2016, Four-fifths (81.7 %) of the EU's farm managers that were 65 years of age or older worked on subsistence farms and very small farms in 2016.

New technologies such as blockchain have appeared with the challenge to rebuild trust in decentralized data governance and easy access to markets. Since 2014 it has increasingly been realized that blockchain can be used for much more than cryptocurrency and financial transactions, so that several new applications are being explored¹¹³: handling and storing administrative records, digital authentication and signature systems, verifying and tracking ownership of intellectual property rights and patent systems, distribution of locally produced goods and, in general, for tracking products as they pass through a supply chain from the manufacturer and distributor, to the final buyer. Actually, Blockchain in supply chain management is expected to grow at an annual growth rate of 87% and increase from \$45 million in 2018 to \$3,314.6 million by 2023¹¹⁴. The use of blockchain also allows improving policy-related processes such as cleaning needed for

 $[\]frac{112}{https://ec.europa.eu/eurostat/documents/3217494/9455154/KS-FK-18-001-EN-N.pdf/a9ddd7db-c40c-48c9-8ed5-a8a90f4faa3f}{2}$

¹¹³ Tayeb, S., and F.C. Lago. 2018. Blockchain technology: between high hopes and challenging implications. MENA Business Law Review First quarter ¹¹⁴ Chang, Yanling, Eleftherios Iakovou, and Weidong Shi. 2019. "Blockchain in Global Supply Chains and Cross Border Trade: A Critical Synthesis of the State-of-the-Art, Challenges and Opportunities." arXiv:1901.02715. arXiv preprint

products to be approved by public health authority faster¹¹⁵, meaning the consumer can enjoy that produce more quickly. If on top of that it can also provide a better income to farmers, it can then give the right incentives for farmers to produce ethically. The transparency characteristics of blockchain allow to fight against food fraud, as, being blockchain a transparent system, we can see the different steps along with what everyone along the chain is making. That way we can better understand if the cost at a particular part of the process is warranted or if it is just riddled with bureaucratic aspects where it takes longer to go through, and it becomes much more expensive. There are several experiments underway, as in the city of Vienna, called Culture Token¹¹⁶, with the aim at securing the integrity of OGD (Open Government Data) by unique document identifiers (hash values) in public Blockchains and designing daily food vouchers for employees in partnered restaurants, iTradeNetwork announced¹¹⁷ its Hyperledger Fabric-based traceability blockchain earlier this year. It's aimed at monitoring the journey of perishable food and is an addition to the firm's other supply chain solutions. These boast customers including Nestlé, Campbells, Heinz, and Kellogg's. Mastercard announced¹¹⁸ [RPAG7] a partnership with Envisible to integrate Mastercard's "Provenance" blockchain with the latter's food traceability system Wholechain. Many CRFS-related projects (such as Fit4Food2030¹¹⁹) consider the notion of platform as a sustainable, multi-stakeholder ecosystem investigating research priorities for sustainable and improved food systems. However, some of these projects lack of technological support to facilitate the implementation of innovation actions and policies. In this sense, WP6 aims to develop a Single Click CRFS Platform, as a technological support to fulfil the following objectives: (i) Digitize a data model that allows food system participants to manage their own datasets and analyze the information in order to obtain relevant information allowing the improvement of their policies of generation, transport, distribution, sale, reuse and recycling of food. (ii) Create a collaborative ecosystem that allows communication between the different players in the chain and the simulation and implementation of business models with the use of tokenization and crypto-transactions. (iii) Address the major open challenges in food systems, from the perspective of data security and privacy, in relation to the fight against fraud, quality and provenance, information protection, etc. (iv) Design multi-device interfaces that facilitate access to ICT technologies to non-technological participants, for broader scope in the implementation of this type of technology in food systems across Europe. This technical work package facilitates the generation of impact on the project, according to the expected impact in the CE-FNR-07 call, in which food systems policies and actions must be shared and compared among various stakeholders in order to increase the transferability of the food system model all over Europe. Also, it facilitates guidance on the overall technological approach on CITIES2030, identifying a suite of candidate technologies and components to be used in the pilots. The methodology to address this goal involves the proposal of a set of domain requirements that lead us to the definition of a reference architecture, whose initial version is included here as a guide to the work to be carried out:

Fig. (b).6a - CITIES2030 Adaptive visualisation dashboard

This architecture also have relations to other work packages:

- WP1 > "CRFS IMPACT: effective action and deployment": The monitoring mechanism supported by the dashboard with adaptive visualizations will be used in WP1 for monitoring the effectiveness of city/region actions.
- WP2 > "CRFS ethics, RRI and gender approach": Regarding CRFS ethics, information reliability can be validated by S2CP thanks to the blockchain system, which brings trust and information transparency.
- WP3> "CRFS INTELLIGENCE: structured, harmonized and actionable knowledge". Knowledge repository provided in WP2 will serve as input for the digital CRFS database provided in WP6.

¹¹⁵ Creating Opportunities across the Value Chain with Blockchain Harvester City: Interview with Genevieve Leveille (Founder), AgriLedger: <u>https://medium.com/@alexwelch_76061/blockchain-interview-w-geneive-leveille-founder-agriledger-7c218a7a268c</u>

¹¹⁶ https://digitales.wien.gv.at/site/en/culture-token-project-outline/

¹¹⁷ https://www.ledgerinsights.com/itradenetwork-blockchain-food-traceability/

¹¹⁸ https://www.ledgerinsights.com/mastercard-blockchain-food-traceability-food-city-envisible-wholechain/

¹¹⁹ https://fit4food2030.eu/food2030platform/

- WP5> "CRFS ANGELS: innovation, synergies and investment action". WP6 will support pilot experiences in WP5, ensuring that the participants have adequate knowledge, skills and tools to achieve their full innovation potential
- WP8> "LEAN GOVERNANCE: data-driven digital management".

WP2 (CRFS PHILOSOPHY: ethics, RRI and gender approach) secures development towards gender considerations.

In the project's content the following approaches will be taken into account: (1) Rethinking concepts and theories on the paternalist nature of the agricultural production and passing from one generation to another the genetic material (see Nyeleni Declaration); (2) Formulating research questions to observe to what extent CRFS are influenced by the gender differences and if, across the European environment, there is discrimination in the activities correlated with CRFS; (3) The analysis of the main factors intersecting with sex and gender in sustainable and durable CRFS (geographic location, socioeconomic status, educational background, lifestyle, family structure, social and family roles, child-care driven behaviour — these factors can highlight the way in which the family (viewed as fundamental socioeconomic unit) relates to CRFS by concerns, such as environmental protection, informed consumer decisions, health care, life quality. At the same time, CITIES 2030 is a gender-neutral initiative and practice systemic gendered activities¹²⁰. This project, through the activities run, will bring contributions to the gender discrimination reduction both in the rural and urban environments. Although the urban environment has come up with solutions for gender discrimination and it is on a solving trend, the rural women are not fully recognized for the significant part played as creators of agri-food knowledge, food production, food security and food distribution. The project activities will permanently support the women's assertion and their role played in the urban food supply chains. Therefore, a constant communication among partners is necessary as it will enable sharing cultural experiences of their own countries. That will provide a solid framework of the project and allow formulating models of good practices and possible directions for implementing these principles.

Women's participation in research and innovation activities must be encouraged by establishing equal opportunity policies. Gender issues will be covered in workshops, seminars, policy and living labs, contribute to changing the agri-food and ICT image by involving female developers in the development and evaluation activities. Moreover, the consortium has ensured that there is a significant gender balance across management, leadership and advisory roles in the project. Gender balanced technology research and pilots: The consortium of CITIES2030 is well aware of gender issues in science and technology (ref. "Commission of The European Communities: Women and Science: Excellence and Innovation – Gender Equality in Science", SEC (2005) 370). Example areas where gender aspects are considered include usability studies, tool preferences, and target group analyses in cases, where the gender balance of a new target group is changing from the gender balance of a target group, where experience existed: ICT research needs to be designed and programmed to take into account the physical, psychological and social characteristics of the gendered user; it also becomes imperative to be able to forecast the effects of technology on gender relations. Thus, gender plays a significant impact in the application of the developed models, their acceptance and adoption. Differences related to the effectiveness and usability of the piloted solutions emanating from the gender, social and cultural perspectives will be taken into consideration.

1.4 Ambition

The ambition of CITIES2030 is to combine existing policy frameworks for CRFS, like the MUFFP, with frameworks for urban resilience, which is mostly evolved around the spheres of city influence like infrastructure, built environment and welfare services. CITIES2030 is making food provision e.g. safety, production, health, social a programmatic priority and pillar of resilience within the resilience policy framework. This demands new areas of systemic framework and concept development and is underscored by an ambitious technology-driven solution - CRFS single click. Security and Food safety. ICT technologies have transformed the way sensor data are interpreted and analysed and used by software services, where we have seen applications in environmental monitoring, inventory management, as well as in food safety management¹²¹. Food safety is a profound factor for protecting public health and preventing the outbreak of foodborne illnesses which can be very costly both for healthcare systems and the food industry. This requires the food sector to make substantial efforts to take new approaches and practices at different stages of the chain from production to processing and delivery to end consumers. The increasing demand for "safe foods" has even gone further to "high quality foods" and in turn has encouraged the food chains to implement new mechanisms for trustworthy flow of information in their chains, thus reliable food traceability systems. New technologies such as blockchain have appeared with the challenge to rebuild trust in decentralized data governance and easy access to markets. Since 2014 it has increasingly been realized that blockchain can be used for much more than cryptocurrency and financial transactions, so that several new applications are being explored¹²²:

⁽b).7 Gender approach

 $^{^{120}\ \}underline{http://gendered innovations.stanford.edu/methods-sex-and-gender-analysis.html}$

¹²¹ J. Gubbi, R. Buyya, S. Marusic, M. Palaniswami. (2013) Internet of Things (IoT): a vision, architectural elements, and future directions, FutureGener. Comput. Syst., vol. 29, no. 7, pp. 1645–1660.

¹²² Tayeb, S., and F.C. Lago. 2018. Blockchain technology: between high hopes and challenging implications. MENA Business Law Review First quarter

handling and storing administrative records, digital authentication and signature systems, verifying and tracking ownership of intellectual property rights and patent systems, distribution of locally produced goods and, in general, for tracking products as they pass through a supply chain from the manufacturer and distributor, to the final buyer. Actually, Blockchain in supply chain management is expected to grow at an annual growth rate of 87% and increase from \$45 million in 2018 to \$3,314.6 million by 2023¹²³. There are several experiments underway, as in the city of Vienna, called Culture Token¹²⁴, with the aim at securing the integrity of OGD (Open Government Data) by unique document identifiers (hash values) in public Blockchains and designing daily food vouchers for employees in partnered restaurants, iTradeNetwork announced¹²⁵ its Hyperledger Fabric-based traceability blockchain earlier this year. It's aimed at monitoring the journey of perishable food and is an addition to the firm's other supply chain solutions. These boast customers including Nestlé, Campbells, Heinz, and Kellogg's. Mastercard announced¹²⁶ a partnership with Envisible to integrate Mastercard's "Provenance" blockchain with the latter's food traceability system Wholechain.

<u>How CITIES2030 goes beyond.</u> In CITIES2030, we leverage the use of blockchain by their integration in our S2CP proposal, allowing improving policy-related processes (such as cleaning needed for products to be approved by public health authority faster¹²⁷, and living lab experiences (enabling the consumer to receive a good more quickly and with more accurate information). If on top of that it can also provide a better income to stakeholders that produce ethically and environmentally friendly. The transparency characteristics of blockchain allow to fight against food fraud, as, being blockchain a transparent system, we can see the different steps along with what everyone along the chain is making, understanding and assessing the cost of a particular part of the process.

<u>Data integration</u>. Data management and integration for various food system actors and domains will enable the specification of a CRFS models in relevant environments. Innovative techniques such as clustering and feature extraction will be investigated to prepare data conducting effective analysis. Distributed learning techniques such as Federated learning and representative learning approaches will enhance data integration.

<u>Collaborative decision support services.</u> A set of technological solutions with be provided in CITIES2030 to facilitate interoperability between various stakeholders and services across systems. These digital solutions will convert an individual or relevant need to a challenge to be solved in a collaborative way. Decision making processes and KPI comparisons will be collectively available among living labs, policy labs and other action groups.

<u>Enabling trustworthy data sharing</u>. Privacy and security technologies will be incorporated for the examination of security and privacy threats on CRFS platform, and the specification and modelling of CRFS data access policies and permissions with regards to SLAs, business models, data ownership, data federation. The application of blockchain to CRFS in operational environments is considered to be a key technological challenge in the field of access policies and data management permissions. In that point, it will be implemented innovative "purpose & consent" contracts using Blockchain in line with COPA-COGECA EU Code of Conduct on agricultural data sharing by contractual agreement.

<u>Establishing a CRFS capital investment framework.</u> CITIES2030 aim to define a route for continuing the operations of Cities2030 exploiting selected most promising Key Exploitable Results through a new entity, potentially a foundation, created and run by the Cities2030 project partners, which could be a legal entity. To achieve this objective is important to define the underlying IP ownership status and IP transfer conditions, together with the partners responsibilities in the future new entity. The necessary developments are the following:

- <u>Defining responsibilities and future roles</u>. Within this task, the FBR will be responsible for defining the framework of the future organization, including mapping the partners that will take part in the new entity as shareholders. This task also foresees defining the concrete responsibilities in the future legal entity, together with a willingness to invest time and financial resources to the organization. For that reason, a session will be organized in the framework of Project Meeting where all project partners meet and express their interest (or non-interest) to participate in the organization. The further communication will be conducted through periodic online meetings until the end of the project (combining the next sub-task "Legal Framework of the Organization").
- <u>Legal Framework of the New Entity</u>. Within this task, the intellectual property rights will be defined, including ownership status of the KERs and the transfer conditions of the underlying IP to the new entity. Legal framework for the new entity will be defined. This includes decision about the physical incorporation country (hence the governing law) and the shareholders structure. Equity allocation will be based on the value-based calculation, taking into consideration

¹²³ Chang, Yanling, Eleftherios Iakovou, and Weidong Shi. 2019. "Blockchain in Global Supply Chains and Cross Border Trade: A Critical Synthesis of the State-of-the-Art, Challenges and Opportunities." arXiv:1901.02715. arXiv preprint.

¹²⁴ https://digitales.wien.gv.at/site/en/culture-token-project-outline/

 $^{^{125}\} https://www.ledgerinsights.com/itradenetwork-blockchain-food-traceability/$

¹²⁶ https://www.ledgerinsights.com/mastercard-blockchain-food-traceability-food-city-envisible-wholechain/

¹²⁷ Creating Opportunities across the Value <u>https://www.ledgerinsights.com/itradenetwork-blockchain-food-traceability/</u>Chain with Blockchain Harvester City: Interview with Genevieve Leveille (Founder), AgriLedger: https://medium.com/@alexwelch_76061/blockchain-interview-w-geneive-leveille-founderagriledger-7c218a7a268c

the value of the input know-how (either value of the technology, KERs, market know-how, access to customers, access to funding sources etc). Furthermore, for the partners who will not be part of the new entity, but have been involved in the value creation (e.g. partners who have been involved with KER development and are the co-owners of the IP) within the Cities2030 project, the licensing scheme will be developed. The outcome of this sub-task is the registered legal entity, a Shareholders Agreement and Articles of Association, governing the internal management structure.

- <u>"Go-to-market" strategy and plan for the new entity</u>. In this task, FBR will be responsible for developing a practical go-to-market plan that will be the basis for new entity future activities in commercializing the selected KERs. The plan will be partly based on the outcomes from T5.2 and T5.3, outlining the most potential target segments and potential customers identified. The plan will give a detailed overview of the timeline, incl. additional development needs and financial needs associated to exploiting the KERs.
- <u>IPR Protection Strategy for the new entity</u>. An IPR Protection Strategy will be developed, that will suggest the most appropriate IP protection means (patenting, trademark protection, trade secrets, copyrights etc). that helps to protect the key IP of the new entity. This strategy will ensure long term strategic protection and a competitive advantage on the market.

<u>Leveraging additional funds for the exploitation phase</u>. Cities 2030 will apply the following measures to support the uptake of the results in getting the funds needed for further commercialization:

- <u>Mobilizing Private Funds.</u> FBR (P11) will support partners keen to exploit the project results in raising additional private investments for the exploitation phase. FBR (P11) will help them in defining the investor pitch, in identifying potential private funds (mainly Business Angels, Angel Networks and strategic investors) which operate in the technology/ area/sector and supporting them in preparing the meetings with those potential investors. The objective will be to support them till find, at least, one potential private investor interested in supporting them.
- <u>Mobilizing European Funds.</u> FBR (P11) will support partners keen to exploit the project results to identify European public funding opportunities (Public Funding Scan) for them and prepare a project scope for the EU Program most interesting for them.
- <u>Mobilizing Structural Fund through connecting with Regional and National Authorities.</u> FBR (P11) will coordinate the following activities to ensure that Cities2030 is aligned with regional strategies and if possible getting the Regional Authorities engagement for the exploitation phase: (i) defining the project Pitch towards Regions. Once the first results of the project are gathered, an infographic will be prepared to show regions the specific results that they could reach in their regions, by implementing this type of activities which are aligned with their Smart Specialisation Strategy. Each partner will be responsible of identifying the proper interlocutor in each region, sharing with them this information and inviting them to the 'Regions Workshop'. (ii) Regions Workshop. Once all regions have a representative person, a Workshop will be organised to share the Cities2030 results, the impact that the project result can have in their regions and jointly discuss how to implement actions to support the further exploitation. (iii) Regional Funds Action Plan. Based on the inputs from the Regions, FBR will prepare an action plan including the Regional Funds which can be used to support the implementation of the Cities2030 at Regional Level and the actions to be done to properly include it in the Regional Programming. (iv) Regional Funds engagement Follow up.

KPIs:

- 1 new entity, potentially a foundation, is created
- 20 Investors contacted
- 30 Meetings with investors
- 10 Investors Memorandum of Understanding signed
- 1 Public Funding Scans

2. Impact

2.1 Expected impacts

CITIES2030 aims at activating and structuring food system transformation towards EU-UN11NUA In the food system arena, incorporating all actors of the food value chain, through the completion and operation of policy and innovation labs and a blockchain-based data-driven CRFS management system. Mapping vulnerabilities and obstacles to sustainable CRFS and generating a structured and actionable URFS knowledge basis in the food system transformation portfolio in the framework of food supply chain and security and data rich requirements CITIES2030 contributes to the alignment of supply chain innovation strategy

Call's expected impact (CEI).

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Call's expected impact (CEI)	CITIES2030 action plan	Deliv.
CEI - 1 > Creation of new and sound	White paper on ethical CRFS	D.2.2
evidence for policy makers in relation to	White paper on gender-based CRFS	D.2.3
urban food systems in support of policy	White paper on RRI-oriented CRFS	D.2.4
development	White paper on sustainable CRFS	D.3.2
	Observatory on sustainable urban food policies and practices	D.3.4

	4 Policy briefs	D.3.5
	CRFS taxonomy compendium	D.3.6
	"100 innovation frameworks for CRFS"	D.3.7
CEI - 2 > Building up of political	Policy co-creation capacity building programme	D.4.1
commitment and capacity for multi-objective	Facilitators and guidelines for policies and pilots developments	D.4.2
coordinated strategies, roadmaps and actions	Pilot cities policy action plans	D.4.3
between different government departments,	Blueprint for policies to generate sustainable CRFS	D.4.4
jurisdictions and stakeholders that aim at	Pilot cities deployment programme and action plan	D.4.5
delivering co-benefits relevant to FOOD		
2030 priorities		
CEI - $3 >$ Creation of a wide network of	"CRFS Alliance" community of practice with 10 cities and 2 in	D.3.1
pilot European cities (food system policies,	2020 developing toward 50 by 16.10.2024 with a solid and	
actions, living labs, good practice,	sustainable synergy action plan	
ambassadors, transferability of the food		
system model all over Europe and beyond		
CEI - 4 > Reconnection of citizens with	"CRFS Alliance" community of practice assemble 100 agents	D.3.1
food (behavioural change towards healthy	of the UFSE in 2020 by M12 and develops towards 500 in total	
sustainable diets, nutrition, responsible	by 16.10.2024	
production and consumption		
CEI - 5 > Increased food and nutrition	Policy co-creation capacity building programme	D.4.1
security for urban and rural dwellers	Facilitators and guidelines for policies and pilots developments	D.4.2
	Pilot cities policy action plans	D.4.3
	Blueprint for policies to generate sustainable CRFS	D.4.4
	Pilot cities deployment programme and action plan	D.4.5
CEI - 6 > Improved social inclusion and	White paper on ethical CRFS	D.2.2
equity of all actors of the food systems	White paper on gender-based CRFS	D.2.3
	White paper on RRI-oriented CRFS	D.2.4
	White paper on sustainable CRFS	D.3.2
	Observatory on sustainable urban food policies and practices	D.3.4
CEI - $7 >$ Creation of innovation	Innovation action capacity building programme	D.5.1
opportunities, jobs and growth relevant to	Facilitators and guidelines for innovation and pilots	D.5.2
city region livelihoods and economic	developments	D.5.3
development for all actors of the food	Pilot cities innovation action plans	D.5.4
systems	Blueprint for business models to generate sustainable CRFS	D.5.5
	Innovation action deployment programme and action plan	
	incorporating the "CRFS SeedInvest" investment action programme	

Beyond expected impacts

Increasing cities and regions cooperation efficiency with indicators. WP1 secures alignment between operations, methodologies and anticipated results, incorporating a risk and change plans, yet it is not indeed the core objective. WP1 forecast and characterise additional outcomes not planned initially and examine their feasibility without additional resources. Likely WP2 to 6, WP1 foster synergies with comparable impact monitoring and assessment (IMA) processes from other sources (e.g. EU-funded projects, etc.). All in all, WP1 secures all activities effectively meet each of the 7 call's expected impact (CEI) with a continued, systemic and digital-based IMA approach that generates CRFS/UFSE indicators and city/region fact-sheet instruments. CITIES2030 develops beyond the 6 categories of indicators identified by the MUFPP, enhancing the framework (outcomes, impact, indicators, recommendations, etc.) with two key pathways: nature based solutions (NBS) and urbanisation as such. Still CITIES2030 plans to keep the same number and nature of categories, only further fine-tune indicators and relates with novel outcomes, impact and recommendations. The role of cities in future-proofing the food systems is unanimously acknowledged and encouraged, This puts importance and urgency to cities taking on an agency for food system transformation and actively seizing the opportunity for strengthening urban resilience. Or, to use a catchphrase turning big societal challenges into opportunities for development, using one problem to fix several others. Behind the catch phrase, there are several barriers for cities to embark on food system transformation, as it is a massive complex to address, let alone putting into an orchestrated, forward action. The macro-narrative of food system transformation must be actionable and the systemic change an accumulated effect of deeply contextualized actions. CITIES2030 enable key mechanisms and structure actionable resources to assist cities tackle the following challenges. CITIES2030 continuously promotes participation in the Food Systems Dialogues (FSD), a UN-based global series of facilitated round-table conversations and consultations, that encourage joint action for transforming food systems, to address a series of challenges listed further, with the incorporation of a comprehensive set of key learnings and

evidence-based practices, that are facilitated by the FSD. Since their launch in June 2018, 23 FSDs events have taken place across Europe and the world, and CITIES2030 will create conditions to increase this number by 50 by 16.10.2024. *Lack of food system insight.* The transparency of the food production system and its value chain dependencies is oftentimes lacking. Who are the stakeholders and how do they connect?

