Urban food system transformation in the context of

FOOD 2030

Current practice & outlook towards 2030

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Urban food system transformation in the context of Food 2030 – current practice and outlook towards 2030

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Author
Daniela LÜTH

Editors
Karen FABBRI
Jasmina VANDRICH

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Urban food system transformation in the context of Food 2030

This report on urban food system transformation reflects on the future of sustainable food systems in line with the priorities of the Food 2030 initiative. It seeks to share good practices and to serve as inspiration for other urban areas wishing to transform their food systems.

The report is based on a survey of 22 European urban food system transformation projects, in-depth interviews, and a participatory workshop with representatives of some 25 European projects and networks. The workshop included exchanges of lessons learned and best practices and discussion of priorities and visions for the future.

The report starts by presenting relevant concepts and policies, followed by an outline of urban food systems in the context of resilience and an overview of EU-funded projects and their geographical distribution. The report closes with lessons learned from projects and an outlook to next steps, including outreach beyond the projects' lifetimes.

1. CONTEXT

1.1. DEFINITION OF CONCEPTS

Food is considered a commodity as well as a human right (FAO, 2023). It is the product of complex food systems. A system and its purpose in general can be defined as 'an integrated whole whose essential properties arise from the relationships between its parts …'. Under food systems we consider all sectors, stakeholders, organisations and disciplines related to food, from primary production, food processing, distribution and retailing to food services, consumption and waste, as well as their interlinked value-added activities (FAO, 2018). Systemic thinking is crucial to understand food systems and address inherently complex problems. By adopting a systemic approach our complex food system can be transformed into 'future-proof' systems (European Commission, 2020a). Food systems must be sustainable, resilient, inclusive, diverse and competitive.

Healthy food. © Ella Olsson, 2023. Source: pexels.com

Figure 1.1 is a graphical illustration of a food system

R&I FOR FUTURE PROOFING FOOD SYSTEMS

Source: European Commission, 2023

Transformative processes are highly relevant for **urban food systems**, since nearly 80 % of all the food produced in the world is consumed in urban areas (EAT, 2022). Three in four EU citizens live in cities, towns or suburbs (Eurostat, 2020). Cities and their inhabitants represent a force for change, notably in terms of the choices cities make about procurement, managing food loss and waste, and designing their food environment and in terms of consumer behaviour and people's relationship with food and food culture. Numerous novel practices as part of innovative food systems are tested at a local level in cities and show potential for being scaled up or further disseminated into new areas.

The concept of **place-based approaches** is one means of providing local solutions to global problems. Place-based approaches are socially constructed, work at a range of scales and can extend beyond the confines of a city or community. Hence, they can be relevant to urban, peri-urban and rural settings. A place-based approach has proven to be beneficial in understanding local experiences and realities in connection with global change (Sonnino & Milbourne, 2022). It can transform food systems by using the transformative potential of smaller sites while connecting urban and rural areas

(European Commission, 2022a), that is, ensuring that the 'city–region' dynamic produces desirable outcomes (Sonnino & Milbourne, 2022).

In this report, we focus on the concept of **urban food system transformation**. The term 'transformation' is understood as large-scale and long-term global environmental and social change, and in this case as a facilitator for making food systems more sustainable.

> Food system transformation can be defined as 'a process of fundamental change in the structural, functional and relational aspects of the food system that leads to more equitable relationships and more benign patterns of interactions and outcomes' (Sonnino & Milbourne, 2022).

Some cities have been shown to be agile, acting as **lighthouses** and took a leading role by showing how change can take place. In cities, environmental goals can be combined with social goals by bringing citizens from different social groups together and, in doing so, bringing systems thinking to life (Raworth, 2018). Cities have begun to play a key role in enhancing participatory governance structures using a multi-actor approach (Mattioni, Milbourne, & Sonnino, 2022). National governments should promote food system transformation beyond local areas to create cohesion and connect the various local initiatives. They have more capacity to invest resources in the food system infrastructure, which is vital to scale up successful practices and enhance the connection between rural and urban areas (Sonnino, 2021).

1.2. GLOBAL CHALLENGES AND GLOBAL POLICY CONTEXT

Environmental challenges such as climate change, biodiversity loss, pollution, and water and resource scarcity are putting food systems all over the world under increasing pressure. Recent crises such as COVID-19 and the unprovoked Russian invasion of Ukraine have put further pressure on food systems.

Responding to the global challenges, European food policies have shifted from being predominantly focused on increasing agricultural productivity and efficiency towards a more holistic approach addressing a wider range of social and environmental concerns, including measures to strengthen the future resilience of food systems, and considering the contribution sustainable food systems can make to mitigate climate change.

At a global level, the relevance of urban food systems is also underlined by the Coalition on Sustainable and Inclusive Urban Food Systems, one of the 28 coalitions that emerged from the United Nations Food Systems Summit in 2021 (UNFSS) (United Nations 2021b; United Nations 2022). The summit set the stage for global

food system transformation to help achieve the Sustainable Development Goals by 2030[1] and defined five action tracks[2] complemented by four cross-cutting levers of change[3] deemed essential to meet the summit's objectives. Connected to these action tracks, initiatives, alliances and coalitions provide specific support to countries, including on urban areas and urban food systems (United Nations, 2021c). The Coalition on Sustainable and Inclusive Urban Food Systems aims to facilitate coherent and coordinated engagement, action and governance between national and local governments, while building on the relationships and expertise of all food system stakeholders (United Nations, 2021a). Key objectives of the coalition include creating a space for dialogue among stakeholders at all levels on priority actions for urban food system transformation; strengthening and facilitating knowledge exchange among key stakeholders; engaging with various sectors beyond governments at different levels (including civil society, private sector and non-governmental organisations); and mobilising human and financial resources to support the capacities of urban administrations to integrate food systems into urban policies, planning and investments (UNFSS, 2022). Research and innovation are key elements in uncovering the potential for food system transformations, as outlined in European policy initiatives.

1.3. EU POLICY CONTEXT

The European Green Deal[4] aims to transform the EU into a modern, resource-efficient and competitive economy with net zero emissions of greenhouse gases by 2050. It is an overarching policy setting out the blueprint for this transformational change, including changes in (European) food systems.

The farm-to-fork strategy[5] (and the biodiversity strategy[6]) is one of the key instruments supporting the delivery of the European Green Deal, as it is paving the way to formulating a more sustainable food policy. The farm-to-fork strategy aims to accelerate our transformation to sustainable food systems and ensure that everyone has access to sufficient safe, nutritious and sustainable food. The transformation of food systems implies making improvements to create sustainable systems that support the Green Deal's ambitions. In doing so, it aims to ensure a neutral or positive environmental impact and mitigate climate change and adapt to its impacts while reversing the loss of biodiversity. Lastly, it aims to preserve the affordability of food while generating fairer economic returns, fostering sustainable competitiveness in the EU supply sector and promoting fair trade. One of the flagship initiatives of the farm-to-fork strategy is the proposal for a legislative framework for sustainable food systems. Its goal is to accelerate the transition to sustainable food systems by having as its core objectives the promotion of policy coherence at EU

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[1] The relevant Sustainable Development Goals relevant are 1 No Poverty, 2 Zero Hunger, 3 Good Health and Well-being, 8 Decent Work and Economic Growth, 9 Industry, Innovation and Infrastructure, 11 Sustainable Cities and Communities, 12 Responsible Production and Consumption and 13 Climate Action.

[2] The UNFSS action tracks are (1) Ensure access to safe and nutritious food for all, (2) Shift to sustainable consumption patterns, (3) Boost nature-positive production, (4) Advance equitable livelihoods, and (5) Build resilience to vulnerabilities, shocks and stress.

[3] The levers of change are gender, human, rights, finance and innovation (https://www.un.org/en/food-systems-summit/levers-of-change).

[4] https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

[5] https://food.ec.europa.eu/horizontal-topics/farm-fork-strategy_en#Strategy

[6] The EU biodiversity strategy for 2030 is a comprehensive, ambitious and long-term plan to protect nature and reverse the degradation of ecosystems. The strategy aims to put Europe's biodiversity on a path to recovery by 2030.

and national levels, mainstreaming[7] sustainability into all food-related policies and strengthening the resilience of food systems. The legislative proposal was subject to an open public consultation and an impact assessment and is foreseen to be adopted by the European Commission by the end of 2023[8].

Food 2030 is the EU's research and innovation (R&I) policy to support food system transformation. Food 2030 calls for a systemic approach whereby R&I policy and projects should seek to achieve the four overarching priorities shown in Figure 1.2. This systems thinking fed into the development of the farm-to-fork strategy, outlined above, and complements its ambitions.

Figure 1.2 Food 2030 priorities

Nutrition	**Climate**	**Circularity**	**Communities**
Focuses on nutrition for sustainable and healthy diets	Focuses on smart and environmentally sustainable food systems, which ensure that natural resources are managed responsibly so they are available for future generations	Focuses on circular and resource-efficient food systems. An area closely connected is reducing food waste and inputs (water, energy)	Focuses on innovation through empowerment of communities through the development of healthy innovation ecosystems that support new business models and the delivery of solutions for the social good and/or have market potential that benefits society

To this end, Food 2030 targets 10 pathways for action (European Commission, 2020c) representing key levers of change where R&I can have deep and multiple impacts. One of these is the urban food systems transformation pathway, which aims to apply R&I to drive **urban food system transformation** by improving strategic thinking, capacity building, multi-actor engagement, understanding, modelling and monitoring of food system transformation. It enforces science-backed, multi-actor governance processes, establishes systemic frameworks for action and reinforces the capacity of cities as innovation ecosystems and agents of change[9]. While all 10 pathways are interconnected, particularly strong links are visible between urban food systems and the pathways on governance and system change and on food waste and resource efficiency.

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[7] Ideas or activities that are shared by most people and regarded as normal or conventional.
[8] https://food.ec.europa.eu/horizontal-topics/farm-fork-strategy/legislative-framework_en
[9] Horizon Europe 2021/2022 work programme and Horizon Europe 2023/2024 work programme (https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/how-to-participate/reference-documents;programCode=HORIZON).

1.4. RESEARCH AND INNOVATION RESPONSE

R&I acts as a key driver in accelerating the transition to sustainable, healthy, inclusive and resilient food systems from primary production to consumption. R&I policy can mobilise a wide diversity of actors across disciplines, sectors and countries to increase our knowledge, develop impactful solutions, help overcome barriers and lock-ins, de-risk investments and uncover new market opportunities relevant to safeguarding food security and building the resilience of food systems at global and local levels. The EU is supporting R&I investments via its Horizon Europe programme, the successor to Horizon 2020, which is the world's biggest public R&I programme with a budget of EUR 95 billion for 2021–2027. Within Horizon Europe Programme, around EUR 9 billion will be invested in accelerating the ecological transition required by the Green Deal.

Horizon 2020 and Horizon Europe have supported food system transformation with an overall budget of around EUR 700 million. Horizon Europe alone accounts for a total investment of EUR 457 million[10].

This report showcases EU-funded projects on urban food system transformation. These projects bring relevant policy initiatives to life (European Commission, 2022a) by contributing to increasing the sustainability and resilience of food systems. Food system transformation requires putting academic thinking into practice by enhancing change on the ground through a place-based approach (Sonnino & Milbourne, 2022), which is illustrated by the projects funded.

[10] Investment amounts based on assessment by Food 2030 pathway.