<u>Lack of connected policies</u>. There are also missing links between policies for food production (oftentimes within business and economic) and affected areas like health and social policy. Or policy links to city based services that could extend and circularize food production value chain, i.e. valorization from 'gut to field' in waste management and utility services.

<u>No plug-and-play</u>. Cities and their food system relations are unique, so every case is highly grounded; no city has the same roadmap. Existing infrastructure, particular strengths or weaknesses, prevalence of specific challenges etc. makes it impossible to merely replicate what has been done elsewhere. It is a process that needs to be carried out locally. While indicators for resilient food systems exist (i.e. MUFFP) they must be carefully calibrated and curated to become actionable locally.

<u>Dynamic roadmap.</u> Cities don't have a clear business case to strategize and implement from. The roadmap is dynamically generated taking direction from policy (vision/ goals) and bottom-up input from experimental and multistakeholder interaction and joint action (solution/ results). This dialectic is key to the resilience roadmap. It's too complex to draw out a strategy for simple implementation; the opportunities are rather exposed with the multiple perspectives and since prototyped and tested for viability and desirability.

<u>Lack of city-region food innovation means.</u> For many cities this is blue ocean; divided focus on either industrialized food value chain innovation or socio-economic urban innovation. Missing innovation bridge, that crosses sector, stakeholders and exposes and explores a new field of innovation. And missing the means to create the needed dynamic.

CITIES2030 develops and pilot an ambitious approach that addresses the barriers of cities to take on agency for food system transformation. CITIES 2030 applies a systemic perspective, providing complex intelligence (policy lab), and creating a grounded forum for bottom-up knowledge and experimental action (living lab) facilitating new tangible viable solutions (10 innovations) and facilitated uptake by others (city-to-region) in order to foster evidence based 'systemic business case' at city level and tools to make city region food systems a vehicle for broader urban resilience (climate, social, economic).

Objective of the project	Key Performance Indicators	Criteria for success (based on 50 cities)
Establish CRFS or	Nber of practices (examined)	100 good practices and use cases examined
enhance ones via Policy	Nber of interviews realised	30 x 19 countries interviews
Labs (CRFS-PL) and	Nber of cities	50 cities
Living Labs (CRFS-LL)	Nber of CRFS-PL	50 CRFS-PL
which will generate	Nber of CRFS-LL	50 CRFS-LL
innovative systems to	Nber of Challenges	50 challenge statements
support food systems	Nber of SMART Goals	50 x 3 or more SMART goals
transition towards	Nber of experiments	50 x 2 experiments
FOOD2030	Nber of investment actions	10+ investment actions
nemo	Nber of innovation pattern sessions	50 x 2 innovation pattern sessions
	Nber of cross-border cooperation sessions	50 x 2 cross-border co-op sessions
	Nber of exploitation workshops	50 x 3 exploitation workshops
	Nber of Food Systems Dialogues (FSD)	50 FSD
	Nber of engaged stakeholders	500 engaged stakeholders
	Nber of women	50% women
	Nber of men	50% men
	Nber of Youngster	20%. Youngster
	Nber of policy makers	10% policy makers
	Nber of governance	20% governance
	Nber of food system experts	40% food system experts
	Nber of other community members	10% other community members
	Nber of digital learning platform	1 digital learning platform
	Nber of documented improvements	100+ documented improvements
	Nber of good practices (generated)	50+ good practices documents
	Nber of innovations	10+ innovations
	Nber of exploitation plans	5+ exploitation plans
	Nber of business plans for innovations	10+ business plans
	Nber of structured investment capital plans	10+ Memorandum of Understanding signed
	Investment capital	1.5 million capital raised

Table 2.1b – Key expected impact and related KPI

<u>New actors of the investment capital arena.</u> CITIES2030 establishes a funding scheme and structure to further support the agents of the UFSE in full cooperation with representative bodies of the EU, liaising via RTU (P29), e.g. EIT Food Latvia. The objective of this task is to define a route for continuing the operations of Cities2030 exploiting selected most promising Key Exploitable Results through a new entity, potentially a foundation, created and run by the Cities2030 project partners. Within this task, the FBR (P11) will be responsible for defining the framework of the future organization, including mapping the partners that will take part in the new entity as shareholders. This task also foresees defining the concrete responsibilities in the future legal entity, together with a willingness to invest time and financial resources to the organization. For that reason, a session will be organized - in the framework of Project Meeting - where all project partners meet and express their interest (or non-interest) to participate in the organization. The further communication will be conducted through periodic online meetings until the end of the project (combining the next sub-task "Legal Framework of the Organization").

Impediments, interferences and frame of reference.

There are a diversity of challenges in food supply chain which are representative of the UFSE complexity, and some of the most significant are exposed below, whereas CITIES2030 addresses all comprehensively The current food supply chain must evolve to meet new demands and UFSE challenges, and UFSE managers need to plan ahead to keep everything flowing smoothly. A combination of consumer expectations, more routes to market, regional, countrywide and international complexities, and other factors creates significant challenges throughout the food supply chain network. CITIES2030 explore what's driving some of the main changes we're seeing in the food supply chain and proposes a set of approaches, an action plan and practical solutions, using as a starting point local, peri-urban and urban short food supply chains.

Profit margins are under pressure as costs creep up throughout the supply chain network. These expenses originate from many ranges, and a deficiency of visibility and accountability for decreasing these costs can result in rising operational expenses (e.g. price of fuel for transport goods by road, increasing commodity prices, raising labour costs, complex logistics, higher charges for storage, transfer and management of products). CITIES2030 addresses this challenge with a holistic approach and the development of a real-time data-management platform, incorporating geospatial functionalities.

The environmental impact of global supply chains. Introducing more ethical and sustainable supply chains is a developing trend and good practice in the UFSE arena. This is currently done by improving regulatory compliance, enhance business branding and reputation (transparency, traceability), reduce waste and overhead, and reassure consumers on ethical environmental sourcing. CITIES2030 integrates 6 key components to address this need: drive efficient supply and demand planning to reduce overproduction; introduce transparency to ensure suppliers are using ethical sourcing; optimize routes to reduce fossil fuel consumption; consolidate shipments to fully utilize containers and transportation; plan around existing environmental risks and impacts; streamline supply chain processes to reduce waste. This is done with a series of activities and instruments within cutting-edge co-creation environments (policy and living labs), and most importantly, with the inclusive engagement of all actors of the UFSE, and the key role played by consumers (e.g. citizens) called for action and participation.

2.2 Measures to maximise impact

(a) Dissemination and exploitation of results

The urban consumers' perception on SFSC is generally related to a philosophy that promotes tradition and specific local conditions. Under the circumstances, digital and technological development is occasionally regarded with some mistrust. The social psychology of urban alimentation has developed certain reservations towards any kind of modernization, given the fact that, in the last century, the most important updates in food economics were related to chemical artificialization of food production and distribution. For this purpose, we are dealing with a paradox when it comes to developing food local networks with the help of breakthrough technologies. Based on this matter, CITIES 2030 project, through the message delivered across community on all societal levels, will make a significant contribution to the smart integration of the state-of-the-art digital tools within a sustainable CRFS, mainly orientated towards supporting local entrepreneurs of metropolitan areas who are actively involved in the production and distribution of healthy food that has the lowest impact upon metropolitan ecology. Plans to disseminate and exploit the outcomes of CITIES2030 are in line with the EC's Guidelines for the Exploitation and Dissemination of Results in Horizon 2020. Within WP7, activities will be undertaken to identify and engage with the full range of agents of the UFSE and citizens (see target audiences in section(b). Dissemination of policy examination and production, innovation action results and publication of data and products is overseen by WP7 and is supported by the project's Advisory Board members, incorporating respect to protection of intellectual property. Processes, protocols and guidance to facilitate dissemination and exploitation are quantified and detailed in the dissemination, exploitation, communication and synergies strategy (DeoRC plan, D.7.1), lead by IAAD (P5). A comprehensive provision gathered in a digital format document and incorporating an actionable set of practical information, which describes dissemination and communication activities to be undertaken within CITIES2030, The dissemination and exploitation of results package also incorporates a framework to assist identify opportunities for the

exploitation of the project's policy and innovation solutions: Synergies action plan (D.7.3), the innovation and Intellectual Property management plan (D.7.4) and the Exploitation of results plan (D.7.5).

The strategy is consistent with the Grant Agreement and the Consortium Agreement, ensuring there is a clear pathway for effective deployment, knowledge transfer and exploitation of results.

The DeoRC plan comprises the following sections:

- Objectives, procedures, and specific activities for communication, dissemination, and securement of the project's synergies.
- Timeline, infographics, and Gantts for dissemination activities.
- Analysis of risk and possibilities to prevent and solve.
- Procedure of project's visual identity by which each activity run within CITIES2030 will mention and display EU emblem and EU funding, in compliance with the financier.
- Internal communication plan.
- Targeted audience.
- Communication channels. It is primarily aimed to broaden the communication and dissemination channels of the project. Last but not least, it will be targeted their alignment to the specific features of each partner country.
- Models of good practices for ensuring the knowledge transfer to the stakeholders, policy-makers, farmers, citizens, rural and urban networks, food clusters, advisory services, research community, and public.

To reach a good understanding of the DeoRC plan, online trainings with partners will be organized. At the same time, partners will be assisted in implementing the DeoRC plan.

Supporting material

- Communication and Dissemination Plan (CDP) of the project
- Project website will be developed in accordance with EU rules combined with Web Content Accessibility Guidelines (WCAG) 2.0¹²⁸
- Social media networks integrated with the rest of the digital and analog materials of the project
- A series of digital templates will be drafted for the following materials
- a leaflet displaying the main objectives/outputs, a standard presentation for EU-level and local communication - posters for use at EU-level and national events and workshops,
 - a set of infographics, to be used on the website and on social media
 - other printed materials (brochures, roll-ups, banners, business cards and so on)
 - 40 animated videos to present most of the project activities
- The White Book of the Communication Ecosystem

Key measures for the project's visibility:

- 1. generating a clear and comprehensive strategy supported by a plan;
- 2. establishing a dedicated steering committee and task force (DEoRC-SC) to animate the activities;
- 3. creating an attractive project identity (logo, colouring, lettering, message, etc.) with a brand-oriented approach;
- 4. designing coherent and efficient stationary (letter heads, templates, etc.);
- 5. producing an appealing set of tools and merchandising (for example serious games);
- 6. generating organised groups of motivated promoters within actionable and deployable structures (online network platform, working groups, Multipliers) for advocacy and PR activities;
- 7. developing a Trust and Transparency Ecosystem (2TE) animated by motivated practitioners;
- 8. organising monthly small-scale events (charrettes, round-tables, webinars, et.);
- 9. participating in fairs, conferencing (keynote speeches and exposing (booths, billboards);

11. organizing an annual campaign that will take place in partners countries in sequences (first one in Istanbul, Turkey);

12. implementing a monitoring and evaluation system to ensure a harmonised alignment and swift adjustments. <u>*Website*</u>. The project website will be designed with latest trend in website design with a focus on promoting the results actively on the home page with banners, and also providing great visibility to the impact achievements generated by the project activities.

¹²⁸ https://www.w3.org/TR/WCAG20/

Fig. 2.2(a) – Proposal for the logo of the project

Website key administrative tools:

1.content fully design in HTML to allow easy translation in almost limitless languages;

2. backbone architecture built with the latest Search Engine Optimization (SEO) system to outpace the "search competition"; 3. web analytics tool will allow tracking and traffic reports.

Users will be able to access information under an open license with no-fee access, use, reworking and redeployment by third parties without limited restrictions.

Miscellaneous tools and design to ensure dynamics to the home page:

- 1. attractive headlines to easily identify what the website is about;
- 2.engaging "pop-ups" with the viewer to suggest where to take the next step and to subscribe to the notifications systems (possibly RSS);
- 3. highly attractive layout yet with four areas only, "Project", "Resources", "Challenges" and "Media";

4. Social Media-oriented design (pictures, headlines, fonts, colours, layout);

5.social media live feeds;

6.integrated search tool with automatic key words and tags to allow quick access to targeted thematic; 7.testimonials;

8.frequently renewed content offer.

Structured Social Media strategy:

- 1. Dedicated development team selected among Social Media bachelors and masters students.
- 2. Supporting team of social media experts, social listening tools and analytics screening.
- 3. Use of dynamic video advertising, turn project's participants into "brand (project) ambassadors" (via their social media profiles).
- 4. Create audience personas (trend and influencing groups) and personalize messages and contents.
- 5. Optimize partners' social media presence and networks, Set up content schedules.
- 6. Develop Q&A and pools, gamify contents, live streaming of events, Develop online reviews.

<u>Accompanying measures.</u> The consortium ambitions to ensure the expected project legacy beyond the project primary targeted audiences and to this end a series of accompanying measures have been projected and are key elements of the DeoRC strategy. The plan details post-project developments and is supported by the same resources planned for dissemination, developing complementary activities. The key drivers for the DeoRC strategy are motivated and committed partners that are assigned to lead specific post-project developments, a clear and shared vision (plan), materialised by an agreement between partners (2020-2024). The DeoRC steering Committee is set to develop beyond 2024 with the adequate resources. Partners' resources are identified and assigned to the tasks with cost advantages (economies of scale) that they obtain through synergies with on-going projects and activities. The Internet-based platforms will reach a users' critical mass generated by all the activities during the project duration that will afford self-sustainability beyond the project lifetime.

Members of the DeoRC focus group develop together multiplication-oriented activities to ensure the targeted audience is encouraged to use the project result:

- 1. mainstreaming via dynamic digital communication (website, social media pages, email subscriptions, etc.);
- 2. presenting and pilot testing successful case-studies in realistic and practical environment in partners' events (open days, conferences, charrettes, exploitation workshops, etc.);
- 3. gamifying storytelling and narratives with attractive digital tools in events;
- 4. linking and leveraging systematically with existing and related projects in which project ArgumentSecure results meet the project's needs;
- 5. triggering collaborative work projects in which the project's results are used (research, pilots, training, learning mobilities, etc.).

Sustainability mechanisms between the consortium's partners:

- 1. bilateral or multilateral transnational meetings triggered by other activities and projects;
- 2. four bilateral or multilateral teleconferences;
- 3. trimestral checkpoints (state of the affairs) and reporting;
- 4. continuous updating of all Internet-based tools;
- 5. continuous dynamic activity of all results listed hereafter.

Exploitation Strategy. The main aim of exploitation in CITIES2030 is to ensure the sustainability of the project's results beyond the project end and to demonstrate how the project has influenced the EU UFSE landscape. Exploitation includes multiple forms: 1. Financial exploitation, building products, projects, or services based on the project results; 2. Research & Innovation development, by engaging new projects (EU-funded or sponsored by other sources), based on the experiences gained in the project; 3. Education, e.g. courses, at the university level or in continuing education, etc.; 4. Community-building around the topics of the project, raising awareness for the addressed problems and the proposed solutions; 5. Knowledge transfer, from academia to industry, by collaboration or via employees; 6. Contributions to open-source projects and standardisation, providing access to the framework and encouraging its broad adoption in commercial and public

systems for interested parties. The consortium have identified a series of general exploitation points as a prelude to each individual partner's exploitation strategy. CITIES2030 categorise these points in two different approaches, oriented towards the industrial partners, addressing the academic partners, other the cities and finally other the civil society organisations. The cities exploitation plan will be developed in the very first months of the project to align with the realities.

Academic exploitation plan. This characteristically includes the offering of courses and seminars with topics related to the project. Through that, the project can attract researchers and new students to work on and improve the ideas of the project. Another area of focus for the academic partners within CITIES2030 is the exploitation of their work and project results through contributions to open-source software, particularly the Single Click CRFS Platform (S2CP), as a major outcome of the project. Its maintenance presents an equally important objective to ensure that the results of CITIES2030 will remain available and relevant long after the project terminates. This can be supported by building and engaging a developer community around CITIES2030. S2CP software and the community that the project anticipate building around the framework will form a foundation for further research and development in the area of food supply chain IT services (incorporating cybersecurity). The availability of the CITIES2030 framework is expected to be a valuable asset for all academic partners in terms of building new partnerships, engaging in future projects and acquiring further funding at the national and EU level, e.g. UNIVE (P1), VIVES (P4), UNRF (P7), UPM (P20), WIT (P21), MATIS (P22), ARFI (P29), IVN (P33), UNIL (P35), IUAV (P38), RTU (P39).

<u>Citizen-arena exploitation plan.</u> Acceleration thought public sector and not-for-profit partnerships: partners IAAD (P5), AGRIA (P13), SINNO (P19), FFI (P23), LLF (P25), GGP (P26) and CITAG (P40) will contribute to exploitation of CITIES2030 results by raising awareness across their networks mainly in the UFSE arena, addressing, in particular, the lack of awareness of citizens of the benefits of taking measures towards transition to sustainable UFSE. Through the planned engagement in WP3 (task 3.1) these partners will be able to connect the needs of industry with the specific capabilities of the project solutions and forge relationships with early adopters and the UFSE at large – a key resource for exploitation.

Industrial Exploitation plans. To achieve the envisioned impacts, the CITIES2030 10 innovative solutions developed under WP5 will provide competitive advantage while enlarging the market footprint, knowledge base and services portfolio of the companies involved, e.g. INVE (P9), FBR (P11), SLEAN (P14), TTZ (P17), BIOZOON (p18), AGFT (P27), ITCM (P30), CORR (P31) and PRIM (P37). Hence, a platform of CRFS technologies, products and services will be generated for exploitation by EU companies via the "CRFS Alliance" platform.

The engagement activities under WP3 will, in addition to ensuring UFSE agents informed perspectives, will raise awareness of the benefits of implementing sustainable UFSE measures across a diverse spectrum of agents. This will establish trust and form a valuable cohort of early adopters to accelerate the exploitation of the results in the EU. To unify the consortium behind a common vision for exploitation of the results, CITIES2030 leverages the knowledge of the consortium to identify and stratify opportunities for the anticipated outcomes, inform innovation priorities and explore and plan food supply chains and undertake commercial assessment and planning including collaboration or where necessary joint-venture agreements to prepare the path for innovation and exploitation beyond the project. A comprehensive exploitation plan is developed (D7.5), outlining the exploit the results of CITIES2030 and the measures that will be used to assess effectiveness on an on-going basis. The exploitation plan will be consistent with the terms of the Grant Agreement and Consortium Agreement ensuring there is a clear pathway exploiting project outputs and will contain the following elements: exploitation objectives, internal process to collate and manage knowledge outputs, to ensure full use of all CITIES2030 results, identification and profiling of use cases for the innovations, proposed tools and channels for transfer knowledge, ensuring effective exploitation of the project outputs, processes to ensure foreground and Intellectual Property (IP) are properly managed.

<u>Management of data.</u> CITIES2030 participates in an open-access data pilot. The project will produce and maintain a data management framework (WP6, WP8), which will be managed by the coordinator UNIVE (P1) and UPM (P20). The plan is based on the principles of making data findable, accessible, interoperable and re-usable (FAIR) and will include information on the data standards that will be applied by the project, how the data will be exploited and how it will be curated and preserved. Data collected will include results from the empirical assessment of end user needs, designs for the algorithms, software components and the integrated platform and the results of testing and validation studies. These will be shared with the consortium using a secure data sharing platform "Correlate CITIES2030". Due to the significant potential for exploitation of the project results, the data management framework will also include provision for embargo of any data that is commercially relevant. Only once exploitation rights are preserved, can the data be included in open access scientific publications, and stored in the repositories of the publishing partners or public databases. Experimental data will be collected in laboratory record books that will be stored once finished. They constitute a proof of ownership in case of conflict and a permanent record of the work done, including experimental details and operating procedures. Entries will be sufficiently detailed so that someone else could replicate the procedure. Lab books will include raw data or reference to the digital location. Lab records will be the

basis of scientific publications, which will be published in an open access basis, making accessible the methodologies used that will enable data verification and re-use.

<u>Knowledge Management and Protection.</u> Responsibility for knowledge management and protection shall sit with CITIES2030 Innovation Action Advisory Board (IAAB). Results arising from CITIES2030 will only be published with the specific approval of the IAAB. If necessary, the IAAB will facilitate discussions between partners who have contributed to the generation of Intellectual Property (IP). The involvement of the IAAB is necessary to ensure clarity about the relationship between the project, the Consortium Agreement (CA) and the results to be protected. <u>Consortium Agreement</u>. Prior to the start of the project, the consortium will establish a Consortium Agreement setting out the terms and procedures for management of IP, confidentiality and other matters pertinent to the execution of the project and the exploitation of the project results. Owing to the collaborative nature of the research planned between the partners, rules for accessing the background knowledge necessary for carrying out these tasks will be precisely defined in the Consortium Agreement. Specific measures to enable sharing of relevant background between partners whilst providing appropriate protection of background from partners in the same competitive sector will be addressed. An initial patent search has shown that there is no background existing outside of the consortium likely to constrain the scope of CITIES2030 development and exploitation activities outlined in this proposal. Identifying background necessary to deliver CITIES2030 prior to starting the project is an essential step for preparing the Consortium Agreement and this will be undertaken and finalised prior to the signature of the Grant Agreement.

Within the framework of the project special attention will be paid to the dissemination of the project outputs. Mechanisms to facilitate the dissemination of new knowledge and products developed by the project include: <u>Open Access Technical Publications</u>: wherever appropriate the results from CITIES2030 will be published open access in high-impact peer reviewed periodicals that have international reach. The choice of journal will be dictated by the nature of the results produced but target publications will include food-related spheres covering a large spectrum of the society along the food supply chain.

(b) Communication activities

Members of the DEoR-SC develop together outreach-oriented activities to ensure the targeted audience is reached:

- 1. fine-tuning and profiling accurately the target audiences identified during the project preparation (primary and secondary target audiences, power of influence, seniority, gender, cultural background, focus area, etc.), thus knowing the audience;
- 2. setting feasible and measurable communication goals;
- 3. ensuring alignment per the project's development phase (inception, maturity and closure);
- 4. continuously assessing the development and adjusting systematically per identified performance indicators;
- 5. linking and leveraging systematically with existing networks (within the consortium) and related events, projects and initiatives;
- 6. creating, activating and animating focus groups per specific sub-objectives or thematic area (communication, channels, approaches, messages, with students differs from researchers, etc.);
- 7. organising accurately the dissemination setting (staff, channel, tools, supporting material, etc.);
- 8. creating efficient story-telling and narrative to facilitate swift and driven response from the audience;
- 9. creating attractive environments around the message (image, supports, influencers, etc.).

Targeted audience	Corresponding channels	Objectives. Expected impact	Key message
General public	Press releases, website, blog, dissemination events, infographics, videos, social media, newsletter, leaflets, brochures, roll-ups, etc.	Awareness-raising, policy labs and living labs enhancements, foster collaboration and co- creation	Citizens involvement, support the development of SFSC, and ensure a sustainable growth of urban life quality.
Entrepreneurs and investors	Same than above, success stories and interviews	Same than above, foster replication, upscale of innovative CFRS, co-create a supportive environment for Europe-wide uptake on CFRS, opportunities in rural areas	Entrepreneurs and investors encouraged to expand their businesses with smart policies, pollution reduction, healthier foods, better quality life. Raising awareness on digital development, sustainable development towards the resilience of local businesses.

The communication and dissemination activities will have impact upon every societal level. Table (b) 1 - Distribution of communication action framework

Targeted audie	nce	Corresponding channels	Objectives.	Key	message				
			Expected impact						
Research and educat	tional	Same than for general	Enhance knowledge on ke	y The scientif	ic research				
community		public and the White Book	factors of success for	community	will be notified				
		of the Communication	innovative CFRSs. Foster	about the be	havior of the				
		Ecosystem	the replication of	urban consu	mer involved				
			innovative CFRSs, policy	in CRFS, co	ollect level of				
			labs and living labs.	positive rea	ction towards				
				SESC	at feedback				
				towards CP	ES philosophy				
				of digital de	velopment and				
				the innovati	ons within				
				CITIES203) project. From				
				an education	nal perspective.				
				a message p	ointing out to				
				smart metro	politan				
				developmen	t through				
				digital evolu	tion of support				
				mechanisms	s for CRFS and				
				integration	of local				
				producers in	the public				
				urban alime	ntation will be				
Regional and nation	a1	Same than for research and	Foster collaboration and	The messag	es for the				
agencies and stakeho	olders	educational community	adoption of CFRSs, policy	stakeholder	s will aim at the				
and advisory service	es		labs and living labs, based	increase the	visibility for				
,			on shared values	the policy la	bs and living				
				labs and the	ir importance				
				in the devel	opment of the				
				sustainable	CRFSs.				
Policy-makers		Same than entrepreneurs	Foster collaboration and	Reports and					
		and investors	adoption of CFRSs, policy	recommend	ations on				
			labs and living labs, based	social, econ	omic and				
			on shared values	environmen	tal impact				
				favourable	conditions for				
				the deploym	conditions for				
				sustainable	CRESs				
Table (b).2 – Key pe	rforman	ice indicators		500000000	010.00				
KPI	Operati	on, objective and related WP		Periodicity	Format				
100 participants M12	Networ	king (WP2, 3, 4, 5, 6, 7)		Continuous	Blended onsite,				
500 participants M48					Online (B2O)				
8	Miscel	llaneous events (WP2 to7)		2/year	B2O				
2	Major	event for project opening/end	ding (WP7)	2/project	B2O				
8	Works	shops (WP2 to 6)	\ \	2/year	B2O				
5.000	Websi	te's single viewers (WP2 to'	Continuous	Online					
5.000	Social Madia	ocial media pages followers (WP2 to7)		Actic printed material (WP2 to7)		Social media pages followers (WP2 to/)	Social media pages followers (WP2 to/)	Continuous	Online
10.000	Dross 1	$\frac{1}{2} \frac{1}{2} \frac{1}$		Continuous	B2O				
<u> </u>	High_i	mast publications (WP2 to7)	7)	1/vear	B20				
4	Open a	access scientific articles (WP	$\frac{1}{2}$ to 7)	1/year	B20				
4	White	papers (WP2 to7)		Continuous	B2O				
10	Video	s on cities' CRFS (WP2 to7)		Continuous B20					
10	Videos	s on CRFS innovation (WP2	to7)	Continuous B2O					
3	Video	on ethics, gender and RRI unde	er CRFS plans (WP2 to7)) Continuous B2O					
4	Newsl	etters (WP2 to7)		1/year	B2O				

3. Implementation

3.1 Work plan – Work packages, deliverables

The effective impact action and instruments framework combined with a result-oriented implementation are critical elements for CITIES2030. The work plan and flow is rooted in a Lean-Agile practice, illustrated in Fig. 3.1a, that incorporates components of both uninterrupted delivery and permanent enhancement, optimized and aligned across the entire value stream.

CITIES2030 is frame in a 3 stage implementation: preparation, production and deployment. The starting point of the project is a community building process (WP3), to identify, engage and activate influential and expert institutions and individual of the UFSE, incorporating citizens, to create the best condition that will generate collaborative partnership and co-creation within structured participatory processes.

Despite a solid preliminary need analysis, CITIES2030, comprehensively substantiated in the present proposal, partners and the community will them develop further studies and examinations, to generate an actionable knowledge basis that will facilitate accuracy and real needs incorporation in subsequent implementation activities, per local communities settings.

The consortium will then generate a set key instruments, for instance capacity building programmes, which are a package of teaching and training provision to equip individuals to be participate in co-creation processes, to be facilitators and multipliers. This provision will be tested in real conditions to secure the accuracy and validity of the programme. Finally, a series of accompanying measures and tools will be designed and produced to secure the long term impact, the adaptability and transferability of the project results.

Work package 1 (WP1) drives the project's implementation via monitoring and assessing the activities/tasks that enable agile teams and partners to reach their goals of monthly and iterative value delivery, aligning all activities with targeted impact KPI.

WP8 coordinates the project's implementation as a whole via securing a result-driven assignment of resources, finetuning the calendar of activities per the project's implementation realities, and reporting efficiently to all teams/partners. WP2 is a central component of the structure and provides a comprehensive framework to secure the project development and results are aligned with the European Union idea of an inclusive, innovative and reflective society.

WP3 generates an actionable blueprint to create sustainable CRFS and to provide to all agents of the food system arena an interactive approach for food supply chain planning, production, monitoring and improvement, to meet the EU-U11NUA objectives. The gathered intelligence is then applied to ensures an adequate activation of all involved participants of the UFSE under WP4, building capacities to facilitate an efficient policies co-creation process. It is also practiced to deliver a structured environment to unlock cities' innovation potential, driven by the same

comprehensive and diverse set of agents of the UFSE, to future proof food systems.

Activities under all three WP3, WP4 and WP5 assist gather, design and develop the main components and technological tools to generate a data-driven CRFS management platform for data collection, analysis and representation in multiple interfaces, the Single Click CRFS Platform (S2CP).

Finally, WP7 dissemination, exploitation of results and communication (DeoRC) secures the project's EU level visibility and Internet presence, providing a solid basis for the project results deployment and exploitation of results. Measures to control the quality of the project implementation are secured and embedded in the project management and implementation strategy (D.8.1). The Project management and Implementation Handbook (PMIH) encompasses a Quality Manual and Guidelines with 5 key features for evaluation of quality levels: the process, the results, the participants, the dissemination and exploitation of results, the impact. The project quality management consists of four main processes: definition (inception), assurance (mechanisms), control (assessment) and improvements

Fig. 3.1a – Lean-agile production approach

(alignment and beyond). Quantitative Objectively Verifiable Indicators (OVI) for each of the above identified levels are created and organized in evaluation questionnaires to be implemented in all project activities per the objective of the evaluation, and considering all project's audiences: target group, beneficiaries and stakeholders. Also, collection of data for evaluation is realized via Internet-based questionnaires ("Correlate CITIES2030") at all time during the project development when pertinent. The project quality management, monitoring and evaluation is coordinated by the secretariat in full cooperation with WP8 and WP1 leaders.

Table 3.1a: List of work packages

Work package No	Work Package Title	Lead Participant No	Lead Participant Short Name	Person- Months	Start Month	End month
1	CRFS IMPACT: shift-driven action and sustainability	39	RTU	72,00	M1	M48
2	CRFS PHILOSOPHY: ethics, RRI and gender approach	19	SINNO	35,00	M1	M48
3	CRFS INTELLIGENCE: structured and actionable knowledge	7	UNRF	366,00	M1	M48
4	CRFS ALLIANCE: cities' empowerment and synergies	33	IVM	423,00	M1	M48
5	CRFS ANGELS: innovation, synergies and investment action	14	SLEAN	419,00	M1	M48
6	CRFS BLOCKCHAIN: Single Click CRFS Platform	20	UPM	222,00	M1	M48
7	CRFS BEACON: Dissemination, exploitation, communication synergies	5	IAAD	197,00	M1	M48
8	LEAN-AGILE GOVERNANCE: data-driven digital management	1	UNIVE	254,00	M1	M48
			Total			
			person-	1.988,00		
			months			

Timing of the different work packages and their components (Gantt chart)

Year (calendar)	2020	T			20	021		-	T		2022	2	-				202	3				2	024	_
Months (calendar)	11 12	1	2	4	6	8 9	10	11 1	2 2	3 4	6 5	9 10	11	12 1	2	3 4	6	9	10 11	1 12	2 3	4	6 8	9 10
Months (project)	1 2	3	4	6	8 1	10 11	12	13 1	4 16	17 18	20 2	3 24	25	26 27	28	29 30	32	35	36 37	7 38	40 41	1 42	44 40	47 48
Activities: work packages and their components		_		_								-				_	-							
Transnah onal project meetings (all partners gathered only in BE, TR, IT otherwise ExeCom)	BE	-		-	IE				RO			TR		-			FI		_		E	5	-	IT
WP1 CRFS IMPACT: shift-driven action and sustainability																								
T.1.1 Generate the project impact action strategy (PIAS)	1	3																_						
T.1.2 Development and pilot of cost-effective IMA methods	1			6																				
T.1.3 All WP-specific impact monitoring and assessment (IMA) implementation		_	_	6						-														48
Deliverables		1		2		3				3		3				3			3	i		3		3
WP2 CRFS PHILOSOPHY: gender, ethics and RRI																								
T.2.1 Project philosophy gui delines	1	3	_	_	-	_	Conception in the local division of the loca	-	-		-	-	_		Concession in such days	_	-	-	_	-	-	-	_	-
T.2.2 A framework for ethical CRFS	1																							48
T.2.3 A framework for gender-based CRFS	1																							48
T.2.4 A framework for RRI-oriented CRFS	1	h.,																						48
T.2.5 WP2-specific IMA implementation		1000	_	_	8																			48
Deliverables		1				5				S	_	2	_		2	3 4,	5	_	S			2		48
WP3 CRFSINTELLIGENCE: structured and actionable knowledge																								
1.3.1 Engage agents and stakeholders of the food system arena	1						10				-													48
T 2.2 Characterize vulnerabilities (propagation pattern, impact)	1						12		_	_	_	_	_		_			_	_	_		_	_	_
1.5.5 Unaracterization of obstacles to sustainable CRFS in identified food supply chains	1						12																	
1.5.4 Generate the project system thinking framework	1						12	-												-				11
T 3.5 Foncy life cycle examinations, policy iao prototype and UKPS Observatory	1						12						-											48
T 2.7 Data driver CPES monogramment stratem i desting	1						12																	
T 2.2 WD2 marifie TMA implementation	1	-		-	- 1	10	12		1		less i	-						-		-				45
1.5.6 WP5-specific INLA implementation			-	-	0	10	12	24 4				5.6	7					-	6 7	,			-	7 5
WD4 CDES ALLIANCE, sitiss' and strange and an angles					0		1,5	2,4 -				5,0	-						,0 1	1-				7 ,,0
WF4 CRFS ALLIANCE: cities empowerment and synergies	1									_	20													
T.4.1 Capacity building programme to roster rearing for transformation	1										20						1							45
T 4.2 Denloyment and multiplication		111	1					10				4.4	25											40
T 4.4 WD4-merific TMA implementation		-	-	-	8		1						22											40
Deliverables	-	-	-	-	1	2	3			6			5	4 6				6	4		6			6
WP5 CRESANCELS: innovation swnergies and investment action							100000												10000	ñ 📖		í ar		
T 5.1 Capacity building programme to foster learning for transformation	1						1						H											48
T.5.2 Develop 10 innovations by applying Innovation Pattern	1																							48
T. 5.3 Evolve Exploitation Plans and Business Plans								13																48
T.5.4 "CRFS SeedInvest" investment action programme			-	-																				48
T.5.5 WP5-specific IMA implementation		-	-																					48
Deliverables			_	-	1	2	3			6			5	4 6				6		4	6			6
WP6 CRFS BLOCKCHAIN: Single Click CRFS Platform (S2CP)																						im		
T.6.1 Requirements and reference architecture	1											24												
T.6.2 Data management and integration	1																							48
T.6.3 Service-based open collaboration space	1																							48
T.6.4 Privacy and security	1																							48
T.6.5 Adaptive visualizations and monitoring							12																	48
T.6.6 WP6-specific IMA implementation		3																						48
Deliverables						6				6		1 2,3	4,6			5,	6		6			6	6	4,5 2,3
WP7 CRFS BEACON: Dissemination, exploitation, communication and synergies																								
T.7.1 Dissemination and communication strategy and tools	1	3																						
T.7.2 Synergies action plan	1	3																						
T.7.3 Communication implementation and management		3																						48
T.7.4 Dissemination implementation and management	1																							48
T.7.5 Innovation and Intellectual Property management			_										25	(48
T.7.6 Exploitation of results plan an implementation																				_	_	_		
T.7.7 WP7-specific IMA implementation		1000	2511122	1000			102.00		81	1 10	_	100	_	1000	Total data					COLUMN T		10000		BACKAGE STREET
Deliverables		1	2,3	6			6	4		6	_	6		4	5	6		_	6 4	5		6		4,5 6
WP8 LEAN AGILE GOVERNANCE: data-driven digital management																								
T.8.1 Project management and implementation strategy and tools	1 2			-				_							Name of Concession, Name of Street, or other	_		-		of the second			_	
T.8.2 Project coordination and partnership internal communication	1																							48
1.8.5 Progress monitoring, quality control and reporting	2																							48
1.8.4 Administrative and financial management	1																							48
1.8.5 Data-driven digital management platform	1																							48
1.5.0 Knowledge management		2																						48
1.8./ WF8-specific IMA implementation	-	3	0	2	2	6 6.1		5		2.4	2	0.0	6		25	2	6 0		12 0		2	20	0 0	48
Deliverables	1	4	4	2	2 1	0 4,0	2,5	2	6	2,0	4	4,5	0		2,0	5,	0 2	4 .	,,,, 0	1	4	2,0	2 0	4,0 6,:

Table 3.1b: Work package description

Work package number	1	Lead	benefici	ary	RTU Dizaina fabrika – RTU (P39)								
Work package title	CRFS	IMPAC	T: shift	-driven a	action an	nd sustai	inability						
Participant number	1	2	3	4	5	6	7	8	9	10			
Short name of participant	UNIVE	EPC	BRUG	VIVES	IAAD	INAG	UNRF	VEGO	INVE	VEJLE			
Person months per participant:	4	0	0	0	8	0	0	0	0	0			
Participant number	11	12	13	14	15	16	17	18	19	20			
Short name of participant	EQUI	INTO	AGRIA	SLEAN	BRH	TTZ	BIOZ	QUAR	SINNO	UPM			
Person months per participant:	0	0	0	0	0	0	0	0	0	0			
Participant number	21	22	23	24	25	26	27	28	29	30			
Short name of participant	WI T	MATI	FFI	VPR	LLF	GGP	AGFT	IASI	ARFI	ICTM			
Person months per participant:	0	0	0	0	8	0	12	0	0	10			
Participant number	31	32	33	34	35	36	37	38	39	40			
Short name of participant	CORR	VIZ	IVM	MOMS	UNIL	UCC	PRIM	IUAV	RTU	CITAG			
Person months per participant:	0	0	0	0	0	0	0	0	30	0			
Participant number	41												
Short name of participant	HARL												
Person months per participant:	0												
Start month	M1				End m	onth							

Objectives

The current WP is co-lead by LLF (P25). WP1 aims at securing the project's effective impact action which is to effectively transform UFSE towards sustainable CRFS which meet the EU-U11NUA. Activities under WP1 delivers the impact action strategy to secure effective food system transformation, allow to adjust, foster, and improve actions developed under WP2, 3, 4, 5, 6 and 7 via impact monitoring and assessment (IMA) of the aforementioned action's effectiveness to make change. WP1 secures alignment between operations, methodologies and anticipated results, incorporating a risk and change plans. In addition, WP1 forecast and characterise additional outcomes not planned initially and examine their feasibility without additional resources. Likely WP2 to 6, WP1 foster synergies with comparable IMA processes from other sources (e.g. EU-funded projects, etc.). All in all, WP1 secures all activities effectively meet each of the 7 call's expected impact (CEI) with a continued, systemic and digital-based impact monitoring and assessment (IMA) process that generates CRFS/FNS indicators and city/region fact-sheet instruments.

Description of work

Task 1.1 – Generate the project impact action strategy (PIAS) [1-3]

Initiating participatory IMA and preparing the documentation of the entire IMA procedure (KPI, approach, action plan, methodology, Gantt, resources, synergies, etc.). Encompasses stakeholders, problem and objectives analysis (including analysis of alternatives). Online group activities between partners and on site workshops with stakeholders in each partner's participating countries for sound understanding of the project context, its elements and their interrelations, information management. Participatory activities: fine tuning impact prediction per anticipated framework (proposal level) incorporating the 7 call's expected impact (CEI), review of problem analysis, formulation of impact hypotheses, validation, selection of impact indicators, incorporation of real-time adjusted indicators per current realities (e.g. "emerging" indicators. Generating KPI. Preparing the updated IMA baseline and assessment with KPI grids and procedures. *Lead partner role:* RTU (P39) coordinate activities, provide guidance, steer implementation and secure alignment, report to WP leader, implement activities to deliver planned outcomes. *Role of participants:* the same for all tasks, IAAD (P5), LLF (P25), AGFT (P27), ICTM (P30) develop the activity within their environment, e.g. per their specific position/role in the UFSE, and assist identifying and engaging a minimum of 25 relevant stakeholders (comprehensive examination) to contribute to the activities as well. **Task 1.2 – Development and pilot of cost-effective IMA methods [1-6]**

Participatory production of outlines, development, pilot and validation of cost-effective IMA methods taken from identified good practices, in particular cutting-edge approaches and mechanisms from the rural development arena, sustainable land management, and evidently food security and nutrition programmes. Framework production for structured interviews and consultations (compilation of qualitative results and cross-check on quantitative data), photomonitoring, and participatory transect walk and observation. Formation of a group of experts to observe and discuss identified issues of local/regional significance, corresponding to the project's 10 thematic. The group of specialists is composed of actors of the UFSE representing different positions in UFSE. Production of electronic templates to be

used for data collection and examination (spreadsheets). *Lead partner role:* LLF (P25) coordinates the activities (same framework than task 1.1). *Role of participants:* IAAD (P5), AGFT (P27), ICTM (P30) RTU (P39) same role than task 1.1.

Task 1.3 – All WP-specific impact monitoring and assessment implementation [6-48]

Activities monitoring and collection of data. Visualisation of the information to simplify examination processes adjusted to all audiences. Monitoring and impact assessment of all activities in the perspective of the city and its region as real-scale pilots. Result-oriented analysis and real time interventions to ensure all project's activities are aligned to meet each of the 7 expected impacts of the call (see section 2.1). Production of comprehensive reports with actionable and deployable information towards the referred alignment. *Lead partner role:* IAAD (P5) coordinates the activities (same framework than task 1.1). *Role of participants:* LLF (P25), AGFT (P27), ICTM (P30) RTU (P39) same framework role than task 1.1.

Deliverables

D.1.1 – Project impact action strategy (PIAS) [M3]

Lead: RTU (P39). A comprehensive blueprint with actionable and deployable information encompassing details on pathways for synergies and good practice leverage/uptake.

D.1.2 – Cost-effective IMA methods digital compendium and facilitators/multipliers [M6]

Lead: IAAD (P5). A comprehensive digital compendium of actionable and deployable information and a group of 10 facilitators.

D.1.3 – All WP IMA reports [M10, M18, M24, M30, M36, M42, M48]

RTU (P39). A comprehensive digital compendium of IMA results incorporating decision-making processes to improve and validate project's activities.

Work package number	2	Lead	benefici	ary	SOCIA	ALINNO	DLABS	– SINN	O (P19)		
Work package title	CRFS	PHILO	SOPHY	: gender	, ethics	and RR	I				
Participant number	1	2	3	4	5	6	7	8	9	10	
Short name of participant	UNIVE	EPC	BRUG	VIVES	IAAD	INAG	UNRF	VEGO	INVE	VEJLE	
Person months per participant:	2	0	0	2	4	0	0	0	0	0	
Participant number	11	12	13	14	15	16	17	18	19	20	
Short name of participant	EQUI	INTO	AGRIA	SLEAN	BRH	TTZ	BIOZ	QUAR	SINNO	UPM	
Person months per participant:	0	0	5	5	0	0	0	0	9	0	
Participant number	21	22	23	24	25	26	27	28	29	30	
Short name of participant	WIT	MATI	FFI	VPR	LLF	GGP	AGF	IASI	ARFI	ICTM	
Person months per participant:	0	0	0	0	0	8	0	0	0	0	
Participant number	31	32	33	34	35	36	37	38	39	40	
Short name of participant	CORR	VIZ	IVM	MOMS	UNIL	UCC	PRIM	IUAV	RTU	CITAG	
Person months per participant:	0	0	0	0	0	0	0	0	0	0	
Participant number	41										
Short name of participant	HARL										
Person months per participant:	0										
Start month	M1 End month M48										

Objectives

WP2 is co-lead by AGRIA (P13). WP2 main aim is to provide a comprehensive framework to secure the project development and results are aligned with the European Union idea of an inclusive, innovative and reflective society. The WP generate reflection activities and debates on citizens needs and realities, values and expectations regarding innovation, policies and public affairs, and to a certain extent research and development. Key areas connecting ethics, gender and RRI are explored to develop a transparent and ethical framework to contribute to sustainable CRFS under the perspective of social sciences, e.g. ethical eating and consumerism, food-centered behaviors to gender relations, public engagement, etc. All in all, WP2 aim at overcoming UFSE barriers related to the society at large, to foster effectiveness in citizen-centred innovation, transparency and participation.

Description of work

Task 2.1 – Project philosophy guidelines [1-3]

Ideate and construct the ethical framework of the project via structured workshops to debate upon the chosen key questions: Principles, Outcomes and Integrity. Principles and Integrity for both individuals and institutional developments,

Outcomes regarding the project's results. Explore ethics as a privileged approach to encourage professionals to behave as anticipated by the society at large and their peers. Examine the complex interaction of policies and morality, and the insufficiency of policies as an ethical system. Liaise and generate synergies with other H2020 projects and initiatives e.g. B2SHARE EUDAT, SHERPA, ASSET, etc. Delivers guidelines to assists all participants make their research data findable, accessible, interoperable and reusable (FAIR), to safeguard it is soundly managed. *Lead partner role:* SINNO (P19) coordinates the activities, provide guidance, steer implementation and secure alignment, implement activities to deliver planned outcomes. *Role of participants:* VIVES (P4), IAAD (P5), AGRIA (P13), SLEAN (P14), GGP (P26) develop the work group activities their environment, e.g. per their specific position/role in the food chain ecosystem, and assist identifying and engaging 5 relevant stakeholders in their respective country to generate a focus group (totalising 30 individuals).