2. FOOD SYSTEMS & RESILIENCE

2.1. RESILIENCE: MAIN ACTIONS AND PRIORITIES FROM THE POLICY PERSPECTIVE

Recent crises have demonstrated the need for resilience in various areas, including food. Resilience is the cornerstone for enabling the transition to sustainable food systems in an inclusive manner. There is no single definition for urban resilience. For the purposes of this report, 'urban resilience refers to a multidimensional dynamic process among stakeholders aiming to prepare and adapt the urban environment to absorb and recover from external and internal disturbances and reduce urban vulnerabilities' (Kapucu, Ge, Martin, & Williamson, 2021). Resilience needs diversity and built-in redundancy in order to offer different options in the event of shocks. At the same time, there needs to be a balance between efficiency and resilience to have both vital and robust systems (Raworth, 2018).

Resilience can be broken down into six dimensions, each with certain stakeholders that ensure urban resilience (Figure 2.1). Urban resilience is only as strong as its weakest dimension and requires a systemic approach and shared responsibility, enforced via networks and partnerships.

Figure 2.1 Dimensions of resilience

Dimension	Relates to:
ENVIRONMENTAL	The environmental component to ensure sustainability
INFRASTRUCTURAL	The built environment
ECONOMIC	The economic dynamism
CULTURAL	The historical and cultural characteristics influencing behaviour
SOCIAL	Defining social networks and communities
GOVERNANCE	Cities being political entities with a specific local governance autonomy and capacity to connect vertically and horizontally

Source: Kapucu, Ge, Martin, & Williamson, 2021

Several lines of European work contribute to enforcing resilience in food systems. With a similar objective, the Standing Committee on Agricultural Research[11] foresight group underlined the need for resilience in three key areas of transition, based on its fifth

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[11] https://scar-europe.org

foresight exercise, that have since been confirmed as increasingly important in its crisis response 'Food security in times of crises'. The key transitions are 1) healthy, sustainable diets for all, 2) towards 'circular' food supply and 3) towards greater diversity. All three are relevant for urban food system transformation to overcome current and potential future crises (European Commission, 2020b).

In March 2022, the European Commission published a communication on safeguarding food security and reinforcing the resilience of food systems. The communication highlights that sustainability and resilience remain focus areas of food systems in the medium and long term. It also underlines the importance of the farm-to-fork strategy and R&I for mitigating pressures on food systems and reinforcing resilience (European Commission, 2022b). The Commission subsequently published a factsheet on the communication to showcase how R&I supports the safeguarding of food security and reinforces the resilience of food systems (European Commission, 2022b).

The emergence of 'wicked problems'[12] connected with food systems and inertia at the national level have turned urban areas into the optimal playground for policy innovation and experimentation (Artioli, Acuto, & McArthur, 2017). Several leverage points to enhance resilience that are in line with policy objectives have been identified by stakeholders on the ground[13].

A contingency plan at the municipality level with specific roles and defined relations with private actors can increase resilience when faced with certain shocks to the system. In November 2021, the Commission adopted a contingency plan for food supply and food security in times of crisis (European Commission, 2021a). While the plan acknowledges the overall resilience of the EU food supply chain, it also identifies inherent shortcomings and puts forward actions to improve preparedness at the EU level. One suggested mechanism is to collaborate across the private and public sectors to enhance preparedness and resilience in times of crises, to quickly identify the signs of an upcoming crisis and to coordinate the response at all levels. To this end, the Commission has established a European food security crisis preparedness and response mechanism by gathering food supply chain experts to exchange data and good practices and ultimately strengthen coordination.

Food policies at the city level can be a key element in enhancing resilience. The recent experience of the COVID-19 pandemic and its consequences for food systems has further highlighted how food policies can play a key role in mitigating the most severe consequences for vulnerable groups. Lessons learned can be drawn from the experience of the Milan Urban Food Policy Pact[14], an agreement among the mayors of more than 250 cities worldwide on implementing food policies, as follows:

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[12] Wicked problems: "transcend disciplinary, organisational, institutional, and geo-political boundaries, some even argue food systems are super wicked problems: time is running out, no central authority, those seeking to solve the problem are also causing it, policies discount the future irrationally" (John Ingram, 2022, ETP Food4Life Workshop).
[13] Responses to the following question in the survey 'How can cities and towns improve their food systems resilience to crises?' from EU-funded projects on urban food system transformation link to relevant policy actions.
[14] https://www.milanurbanfoodpolicypact.org

- the importance of collaboration between different stakeholders, including local authorities, research bodies, non-governmental organisations, businesses and the community to create positive innovations;
- the need for a long-term vision and political commitment to achieve food policy goals for a lasting impact;
- the importance of education and awareness-raising initiatives in promoting good practices and the direct involvement of citizens in making healthier and more sustainable food choices;
- the importance of data collection and impact monitoring to assess the effectiveness of food policies and to make any changes or improvements, starting from the local level;
- the role of effective governance in promoting a systemic approach, as it allows actions to be coordinated and ensures that goals are met.

A stronger focus on **short supply chains** and a meaningful balance between short and long supply chains can contribute to building resilience (European Commission, 2022b), especially in urban food systems. Sustainable production and consumption need to go hand in hand. One well-known angle is to support **local production** of a variety of fruit and vegetables and in doing so enhance business opportunities for small-scale farmers. **Local consumption** can further be encouraged through food procurement schemes in schools as well as local offerings beyond schools. This includes encouraging consumption of seasonal and locally sourced food, cooking with local ingredients and correcting unhealthy dietary patterns. Nudging consumers towards healthy and sustainable choices is an important part of enhancing resilience[15]. The theory of **doughnut economics** draws on the power of nudging citizens to adopt the right behaviour. Digital technologies can make nudging smarter and cheaper than before (Raworth, 2018). Two relevant examples of EU-funded projects are Strength2Food, which stimulated short supply chains by improving public sector food procurement, especially for schools, and SchoolFood4Change, which promotes sustainable, healthy and enjoyable school meals for children, while at the same time preserving planetary resources[16].