Task 2.2 – A framework for ethical CRFS [1-48]

Explore the 10 project's thematic with a focus on ethical approaches in the food systems and ecosystems arena, to identify critical and relevant issues, and learn more about how to practice ethics and values to assist build inclusive, equitable and resilient food systems. Structure ethical decision-making mechanisms to make them a standard practice in the food sector integrating all agents of the supply chain and beyond. Activities are embedded in data collection and examination, realisation of structured interviews with agents of the food systems and ecosystems arena, production of structured observations and implementation of 12 online meeting between engaged partners (3 per year). Liaise and generate synergies with other H2020 projects and initiatives e.g. ASSET, PrimeFish, NextGenProtein. *Lead partner role:* IAAD (P5) coordinates the activities (same framework than task 2.1). *Role of participants:* VIVES (P4), SLEAN (P14), AGRIA (P13), SINNO (P19), GGP (P26)

Task 2.3 – A framework for gender-based CRFS [1-48]

Examines the importance of food-centered developments to gender relations and the construction of gendered identities across cultures. Explores how everyone gender's connection to food may enable mutual respect or generate gender hierarchy. Activities are embedded in data collection and examination, realisation of structured interviews with agents of the food systems and ecosystems arena, production of structured observations and implementation of 12 online meeting between engaged partners (3 per year). Liaise and generate synergies with other H2020 projects and initiatives e.g. Gender-SMART, FOOD CITIZENS, etc. *Lead partner role:* AGRIA (P13) coordinates the activities (same framework than task 2.1). *Role of participants:* VIVES (P4), IAAD (P5), SLEAN (P14), SINNO (P19), GGP (P26). **Task 2.4 – A framework for RRI-oriented CRFS [1-48]**

Identifies, explores and characterizes the challenges food systems and ecosystems present for RRI within the 10 projects' thematic from production to inclusion and equity. Ideate, co-create, implement and pilot RRI mechanisms under WP4, 5, and 6 to structure a RRI framework for the co-creation, pilot and deployment of innovation. Integrate a RRI baseline in all project's activities whilst establishing synergies with major RRI initiatives at EU level, e.g. RRI Tools, GRACE, LANDSUPPORT, BigPicnic, SKIN and PROTEIN2FOOD. Activities are embedded in data collection and examination, realisation of structured interviews with agents of the food systems and ecosystems arena, production of structured observations and implementation of 12 online meeting between engaged partners (3 per year). *Lead partner role:* VIVES (P4) coordinates the activities (same framework than task 2.1). *Role of participants:* IAAD (P5), SLEAN (P14), AGRIA (P13), SINNO (P19), GGP (P26)

Task 2.5 – WP2-specific impact monitoring and assessment implementation [M8-M48]

Activities monitoring and collection of data at WP level to feed WP1. Visualisation of the information to simplify examination processes adjusted to all audiences. Impact monitoring and assessment (IMA) of all activities in the perspective of the city and its region as real-scale pilots. Result-oriented analysis and real time interventions to ensure all project's activities are aligned to meet each of the 7 expected impacts of the call (see section 2.1). Production of WP-specific reports with actionable and deployable information towards the above referred alignment. *Lead partner role:* IAAD (P5) coordinates the activities (same framework than task 6.1). *Role of participants:* all partners develop the task simultaneously in their city/country, collectively when they are more than one in the country.

Deliverables

D.2.1 – Project philosophy guidelines [M3]

Lead: SINNO (P19). A comprehensive provision gathered in a digital format document and incorporating a dynamic set of information.

D.2.2 – White paper on ethical CRFS [M28]

Lead: IAAD (P5). A comprehensive provision gathered in a digital format document and incorporating a dynamic set of information.

D.2.3 – White paper on gender-based CRFS [M29]

Lead: AGRIA (P13). A comprehensive provision gathered in a digital format document and incorporating a dynamic set of information.

D.2.4 – White paper on RRI-oriented CRFS [M30]

Lead: VIVES (P4). A comprehensive provision gathered in a digital format document and incorporating a dynamic set of information.

D.2.5 – WP2-specific IMA reports [M10, M18, M24, M30, M36, M42, M48] Lead: IAAD (P5). A comprehensive digital compendium of WP-specific IMA results incorporating decision-making processes to improve and validate project's activities, providing detailed and comprehensive insight to WP1.

Work package number	3	Lead	benefici	ary	UNRF	(P7)						
Work package title	CRFS	INTEL	LIGENO	CE: struc	ctured a	nd action	nable kn	owledg	e			
Participant number	1	2	3	4	5	6	7	8	9	10		
Short name of participant	UNIVE	EPC	BRUG	VIVES	IAAD	INAG	UNRF	VEGO	INVE	VEJLE		
Person months per participant:	36	14	4	6	8	6	24	12	12	6		
Participant number	11	12	13	14	15	16	17	18	19	20		
Short name of participant	EQUI	INTO	AGRIA	SLEAN	BRH	TTZ	BIOZ	QUAR	SINNO	UPM		
Person months per participant:	4	8	6	6	8	6	6	8	5	2		
Participant number	21	22	23	24	25	26	27	28	29	30		
Short name of participant	WIT	MATI	FFI	VPR	LLF	GGP	AGF	IASI	ARFI	ICTM		
Person months per participant:	2	6	10	12	12	15	8	12	11	10		
Participant number	31	32	33	34	35	36	37	38	39	40		
Short name of participant	CORR	VIZ	IVM	MOMS	UNIL	UCC	PRIM	IUAV	RTU	CITAG		
Person months per participant:	4	6	8	12	3	8	6	10	10	6		
Participant number	41											
Short name of participant	HARL											
Person months per participant:	8											
Start month	M1				End n	nonth	M48					

Objectives

The current WP is co-lead by IAAD (P5). WP3 generates an actionable blueprint to create sustainable CRFS, and incorporates detailed plans of action and methodologies, outlined in a structured form, to provide all agents of the food system arena an interactive approach for food supply chain planning, production, monitoring and improvement, to meet the EU-U11NUA objectives. WP3 aims to identify, engage and activate agents and stakeholders of the food system arena to establish the "CRFS Alliance". Activities will characterise and assemble sound evidence on current needs (vulnerabilities, obstacles) to sustainable CRFS implementation and development. This provides conditions to examine current solutions from a broad spectrum of sources with a special attention to cities signatories of the MUFPP, the citizen science and start-up sphere. WP3 generates instruments to facilitate co-creation and participatory reflexion processes, and intelligence.

Description of work

Task 3.1 – Engage agents and stakeholders of the food system arena [M1-M48]

Design and implement engagement activities to gather insight from agents from the food system arena, including the unorganized public (consumers) to better understand the related landscape, and initiate the project's synergies action plan. 500 active participants are distributed in 19 partners' countries. Engagement activities include 5 field events in each selected partner's country. Planned activities: meetings, interviews with questionnaires, small-scale dynamic workshops for awareness-raising, multiple stakeholder technical workshops and SME/Industry site visits to train and prepare participants for CRFS developments. Similarly, 5 digital event will be held (short webinars and teleconferences). Establishment of 10 working groups based on the FAO-UN CRFS concept. *Lead partner role:* IAAD (P5) coordinates the activities, provide guidance, steer implementation and secure alignment, implement activities to deliver planned outcomes.

<u>*Role of participants:*</u> all partners develop the data collection within their environment, e.g. per their specific position/role in the food chain ecosystem, and assist identifying and engaging 30 relevant stakeholders per country. **Task 3.2 – Characterize vulnerabilities (propagation pattern, impact) [M1-M12]**

Contextualise and benchmark UFSE via a benchmarking survey in participating cities/regions with the EU sphere to define the local/regional landscape, identify similarities and differences between cities and regions. Generate synergies with current studies and surveys in the same thematic from key actors of the food system arena. Feedback from participants will be structured to develop an understanding of existing practices across the food chain arena, and provide data to support comprehensive mapping. Practice of the fault tree modelling approach (Gwen M. Chodur et al.). The method applies to the community level to characterize food system functioning as food security and maps food system frameworks per three key principles: accessibility, availability, and acceptability. Data collection: literature, agents/stakeholders interviews, expert opinions,

empirical data. <u>Lead partner role:</u> MATIS (P22) coordinates the activities (same framework than task 3.1). <u>Role of participants:</u> all partners develop the task simultaneously in their city/country (same framework than task 3.1). **Task 3.3 – Characterization of obstacles to sustainable CRFS in identified food supply chains [M1-M12]** Benchmarking survey and examination of successful use-cases to qualify and quantify predominant strategies towards UFSE policies among local and regional actors of the food chain arena. Gather insight from all spheres with a focus on short food chain supply by community-based structures (e.g. family farming, social cooperatives, etc.). Regarding innovation, focus on Open and Citizen Science, e.g. Zooniverse for instance, the world's largest platform for people-powered research. Policy arena insight, encompassing existing CRFS (cities' case studies), such as Vienna (blockchain). Innovation arena SME/Industry and start-ups (innovators) insight and networks (e.g. Greenovate, etc.). EU project and initiatives insight (e.g. IoF2020, FIT4FOOD2030, RUBIZMO, PROMISS, etc.). <u>Lead partner role:</u> TTZ (P16) coordinates the activities (same framework than task 3.1). <u>Role of participants:</u> all partners develop the task simultaneously in their city/country (same framework than task 3.1).

Task 3.4 – Generate the project system thinking framework [M1-M12]

Co-creation of the "CRFS Logic Framework Approach" (CLFA). Discuss a methodological framework for CRFS system thinking and scenarios interventions, based on systems dynamics (Wolstenholme, 1997): what (problem structuring), why (influence diagrams to demonstrate the relationship between variables), how (dynamic modelling, e.g. develop high-level systems diagrams, define variable type), within (scenario planning and modelling). CLFA, practiced in all co-creation processes hosted by WP4, 5 and 6, promotes exploring CRFS inter-relationships (framework and connections), perspectives and boundaries (agreeing on the meaning of scope, scale, enhancement, approach, mechanisms, etc.). *Lead partner role:* SLEAN (P14) coordinates the activities (same framework than task 3.1). *Role of participants:* all partners develop the task simultaneously in their city/country (same framework than task 3.1).

Task 3.5 – Policy life cycle examinations, policy lab prototype and CRFS Observatory [M1-M48] Examination of European food systems and the corresponding food and nutrition security policy framework. Mapping the governance of food systems, their performance and identify their priorities. Mapping inter-relations between practices policies under the perspective of FOOD2030 and the SDG. Production of a policy lab prototype in 9 cities and 2 regions. Creation of the CRFS Observatory (policy watch) which will run from M1 to M48 and beyond. *Lead partner role:* UNIVE (P1) coordinates the activities (same framework than task 3.1). *Role of participants:* all partners develop the task simultaneously in their city/country (same framework than task 3.1). IAAD (P5) generate a CRFS taxonomy compendium.

Task 3.6 – Examination of the innovation landscape and living lab prototype [M1-M12]

Screening and mapping trends in novel and in all applicable sphere of the food system arena incorporating social sciences and humanities, technology and methodologies, emerging food processing technologies, equipments and ICT-based systems. Uptake of project PoliRural (H2020) methodology based on semantic analysis of diverse amorphous text data sources via innovative big data text mining system. Generates the project's food innovation emerging technologies and start-ups map, via swift yet comprehensive collection of the entire polyphony of available data, to facilitate conventional foresight, future-oriented systems examination (knowledge, skills, equipments, impact, etc.), and horizon scanning investigation. Production of a policy lab prototype in 9 cities and 2 regions. *Lead partner role:* LLF (P25) coordinates the activities (same framework than task 3.1). *Role of participants:* all partners develop the task simultaneously in their city/country (same framework than task 3.1). IAAD (P5) specifically cooperate on the provision of the report "100 innovation frameworks for CRFS".

Task 3.7 – Data-driven CRFS management system ideation [M1-M12]

Ideation of a data-driven CRFS management system based on a comprehensive study of the ICT arena to screen available technologies, incorporating the promising 5G mobile environments. Mapping the landscape of data-driven urban management systems for possible uptake and leverage. Develop and implement a quantitative survey of end-user requirements with respect to cybersecurity across the food system arena. Based on the outcomes of the survey, a focus group will be conducted to explore selected insights from the survey and discuss them in more detail providing an in-depth understanding on the needs and requirements of end users and how CITIES2030 can meet their expectations. *Lead partner role:* UPM (P21) coordinates the activities (same framework than task 3.1). *Role of participants:* IAAD (P5), VEJLE (P10), INVE (P9), TTZ (P17), WIT(P21), AGFT (P27), ARFI (P29), ICTM (P30), UNIL (P35), PRIM (37) develop the task simultaneously at EU level and beyond and contribute in the focus group. **Task 3.8 – WP3-specific impact monitoring and assessment implementation [M3-M48]**

Activities monitoring and collection of data at WP level to feed WP1. Visualisation of the information to simplify examination processes adjusted to all audiences. Impact monitoring and assessment (IMA) of all activities in the perspective of the city and its region as real-scale pilots. Result-oriented analysis and real time interventions to ensure all project's activities are aligned to meet each of the 7 expected impacts of the call (see section 2.1). Production of WP-specific reports with actionable and deployable information towards the above referred alignment. *Lead partner role:* IAAD (P5) coordinates the activities (same framework than task 6.1). *Role of participants:* all partners develop the task simultaneously in their city/country, collectively when they are more than one in the country.

Deliverables

D.3.1 – "CRFS Alliance" community of practice and supporting instruments [M12]

Lead: IAAD (P5). A network of 100 individuals and organisations representative of the food chain arena organised in 10 groups, and a cloud-based system on Google Sites to support networking, data storage and exchange, the "Connected CRFS Alliance", the CRFS Synergies Action Plan (see WP5) and the CRFS Educational Programme (see WP4/WP5).

D.3.2 – White paper on sustainable CRFS [M13]

Lead: IVM (P33). In line with the EC white paper on food safety to set out a "Farm to Table" legislative action programme (2000) the present white paper outlines a framework to facilitate food systems transition to circularity and sustainability.

D.3.3 – System thinking methodology provision [M12]

Lead: SLEAN (P14). A report incorporating a precise framework for the implementation of a methodological framework for CRFS system thinking and scenarios interventions, based on systems dynamics.

D.3.4 – Observatory on sustainable urban food policies and practices [M13]

Lead: UNIVE (P1). The "CRFS Intelligence Lab", established at UNIVE (P1) and gathering a group of 10 scholars and experts in urban food policies from different spheres (social, political sciences,), together with al agents of the food system arena. Guidelines for the establishment of policy labs and establishment of policy labs prototypes in 10 cities and 2 regions.

D.3.5 – 4 Policy briefs [M14, 24, 36, 48]

Lead: UNIVE (P1). A provision which structures and delivers intelligence on sustainable urban food chain and ecosystems and provide evidence-based recommendations combining a series of proficiencies.

D.3.6 - CRFS taxonomy compendium [M24, M36, M48]

Lead: IAAD (P5). A provision which structures and outlines the definition of a comprehensive number of components of the food system arena elaborate with a participatory approach with all agents of the urban food chains.

D.3.7 – "100 innovation frameworks for CRFS" [M13, M25, M37, M47]

Lead: IAAD (P5). A provision which introduces and describes 100 pioneering developments on food systems incorporating a comprehensive number of proficiencies from biotechnology to waste management. Guidelines for the establishment of policy labs and establishment of policy labs prototypes in 10 cities and 2 regions.

D.3.8 – Guidelines for a data-driven CRFS management platform [M8]

Lead: UPM (P20). Guidelines to create a blockchain-based digital system (within WP6) and encompassing precise information on possible pathways considering sustainable CRFS developments.

D.3.9 - WP3-specific IMA reports [M10, M18, M24, M30, M36, M42, M48]

Lead: IAAD (P5). A comprehensive digital compendium of WP-specific IMA results incorporating decision-making processes to improve and validate project's activities, providing detailed and comprehensive insight to WP1.

Work package number	4	Lead	benefici	ary	IVM (P33)								
Work package title	CRFS	ALLIA	NCE: ci	ties' emp	powerm	ent and	synergi	es					
Participant number	1	2	3	4	5	6	7	8	9	10			
Short name of participant	UNIVE	EPC	BRUG	VIVES	IAAD	INAG	UNRF	VEGO	INVE	VEJLE			
Person months per participant:	4	16	12	10	8	8	8	15	15	12			
Participant number	11	12	13	14	15	16	17	18	19	20			
Short name of participant	EQUI	INTO	AGRIA	SLEAN	BRH	TTZ	BIOZ	QUAR	SINNO	UPM			
Person months per participant:	4	13	12	8	12	8	8	15	8	2			
Participant number	21	22	23	24	25	26	27	28	29	30			
Short name of participant	WIT	MATI	FFI	VPR	LLF	GGP	AGF	IASI	ARFI	ICTM			
Person months per participant:	2	12	10	15	15	15	15	12	11	8			
Participant number	31	32	33	34	35	36	37	38	39	40			
Short name of participant	CORR	VIZ	IVM	MOMS	UNIL	UCC	PRIM	IUAV	RTU	CITAG			
Person months per participant:	4	12	24	12	0	12	4	12	10	10			
Participant number	41												
Short name of participant	HARL												
Person months per participant:	6												
Start month	M1				End month M48								

Objectives

The current WP is co-lead by VEJLE (P10). WP4 ensures an adequate activation of all involved participants from the food systems and ecosystems, building capacities to facilitate an efficient co-creation process. WP4 substantially leverage learnings from the MUFPP+ securing synergies and correspondence with key findings. WP4 delivers

policy life cycle assessments within labs, to design, pilot in real scale, validate and deploy sustainable CRFS policies which meet the EU FOOD2030 and UN-SDG11 policy framework. WP4 explores policy-framed and technology-based scenarios, build competences at city level, and deploy policies at regional level towards compliance with the aforementioned policy framework. Likely WP1-6, WP4 foster synergies with comparable developments. All in all, WP4 generates an overarching development paradigm driven by resilience, focusing on re-framing policy areas within the methodological framework of city resilience, up-taking from the MUFPP+.

Description of work

Task 4.1 – Capacity building programme to foster learning for transformation [M1-M20].

Based on the CRFS Educational Programme (WP3). Implement training activities to equip participants for the development of policy co-creation processes, based on 10 identified thematic (see Fig. 1.1b), understood as Learning Outcomes under the present learning process. 2 onsite event with 30 participants takes place completed with 5 online events and supported by the CRFS Alliance Google Site platform were learning material is made available and fully accessible. *Lead partner role:* IAAD (P5) coordinate activities, provide guidance, steer implementation and secure alignment, report to WP leader, implement activities to deliver planned outcomes. *Role of participants:* all partners contributes to the co-creation process of the capacity building programme per their respective field of expertise and implement the events. Partners from the same country cooperate via a balanced distribution of tasks.

Task 4.2 – Policy life cycle assessment, co-creation, co-production and piloting [M1-M48].

Implement the project's system thinking methodology CRFS Logical Framework within 5 on site and 5 online events, a solid and result-oriented instrument to facilitate co-creation mechanisms in 10 identified thematic and corresponding working groups. Leverage development from the MUFPP+ and selected pertinent sources as well (e.g. research, civil society and businesses). Generate synergies with similar developments targeting cities and regions. Implement 4 pilot cities e.g. BRUG (P3), VEJLE (P10), VIZ (P32) and HARL (P41) and 1 pilot region e.g. UCC (P36). Creates a group of facilitators composed by an expert with seniority in practices in each country except Ireland and Luxembourg. All activities are implemented in the established policy labs. *Lead partner role:* VEJLE (P10) coordinates the activities (same framework than task 4.1) implement a pilot and realise the 10 events. *Role of participants:* BRUG (P3), VIZ (P32), UCC (P36) and HARL (P41) develop a pilot and realise the 10 events as well. All remaining partners realise the 10 events and contribute to creating preconditions for future deployment one or more cities in their region organising (e.g. synergies, facilitators, etc.). Partners from the same country cooperate via a balanced distribution of tasks.

Task 4.3 – Deployment and multiplication [M25-M48].

Co-creation and implementation of a deployment action programme to reach 50 pilot cities by 16.10.2024. Production of a series of actionable instruments which core is structured by a multiplier team in all participating countries. The programme also encompasses material for training and a practical roadmap transferable to a vast majority of settings (climate, typography, etc.) yet tailored for specific CRFS setting depending on the characteristics of the food system arena. This provision will be accessible online. Three deployment levels are anticipated, national level on year 3, transnational (boarder countries and the EU+) and international on year 4. *Lead partner role:* IVM (P33) coordinates the activities (same framework than task 4.1). *Role of participants:* all remaining partners contribute to the deployment in one or more cities in their region. Partners from the same country cooperate via a balanced distribution of tasks. **Task 4.4 – WP4-specific impact monitoring and assessment implementation [M8-M48]**.

Activities monitoring and collection of data at WP level to feed WP1. Visualisation of the information to simplify examination processes adjusted to all audiences. Impact monitoring and assessment (IMA) of all activities in the perspective of the city and its region as real-scale pilots. Result-oriented analysis and real time interventions to ensure all project's activities are aligned to meet each of the 7 expected impacts of the call (see section 2.1). Production of WP-specific reports with actionable and deployable information towards the above referred alignment. *Lead partner role:* IAAD (P5) coordinates the activities (same framework than task 6.1). *Role of participants:* all partners develop the task simultaneously in their city/country, collectively when they are more than one in the country.

Deliverables

D.4.1 – Policy co-creation capacity building programme [M8]

Lead: IAAD (P5). Open access digital training guide and self-learning online platform encompassing a comprehensive set of learning material and generated on Google Site.

D.4.2 – Facilitators and guidelines for policies and pilots developments [M11]

Lead: VEJLE (P10). A comprehensive provision gathered in a digital format and incorporating a dynamic set of information (e.g. audio-video and network of experts), and a task force of 10 facilitators.

D.4.3 – Pilot cities policy action plans [M12]

Lead: IVM (P33). A comprehensive provision gathered in a digital format and incorporating a set of information describing with precision the programme to implement the pilot in the city or regions.

Lead: IVM (P33). A comprehensive provision gathered in a digital format, incorporating recommendations on policies and structured legislative proposals per countries' specificities, in 2 stages (drafted, completed).

D.4.5 – Pilot cities deployment programme and action plan [M25]

Lead: VEJLE (P10). A comprehensive provision gathered in a digital format, incorporating the strategy, instruments, facilitators (see D.4.2), implementation mechanisms, protocols with the cities or regions, monitoring and assessment plan.

D.4.6 - WP4-specific IMA reports [M18, M27, M35, M41, M48]

Lead: IAAD (P5). A comprehensive digital compendium of WP-specific IMA results incorporating decision-making processes to improve and validate project's activities, providing detailed and comprehensive insight to WP1.

Work package number	5	Lead l	oenefici	ary	SMART & LEAN HUB OY - SLEAN (P14)								
Work package title	CRFS	ANGEL	LS: inno	vation, s	synergie	s and in	vestmer	t action					
Participant number	1	2	3	4	5	6	7	8	9	10			
Short name of participant	UNIVE	EPC	BRUG	VIVES	IAAD	INAG	UNRF	VEGO	INVE	VEJLE			
Person months per participant:	4	14	4	10	8	8	8	15	15	12			
Participant number	11	12	13	14	15	16	17	18	19	20			
Short name of participant	FBR	INTO	AGRIA	SLEAN	BRH	TTZ	BIOZ	QUAR	SINNO	UPM			
Person months per participant:	12	13	12	20	10	12	12	15	8	2			
Participant number	21	22	23	24	25	26	27	28	29	30			
Short name of participant	WIT	MATI	FFI	VPR	LLF	GGP	AGF	IASI	ARFI	ICTM			
Person months per participant:	2	12	10	15	15	15	12	12	11	10			
Participant number	31	32	33	34	35	36	37	38	39	40			
Short name of participant	CORR	VIZ	IVM	MOMS	UNIL	UCC	PRIM	IUAV	RTU	CITAG			
Person months per participant:	4	12	8	12	0	12	4	10	10	10			
Participant number	41												
Short name of participant	HARL												
Person months per participant:	6												
Start month	M1				End m	onth	M48						

Objectives

The current WP is co-lead by FBR (P11). WP5 delivers a structured environment to unlock cities' innovation potential, driven by a comprehensive and diverse set of agents of the UFSE, to future proof food systems. It identifies, structures and accelerates innovation processes incorporating the design, pilot, validation and deployment of cutting-edge food-related technology. WP5 explores challenges from the real-life food value chain and builds capacities in all agents of the FSEA to generate sustainable food supply chains and corresponding CRFS. WP5 implement pilots on products, services and mechanisms at city level, and eventually generates sustainable business models. Finally, WP5 puts effort on identifying and activating funding schemes to support the structured and sustainable development of aforementioned innovations.

Description of work

Task 5.1 – Capacity building programme to foster learning for transformation [M1-M20]

Generate a capacity building programme based on the CRFS Educational Programme (WP3). Implement training activities to equip participants for the development of innovation co-creation processes, based on 10 identified thematic, understood as Learning Outcomes under the present learning process. 2 onsite event with 30 participants takes place completed with 5 online events and supported by the CRFS Alliance Google Site platform were learning material is made available and fully accessible. The source of the learning is provided by the report "100 innovation frameworks for CRFS" (see deliverable in WP3 D.3.7). Lead partner role: IAAD (P5) coordinate activities, provide guidance, steer implementation and secure alignment, report to WP leader, implement activities to deliver planned outcomes. *Role of participants:* all partners organizes the learning events either together with other partners present in the same country (e.g. Belgium, Cyprus, etc.) or alone (Norway, Turkey, etc.), and assist identifying and engaging 30 relevant stakeholders per country, who can be the same already engaged in WP3. Task 5.2 – Develop 10 innovations by applying Innovation Pattern [M1-M48]

The objective is to find answers to pilot's challenges and to evolve innovations by running Innovation Patterns Living Labs. The Innovation Pattern merges intelligence services (WP3, Task 5.1), capacity building (discourse, learning by doing), reflection and impact analysis, co-operation and synergies with other cities, regions, pilots and RI actions, the exploitation and business plans evolvement. All activities are implemented in the established living labs. Lead partner role: SLEAN (P14) coordinates the activities (same framework than task 5.1). Role of participants: all partners develop the task simultaneously in their city/country (same framework than task 5.1).

Task 5.3 – Evolve Exploitation Plans and Business Plans [M13-M48]

Lead the last mile to exploitable outputs, monitors and uptakes the most exploitable outcomes e.g. contents, observations, improvements, good practices and innovations from each pilot. The task 5.3 with a support of WP3, collects data from the pilots' experiments and markets, and seeks synergies between pilots and ongoing H2020 projects. The task carries out the Exploitation Workshop (EW) series with the pilots to develop marketready products and services. Knowledge obtained through EW series will help to form the Exploitation Plans for different types of beneficiaries (e.g. public bodies, business, consultancy, training) and to develop the Business Plans for innovations. The third outcome of the EW series serves also the need to build capacity on business planning and modelling. Lead partner role: AGFT (P27) coordinates the activities (same framework than task 5.1). Role of participants: all partners develop the task simultaneously in their city/country (same framework than task 5.1). Task 5.4 – "CRFS SeedInvest" investment action programme [M8-M48]

Identifies and explore proper procedures to establish a non-profit legal entity to raise funds, possibly a foundation model, to be led by an independent management board, in which the present consortium is represented. Explore fundraising schemes to co-create ventures combinations that will support the acceleration of innovation. Organise fundraising activities on the occasion of thematic-related major events, and when feasible on the occasion of the transnational project meetings. Structure 10 eligible investment contracts between innovators and investors selected from the report "100 innovation frameworks for CRFS" (see deliverable in WP3 D.3.7). Lead partner role: FBR (P11) coordinates the activities (same framework than task 5.1). Role of participants: all partners develop the task simultaneously in their city/country (same framework than task 5.1).

Task 5.5 – WP5-specific impact monitoring and assessment implementation [M8-M48]

Activities monitoring and collection of data at WP level to feed WP1. Visualisation of the information to simplify examination processes adjusted to all audiences. Impact monitoring and assessment (IMA) of all activities in the perspective of the city and its region as real-scale pilots. Result-oriented analysis and real time interventions to ensure all project's activities are aligned to meet each of the 7 expected impacts of the call (see section 2.1). Production of WP-specific reports with actionable and deployable information towards the above referred alignment. Lead partner role: IAAD (P5) coordinates the activities (same framework than task 6.1). Role of participants: all partners develop the task simultaneously in their city/country, collectively when they are more than one in the country.

Deliverables

D.5.1 – Innovation action capacity building programme [M8]

Lead: IAAD (P5). Open access digital training guide and self-learning online platform encompassing a comprehensive set of learning material and generated on Google Site.

D.5.2 – Facilitators and guidelines for innovation and pilots developments [M11]

Lead: SLEAN (P14). A comprehensive provision gathered in a digital format and incorporating a dynamic set of information (e.g. audio-video and network of experts), and a task force of 10 facilitators.

D.5.3 – Pilot cities innovation action plans [M12]

Lead: VEJLE (P10). A comprehensive provision gathered in a digital format and incorporating a set of information describing with precision the programme to implement the innovation in the city or regions.

D.5.4 – Blueprint for business models to generate sustainable CRFS [M26, M38]

Lead: FBR (P11). A comprehensive provision gathered in a digital format, incorporating SWOT analysis on market, structured business models, plans and corresponding funding schemes, per countries' specificities, in 2 stages (drafted, completed).

D.5.5 – Innovation action deployment programme and action plan [M25]

Lead: SLEAN (P14). A comprehensive provision gathered in a digital format, incorporating the strategy, instruments, facilitators (see D.5.2), implementation mechanisms, protocols with the cities or regions, and the "CRFS SeedInvest" investment action programme.

D.5.6 – WP5-specific IMA reports [M18, M27, M35, M41, M48]

Lead: IAAD (P5). A comprehensive digital compendium of WP-specific IMA results incorporating decision-making processes to improve and validate project's activities, providing detailed and comprehensive insight to WP1.

Work package number	6	Lead	benefici	ary	Univers	Universidad Politécnica de Madrid - UPM (P20)							
Work package title	CRFS	BLOCK	KCHAIN	V: Single	e Click (CRFS PI	atform ((S2CP)					
Participant number	1	<u>1</u> <u>2</u> <u>3</u> <u>4</u> <u>5</u> <u>6</u> <u>7</u> <u>8</u> <u>9</u> <u>10</u>											
Short name of participant	UNIVE	EPC	BRUG	VIVES	IAAD	INAG	UNRF	VEGO	INVE	VEJLE			
Person months per participant:	0	0	0	0	4	0	0	0	0	0			
Participant number	11	12	13	14	15	16	17	18	19	20			
Short name of participant	EQUI	INTO	AGRIA	SLEAN	BRH	TTZ	BIOZ	QUAR	SINNO	UPM			
Person months per participant:	0	0	0	0	0	0	0	0	10	74			

Participant number	21	22	23	24	25	26	27	28	29	30
Short name of participant	WIT	MATI	FFI	VPR	LLF	GGP	AGF	IASI	ARFI	ICTM
Person months per participant:	30	0	0	0	0	0	0	0	0	10
Participant number	31	32	33	34	35	36	37	38	39	40
Short name of participant	CORR	VIZ	IVM	MOMS	UNIL	UCC	PRIM	IUAV	RTU	CITAG
Person months per participant:	0	0	0	0	30	0	64	0	0	0
Participant number	41									
Short name of participant	HARL									
Person months per participant:	0									
Start month	M1				End m	onth	M48			

Objectives

This work-package will gather, design and develop the main components and technological tools to establish a data-driven CRFS management platform for data collection, analysis and representation in multiple interfaces. An initial requirement acquisition will lead to the proposal of a common technical architecture for CITIES2030, for with supporting data set will be incorporated to be considered for data analysis and representation. Particularly, a service-based open collaboration space will be incorporated, to be used by CITIES2030 participants to improve their multi-stakeholder dialogue processes. In this space, blockchain technology will be employed to provide some proof of concepts of token-based monetization processes, and reflect multi-stakeholder interaction in a reliable and transparent way. Documentation and software repositories will be available for policy labs and living labs to develop their own solutions with assistance from WP6.

Description of work

Task 6.1 – Requirements and reference architecture [M1-M24]

This task will compile use cases, roles and lab definitions and provide insight about the required technologies to be employed in CITIES2030 (from SOTA solutions or defined inside the project). The tasks will elaborate a set of requirements and will provide the CITIES2030 technical architecture, based on the experiences of UPM, WIT, SINNO and UNIL from previous project platforms (DataBio, DEMETER, PoliRural, REDIRNET), and compatible with other already established ecosystems, such as BDVA and AIOTI. Common layers for data and services will be specified, utilizing open APIs to allow the architecture extension, by the integration of external components and third-party tools. *Lead partner role:* UPM (P20) coordinate activities, steer development and secure alignment. *Role of participants:* WIT(P21), UNIL (P35), PRIM (P37), SINNO(P19): Transform end-user requirements from Task 3.7 into technical requirements and API specifications.

Task 6.2 – Data management and integration [M1-M48]

Taking outputs from Task 6.1, this task focuses on acquiring, preparing, analysing, fusing and integrating the incoming datasets that support the project use cases in a horizontal manner, as well as provide the mechanisms to access and share them. Data mining techniques will be incorporated into this task and SoTA components coming from other projects (e.g. text mining components being developed in Polirural project) will be considered. In handling such large and heterogeneous datasets, techniques such as distributed compression and compressed learning can be taken into consideration for effective data management. Data mining methods such as clustering, and feature extraction will be investigated to prepare data conducting effective analysis. Distributed learning techniques such as Federated learning and representative learning approaches can then be taken into consideration for developing collaborative data integration and analysis mechanisms. Additionally, techniques of prediction with guarantees such as causal and conformal learning will be investigated. A multi actor data governance framework will also be designed and implemented using existing tools where available and leveraging work performed by the WIT team on a Irish project called BusPRIME (Business Privacy Modelling and Execution), extending it by addressing data governance, multi-party incentivised data sharing and integrating with the required security elements coming from Task 6.4. This task will require the specification of data models (from WP2, WP3, WP4 and WP5) in order to define data model profiles to be integrated into database. The framework design and implementation will be fully aligned with the work in WP8. Lead partner role: WIT(P21) coordinates activities (same framework than task 6.1). Role of participants: UNIL (P35), ITCM(P30) participates in development team coordinated by lead partner.

Task 6.3 – Service-based open collaboration space [M1-M48]

This task will develop common APIs to design, implement and provide digital technology solutions for increasing stakeholder's collaboration performance levels and decision-making accuracy. Current state of the art components such as geospatial information processing technologies or FIWARE catalogue components will be assembled in a continuous integration and deployment environment based on Cloud Computing and Containerized services (Kubernetes and Docker). Specifically, this task will provide a marketplace for optimization of multi-stakeholder dialogue processes, in which blockchain will be employed to provide some proof of concepts of token-based monetization processes, in a

reliable and transparent way. Also, a communication space will be implemented where decision making processes and KPI comparisons can be shared and make available among living labs, policy labs and other action groups. <u>Lead partner</u> <u>role:</u> UPM(P20) coordinates activities (same framework than task 6.1). <u>Role of participants:</u> PRIM(P37), SINNO(P19), UNIL (P35) participates in development team coordinated by lead partner.

Task 6.4 – Privacy and Security [M1-M48]

The main objective of this task is to propose a blockchain-based framework to ensure trust, transparent, and traceable transactions between stakeholders, as well as the security of the data, i.e., its availability, integrity and confidentiality. It is important also to highlight the technical implications imposed by the applicable regulations regarding private information, as the GDPR as well as other national or city regulations. The task will classify and analyse all the personal data processes involved in the project to deliver a set of recommendations and guidelines, which are aligned with the GDPR perspective and different city and region regulations. This task will also provide some risk analysis and estimation to which tools and data sets can be integrated into the project to offer the desired level of data security. Blockchain privacy and security technologies will be studied and incorporated as authentication and authorization tools. These tools will permit the examination of security and privacy threats on CRFS platform, and the specification and modelling of CRFS data access policies and permissions with regards to SLAs, business models, data ownership, data federation. This task will also extend the BusPRIME purpose specification models for data integrity and verification of data handling through the establishment of "purpose & consent" contracts using Blockchain in line with COPA-COGECA EU Code of Conduct on agricultural data sharing by contractual agreement. *Lead partner role:* UNIL (P35) coordinates activities (same framework than task 6.1). *Role of participants:* WIT(P21), UPM(P20) participates in development team coordinated by lead partner.

Task 6.5 – Adaptive visualizations and monitoring [M12-M48]

This task is focused on the application of user experience design (UX) to develop a dashboard framework capable of integrating different web and mobile interfaces to serve as decision support systems in CITIES2030. The dashboards will allow users to query project data, apply data analytics operations and visualize the outcome. The users will be able to customize the dashboard based on their own needs, with the aim that CRE can use this environment to compare the results of applying different processes or techniques to their data, and to monitor the performance of their solutions. *Lead partner role:* PRIM (P37) coordinates activities (same framework than task 6.1). *Role of participants:* UPM(P20), WIT(P21) participates in development team coordinated by lead partner.

Task 6.6 – WP6-specific impact monitoring and assessment implementation [M3-M48]

Activities monitoring and collection of data at WP level to feed WP1. Visualisation of the information to simplify examination processes adjusted to all audiences. Impact monitoring and assessment (IMA) of all activities in the perspective of the city and its region as real-scale pilots. Result-oriented analysis and real time interventions to ensure all project's activities are aligned to meet each of the 7 expected impacts of the call (see section 2.1). Production of WP-specific reports with actionable and deployable information towards the above referred alignment. *Lead partner role:* IAAD (P5) coordinates the activities (same framework than task 6.1). *Role of participants:* all partners develop the task simultaneously in their city/country, collectively when they are more than one in the country.

Deliverables

D6.1 – S2CP design and reference architecture [M24]

Lead: UPM (P20). This report integrates the set of technological requirements extracted from the interaction with the use cases and user requirements of Task 3.7 and addresses the design of the architecture of the S2CP platform as well as the proposed API interfaces to be developed in the rest of the WP6 tasks.

D6.2 – Data sources and integration report [M24, M48]

Lead: WIT (P21). This report with intermediate and final versions identifies the external and internal data sources that are of interest to the project, analyses them and develops connectors for their incorporation into the data model. They also summarize the implementation efforts of the necessary tools and services for rendering the datasets, performing spatial operations and complex analysis.

D6.3 – Service-based open collaboration space development report [M24, M48]

Lead: UPM (P20). This report describes the intermediate and final versions of the Service-based open collaboration space, based on the architecture and interfaces defined in D6.1. It includes the technical description and the user manual for the development of applications and services on the collaboration space, as well as the services developed.

D6.4 – Data security for S2CP [M24, M48]

Lead: UNIL (P35). This deliverable with intermediate and final versions describes the security study carried out in Task 6.4, which includes the applicable regulations regarding private information, risk analysis and estimation to which tools and data sets can be integrated into the project and the implemented CRFS data access policies and permissions with regards to SLAs, business models, data ownership and data federation.

D6.5 – S2CP Dashboard report [M30, M48]

Lead: PRIM (P37). This report describes the implementation process and the user manual for the use of the multi-device interface of the S2CP dashboard. It includes demonstrations of the use of the dashboard for the query project data, apply data analytics operations and visualize the outcome to solve CRFS domain problems. **D.6.6 – WP6-specific IMA reports [M10, M18, M25, M30, M36, M42, M47]**

Lead: IAAD (P5). A comprehensive digital compendium of WP-specific IMA results incorporating decision-making processes to improve and validate project's activities, providing detailed and comprehensive insight to WP1.

Work package number	7	7 Lead beneficiary				IST. EUR. RESEARCH ASSOC. – IAAD (P5)					
Work package title	CRFS	BEACO	N: Diss	eminatio	n, explo	itation, c	commun	ication a	nd syner	rgies	
Participant number	1	2	3	4	5	6	7	8	9	10	
Short name of participant	UNIVE	EPC	BRUG	VIVES	IAAD	INAG	UNRF	VEGO	INVE	VEJLE	
Person months per participant:	8	14	4	4	24	0	4	6	4	4	
Participant number	11	12	13	14	15	16	17	18	19	20	
Short name of participant	EQUI	INTO	AGRIA	SLEAN	BRH	TTZ	BIOZ	QUAR	SINNO	UPM	
Person months per participant:	4	3	3	4	4	4	4	4	4	3	
Participant number	21	22	23	24	25	26	27	28	29	30	
Short name of participant	WIT	MATI	FFI	VPR	LLF	GGP	AGF	IASI	ARFI	ICTM	
Person months per participant:	2	4	3	4	4	4	4	6	6	4	
Participant number	31	32	33	34	35	36	37	38	39	40	
Short name of participant	CORR	VIZ	IVM	MOMS	UNIL	UCC	PRIM	IUAV	RTU	CITAG	
Person months per participant:	4	4	4	4	3	4	4	4	4	8	
Participant number	41										
Short name of participant	HARL										
Person months per participant:	4										
Start month	M1				End m	onth	M48	M48			

Objectives

The current WP is co-lead by CITAG (P40). WP7 aim at securing the public disclosure of the results of the project with an impact-driven strategy, with a focus on generating momentum at specific stages via synergies with other food-related and urban-related events, initiatives and projects. Also, WP7 ideate and implement a structured framework of strategic and targeted measures for publicizing dissemination actions to the diverse and comprehensive target audiences. WP7 framework covers dissemination, communication exploitation of results and synergies and develops with two-way exchange mechanisms, driven by the transfer of information from CITIES2030 and by the uptake from targeted audiences to integrate CITIES2030. All in all, WP7 delivers an actionable and deployable mechanism to secure the project impact.

Description of work

Task 7.1 – Dissemination and communication strategy and tools [M1-M3]

Description of the strategy (e.g. approach, action plan, methodology, calendar, resources, tools, etc.), outreach of the target audiences, the activities to be performed, messages and the channels to be used, structured calendar and resources assignment framework for the engagement of targeted audiences and stakeholders, to disseminate and promote the project and its outputs on the one hand, and to communicate with the targeted audiences in the other hand. Production of the dissemination package e.g. consolidated project's image and overall branding (logo, stationary, etc.), website and social media pages, events guidelines and formats, leaflets, newsletters, infographics, roll-up, posters, innovation action campaigns, and overall merchandising at large. Production of the communication strategy with experts in the field, especially engaged in the project on a long-term basis to secure synchronisation with world-wide level calendar-based realities. Production and management of a comprehensive database of the target audiences which will be updated throughout the lifecycle of the project. *Lead partner role:* IAAD (P5) coordinate activities, secures an EU level wide perspective, provide guidance, steer implementation and secure alignment, report to WP leader, implement activities to deliver planned outcomes. *Role of participants:* all partners contributes with the delivery of a local context fine-grain strategy (city/region outreach) and a national awareness-raising basis.

Task 7.2 – Synergies action plan [M1-M4]

Co-creation of a comprehensive action plan to effectively activate synergies between the project's partners and existing networks, projects, clusters, platforms, and EU bodies. Co-creation of a Memorandum of Understanding to secure an effective two-way uptake and exchange. This activity incorporate the reactivation of H2020 consortia engaged in projects ended in 2019 or ending in 2020 e.g. engagement as Alliance Partners. The plan is implemented in each key activities e.g. WP3, 4, 5 and 6, to generate an effective leverage and uptake of key findings and learning from a vast panoply of sources, and a solid multiplication effect regarding the projection of the project results to other cities and

regions, incorporating the same diversity of actors from the UFSE. Task 7.2 secures a centralized and global coordination of WP specific synergies activities. Lead partner role; IAAD (P5) coordinates the activities (same framework than task 7.1). structures a comprehensive set of targets covering all arenas incorporating a fine-tuned action plan determined by local, regional contexts in each represented countries. Role of participants: all partners contributes with insight on their local context and current network (e.g. contact persons, message format and communication channels) and co-create the overall programme of activities.

Task 7.3 – Communication implementation and management [M3-M48]

Communication activities undertaken to publicize and promote the project, and bring visibility to all dissemination actions, with a special attention to the results. These activities incorporates publications, presentations at international conferences, events and exhibitions, developing in both digital and physical arenas. Engagement activities to activate targeted audiences and consolidate long term two-ways communication levels building upon calendar-based realities e.g. current activities implemented by the targeted audiences in their organisations and environments.

Lead partner role: ARFI (P29) coordinates the activities (same framework than task 7.1) with the specific role to secure communication with the science and technology arena. Role of participants: all partners contributes with the outreach and dissemination actions. Countries with more than one partner organise coordinated actions per complementarity of expertise and distributed monthly roles per agreed country specific calendar of activities. IAAD plays a specific role in supporting ARFI and all partners in structuring and aligning communications action.

Task 7.4 – Dissemination implementation and management [M3-M48]

Generate a vast panoply of activities tailored to targeted audiences e.g. seniority (education level, years of experience, etc.) and overall background (scholars, entrepreneurs, public servants, public, etc.). All data is published in the open access section of the project website and disseminated to all audiences with tailored strategies, practicing a FAIR open access data, target audience. 4 newsletters to report on the progress of the project (1 per year). Production of short videos for each city engaged in the project, targeting a wider audience through digital media, for project participants to disseminate about the project and engage other complementary audiences at international conferences, external events, etc. The video are creative and provide a strong attractiveness effect, guaranteeing that the viewers have a clear picture of the project aims and results. 12 open access policy and technology publications, 12 articles in non-specialized press (3 per year). 4 Policy briefs (WP4) and 3 White Papers (WP2)). 10 technical presentations, one per innovation framework (WP5). 20 awareness-raising and learning events (5 per year) including 1 during the transnational project meetings. Lead partner role: IAAD (P5) coordinates the activities (same framework than task 7.1). Role of participants: all partners contributes with the outreach and dissemination actions. Countries with more than one partner organise coordinated actions per complementarity of expertise and distributed monthly roles per agreed country specific calendar of activities.

Task 7.5 – Innovation and Intellectual Property management [M3-M48]

Structuring a framework for innovation and Intellectual Property (IP) management. Reporting, recording and management of the innovations and related IP resulting from the project activities to ensure an optimised use of results from innovation actions, with exploitation potential, during the project and beyond its scope. Effective monitoring and recording of all publications ensuring compliance with the terms of the Project Management Board and the Innovation Advisory Board, and ensure appropriate measures are implemented for the protection of IP. The resulting IP and Innovation log will inform the formulation and update of the project exploitation plans. On this matter WP7 specially synchronizes actions with WP5 task 5.4 "CRFS SeedInvest" investment action programme". Lead partner role: ARFI (P29) coordinates the activities (same framework than task 7.1). Role of participants: all partners contributes with the outreach and dissemination actions. Countries with more than one partner organise coordinated actions per complementarity of expertise and distributed monthly roles per agreed country specific calendar of activities.