There is potential for enhancing resilience by reducing food losses and waste. In the EU, around 88 million tonnes of food waste are generated annually, primarily by households, with the associated costs estimated at EUR 143 billion (FUSIONS, 2016). In 2021 alone, estimates indicate that the amount of food wasted is higher than the amount of food the EU imports (Feedback EU, 2022). Food waste depletes natural resources and creates ethical concerns. The EU is committed to meeting the Sustainable Development Goal target of halving per capita food waste[17] at retail and consumer levels by 2030 and reducing food losses along the food production and supply chains (European Commission, 2022c). A range of projects funded under Horizon 2020 and Horizon Europe have contributed to reducing food loss and waste with a total investment of EUR 67 million. Educating consumers to prevent food waste, including capacity and skill building, as well as fostering appropriate changes

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[15] The Strength2Food project presents some evidence on this from working with a retailer to promote consumption of local foods: (Brecic, Sincic Coric, A., & Gorton, 2021).
[16] https://schoolfood4change.eu/about
[17] https://www.milanurbanfoodpolicypact.org Sustainable Development Goal 12.3 (https://www.fao.org/sustainable-development-goals/indicators/1231/en/).

in consumer behaviour and social norms are crucial to combat food waste, especially in urban areas. In this context, two Horizon Europe projects have been recently funded to support evidence-based decision making to change social norms reducing food waste (CHORIZO and ToNoWaste). Technology can also play a role with information technology solutions helping to distribute food that otherwise would go to waste. One example is the Short Chain Platform for farmers which will be developed in the framework of the EU funded project Sisters. The platform aims to help farmers sell their discarded produce and in doing so favours local economies and local farmers' incomes, using IT solutions to avoid food losses and breaking down barriers between primary sectors, while working across the whole EU.

Moving towards a **circular economy** is connected to using and reducing food waste at a local level, such as by recovering valuable nutrients by using food waste as fertiliser. circwaste contributes to implementing a national waste management plan for Finland and directing the country towards a circular economy by avoiding food waste and boosting nutrient recycling.

In general, technology has a key role to play in enhancing resilience. Food 2030 identified 'food and data' as a key pathway for action that focuses on the role of data, technology and digitalisation in the food sector to contribute to all Food 2030 priorities. Recent EU-funded projects show how to enhance resilience via data solutions to improve transparency and the economy of food systems. TITAN will provide transparency-related solutions for transforming the food system. Examples are enhancing transparency in agri-food businesses with a focus on small and medium-sized enterprises; improving food choices by providing more transparent information to the consumer in terms of food safety and the authenticity of products. Data4Food2030 will define pathways towards a fair, inclusive and innovative data economy for sustainable food systems. ZeroW will demonstrate innovations to tackle food loss and waste in nine 'living labs', with the potential to bring about fundamental changes in terms of both social (values, regulations, attitudes) and technical (infrastructure, technology, tools, processes) dimensions.

2.2. URBAN–RURAL / REGIONAL LINKAGES: CURRENT LEVEL OF INTERACTION AND CONTRIBUTION TO RESILIENCE

Urban areas are strongly connected to other areas. They connect on horizontal (rural vs urban areas), vertical (local vs regional vs national) and even global levels.

Achieving resilience in urban food systems needs collaboration across all levels of government and stakeholders (Kapucu, Ge, Martin, & Williamson, 2021) Strengthening **urban–rural connections** can provide powerful tools to enhance

resilience. An example is a territorialised food system in which cities link to the surrounding countryside, collaborate and enable strong rural–urban linkages with the food–energy–water–land nexus.

EU-funded urban food system transformation projects (22 in total) were surveyed and asked about their urban–rural connections. Half of the projects surveyed indicated that rural–urban connections are leveraged[18] (see Figure 2.2 for detailed responses). FoodCLIC, for example, focuses on rural–urban connections and aims to develop integrated urban food policies and develop sustainability priorities, spatial linkages, social inclusion initiatives and sectoral connections to transform food systems in city-regions.

Cities have only limited leverage, and connecting with initiatives at regional, national and global levels can be much more powerful in driving food system transformation.

Figure 2.2 Connections and synergies with rural areas

We do not have any connections to rural areas in our project	We leverage rural-urban connections partly, but not in a systematic way	We leverage rural-urban connections systematically, but it is not a focus of the project	We leverage rural-urban connections and it is a main focus of the project	None of the above
9%	23%	27%	27%	14%
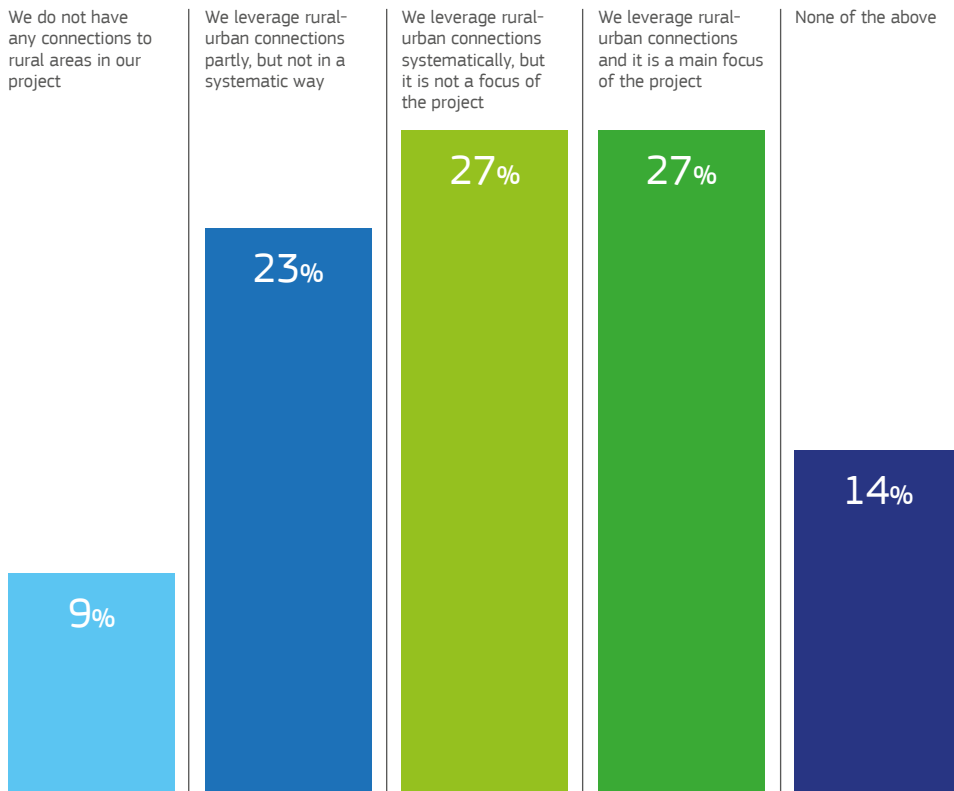
[18] Question: Indicate how your project connects with rural areas/exploits synergies between rural and urban/peri-urban areas.

Hence, transforming food systems for health, sustainability and inclusion motives requires robust, system-wide changes at all governance levels that reinforce each other (European Commission, 2020a).

Interaction at different government levels is promising (see Figure 2.3). However, the lack of interaction becomes more apparent at higher levels. Only two in five of the projects interact with initiatives at national level and a little over one in four interact with initiatives at European level and beyond[19]. These interactions are necessary for scaling up local initiatives, particularly their connections with other local, regional and national levels of government.

Projects that interact at different government levels (e.g. Cities2030, circwaste, CLEVERFOOD, FoodCLIC, FOODRUS, RURALIZATION, SchoolFood4Change, SMARTCHAIN, Strength2Food) can serve as lighthouses for how to connect with national governments.

Figure 2.3 Support and interaction at different scales

| | 5% | 5% | 69% | 72% | 41% | 27% | 27% | 37% |
| Not/very little affiliated with any other level of administration | Not/very little affiliated with any other projects/initiatives | Interact closely with the city administration | Interact closely with administration at regional level | Interact closely with administrations at national level | Interact closely with other projects and/or initiatives in Europe | Interact closely with initiatives outside of Europe | Other |

[19] Question: Indicate the support/interactions from/with the following administrative levels/other initiatives. Please indicate all that apply.

Alongside meaningful connections at different government levels, connections in R&I are crucial. At the European level, the revamped **European Research Area** (ERA) aims to create a single market, without borders, for research, innovation and technology across the EU in which countries come together and improve their research polices and systems. The ERA also aims to boost market uptake of R&I results (European Commission, 2021c). One of the ERA's key objectives, 'bringing science closer to citizens', is relevant for urban food system transformation, as place-based solutions should always be closely connected to society, including vulnerable people (European Commission, 2021b).

One of the networks providing support for making connections is **URBACT**, a European territorial cooperation programme that aims to foster sustainable integrated urban development in cities across Europe. URBACT's main goal is to enable cities to work together and develop integrated solutions to common urban challenges by networking, learning from one another's experiences, and identifying good practices. URBACT III has 83 networks, 8 of which so far are working on topics linked to sustainable food and urban agriculture, supporting cities to act[20].

Another example of leveraging different governance levels and connections is **EIT Food**[21]. This pan-European organisation ensures that policy becomes practice while providing better connections with industry and different stakeholders. EIT Food connects industries, citizens and universities at EU to local levels and even beyond (Africa and Canada). EIT Food is particularly relevant for innovations that need assistance in proofing, scaling and getting to the market (European Commission, 2022a).

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[20] URBACT is a cohesion policy instrument, co-financed by the European Regional Development Fund, the 27 Member States, Norway and Switzerland, URBACT - Homepage | urbact.eu
[21] https://www.eitfood.eu

3. EU-FUNDED PROJECTS

3.1. EU RESEARCH FUNDING OVERVIEW

Horizon 2020 was Europe's R&I programme for 2014–2020, which had a budget of nearly EUR 80 billion. In terms of the 22 projects surveyed, nearly two out of three were financed under Horizon 2020. More specifically, they fall under 'Societal Challenge 2' of the programme, which covers 'food security, sustainable agriculture and forestry, marine, maritime and inland water research and the bioeconomy'. Within this part of the programme, the Food 2030 impact pathway 'urban food system transformation' funded R&I projects amounting to EUR 55 million.

In September 2020, the Commission launched the **European Green Deal call** under Horizon 2020, with a budget of EUR 1 billion, which aims to deliver clear, tangible results in the short to medium term. More than 1 500 proposals were submitted in response to the 20 thematic topics of the call, and the European Commission is funding 73 projects.

Another funding mechanism is **LIFE**[22], a 30-year-old EU funding instrument for environment and climate action. It has so far co-financed more than 5 500 projects with four sub-programmes that are all relevant to urban food system transformation: 1) nature and biodiversity; 2) circular economy and quality of life; 3) climate change mitigation and adaptation; and 4) clean energy transition.

Horizon Europe, the successor to Horizon 2020, is the world's biggest public R&I programme with a budget of EUR 95 billion for 2021–2027. Around EUR 9 billion will be invested in accelerating the ecological transition required by the Green Deal. Cluster 6 of Horizon Europe, 'Food, bioeconomy, natural resources, agriculture and environment', aims to reduce agricultural degradation and to halt and reverse the decline of biodiversity on land and in inland waters and seas and to better manage natural resources through transformative change of the economy and society in both urban and rural areas. The pathway 'urban food system transformation' has earmarked a budget of EUR 21.4 million for the Horizon Europe work programme for 2021–2022 and another EUR 18 million for the Horizon Europe work programme for 2023–2024[23]. In cluster 6, eight partnerships are envisaged to support the achievement of EU priorities, such as the European Green Deal, and to deploy impact-driven R&I activities. They are included in the 49 partnerships driving green and digital transitions. One such partnership is the **Sustainable Food Systems Partnership for People, Planet and Climate**, which will complement Horizon Europe calls[24]. A new Coordination and Supporting action FOODPathS has been funded which conducts preparatory work for the partnership, in which each member is a network engaging and widening activities to shape the future SFS partnership.