Task 7.6 – Exploitation of results plan an implementation[M25-M48]

Though sustainability frameworks are embedded in all WP [systemic) WP7 centralizes CITIES2030's Heritage Action Agenda, co-created under this task. This actionable and deployable agenda incorporates an action plan, describes and structures a strategy to facilitate and encourage the exploitation of the project outputs and ensure the sustainability after the project's scope. The consortium will co-develop this legacy plan exploring multiple pathways to gather support for the sustainability of the project results. The action plan includes a task force of 40 multipliers distributed in all participating countries. It details tailored exploitation plans including target markets and agents of the UFSE, e.g. market analysis and exploitation plan (segments, strategy), performance based price elasticity assessment, market access barriers including IPR financial business case analysis, e.g. business models and exploitation plans aimed at target markets to illustrate results of the project, and to show how they can innovatively benefit the UFSE in a commercially feasible ecosystem services offering. A Research Innovation Action exploitation plan and a Citizen science exploitation plan. Results will be presented at international exhibitions in the reference arena e.g. UFSE and related spheres. All in all, encourage the use of the project results during the project scope and beyond. Lead partner role: SLEAN (P14) coordinates the activities (same framework than task 7.1). Role of participants: all partners contributes with the outreach and dissemination actions. Countries with more than one partner organise coordinated actions per complementarity of expertise and distributed monthly roles per agreed country specific calendar of activities.

Task 7.7 – WP7-specific impact monitoring and assessment implementation [M3-M48]

Activities monitoring and collection of data at WP level to feed WP1. Visualisation of the information to simplify examination processes adjusted to all audiences. Impact monitoring and assessment (IMA) of all activities in the perspective of the city and its region as real-scale pilots. Result-oriented analysis and real time interventions to ensure all project's activities are aligned to meet each of the 7 expected impacts of the call (see section 2.1). Production of WP-specific reports with actionable and deployable information towards the above referred alignment. *Lead partner role:* IAAD (P5) coordinates the activities (same framework than task 6.1). *Role of participants:* all partners develop the task simultaneously in their city/country, collectively when they are more than one in the country.

Deliverables

D.7.1 – Dissemination, exploitation, communication and synergies strategy [M3]

Lead: IAAD (P5). A comprehensive provision gathered in a digital format document and incorporating an actionable set of practical information.

D.7.2 – Dissemination package [M4]

Lead: IAAD (P5). A comprehensive collection of instrument to assist generate the effective visibility and impact of the project.

D.7.3 – Synergies action plan [M4]

Lead: IAAD (P5). A comprehensive provision gathered in a digital format document and incorporating an actionable set of practical information.

D.7.4 – Innovation and Intellectual Property management plan and reporting [M14, M26, M37, M47]

Lead: ARFI (P29). A comprehensive collection of instrument to assist generate the effective protection of the innovation frameworks developed by the project.

D.7.5 – Exploitation of results plan [M28, M38, M47]

Lead: SLEAN (P14). A comprehensive provision gathered in a digital format document and incorporating an actionable set of practical information.

D.7.6 - WP7-specific IMA reports [M6, M12, M18, M24, M30, M36, M42, M48]

Lead: IAAD (P5). A comprehensive digital compendium of WP-specific IMA results incorporating decision-making processes to improve and validate project's activities, providing detailed and comprehensive insight to WP1.

Work package number	8 Lead beneficiary				Ca' Foscari University of Venice – UNIVE (P1)					
Work package title	LEAN	-AGILE	E GOVE	RNAN	CE: data	-driven	digital r	l management		
Participant number	1	2	3	4	5	6	7	8	9	10
Short name of participant	UNIVE	EPC	BRUG	VIVES	IAAD	INAG	UNRF	VEGO	INVE	VEJLE
Person months per participant:	40	24	4	4	18	2	4	4	4	4
Participant number	11	12	13	14	15	16	17	18	19	20
Short name of participant	EQUI	INTO	AGRIA	SLEAN	BRH	TTZ	BIOZ	QUAR	SINNO	UPM
Person months per participant:	4	4	3	6	4	4	4	4	4	3
Participant number	21	22	23	24	25	26	27	28	29	30
Short name of participant	WIT	MATI	FFI	VPR	LLF	GGP	AGF	IASI	ARFI	ICTM
Person months per participant:	3	4	3	4	4	4	4	4	4	4
Participant number	31	32	33	34	35	36	37	38	39	40
Short name of participant	CORR	VIZ	IVM	MOMS	UNIL	UCC	PRIM	IUAV	RTU	CITAG
Person months per participant:	24	4	6	4	4	4	4	4	6	4
Participant number	41									
Short name of participant	HARL									
Person months per participant:	4									
Start month	M1				End month M48					

Objectives

The current WP is co-lead by UIAV (P38). WP8 generates a Lean-Agile project management framework that separates the development process into narrowed iterations to facilitate decision-making and problem solving. WP8 coordinates the project's implementation as a whole via securing a result-driven assignment of resources, fine-tuning the calendar of activities per the project's implementation realities, and reporting efficiently to all teams/partners. WP8 secures a sound and FAIR knowledge management baseline to provide the optimized inclusion of all partners engagement, accessibility and space to communicate. WP8 develops with a gender equality driven and ethical-driven approach. WP8 delivers the "Correlate CITIES2030", a tailored software as a service (SaaS) giving the users an instant transparent and augmented layer over other online and actionable content, files and pages, stored in and across unconnected and

scattered private and public online platforms. WP8 generate the project's Ethics Requirements formulation. WP8 secure the Ethics Requirements framework of the project, which are guidelines to manage personal data, monitored throughout the duration of the project by activities of different management forums and the project's Ethics Manager.

Description of work

Task 8.1 – Project management and implementation strategy and tools [M1-M2]

Description of the strategy (e.g. approach, action plan, methodology, calendar, resources, tools, etc.), the activities to be performed, structured calendar and resources assignment framework for the implementation of the project's activities. Co-production of templates package e.g. consolidated project's management tools for reporting (qualitative and quantitative) and overall material for reporting at large. Co-production of the internal communication strategy with experts in the field, especially engaged in the project on a long-term basis to secure synchronisation with partners' level calendar-based realities. Co-production and management of a comprehensive database gathered from partners which will be updated throughout the lifecycle of the project. The strategy incorporates communication between the EC and the consortium, sub-contracts and agreements within the partnership, the mechanisms for distribution of the EC financial contribution, methodologies for the review and approval of all reports and deliverables, including financial claims, change and risk plan. Establishment of the managerial bodies: the Project Management Office (PMO), the secretariat and the Executive Committee (ExeCom). Comprehensive development of the Ethics Requirements formulation. Lead partner role: UNIVE (P1) coordinate activities, secures an EU level wide perspective, provide guidance, steer implementation and secure alignment, report to WP leader, implement activities to deliver planned outcomes. Role of participants: all partners contributes with the delivery of a local context fine-grain strategy (city/region context) and a national overview basis. EPC (P2) and IUAV (P39) develops especially in the PMO and EPC (P2), IAAD (P5), SLEAN (P14), LLF (P25) and CORR (P31) in the secretariat. The secretariat holds an exceptional role which is to secure the performance of the cities and regions engaged in the project, in collaboration with a specific partner, e.g. VIVES (P4) for BRUG (P3), UNRF (P7) for UCC (P36), INVE (P9) for VEGO (P8), FBR (P11) for VEJLE (P10), SLEAN (P14) for INTO (P12), TTZ (P16) for BRH (P15), SINNO (P19) for QUAR (P18), LLF (P25) for VPR (P24), ARFI (P29) for IASI (P28), EPC (P2) for VIZ (P32), IVM (P33) for HAR (P41), ITCM (P30) for MOMS (P34).

Task 8.2 – Project coordination and partnership internal communication [M1-M48] Co-creation and definition of the CITIES2030 governance bodies. Planning, organisation and administration of consortium meetings including logistical plans, minutes and follow-up on actions from project meetings, management of the calendar of activities. Implementation of project management processes and procedures including progress monitoring, risk management and innovation management procedures. Conflict anticipation and management. Contribution to alignment actions together with WP1. Providing a clear roadmap for consistently communicating within the partnership. Provide a situation overview and mapping the current situation, considering project's needs and communicating to key partners e.g. WP leaders and co-leaders. Populate the communications calendar (e.g. timeline with a project tracker spreadsheet embedded in the data-driven digital management platform. Communication between the EC and the consortium. Lead partner role: UNIVE (P1) coordinates the activities (same framework than task 8.1). Role of participants: all partners contributes with the delivery of a local context fine-grain information (city/region context) and a national overview basis.

Task 8.3 – Progress monitoring, quality control and reporting [M2-M48]

Track and report, on a quarterly basis, the progress of the WP tasks, deliverables and milestones and highlight any delays for the consideration of remedial action by the project management office. Management of the timely consolidation of technical and financial partners' reports. Compilation of periodic summaries of technical progress in relation to the project workplan. Advising the EC Project Officer of any issues or delays likely to affect the overall progress of the project. Lead partner role: IUAV (P38) coordinates the activities (same framework than task 8.1). Role of participants: all partners contributes with the delivery of a local context fine-grain information (city/region context) and a national overview basis.

Task 8.4 – Administrative and financial management [M1-M48]

Planning, structuring, supervising and controlling the financial activities such as procurement and utilization of funds of the project. Applying general management principles co-created by task 8.1 to the financial framework of the project. Management of sub-contracts and agreements within the partnership, distribution of the EC financial contribution, review and approval of all reports and deliverables, including financial claims. Fine-tune financial management incorporating analytical accountancy to secure alignment with resources expenditure and assist partners delivering sound and result-driven implementation processes. Lead partner role: UNIVE (P1) coordinates the activities (same framework than task 8.1). Role of participants: all partners contributes with the delivery of a local context fine-grain information (city/region context) and a national overview basis.

Task 8.5 – Data-driven digital management platform [M1-M48]

The platform "Correlate CITIES2030" provide a cloud-based framework to secure a lean-agile digital management. The platform gives the users an instant transparent and augmented layer over other online content, files and pages, stored in and across unconnected and scattered private and public online platforms. The user correlates (drag and drop) the file into a context map where all files independent of format can be organized, annotated and shared among collaborators. The flexibility, system agnostic and easy-to-use app simplifies sharing of correlated content and is gender unaware across

individual, smaller groups and larger communities. The software is available for each participant in the consortium with up to 5 users within each participant, free of charge during the project period. Invited users have access to an informative overview, easy navigation and direct access to information stored in isolated and distributed storage and archive systems. The EC have full access to the platform in all areas. *Lead partner role:* CORR (P31) coordinates the activities (same framework than task 8.1). *Role of participants:* all partners contributes with the delivery of a local context fine-grain information (city/region context) and a national overview basis.

Task 8.6 – Knowledge management [M1-M48]

Delivers a guideline for knowledge management frameworks in UFSE and a strategy for capacity building activities for knowledge transfer. papers. The proposed system ensures CITIES2030's intellectual productivity is curated, administered and made accessible for the long term. Knowledge management is being addressed by a number of key actors yet needs pathways for the agents of the UFSE to better work together to leverage efforts towards the enhancement of a joint approach. It is intended CITIES2030 develops a consensus-based actions package to shift towards a common knowledge management solution. *Lead partner role:* UNRF (P7) coordinates the activities (same framework than task 8.1). *Role of participants:* all partners contributes with the delivery of a local context fine-grain strategy (city/region context) and a national overview basis.

Task 8.7 – WP8-specific impact monitoring and assessment implementation [M3-M48]

Activities monitoring and collection of data at WP level to feed WP1. Visualisation of the information to simplify examination processes adjusted to all audiences. Impact monitoring and assessment (IMA) of all activities in the perspective of the city and its region as real-scale pilots. Result-oriented analysis and real time interventions to ensure all project's activities are aligned to meet each of the 7 expected impacts of the call (see section 2.1). Production of WP-specific reports with actionable and deployable information towards the above referred alignment. *Lead partner role:* IAAD (P5) coordinates the activities (same framework than task 6.1). *Role of participants:* all partners develop the task simultaneously in their city/country, collectively when they are more than one in the country.

Deliverables

D.8.1 – Project management and implementation strategy [M2]

Lead: UNIVE (P1). A comprehensive provision gathered in a digital format document and incorporating an actionable set of practical information, labelled "CITIES2030 Action Plan".

D.8.2 – Progress monitoring, quality control and briefs [M4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48] Lead: IUAV (P38). A comprehensive provision gathered in a digital format document and incorporating an actionable set of practical information.

D.8.3 – Administrative and financial management briefs [M6, 12, 18, 24, 30, 36, 42, 48]

Lead: UNIVE (P1). A comprehensive provision gathered in a digital format document and incorporating an actionable set of practical information.

D.8.4 – Data-driven digital management platform [M3, 11, 35, 47]

Lead: CORR (P31). A solid lean-agile software instrument to assist generate the effective management of the project. **D.8.5 – Knowledge management guidelines and briefs [M13, M28, M38, M47]**

Lead: UNRF (P7). A comprehensive provision gathered in a digital format document and incorporating an actionable set of practical information.

D.8.6 - WP8-specific IMA reports [M10, M18, M25, M30, M37, M42, M48]

Lead: IAAD (P5). A comprehensive digital compendium of WP-specific IMA results incorporating decision-making processes to improve and validate project's activities, providing detailed and comprehensive insight to WP1.

Deliverable (number)	Deliverable name	Work package number	Short name of lead participant	Туре	Dissemination level	Delivery date (in months)
D.8.1	Project management and implementation	8	UNIVE (P1)	R	PU	M2
	strategy					
D.1.1	Project impact action strategy (PIAS)	1	RTU (P39)	R	PU	M3
D.2.1	Project philosophy guidelines	2	SINNO (P19)	R	PU	M3
D.7.1	Dissemination, exploitation, communication and synergies strategy	7	IAAD (P5)	R	PU	M3
D.8.4	Data-driven digital management platform	8	CORR (P31)	DEC, other	PU	M3 to M47
D.7.2	Dissemination package	7	IAAD (P5)	R	PU	M4
D.7.3	Synergies action plan	7	IAAD (P5)	R	PU	M4
D.8.2	Progress monitoring, quality control and briefs	8	IUAV (P38)	R	PU	M4 to M48

Table 3.1c: List of Deliverables

Deliverable	Deliverable name	Work	Short name	Туре	Dissemination	Delivery
(number)		package	of lead		level	date
		number	participant			(in months)
D.1.2	Cost-effective IMA methods digital	1	IAAD (P5)	R	PU	M6
	compendium and facilitators/multipliers					
D.8.3	Administrative and financial	8	UNIVE (P1)	R	PU	M6 to M48
	management briefs					
D.3.8	Guidelines for a data-driven CRFS	3	UPM (P20)	R	PU	M8
	management platform					
D.4.1	Policy co-creation capacity building programme	4	IAAD (P5)	R, other	PU	M8
D.5.1	Innovation action capacity building programme	5	IAAD (P5)	R, other	PU	M8
D.1.3	All WP IMA reports	1	LLF (P25)	R	PU	M10 to M48
D.2.5	WP2-specific IMA reports	2	IAAD (P5)	R	PU	M10 to M48
D.3.9	WP3-specific IMA reports	3	IAAD (P5)	R	PU	M10 to M48
D.6.6	WP6-specific IMA reports	6	IAAD (P5)	R	PU	M10 to M47
D.8.6	WP8-specific IMA reports	8	IAAD (P5)	R	PU	M10 to M48
D.4.2	Facilitators and guidelines for policies	4	VEJLE (P10)	R, other	PU	M11
	and pilots developments					
D.5.2	Facilitators and guidelines for innovation	5	SLEAN (P14)	R, other	PU	M11
	and pilots developments					
D.7.	WP7-specific IMA reports	7	IAAD (P5)	R	PU	M11 to M48
D.3.1	"CRFS Alliance" community of practice	3	IAAD (P5)	Other	PU	M12
	and supporting instruments					
D.3.3	System thinking methodology provision	3	SLEAN (P14)	R	PU	M12
D.4.3	Pilot cities policy action plans	4	IVM (P33)	R	PU	M12
D.5.3	Pilot cities innovation action plans	5	VEJLE (P10)	R	PU	M12
D.3.2	White paper on sustainable CRFS	3	IVM (P33)	R	PU	M13
D.3.4	Observatory on sustainable URFS and	3	UNIVE (P1)	Other	PU	M13
	prototype of policy lab					
D.3.7	"100 innovation frameworks for CRFS"	3	IAAD (P5)	R	PU	M13 to M47
D.8.5	Knowledge management briefs	8	UNRF (P7)	R	PU	M13 to M47
D.3.5	4 policy briefs	3	UNIVE (P1)	R	PU	M14 to M48
D.7.4	Innovation and Intellectual Property	7	ARFI (P29)	R	PU	M14 to M47
	management plan and reporting					
D.4.6	WP4-specific IMA reports	4	IAAD (P5)	R	PU	M18 to M48
D.5.6	WP5-specific IMA reports	5	IAAD (P5)	R	PU	M18 to M48
D.3.6	CRFS taxonomy compendium	3	IAAD (P5)	R	PU	M24 to M48
D.6.1	S2CP design and reference architecture	6	UPM (P20)	R	PU	M24
D.6.2	Data sources and integration report	6	WIT (P21)	R	PU	M24, 48
D.6.3	Service-based open collaboration space	6	UPM (P20)	R	PU	M24, 48
	development report		- (- /		_	, -
D.6.4	Data security for S2CP	6	UNIL (P35)	R	PU	M24, 48
D.3.7	"100 innovation frameworks for CRFS"	3	IAAD (P5)	R	PU	M13 to M47
D.4.5	Pilot cities deployment programme and	4		R	PU	M25
	action plan				_	_
D.5.5	Innovation action deployment	5	SLEAN (P24)	R	PU	M25
	programme and action plan	-	~			
D.4.4	Blueprint for policies to generate	4		R	PU	M26, M37
	sustainable CRFS				_	-,
D.5.4	Blueprint for business models to	5	FBR (P11)	R	PU	M26, M38
	generate sustainable CRFS	-	× ,		_	-,
D.2.2	White paper on ethical CRFS	2	IAAD (P5)	R	PU	M28
D.7.5	Exploitation of results plan	7	SLEAN (P14)	R	PU	M28 to M47
D.2.3	White paper on gender-based CRFS	2	AGRIA (P13)	R	PU	M29
D.2.4	White paper on RRI-oriented CRFS	2	VIVES (P4)	R	PU	M30
D.6.5	S2CP Dashboard report	6	PRIM (P37)	R	PU	M30, M48

3.2 Management structure, milestones and procedures

Management structure. The managerial framework of CITIES2030 is structured to certify strategic command of each activity and task of the project, through effective coordination between the operative units (e.g. PM, PMO, etc.). The activities are continuously, timely and precisely implemented per quality control mechanisms with appropriate evidence-based project standards. The managerial framework generates an efficient and effective environment for each single tasks within the overarching activities to be achieved, furthering an optimal process which balances professional rigor with the overall project management throughout the lifetime of the project. The consortium brings together experts from the UFSE scientific, technical, economic and societal fields as well as motivated and experienced project management partners, gathering a solid H2020 large scale projects expertise. This will ensure that both innovation actions and management activities are resourced with accurate means. The consortium as whole agree that in the interests of performing effectiveness and effective conflict or dispute resolution, the current formal mechanism and managerial framework provides safeguards and arbitration for all parties.

The managerial framework of CITIES2030 is structured by a Consortium Agreement complementary to the grant agreement. The Executive Committee (ExeCom) is the body responsible for all project related matters as a whole, composed by the WP leaders and the secretariat, one or more members of the PMO, the PM and, when pertinent, Advisory Board members. More specifically the ExeCom authorise decisions on the implementation orientations of the project and any agreed re-allocation of budget, if necessary (e.g. new major execution orientations to pursue; lack of progress of one or other WPs or participants). The ExeCom itself may incorporate external expertise representative (or nominated proxy) for each partner. Other members of the ExeCom may be appointed as appropriate.

Fig. 3.2a – CITIES2030 result-driven management framework The ExeCom secures that correct procedures are adopted and followed, that all deadlines, milestones, deliverables, reports, and events are effectively implemented. The ExeCom reviews the technical and scientific progress and performance made by each of the partners with a four-monthly checkpoints – though this will be agreed conditional to the complexity of each WP, based upon realistic and achievable milestones - and decides in detail the onward actions for the subsequent project phase. Where necessary, decides any corrective measures vital to address delays. The 7 transnational ExeCom meetings (biannual in 4 years' project) and 24 teleconferences (6 every year) provides a comprehensive review of the overall progress against the "CITIES2030 Action Plan". Any sensitive issue is addressed privately to secure confidentiality. Teleconference calls are organized if urgent matters arise in between transnational meetings to address needs promptly and implement effective answers. The PM participates in all transnational meetings as chairperson.

Management bodies.CITIES2030 Project Manager (PM, UNIVE, P1) represents the consortium as a whole and is directly responsible for communication with the European Commission including the provision of all technical, financial and administrative reports. UNIVE is responsible for delegation of the WP and the effective overall execution of CITIES2030 Action Plan. UNIVE develops in close collaboration with the administrations of all partners to secure that the administrative, reporting and financial aspects of the project are managed in an effective and timely manner. The PMO heightens the balance between the diverse management units (incorporating requirements and needs, operational functions of PM), associated with financial management, performance monitoring, reporting and partner liaison. All partners agree UNIVE is responsible for establishing the PMO to support the delivery of the project, which is composed by staffs from UNIVE, EPC (P2) and IUAV (P39).

UNIVE establishes a secretariat who will oversee the implementation of the project and provide support (as detailed in WP8) to all CITIES2030 partners. By separating the key operational management (secretariat) from the project administrative management responsibilities, partners trust the overall performance and impact will be achieved more efficiently. The secretariat is composed by staffs from EPC (P2), IAAD (P5), SLEAN (P14), LLF (P25) and CORR (P31) and develops with the data-driven digital project management platform "Correlate CITIES2030". The secretariat is assigned an exceptional management role regarding cities as described in task 8.1 (WP8). CITIES2030 WP leaders have regular informal contact by email and teleconferences with each and all WP participants, especially with the WP co-leader, who assist in the WP management. Both leaders and co-leaders report on obstacles and resolutions arising during the progress of the WP to the secretariat. WP leaders and co-leaders

(WPLC) are encouraged to share administrative responsibility and to support the members of other WPs to participate actively in the organisation of the activities, information sharing, international exchange. WPLC are responsible for bringing deliverables and milestones to the attention of the PM and the Consortium at the correct time. The CITIES2030 Advisory Board is a non-executive body part of WP8 yet critical to secure the optimum accuracy of the project development with the UFSE realities. It is anticipated to incorporates a total of 50 experts and agents of the UFSE by 16.10.2022. Their role centralises on providing guidance to the ExeCom, steer the project development and contribute to the project's activities per the pertinence of members' fields of proficiency. CITIES2030 advisory boards are the Policy Enactment Advisory Board (PEAB) led by VEJLE (P10), Innovation Action Advisory Board (IAAB) led by ICTM (P30), Synergies Action Advisory Board (SYAB) led by ARFI (P29) and the project's Advisory Board (CIAB) led by four external Alliance Partners anticipated to be the Global Resilient Cities Network (GRCN) located in the city of London (UK) representing the urbanism and cities spheres, the Resilient Regions Association (RRA) located in Malmö (Sweden) representing the climate action thematic, DUNAVNET located in the city of Novi Sad (Serbia) representing the ITC sphere, and NAHhaft located in the city of Dresden (Germany) representing the civil society arena.