[22] https://www.lifeis30.eu/wp-content/uploads/2022/02/LIFEis30-Informative-factsheet.pdf

[23] Horizon Europe 2021/2022 work programme and Horizon Europe 2023/2024 work programme (https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/how-to-participate/reference-documents;programCode=HORIZON)

[24] FOODpathS (https://www.foodpaths.eu) is a project supporting the creation of the Horizon Europe Sustainable Food Systems Partnership.

Projects funded under the EU's R&I programme are encouraged to make use of the multi-actor approach. For food system transformation, this implies including a wide diversity of food system actors, with particularly strong involvement of citizens and civil society. The multi-actor approach fosters social innovation and is recommended when the solution is at the socio-technical interface and requires social change, new social practices, social ownership or market uptake. This an important factor in fostering responsible R&I and is more than just widely disseminating the results of a project or listening to the views of a board of stakeholders.

To this end, **living labs** are a suitable means of making use of the multi-actor approach. Living labs are defined as 'user-centered, open innovation ecosystems based on a systematic user co-creation approach integrating research and innovation processes in real life communities and settings. ... Citizens are at the center of innovation and have thus shown the ability to better mold the opportunities ... to the specific needs and aspirations of local contexts, cultures, and creativity potentials' (TRANSIT, 2017).

Projects funded under the Food 2030 'urban food system transformation' pathway are encouraged to deliver across all four Food 2030 priorities: 1) nutrition, 2) climate, 3) circularity and 4) innovation through communities, as described in Chapter 1.

This report is mainly based on the experiences of EU-funded project staff. Project representatives were invited to share their views and learning via a survey followed by a workshop organised by the European Commission's Directorate-General for Research and Innovation and REA, in cooperation with a panel of experts from academia and from urban and international networks.

The first step required identifying projects linked to urban food system transformation. Horizon 2020 projects under the umbrella of the Food 2030 pathway 'urban food system transformation' and those linked to food waste in an urban context, as well as projects on that theme funded under the Green Deal call, LIFE and Horizon Europe programmes, were included. The result was that 22 projects, with an overall budget of around EUR 174 million, were selected to take part in the study.

The first stage of the study was a survey seeking to examine to what extent and how projects are delivering on the Food 2030 priorities. The questionnaire covered the main challenges, how these were tackled and the main achievements. Other topics covered were governance, cooperation, R&I needs and focus areas (see Annex 1 for questionnaire).

As a follow-up to the survey, project staff were invited to a participatory Cities 2030 workshop, held in June 2022. The main goals of the workshop were to facilitate

networking among urban food system transformation projects and to inspire and learn from each other while taking stock and identifying gaps to be addressed by future initiatives. Representatives of most of the projects surveyed joined the workshop, as did representatives of several additional projects, resulting in the participation of 25 urban food system transformation projects. The workshop started with an overview of the main highlights of the survey followed by a panel discussion with four project representatives to look at the survey results in depth. In breakout sessions participants discussed what was going well in their projects and what needs to be done differently or better. The workshop ended with a panel discussion with urban food system transformation experts on the relevance of and challenges for cities and the 'vision on food cities' and pitches from representatives of relevant initiatives to connect with (EIT Food[25], URBACT[26], Cities Mission[27] and the anticipated Horizon Europe Sustainable Food Systems Partnership[28]).

3.2. MAIN WORKSHOP TAKEAWAYS

The **main takeaways** from the workshop discussion were:

- the need for comprehensive analysis (data) to understand what is working and what is not (evidence-based studies);
- the need for concrete and visible solutions;
- that public procurement of food is a key element for change, trickling down to connected areas and people – in the case of schools to pupils and their parents;
- that multi-level integration and political commitment is key: a good example of multi-level integration is that cities work more closely with regions to enhance regional food resilience, while, for political commitment, there are some good examples of food policy priorities in Denmark and Scotland;
- that systems thinking needs to be enforced, for example to promote interconnectivity between urban and territorial policies (and enhance multi-level integration);
- learning from each other is very beneficial, across projects, but also to connect with good examples beyond Europe.

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[25] https://www.eitfood.eu
[26] https://urbact.eu
[27] https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe/climate-neutral-and-smart-cities_en
[28] https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/european-partnerships-horizon-europe/food-bioeconomy-natural-resources-agriculture-and-environment_en https://www.foodpaths.eu

3.3. URBAN FOOD SYSTEM PROJECTS – CONTRIBUTION TO FOOD 2030 PRIORITIES

Figure 3.1 shows the proportion of projects contributing to each of the Food 2030 priorities.

Nutrition for sustainable and healthy diets;

Climate and environment

Circularity and resource efficiency

Innovation through empowering communities

91%

55%

41%

36%
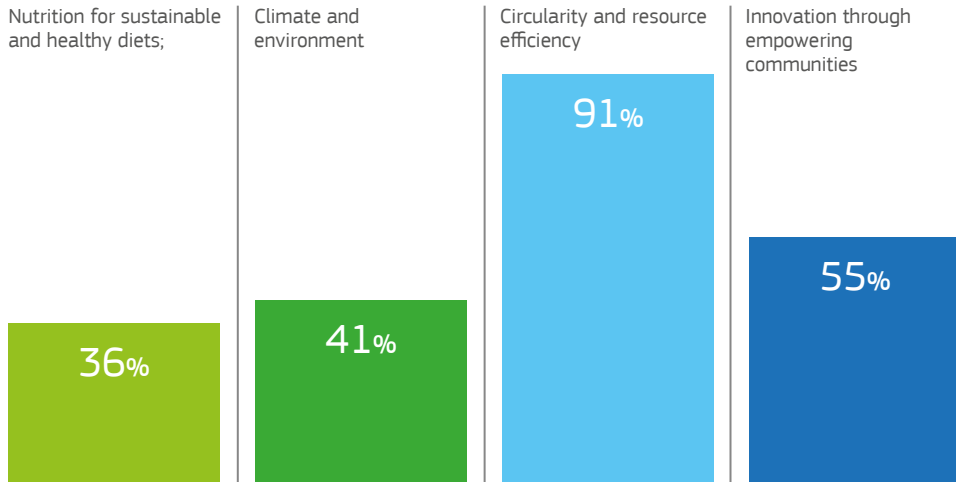
Figure 3.1 Food 2030 priorities: contribution of projects