Management procedures. Effective communication is essential to deliver the CITIES2030 project objectives. "Correlate CITIES2030" (an interactive platform, site and a confidential file sharing cloud, including areas for group discussion), is established to facilitate regular digital communication between partners. Teleconferencing is extensively used for communication on both management and operational matters. Formal network meetings involving all project partners will be held every 2 months. The ExeCom meetings are conducted to pre-agreed agendas and encompasses presentations on WP progress, emerging results and future plans. Separate session are allocated at each transnational meeting to address possible legal, ethical, contractual, financial, and administrative matters. Result-driven progress monitoring methodologies are implemented to safeguard on-schedule delivery of the project plan, and improvement monitoring procedures are practiced from the very start of the project. The key administrative member of each institution delivers a quarterly brief detailing general progress and any difficulties or challenges arising with respect to the work plan. These reports are timely provided to the PMO and PM. The project reports are validated and circulated to the consortium by the secretariat and made available for download via the private members' area of the "Correlate CITIES2030" cloud. Activity reports will encompass a management overview, a description of the progress towards the project objectives, the status of project deliverables (see table 3.1c), the achievement of key milestones (see table 3.2a), identification of challenges and suggested corrective action to be taken, and the progress towards dissemination globally. Table 3.2a:List of milestones

Milestone number	Milestone name	Related work package(s)	Due date (in month)	Means of verification
MIL1	Project guidelines and strategies	1, 2, 7, 8	M3	The provision is effectively delivered and accurate per the anticipated quality level
MIL2	Data-driven digital management platform	8	M3	The first version of the platform is operational and used by all participants
MIL3	Project visibility package	7	M4	The Dissemination package and the synergies action plan are effectively delivered and accurate per the anticipated quality level
MIL4	Cost-effective IMA methods package	1	M6	The comprehensive digital compendium of actionable and deployable information is delivered and a group of 10 facilitators are operational
MIL 5	Guidelines for the data-driven CRFS management platform	3	M8	The guidelines for S2CP are effectively delivered and accurate per the anticipated quality level
MIL 6	Policy co-creation and innovation action capacity building programmes (CBP)	4,5	M8	The CBP are effectively delivered and accurate per the anticipated quality level
MIL 7	Pilot development package	4,5	M11	The comprehensive digital compendium of actionable and deployable information is delivered and a task force of 10 facilitators are operational
MIL 8	The "CRFS Alliance" and supporting instruments	3	M12	100 individuals are actively engaged in the project activities and registered in the data base; the platform is operational
MIL 9	System thinking methodology	3	M12	The report incorporating a precise framework for the implementation is effectively delivered and accurate per the anticipated quality level
MIL 10	Pilot cities action plans	4,5	M12	The plans are effectively delivered and accurate per the anticipated quality level

Milestone	Milestone name	Related	Due date	Means of verification
number		work	(in month)	
		package(s)		
MIL 11	Policy and innovation labs	3	M13	Policy and innovation labs prototypes established in 10 cities
				and 2 regions
MIL 12	S2CP design package	6	M24	The following provision is effectively delivered per the
				anticipated quality level: S2CP design and reference
				architecture, Data sources and integration report, Service-
				based open collaboration space development report, Data
				security for S2CP
MIL 13	Pilot cities deployment	4,5	M25	The pilot cities and innovation action deployment programmes
				effectively delivered per the anticipated quality level and the
				pilots started
MIL 14	Exploitation of results plan	7	M28	The plan is effectively delivered and accurate per the
				anticipated quality level
MIL 15	S2CP platform	6	M48	The S2CP platform is effectively per the anticipated quality
				level and is operational

The project development reporting and review is structured with quarterly administrative and financial reports. At the end of each reporting period the consortium prepares and submit to the H2020 executive Agency technical and financial reports, including requests for payment. All beneficiaries contribute to the completion of the technical reports and the administrative of each partner ensures timely completion of the finance claims for the period. The PMO collates summaries of the expenditure statements and explanations prepared by each partner. A final report is generated on completion of the project, in which results are assessed against agreed objectives. The report focuses on the economic and social implications of the data obtained. It also describes the dissemination of the results and the factors associated with their potential overall exploitation. Regarding financial operations, any changes to allocated budgets necessary for the effective and efficient performance of the project will be agreed by the ExeCom and the PMO, details are described in the Grant Agreement. Each consortium member keeps strict accounting of expenditures and provide financial reports within the timescale indicated by the PMO and, with enough clarification to justify the costs being claimed. Where financial audits are required, they are carried out and certificates provided in line with the Grant Agreement. Innovation management (IM) is a matter of great focus in CITIES2030. The project generates IM processes which offers participants to co-create and cooperate with a common understanding of market and technical challenges, goals and processes. It aim to implement novel and creative ideas without disruption, and introduce new services, processes, mechanisms or products and is therefore pivotal to CITIES2030. The consortium acknowledges that participative cooperation is a paramount source of innovation and as such the project structure is designed to secure that all partners are actively and inclusively engaged in IM developments, and that the knowledge obtained through participation in CITIES2030 has an impact far beyond the project scope. The partners report on progress on a quarterly basis, stressing opportunities for innovation to the secretariat who in collaboration with the ExeCom evaluates the opportunities against current market offerings. The results of this activity will be integrated into the project Exploitation of Results Plan (D.7.5) following the project intellectual property management procedures (D.7.4) to ensure adequate protection and exploitation of the results. In the case of notable divergence from the objectives of one WP (e.g. conflicts and unexpected events), a thorough plan of action is established between the PMO, the PMO, the WP leader, and the contributors of the WP concerned. If major technical or financial re-orientations are expected, decisions are taken during the ExeCom transnational meeting by consensus as often as possible, or if where necessary, and as a final resort, by a simple majority vote. All participants are timely notified of any proposed modifications to the work plan or budget provisions that are to be decided upon. Further conflict resolution measures including arbitration are well-defined and agreed in the Consortium Agreement.

Critical risks for implementation. The examination of the activities to be implemented in CITIES2030 identifies a number of risks potentially jeopardising the achievement of the project objectives. Nevertheless, the strategy practiced by the project, as outlined in the project work plan, substantiates that the overall risk of failure to deliver significant outputs and outcomes is normal and controllable. Table 3.2b below reviews the risks identified during the preparation of this proposal. Risks is be monitored by the secretariat throughout the project.

Description of risk (indicate level of likelihood: Low/Medium/High)	Work package(s) involved	Proposed risk-mitigation measures
High. The work doesn't end up in innovations. Pilots are not capable to identify and develop novel solutions on pain points.	5	Each pilot needs to identify the development direction. Based on pilot personnel's' and stakeholders' experience and the gathered knowledge they have to remove the obstacles on the

Table 3.2b: Critical risks for implementation

		lead to the innovations. Open mind, active learning and experimental approach are the keys.
High. The pilot's personnel are not willing or	5	WP leader puts a lot of effort on quality training
able to apply Innovation pattern.		material and also personal discussions to overcome
		obstacles and find the route to move on.
High. Innovation required to design and	6	The involvement of experienced software engineers and
develop the proposed models and algorithms		the adoption of agile development techniques ensures an
underestimated resulting in cascading delays.		efficient development process. If one of the models or
		algorithms proves not to be feasible, alternative approaches
		using commercially available solutions is planned.
Medium. Limited responses to the surveys	3	The consortiums extensive networks is actively and
(also relates with limited engagement by agents		continuously engaged and activated to promote the survey
of the UFSE).		and stimulate uptake in participation.
Medium. Failure of the proposed software	6	Design of the component architectures will be based on cutting-
architecture for one or more components.		edge technology and a comprehensive requirement collating
		exercise. Should a proposed architecture fail, alternatives of the
		architecture will be considered.
Medium. Unexpected negative consequences	2	Develop a proper training about ethics and gender to allow
of activities regarding ethics and gender		the identification, mitigation and transformation of related
approaches to UFSE.		risks, improving organizational efficiency and developing
		organizational identity.
Medium. Obstacles regarding the integration of	6	Implement agile development methods, collaboratively design
the platform components.		the component and system level architecture prior to initiating
		development, ensure use of standard interfaces.
Low. The project framework is not compliant	2, 3, 4, 5, 6	The UFSE landscape and realities is thoroughly examined at
with the evolving EU legislation on UFSE as		the very inception of the project to secure that all relevant
well as supply chain-related and food-related		compliance regimes and regulatory frameworks are accurately
standards.		understood; the "CRFS Intelligence Lab" (observatory) is the
		interactive and real-time updated instrument to ensure the
		consortium is aware of any changes in policies.
Low. Failure of project governance due to	All	Implement a robust management structure with regular full
complexity and number of partners.		consortium reviews. Deployment of a fulltime experience
		project manager and use of best practice communications
		and management tools.
Low. Failure to deliver one or more of the	All	Implement progress monitoring procedures to proactively
project's objectives and expected impacts.		identify issues that are arising. The Consortium Agreement
		will include specific measures to deal with underperforming
		partners should the situation arise.

3.3 Consortium as a whole

CITIES2030 is structured by a UFSE-related partnership at different level and position of the food supply chain, from production (INVE, P9) to waste management (e.g. all cities practically), incorporating transformation (GGP P26, ICTM P30), markets (BIOZ, P17). Other partners are more specifically representatives of external yet correlated spheres, for instance inclusion and equity (IAAD P5, SINNO P19). Completing and interrelating partners consolidate this central expertise by bringing proficiency in policy research and development (FFI P23, IVM P33, RTU P39), technology (AGFT P27) and innovation (TTZ P16, MATIS P22), funding schemes and ventures (FBR P11), education (VIVES P4), research globally (UNRF P7, ARFI P29). All develop on food related matters on a daily (cities), weekly or monthly base. CITIES2030 assemble an exceptional number of partners with the most accurate expertise and experience for the achievement of the envisioned outcomes. First, three key H2020 project coordinators that are WIT (P21), providing a substantial uptake from project "Building an interoperable, data-driven, innovative and sustainable European agri-food sector" (DEMETER, grant agreement ID: 857202), in which UPM (P20) and ICTM (P30) are partner as well; MATIS (P22) delivering essential key finding from project "Bioconversion of underutilized resources into next generation proteins for food and feed" (NextGenProtein, ID: 862704); and last but not least of all 3, IVM (P33), bringing an accurate and cutting-edge material, e.g. the 'EU think tank' (a linking pin between EC, Member States, etc.), 'Policy Labs' (to align public/private RI policies/programs), 'City Labs' (liaising with the MUFPP signatory cities), from project "Fostering Integration and Transformation for FOOD 2030" (FIT4FOOD2030, ID: 774088). Therefore, these partners play a substantial and essential role on WP6, and to a lesser extent in WP3, WP4 and WP5 as well.

Then, a diverse portfolio of food-related experienced partners, providing excellent environments and condition to upscale, uptake and enhance developing findings, are secured to engage the planed WP. WP1 secures the project impact and alignment and is led by RTU (P39), a research body highly experienced in impact assessment but also directly connected with the UFSE via EIT Food Latvia, and co-led by AGFT (P27) an enterprise practised in result-driven development and strict calendar delivery programmes. This core group is strengthened by expert partners in the planned activities e.g. IAAD (P5, 12 ERASMUS+ projects), LLF (P25, member in six Committees and Councils lead by Ministries, including European Union Funds Monitoring Committee), AGFT (P27, management of 60.000 hectares in Serbia and Hungary), ICTM (P30, running the use case implementation CYSLOP under project IoF2020). WP2 secures the project is accurately aligned with cutting-edge food-related ethics, gender frameworks and RRI, therefore it is led by SINNO (P19) with key expertise is fostering transparency and citizen participation, and co-led by AGRIA (P13) leading an extensive women's network in the rural areas. This core group is strengthened by VIVES (P4) which second pillar is research, IAAD (P5) with a solid expertise in genderbased learners' activation processes, SLEAN (P14) gathering a extensive experience in ethics applied to businesses and social developments, GGP (P26) which fosters green growth in all segments of the Macedonia national economy and the region. WP3, especially cities and research bodies, led by UHRF (P7) with expertise in survey and research, also supporting the region of Troodos in Cyprus (UCC, P36) to implement the anticipated pilot. WP3 is also managed by IAAD (P5) though newcomer under H2020 proposals, but with a substantial expertise in UFSE via its staff and projects, in particular on nature-based solutions. All partners are engaged and bring their specific expertise per respective food-related environments (e.g. activities, staff, etc.). Also, a substantial number of partners provide key learning from pertinent and current food-related or ICT-based H2020 projects. They are VIVES (P4) with project "Prevention of malnutrition in senior subjects in the EU" (PROMISS, ID: 678732)", VEJLE (P10) with "Circularize value chains across European regional innovation strategies" (C-VoUCHER, ID: 777773), ARFI (P29) with "Replicable business models for modern rural economies" (RUBIZMO, ID: 773621), SLEAN (P14), VPR (P24), LLF (P25), GGP (P26), AGFT (P27) with project "Future oriented collaborative policy development for rural areas and people" (PoliRural, ID: 818496), WIT (P21) with project "Connecting the dots to unleash the innovation potential for digital transformation of the European agri-food sector" (SmartAgriHubs, ID: 818182) and with project "Businessoriented support to the European robotics and agri-food sector, towards a network of digital innovation hubs in robotics" (agROBOfood, ID: 825395). All other partners provide their solid experience in benchmarking surveys and studies via the diverse panoply of initiatives in which they also further enhance their competences.

WP4 benefits from the same complementary, polyvalent, rich evidence-based expertise and track record of all partners already mentioned, and is led by IVM (P33), currently developing in project FIT4FOOD, and co-led by VEJLE (P10) currently developing in project C-VoUCHER. Likely, WP5 is provided substantial uptake contribution from all partners, led by SLEAN (P14) with expertise already emphasized and co-led by FBR (P11) also presently developing in project C-VoUCHER. WP6 is solidly grounded with 4 innovative software solution providers with expertise in developing data-driven management platforms: UPM (P20), WIT (P21), ICTM (P30), UNIL (P35) and PRM (P37), notably UPM (P20) collaborative environments and platforms, smart farming and logistics, data modelling and traceability of products and retail sectors. covering many aspects of the Agrifood chain (from farm to fork). Also, Mobile Platforms and Services, Data Analytics and Social computing, Next Generation Internet Technologies, Cybersecurity, Privacy and Identity, Adaptive Networks and High Performance Computing, with WIT (P20). Fundamental and applied research in computer networking, privacy, and security, namely in the areas of privacy by distribution, network and system security, SCADA and cyber security, Big Data, IoT, vehicular communication and multimodal traffic management, and wireless networks and mobile security, with UNIL (P35). GIS solutions with open-source highly secured systems on dedicated redundancy cloud facilities, high-performance computing and visualization techniques combining static mapping techniques to machine learning algorithms in vertical/volumetry construction analysis using remote sending, innovative mapping and API design, with PRIM (P37). These four partners will drive the development of innovative solutions to the ICT-related challenge proposed by the project, incorporating cybersecurity and cyber risk management. WP7 is led by IAAD (P5) with an extensive experience on dissemination and exploitation of results and communication (DeoRC) provided by staff active under worldwide initiatives (UNDP), but also gained via 12 ERASMUS+ projects in the past 3 years. WP7 co-leader CITAG (P40) active in the city of Marseille is the third-largest in France after those of Paris and Lyon, and connected with more than 650 structures engaged in agriculture and food-related activities in the Marseille Greater Area only. All remaining partners also gather an extensive experience in DeoRC and synergies either gained from their extensive network developments or EU funded initiatives in which they participate. Finally, WP8 is led by UNIVE (P1), which has an enhanced and consolidated capacity building in developing, planning and managing large scale multilateral cooperation projects and other significant international initiatives, such as the present one. It has developed unanimously internationally well-known clusters of excellence knowledge, researches and best practices in the multifaceted and multidisciplinary food sector (e.g. Agri-Food Management & Innovation Lab). WP8 is co-led by EPC (P2). with a large experience in national, European and international projects, as partner and lead partner (e.g. URBANWINS and CREW). All remaining partners also gather an extensive experience in management either gained from their extensive network-k developments or EU funded initiatives in which they participate.

3.4 Resources to be committed

Budget overview. A project with a several number of partners requires more the traditional 10 per cent for management. It is not only a question of reporting and financial flows, but most of all it is an issue of ensuring quality, notably coordinate and monitor the implementation ensuring all partners have a clear picture of both the project scope and their specific role to contribute at the achievement of expected results. Of course, the majority of budget allocation is for technical implementation and to ensure a sound impact of the project. the core WPs are WP4 and WP5, which are those including living labs in and for the cities involved. Also, in WP6 and WP3, it is allocated and important part of the budget: in on one side the increase of the knowledge is relevant to develop living labs and take decisions based on data and good practices; on the other side, the ITC innovative tools designed, tested and delivered in WP6 enables the exploitation and the scale up. Cities (both in the partnership and fellow ones) will benefit from knowledge and tools for implementing Food plans and policies in the long run. WP1 and WP are dimensioned on the project size, while WP1 and WP2, which have lower budget are in any case necessary to ensure impact and ethics of all project tasks.

Efforts (staff). The distribution of the budget among partners have been based on their effective involvement in specific WPs' activities. The following figures and tables provides an overview of budget allocation.

Table 3.4a: Summary of staff effort

Fig. 3.4a – Breakdown of the budget per key area of activity

efforts per Work Package

Participant Number	Short Name	WP1	WP2	WP3	WP4	WP5	WP6	WP7	WP8	Total Person- Months per Participant
1	UNIVE	4	2	36	4	4	0	8	40	98
2	EPC	0	0	14	16	14	0	14	24	82
3	BRUG	0	0	4	12	4	0	4	4	28
4	VIVES	0	2	6	10	10	0	4	4	36
5	IAAD	8	4	8	8	8	4	24	18	82
6	INAG	0	0	6	8	8	0	0	2	24
7	UNRF	0	0	24	8	8	0	4	4	48
8	VEGO	0	0	12	15	15	0	6	4	52
9	INVE	0	0	12	15	15	0	4	4	50
10	VEJLE	0	0	6	12	12	0	4	4	38
11	EQUI	0	0	4	4	12	0	4	4	28
12	INTO	0	0	8	13	13	0	3	4	41
13	AGRIA	0	5	6	12	12	0	3	3	41
14	SLEAN	0	5	6	6	20	0	4	6	47
15	BRH	0	0	8	12	10	0	4	4	38
16	TTZ	0	0	6	8	12	0	4	4	34
17	BIOZ	0	0	6	8	12	0	4	4	34
18	QUAR	0	0	8	15	15	0	4	4	46
19	SINNO	0	9	5	8	8	10	4	4	48
20	UPM	0	0	2	2	2	74	3	3	86
21	WIT	0	0	2	2	2	30	2	3	41
22	MATIS	0	0	6	12	12	0	4	4	38
23	FFI	0	0	10	10	10	0	3	3	36
24	VPR	0	0	12	15	15	0	4	4	50

Participant Number	Short Name	WP1	WP2	WP3	WP4	WP5	WP6	WP7	WP8	Total Person- Months per Participant
25	LLF	8	0	12	15	15	0	4	4	58
26	GGP	0	8	15	15	15	0	4	4	61
27	AGFT	12	0	8	15	15	0	4	4	58
28	IASI	0	0	12	12	12	0	6	4	46
29	ARFI	0	0	11	11	11	0	6	4	43
30	ICTM	10	0	10	8	10	10	4	4	56
31	CORR	0	0	4	4	4	0	4	24	40
32	VIZ	0	0	6	12	12	0	4	4	38
33	IVM	0	0	8	24	8	0	4	6	50
34	MOMS	0	0	12	12	12	0	4	4	44
35	UNIL	0	0	3	0	0	30	3	4	40
36	UCC	0	0	8	12	12	0	4	4	40
37	PRIM	0	0	6	4	4	64	4	4	86
38	IUAV	0	0	10	12	10	0	4	4	40
39	RTU	30	0	10	10	10	0	4	6	70
40	CRE	0	0	6	10	10	0	8	4	38
41	HARL	0	0	8	12	6	0	4	4	34
Total Pers	son Months	72	35	366	423	419	222	197	254	1988

Other direct costs

- travel cost to ensure the participation of all the partners and alliance associated partners to take part at the KOM, the intermediate and final consortium assembly/meetings. Only partners taking part at the management board, Secretary and those who are WP leaders and co leaders have additional travel budget to meet during 4 meetings and if necessary operative meetings;

- some equipment (budgeted following the rule of depreciation cost) have been allocated to cities dealing with pilot requiring purchase of goods and means;
- Open access publication

Cost for communication and dissemination including support for translation and for editing and producing materials, both at general project level and at partners level (Indeed, organizing living labs requires an effort in terms of communication with local and regional stakeholders that are expected to contribute at labs activities;

- audit certificate
- the other part of this budget voice includes:
 - data and literature purchase particularly for WP3, quality evaluation
 - services to support the organization of both partners' meetings/assembly and living labs activities;
 - ITC services for the purpose of the observatory (WP3) and the project platform (WP7);
 - Services to organize living and policies lab, pilot act, and logistic supports to participatory activities

activities Fig. 3.4c – Breakdown of the expenditure per category **Table 3.4b: Other direct cost' items (travel, equipment, other goods and services, large research infrastructure)**

P1 - UNIVE	Cost (€)	Justification
Travel	22.200	participation at consortium meetings and events
Equipment	0	
Other goods and		data and literature purchase; open access publication; service for printing materials,
services	175 808	editing papers; cost for translation; ITC and web services for the purpose of the
	175.000	Observatory; service to organise labs, focus groups and workshops with partners,
		alliance partners, and with stakeholders and experts to be consulted; public relations,

		financial audit, quality independent evaluation, consultants necessary to support the
		implementation of tasks developed by beneficiaries.
Total	198.008	
P2 - EPC	Cost (€)	Justification
Travel	12.600	participation at consortium meetings and events
Equipment	0	
Other goods and	22.500	audit certificates, service to organize viz lab, cost of translation, service for editing
Total	35 100	and printing matchas, addit certificate
P3 - RRUC	Cost(f)	Instification
Travel		participation at KOM Intermediate and closure consortium meetings
	7.200	labs and events
Equipment	- €	
Other goods and	22 000	service for translation, for producing communication materials; service to organize
services	55.000,	events and to support living labs organization; data purchase; audit certificate
Total	40.200	
P4 - VIVES	Cost (€)	Justification
Travel	7.200	participation at KOM, Intermediate and closure consortium meetings, labs and events
Equipment	0	
Other goods and	11.000	service for translation, for producing communication materials; service to organize
services	10.000	events and to support living labs organization; data purchase; audit certificate
	18.200	T (10)
P5 - IAAD Troval	Cost (€)	Justification
Equipment	22.000	participation at consortium meetings and events
Other goods and	0	Open access publication: data and literature purchase: cost for translation for editing
services		and producing communication materials: ITC services: web site creation and
	73.500	management service to organize meetings and conferences; ensure logistic supports;
		fee for experts speakers invited to take part at events; audit certificate
Total	95.500	
P6 - INAG	Cost (€)	Justification
Travel	7.200	participation at KOM, Intermediate and closure consortium meetings, labs and events
Equipment	0	
Other goods and	10.000	service for translation, for producing communication materials; service to organize
services	17 200	events and to support living labs organization; data purchase; audit certificate
I ULAI D7 LINDE	17.200	Instituation
r / - UNKF Travel	Cost (E)	narticination at KOM Intermediate and closure consortium meetings
	7.200	labs and events
Equipment	0	
Other goods and	10 500	data purchase and publication; cost for translation, for editing and printing
services	10.500	communication materials; service to organize meetings and ensure logistic
Total	17 700	supports, the for experts speakers invited to take part at events, audit defutileate
P8 - VFCO	Cost (f)	Institution
Travel	7.200	participation at KOM. Intermediate and closure consortium meetings, labs and events
Equipment	0	
Other goods and		data purchase; cost for translation, for editing and printing communication materials;
services	22.000	service to organize meetings and ensure logistic supports; fee for experts speakers invited
		to take part at events; audit certificate
Total	29.200	
P9 - INVE	Cost (€)	Justification
L NOTO	1 / 700	participation at KUIVI Intermediate and closure consortium meetings labs and events

Equipment	0	
Other goods and		data purchase; cost for translation, for editing and printing communication materials;
services	19.200	ITC services; service to organize meetings/labs; fee for experts speakers invited to take
		part at events; audit certificate
Total	26.400	
P10 - VEJLE	Cost (€)	Justification
Travel	12.700	participation at consortium meetings and events
Equipment	0	
Other goods and	0.700	cost for translation, for editing and printing communication materials; service to organize
services	8.500	meetings/labs; fee for experts speakers invited to take part at events; audit certificate
Total	21.200	
P11 - FBR	Cost (€)	Instification
Travel	14 100	participation at consortium meetings and events
Equipment	0	
Other goods and	0	service for translation for producing communication materials; service to organize
services	12.800	meetings/labs: fee for experts speakers invited to take part at events/labs: audit certificate
Total	26.900	
P12 INTO	Cost(f)	Instification
T12 - INTO	7200	participation at KOM Intermediate and closure consortium meetings labs and events
Fauinment	0	
Other goods and	0	service for translation for producing communication materials; service to organize
Services	18 000	meetings/labs: social media expert: fee for experts speakers invited to take part at
Services	10.000	events/labs: audit certificate.
Total	25 200	
	Cost (f)	Instituation
P13 - AGRIA	COSL (€)	Justification
Equipment	14.100	participation at consortium meetings and events
Equipment	0	
Other goods and		convice for translation for producing communication materials, convice to organize
Other goods and	6.300	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate
Other goods and services	6.300	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate
Other goods and services Total	6.300 20.400	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate
Other goods and services Total P14 - SLEAN	6.300 20.400 Cost (€)	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification
Other goods and services Total P14 - SLEAN Travel	6.300 20.400 Cost (€) 14.100	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events
Other goods and services Total P14 - SLEAN Travel Equipment	6.300 20.400 Cost (€) 14.100 0	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events
Other goods and services Total P14 - SLEAN Travel Equipment Other goods and services	6.300 20.400 Cost (€) 14.100 0	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication and dissemination materials; data purchase; service to organize meetings/abs; and consortium meetings; social media
Other goods and services Total P14 - SLEAN Travel Equipment Other goods and services	6.300 20.400 Cost (€) 14.100 0 26.000	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication and dissemination materials; data purchase; service to organize meetings/labs and consortium meetings; social media expert: fee for experts speakers invited to take part at events/labs; audit certificate;
Other goods and services Total P14 - SLEAN Travel Equipment Other goods and services	6.300 20.400 Cost (€) 14.100 0 26.000 40.100	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication and dissemination materials; data purchase; service to organize meetings/labs and consortium meetings; social media expert; fee for experts speakers invited to take part at events/labs; audit certificate;
Other goods and services Total P14 - SLEAN Travel Equipment Other goods and services Total	6.300 20.400 Cost (€) 14.100 0 26.000 40.100	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication and dissemination materials; data purchase; service to organize meetings/labs and consortium meetings; social media expert; fee for experts speakers invited to take part at events/labs; audit certificate; Justification
Other goods and services Total P14 - SLEAN Equipment Other goods and services Total P15 - BRH	6.300 20.400 Cost (€) 14.100 0 26.000 40.100 Cost (€)	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication and dissemination materials; data purchase; service to organize meetings/labs and consortium meetings; social media expert; fee for experts speakers invited to take part at events/labs; audit certificate; Justification participation at KOM. Intermediate and closure consortium meetings
Other goods and services Total P14 - SLEAN Travel Equipment Other goods and services Total P15 - BRH Travel	6.300 20.400 Cost (€) 14.100 0 26.000 40.100 Cost (€) 7.200	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication and dissemination materials; data purchase; service to organize meetings/labs and consortium meetings; social media expert; fee for experts speakers invited to take part at events/labs; audit certificate; Justification participation at KOM, Intermediate and closure consortium meetings, labs and events
Other goods and services Total P14 - SLEAN Travel Equipment Other goods and services Total P15 - BRH Travel	 6.300 20.400 Cost (€) 14.100 0 26.000 40.100 Cost (€) 7.200 0 	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication and dissemination materials; data purchase; service to organize meetings/labs and consortium meetings; social media expert; fee for experts speakers invited to take part at events/labs; audit certificate; Justification participation at KOM, Intermediate and closure consortium meetings, labs and events
Other goods and services Total P14 - SLEAN Travel Equipment Other goods and services Total P15 - BRH Travel Equipment Other goods and	 6.300 20.400 Cost (€) 14.100 0 26.000 40.100 Cost (€) 7.200 0 	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication and dissemination materials; data purchase; service to organize meetings/labs and consortium meetings; social media expert; fee for experts speakers invited to take part at events/labs; audit certificate; Justification participation at KOM, Intermediate and closure consortium meetings, labs and events data purchase; cost for translation for editing and printing communication materials;
Other goods and services Total P14 - SLEAN Equipment Other goods and services Total P15 - BRH Travel Equipment Other goods and services	 6.300 20.400 Cost (€) 14.100 0 26.000 40.100 Cost (€) 7.200 0 26.900 	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication and dissemination materials; data purchase; service to organize meetings/labs and consortium meetings; social media expert; fee for experts speakers invited to take part at events/labs; audit certificate; Justification participation at KOM, Intermediate and closure consortium meetings, labs and events data purchase; cost for translation, for editing and printing communication materials; service to organize local and consortium meetings and ensure logistic supports; fee for
Other goods and services Total P14 - SLEAN Travel Equipment Other goods and services Total P15 - BRH Travel Equipment Other goods and services	 6.300 20.400 Cost (€) 14.100 0 26.000 40.100 Cost (€) 7.200 0 26.900 	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication and dissemination materials; data purchase; service to organize meetings/labs and consortium meetings; social media expert; fee for experts speakers invited to take part at events/labs; audit certificate; Justification participation at KOM, Intermediate and closure consortium meetings, labs and events data purchase; cost for translation, for editing and printing communication materials; service to organize local and consortium meetings and ensure logistic supports; fee for experts speakers invited to take part at events; audit certificate
Other goods and services Total P14 - SLEAN Travel Equipment Other goods and services Total P15 - BRH Travel Equipment Other goods and services	 6.300 20.400 Cost (€) 14.100 0 26.000 40.100 Cost (€) 7.200 0 26.900 34.100 	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication and dissemination materials; data purchase; service to organize meetings/labs and consortium meetings; social media expert; fee for experts speakers invited to take part at events/labs; audit certificate; Justification participation at KOM, Intermediate and closure consortium meetings, labs and events data purchase; cost for translation, for editing and printing communication materials; service to organize local and consortium meetings and ensure logistic supports; fee for experts speakers invited to take part at events; audit certificate
Other goods and services Total P14 - SLEAN Equipment Other goods and services Total P15 - BRH Travel Equipment Other goods and services Total P16 - TTZ	 6.300 20.400 Cost (€) 14.100 0 26.000 40.100 Cost (€) 7.200 0 26.900 34.100 Cost (€) 	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication and dissemination materials; data purchase; service to organize meetings/labs and consortium meetings; social media expert; fee for experts speakers invited to take part at events/labs; audit certificate; Justification participation at KOM, Intermediate and closure consortium meetings, labs and events data purchase; cost for translation, for editing and printing communication materials; service to organize local and consortium meetings and ensure logistic supports; fee for experts speakers invited to take part at events; audit certificate Justification
Other goods and services Total P14 - SLEAN Travel Equipment Other goods and services Total P15 - BRH Travel Equipment Other goods and services Total P16 - TTZ	 6.300 20.400 Cost (€) 14.100 0 26.000 40.100 Cost (€) 7.200 0 26.900 34.100 Cost (€) 7.200 	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication and dissemination materials; data purchase; service to organize meetings/labs and consortium meetings; social media expert; fee for experts speakers invited to take part at events/labs; audit certificate; Justification participation at KOM, Intermediate and closure consortium meetings, labs and events data purchase; cost for translation, for editing and printing communication materials; service to organize local and consortium meetings and ensure logistic supports; fee for experts speakers invited to take part at events; audit certificate Justification participation at KOM. Intermediate and closure consortium meetings partice to organize local and consortium meetings and ensure logistic supports; fee for experts speakers invited to take part at events; audit certificate
Other goods and services Total P14 - SLEAN Equipment Other goods and services Total P15 - BRH Travel Equipment Other goods and services Total P16 - TTZ	 6.300 20.400 Cost (€) 14.100 0 26.000 40.100 Cost (€) 7.200 0 26.900 34.100 Cost (€) 7.200 0 	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication and dissemination materials; data purchase; service to organize meetings/labs and consortium meetings; social media expert; fee for experts speakers invited to take part at events/labs; audit certificate; Justification participation at KOM, Intermediate and closure consortium meetings, labs and events data purchase; cost for translation, for editing and printing communication materials; service to organize local and consortium meetings and ensure logistic supports; fee for experts speakers invited to take part at events; audit certificate Justification participation at KOM, Intermediate and closure consortium meetings, labs and events
Other goods and services Total P14 - SLEAN Equipment Other goods and services Total P15 - BRH Travel Equipment Other goods and services Total P16 - TTZ Travel Equipment	 6.300 20.400 Cost (€) 14.100 0 26.000 40.100 Cost (€) 7.200 0 26.900 34.100 Cost (€) 7.200 0 	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication and dissemination materials; data purchase; service to organize meetings/labs and consortium meetings; social media expert; fee for experts speakers invited to take part at events/labs; audit certificate; Justification participation at KOM, Intermediate and closure consortium meetings, labs and events data purchase; cost for translation, for editing and printing communication materials; service to organize local and consortium meetings and ensure logistic supports; fee for experts speakers invited to take part at events; audit certificate Justification participation at KOM, Intermediate and closure consortium meetings, labs and events
Other goods and services Total P14 - SLEAN Equipment Other goods and services Total P15 - BRH Travel Equipment Other goods and services Total P16 - TTZ Travel Equipment Other goods and	 6.300 20.400 Cost (€) 14.100 0 26.000 40.100 Cost (€) 7.200 0 34.100 Cost (€) 7.200 0 17.000 	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication and dissemination materials; data purchase; service to organize meetings/labs and consortium meetings; social media expert; fee for experts speakers invited to take part at events/labs; audit certificate; Justification participation at KOM, Intermediate and closure consortium meetings, labs and events data purchase; cost for translation, for editing and printing communication materials; service to organize local and consortium meetings and ensure logistic supports; fee for experts speakers invited to take part at events; audit certificate Justification participation at KOM, Intermediate and closure consortium meetings, labs and events data purchase; cost for translation, for editing and printing communication materials; service to organize local and consortium meetings and ensure logistic supports; fee for experts speakers invited to take part at events; audit certificate Justification participation at KOM, Intermediate and closure consortium meetings, labs and events service for translation, for producing communication materials; service to organize meetings and ensure logistic supports for an events for for any participation for producing communication materials; service to organize
Other goods and services Total P14 - SLEAN Cravel Equipment Other goods and services Total P15 - BRH Travel Equipment Other goods and services Total P16 - TTZ Travel Equipment Other goods and services	 6.300 20.400 Cost (€) 14.100 0 26.000 40.100 Cost (€) 7.200 0 34.100 Cost (€) 7.200 0 17.000 	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication and dissemination materials; data purchase; service to organize meetings/labs and consortium meetings; social media expert; fee for experts speakers invited to take part at events/labs; audit certificate; Justification participation at KOM, Intermediate and closure consortium meetings, labs and events data purchase; cost for translation, for editing and printing communication materials; service to organize local and consortium meetings and ensure logistic supports; fee for experts speakers invited to take part at events; audit certificate Justification participation at KOM, Intermediate and closure consortium meetings, labs and events
Other goods and services Total P14 - SLEAN Equipment Other goods and services Total P15 - BRH Travel Equipment Other goods and services Total P16 - TTZ Travel Equipment Other goods and services	 6.300 20.400 Cost (€) 14.100 0 26.000 40.100 Cost (€) 7.200 0 26.900 34.100 Cost (€) 7.200 0 17.000 24.200 	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication and dissemination materials; data purchase; service to organize meetings/labs and consortium meetings; social media expert; fee for experts speakers invited to take part at events/labs; audit certificate; Justification participation at KOM, Intermediate and closure consortium meetings, labs and events data purchase; cost for translation, for editing and printing communication materials; service to organize local and consortium meetings and ensure logistic supports; fee for experts speakers invited to take part at events; audit certificate Justification participation at KOM, Intermediate and closure consortium meetings, labs and events data purchase; cost for translation, for editing and printing communication materials; service to organize local and consortium meetings and ensure logistic supports; fee for experts speakers invited to take part at events; audit certificate Justification participation at KOM, Intermediate and closure consortium meetings, labs and events service for translation, for producing communication materials; service to organize meetings and ensure logistic supports; fee for experts speakers invited to take part at events; audit certificate, service to support living labs organization
Other goods and services Total P14 - SLEAN Equipment Other goods and services Total P15 - BRH Travel Equipment Other goods and services Total P16 - TTZ Travel Equipment Other goods and services	 6.300 20.400 Cost (€) 14.100 0 26.000 40.100 Cost (€) 7.200 0 34.100 Cost (€) 7.200 0 17.000 24.200 	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication and dissemination materials; data purchase; service to organize meetings/labs and consortium meetings; social media expert; fee for experts speakers invited to take part at events/labs; audit certificate; Justification participation at KOM, Intermediate and closure consortium meetings, labs and events data purchase; cost for translation, for editing and printing communication materials; service to organize local and consortium meetings and ensure logistic supports; fee for experts speakers invited to take part at events; audit certificate Justification participation at KOM, Intermediate and closure consortium meetings, labs and events data purchase; cost for translation, for editing and printing communication materials; service to organize local and consortium meetings and ensure logistic supports; fee for experts speakers invited to take part at events; audit certificate Justification participation at KOM, Intermediate and closure consortium meetings, labs and events service for translation, for producing communication materials; service to organize meetings and ensure logistic supports; fee for experts speakers invited to take part at events; audit certificate, service to support living labs organization
Other goods and services Total P14 - SLEAN Equipment Other goods and services Total P15 - BRH Travel Equipment Other goods and services Total P16 - TTZ Travel Equipment Other goods and services	 6.300 20.400 Cost (€) 14.100 0 26.000 40.100 Cost (€) 7.200 0 34.100 Cost (€) 7.200 0 17.000 24.200 Cost (€) 7.200 	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication and dissemination materials; data purchase; service to organize meetings/labs and consortium meetings; social media expert; fee for experts speakers invited to take part at events/labs; audit certificate; Justification participation at KOM, Intermediate and closure consortium meetings, labs and events data purchase; cost for translation, for editing and printing communication materials; service to organize local and consortium meetings and ensure logistic supports; fee for experts speakers invited to take part at events; audit certificate Justification participation at KOM, Intermediate and closure consortium meetings, labs and events data purchase; cost for translation, for editing and printing communication materials; service to organize local and consortium meetings and ensure logistic supports; fee for experts speakers invited to take part at events; audit certificate Justification participation at KOM, Intermediate and closure consortium meetings, labs and events service for translation, for producing communication materials; service to organize meetings and ensure logistic supports; fee for experts speakers invited to take part at events; audit certificate, service to support living labs organization

Equipment	0	
Other goods and		service for translation, for producing communication materials; service to organize
services	13.000	events; ; service to support living labs organization; fee for speakers invited to take part at
		events; audit certificate
Total	20.200	
P18 - OUAR	Cost (€)	Justification
Travel	7 200	participation at KOM, Intermediate and closure consortium meetings, labs and events
	7.200	
Equipment	0	
Other goods and	1 < 000	service for translation, for producing communication materials; service to
services	16.800	organize events; ; service to support living labs organization; fee for speakers
Total	24.000	invited to take part at events; aucht certificate
	24.000	T
P19 - SINNO	COST (€)	Justification
I ravel	12.000	participation at consortium meetings and events
Equipment	0	andit aastifiaata
Other goods and	2.800	
Total	14 800	
	Cost(f)	Instification
	12000	Justification participation at KOM Intermediate and closum consortium meetings labs and events
Fauinment	0	
Other goods and	0	service for translation for producing communication materials: service to organize
services	21.000	events and to support living labs organization: data purchase: audit certificate
Total	33.000	events and to support itving nots organization, data parenase, addit certificate
D21 WIT	Cost(f)	Instification
Travel	14 100	participation at consortium meetings and events
Fauinment	0	participation at consortium meetings and events
Other goods and	0	
Ulher goods and		service for translation for producing communication materials, service to organize
other goods and services	9.200	events and to support living labs organization; data purchase; audit certificate
Sther goods and services Total	9.200 23.300	events and to support living labs organization; data purchase; audit certificate
Total	9.200 23.300 Cost (€)	events and to support living labs organization; data purchase; audit certificate
P22 - MATIS Travel	9.200 23.300 Cost (€) 7.200	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events
P22 - MATIS Travel Equipment	9.200 23.300 Cost (€) 7.200 0	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events
Other goods and services Total P22 - MATIS Travel Equipment Other goods and	9.200 23.300 Cost (€) 7.200 0	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication materials; service to organize
Other goods and services Total P22 - MATIS Travel Equipment Other goods and services	9.200 23.300 Cost (€) 7.200 0 17.000	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate
Other goods and services Total P22 - MATIS Travel Equipment Other goods and services Total	9.200 23.300 Cost (€) 7.200 0 17.000 24.200	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate
Other goods and services Total P22 - MATIS Travel Equipment Other goods and services Total P23 - FFI	9.200 23.300 Cost (€) 7.200 0 17.000 24.200 Cost (€)	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification
Other goods and services Total P22 - MATIS Travel Equipment Other goods and services Total P23 - FFI Travel	9.200 23.300 7.200 0 17.000 24.200 Cost (€) 7.200	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at KOM, Intermediate and closure consortium meetings,
Other goods and services Total P22 - MATIS Travel Equipment Other goods and services Total P23 - FFI Travel	9.200 23.300 Cost (€) 7.200 0 17.000 24.200 Cost (€) 7.200	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at KOM, Intermediate and closure consortium meetings, labs and events
Other goods and services Total P22 - MATIS Travel Equipment Other goods and services Total P23 - FFI Travel Equipment	9.200 23.300 Cost (€) 7.200 0 17.000 24.200 Cost (€) 7.200 0	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at KOM, Intermediate and closure consortium meetings, labs and events
Other goods and services Total P22 - MATIS Travel Equipment Other goods and services Total P23 - FFI Travel Equipment Other goods and services Total P23 - FFI Cother goods and services Other goods and services	9.200 23.300 Cost (€) 7.200 0 17.000 24.200 Cost (€) 7.200 0 15.200	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at KOM, Intermediate and closure consortium meetings, labs and events service for translation, for producing communication materials; service to organize
Other goods and services Total P22 - MATIS Travel Equipment Other goods and services Total P23 - FFI Travel Equipment Other goods and services Total P23 - FFI Travel Other goods and services	9.200 23.300 Cost (€) 7.200 0 17.000 24.200 Cost (€) 7.200 0 15.200 22.400	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at KOM, Intermediate and closure consortium meetings, labs and events service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate
Other goods and services Total P22 - MATIS Travel Equipment Other goods and services Total P23 - FFI Travel Equipment Other goods and services Total P23 - FFI Travel Other goods and services Total	9.200 23.300 Cost (€) 7.200 0 17.000 24.200 Cost (€) 7.200 0 15.200 22.400	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at KOM, Intermediate and closure consortium meetings, labs and events service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate
Other goods and services Total P22 - MATIS Travel Equipment Other goods and services Total P23 - FFI Travel Equipment Other goods and services Total P23 - FFI Travel Other goods and services Total P24 - VPR	9.200 23.300 Cost (€) 7.200 0 17.000 24.200 Cost (€) 7.200 0 15.200 22.400 Cost (€)	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at consortium meetings and events service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at KOM, Intermediate and closure consortium meetings, labs and events service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate Justification participation at KOM, Intermediate and closure consortium meetings, labs and events service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate
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Other goods and	24.400	service for translation, for producing communication materials; service to organize
services	20,500	events and to support living labs organization; data purchase; audit certificate
l otal	38.500	
P26 - GGP	Cost (€)	Justification
	7.200	labs and events
Equipment	0	
Other goods and	19.300	service for translation, for producing communication materials; service to organize
services Total	26 500	events and to support living labs organization; data purchase; audit certificate
P27 - ACET	Cost(f)	Instification
Travel	7.200	participation at KOM, Intermediate and closure consortium meetings, labs and
Equipment	0	
Other goods and services	20.300	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate
Total	27.500	
P28 - IASI	Cost (€)	Justification
Travel	7.200	participation at KOM, Intermediate and closure consortium meetings, labs and events
Equipment	0	
Other goods and services	26.000	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate
Total	33.200	
P29 - ARFI	Cost (€)	Justification
Travel	7.200	participation at KOM, Intermediate and closure consortium meetings, labs and events
Equipment	0	
Other goods and services	27.500	service for translation, for producing communication materials; service to organize events and to support living labs organization; data purchase; audit certificate
Total	34.700	
P30 - ICTM	Cost (€)	Justification
	7.200	events
Equipment	0	sorvice for translation for producing communication materials, service to organize events and
Other goods and services	8.800	to support living labs organization; data purchase; audit certificate
Total	16.000	
P31 - CORR	Cost (€)	Justification
Travel	14.100	participation at consortium meetings and events
Equipment	0	
Other goods and services	18.300	events and to support living labs organization; data purchase; audit certificate
Total	32.400	
P32 - VIZ	Cost (€)	Justification
Travel	7.200	participation at KOM, Intermediate and closure consortium meetings, labs and events
Equipment	36.000	purchase of smart green vehicles (depreciation rate) for the purpose of improving the system of urban distribution of food and food reuse;
Other goods and services		cost for translation; service for producing communication materials; support and
	31.800	service for meetings/labs organization, fee for expert speakers taking part at dissemination and awareness raising event, cost for room rent necessary for
	75.000	training and awareness raising events;
Total	/5.000	
P33 - IVM	Cost (€)	JUSTIFICATION
ravo	14 100	participation at consortium meetings and events

21.000 papers: service to organize events and to support living labs organization; data participation at KOM. Intermediate and closure consortium meetings, labs and events P34 - MOMS Cost (C) P34 - MOMS Tareet 7.200 participation at KOM. Intermediate and closure consortium meetings, labs and events Cother goods and services service for translation, for producing communication materials, service to organize events and to support hiving labs organization; data parchase; andit certificate P35 - IVIN Cost (C) Justification Participation at KOM. Intermediate and closure consortium meetings, labs and events service for translation, for producing communication materials and open access papers; service to organize events and to support hiving labs organization; data parchase; andit certificate; certificat	Other goods and services		service for translation, for producing communication materials and open access
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