PROJECT	Nutrition and sustainable and healthy diets	Climate and environment	Circularity and resource efficiency	Innovation through empowering communities
circwaste			●	
Cities2030	●		●	●
FoodCLIC	●	●		●
FoodE			●	●
FOODRUS			●	●
FOOD TRAILS	●	●	●	●
FUSILLI	●	●	●	●
DECISIVE			●	
HOOP			●	
InnoFoodAfrica	●		●	●
i-REXFO LIFE			●	
LIFE FOSTER			●	

RURALIZATION		●		●
SCALIBUR		●	●	
SchoolFood4Change	●	●	●	●
SiEUGreen	●		●	
SISTERS			●	
SMARTCHAIN		●	●	●
Strength2Food			●	
UNaLab		●	●	●
VALUEWASTE			●	
ZeroW	●	●	●	●

Taking each of the four Food 2030 priorities in turn, we will examine how projects contribute to the priorities in practice.

Eight projects contribute to the Food 2030 priority **nutrition and sustainable and healthy diets**. Changing the food environment to facilitate access to healthier diets is tackled by several projects. SchoolFood4Change and Cities2030 target healthier diets in school canteens while FoodCLIC aims to create food environments that empower citizens to access and choose healthier and more sustainable foods. Education is covered by the international project InnoFoodAfrica, which formulates nutritional recommendations considering regional aspects (urban, rural, sub-Saharan Africa, Europe), malnourished infants, obese urban adults, and crisis situations. FUSILLI promotes food quality and health training activities on consumption habits targeting different population segments. ZeroW designs recipes ensuring low food loss and waste, high nutritional scores and low environmental impact.

Nine projects contribute to the Food 2030 priority **climate and environment**. The priority is put into practice by taking a systems approach to positively change and measure the environmental impact at the city-region level (FoodCLIC), and on the rural/farming level (RURALIZATION, FUSILLI). Greenhouse gas emissions are reduced by valorising urban biowaste in added-value applications (SCALIBUR) or by reducing food loss and waste (ZeroW). Short supply chains (SMARTCHAIN), implementation of nature-based solutions (UNalab) and innovative procurement criteria for school meals (SchoolFood4Change) contribute to positive climate and environmental impacts.

Nearly all projects contribute to the Food 2030 priority **circularity and resource efficiency**, with eight projects contributing to only this priority. Half of the projects link their actions to reducing and re-using food loss and waste. Other actions are linked to circularity, for example implementing water storage to support the maintenance of vegetation using stored water during rainy seasons (UNalab) and interventions in school canteens to develop a more circular approach (FOOD TRAILS).

Another application is the development of bio-material solutions for crop side streams that cannot be used for feed to replace fossil fuel-based alternatives (InnoFoodAfrica).

Twelve projects contribute to the Food 2030 priority **innovation through empowering communities**. Projects support innovations in a participatory manner through, for example, living labs. ZeroW develops and tests innovations in nine living labs across Europe, adopting a systemic and multi-actor approach and involving all relevant stakeholders, food actors and consumers. UNalab establishes living labs that focus on nature-based solutions (NBS), implementation of innovative financing models for community-defined NBS, and development of an evidence base on NBS performance and impact to foster further innovation and decision support tools.

Only four projects contribute to all four priorities. A truly systemic approach is required to contribute to all four Food 2030 priorities. For example, FUSILLI works in several areas from healthy diets to farming practices, including reduction of food loss and waste, and innovation at the city level. ZeroW addresses food loss and waste in all four priorities, while SchoolFood4Change does so through its focus on school food procurement. This shows that, even if a project concentrates on a particular aspect of the food system, it can positively contribute to all four priorities.

3.4. PROJECT ACHIEVEMENTS

Most of the EU-funded projects included in this report have been ongoing for several years and three have ended already. Hence, project partners can look back and reflect on their achievements and what they are proud of, as shown in Table 3.2.

The responses fall into several categories, one of which is **collaboration and support** among the projects. Five projects (FoodShift2030, FoodE, FOOD TRAILS, FUSILLI, Cities2030) built a working group called the Food 2030 project family based on the need for developing common strategies for project results dissemination, advocacy and impact evaluation.

Outreach to regions is cited by a few projects as a particular success. For living labs to exploit their full potential, additional linkages from the regional to the national level are essential. In FoodCLIC a strong connection to the national government already exists; for example, the Netherlands has a network (food system taskforce) between the different ministries with the goal of creating integrated food policies. Many countries are aware of the need to connect regional and national levels, but progress and support varies.

Another aspect is **tangible solutions** such as monitoring systems, apps and platforms that have been developed. These are viable solutions that should be scaled up once the project concludes to enhance food system transformation.

Figure 3.2 Projects and their main achievements

PROJECT	① **What are you most proud of so far in the project?** ② **Main achievements of project**
FOOD TRAILS Building pathways towards Food 2030 urban food policies	① The activation of living labs on food in cities that are distinct in terms of developing their own food policy. The alignment between cities based on mapping needs and actors, the design of food policy actions and the definition of impact mapping systems. ② Eleven urban food policies, tools for sharing and replicating among cities and common indicators for impact evaluation.
CIRCWASTE Promotes efficient use of material flows, waste prevention and new waste and resource management concepts	① Natural resource centres produced a national food loss roadmap, developed sustainable donation processes together with actors and promoted farm-scale biogas production.
RURALIZATION Providing exciting opportunities for new generations to spark a process of ruralisation that promotes rural regeneration	① Reconciling research activity and knowledge and action needs close to the ground and local populations for territorial regeneration. ② Trend analysis, inventory of the (rural) dreams of young people, and 30 case studies of promising practices: innovative practices, market trends, legal and policy analysis.
HOOP supports 8 European cities and regions in developing large-scale UBCE initiatives by providing multidisciplinary project development assistance	① The cities and regions are very enthusiastic about developing new circular alternatives for food waste treatment. ② 16 urban circular bioeconomy projects identified, network of 40 cities and regions and 230 stakeholders (biowaste clubs) established, and 15 circular business models defined.
SCALIBUR Leading a revolution in biowaste recycling	① The development of new systems for the characterisation of organic matter in the container, the implementation of real pilots in cities, and obtaining real and high-value products. ② Sensors and other technical applications and industrial products, as well as a stakeholder platform.
FUSILLI 12 cities to develop urban food plans for an integrated and safe holistic transition towards healthy, sustainable, secure, inclusive and cost-efficient food systems	① The collaboration and willingness of stakeholders to embrace change. ② Roadmaps for 12 living labs, urban food plans, and short-term policies on, for example, community empowerment.

DECISIVE A Decentralised management Scheme for Innovative Valorisation of Urban Biowaste	**1** Having a restaurant manager explaining how he was proud to be part of a circular management of food production and food waste valorisation.
FOODRUS To create resilient food systems in Europe through circular solutions that prevent FLW	**1** Working with three different value chains towards a common objective, looking not only for individual benefits and cooperating with different stakeholders, including from research, administration, bank and civic organisations, through a co-creation process. Pilots are getting a sense of belonging to the project, and a channel for cooperating with the associated regions is being effectively put into practice. Technical solutions are being built considering three pilots with different needs. **2** To reduce FLW through social, ethical, financial, managerial, organisational and technological solutions; to create a reliable FLW quantification and monitoring system; to promote efficiency and long-term behavioural changes in the use of resources; to conduct a multi-criteria assessment to evaluate the impact of the strategies implemented; and to create a multi-actor alliance based on new sustainable and cooperative models and promoting the replicability of the strategies.
ZeroW To demonstrate the applicability of systemic innovations in addressing current food system's FLW lock-in effects and steer a just transition towards a near-zero FLW system	**1** Demonstrated enthusiasm and collaboration across 46 partners from 16 countries by working together to achieve the ambitious objectives of playing a key role in the transition of current food systems towards halving FLW by 2030 and reaching near-zero FLW by 2050. **2** Establish semantic interoperability through an FLW data space and provide collaborative business and governance models for data sharing; scale up and commercialise the FLW systemic innovation solutions and approach; define a 'just' transition pathway to near-zero FLW; and deliver policy recommendations.
SchoolFood4Change Shifting school meals and schools into a new paradigm by addressing public health and territorial, social and environmental resilience	**1** Including all the frontrunner cities in Europe; establishing new standards and concepts; and, most of all, working on real food system change through our multiple activities, in particular innovative tenders.
UNaLab To generate evidence of the benefits, cost-effectiveness, economic viability and replicability of NBS targeting climate change mitigation and adaptation, and sustainable water management	**1** The CRFS Observatory and the blockchain-based data-driven UFSE management platform (digital twin supply chain) providing solutions to building resilient food supply chains. **2** Establishing and enhancing existing CRFS policy and living labs and CRFS Cities2030 Observatory, and the single click CRFS platform.

Cities2030 To create a future proof and effective CRFS that enables dynamic management of complex interconnected sub-systems, generating circular models between cities and their peri-urban areas, by incorporating agents and relationships alongside the actual business network and supply chain	**1** The CRFS Observatory and the blockchain-based data-driven UFSE management platform (digital twin supply chain) providing solutions to building resilient food supply chains. **2** Establishing and enhancing existing CRFS policy and living labs and CRFS Cities2030 Observatory, and the single click CRFS platform.
SiEUGreen To enhance the EU-China cooperation in promoting urban agriculture for food security, resource efficiency and smart, resilient cities	**1** Exchange of technical know-how between Europe and China. **2** Five showcases (three in Europe and two in China) to demonstrate different types of technologies and experiences in urban agriculture, including on how domestic organic waste can be converted to biogas, compost and solid/liquid fertiliser, or improvements in cultivating techniques such as paper-based, hydroponics, aquaponics, and soil-based (compost or peat) systems.
LIFE FOSTER Tackle food waste through prevention solutions based on the circular economy approach	**2** The development of a vocational training model and training programmes that were delivered to: – 405 trainers and teachers in Italy, France, Spain and Malta – around 8 000 students – both young people and adults – distribution of a newsletter to 158 000 contacts – a manifesto for food waste prevention signed by 500 subscribers – nearly 47 000 food service professionals reached through events
SISTERS To reduce FWL in the main stages of the food value chain in Europe through innovations targeted to each link of the chain	**1** The systemic innovations that we will approach affect each of the links of the food value chain. **2** We will design, implement and promote the uptake of five innovative strategies, one at each stage of the food value chain, to systemically reduce FLW (by 27 % in the case studies and will reduce CO_2 emissions by around 20 % in the case studies).
Strength2Food Developing markets for quality foods and quantifying their economic, social and environmental outcomes	**1** Development of a set of tools for measuring the economic, social and environmental outcomes of food supply chains; improving school meal planning (nutrition, cost and take-up); improving the local economic and environmental impacts of public sector food procurement; developing educational resources for schools and a massive open online course on sustainable food choices; and applying tools and research evidence in a set of intervention pilot studies, working with industry and public administration partners. **2** Measured the economic, social and environmental impacts of organic, PDO/PGI short food supply chains and different models of public sector food procurement; and conducted six intervention studies on developing markets for quality foods.

InnoFoodAfrica African crops provide a nutrient-dense, gluten-free solution	**1** Comprehensive studies of African/European food consumption and African crop value chains and developed several food prototypes from traditional African crops.
VALUEWASTE Unlocking new value from urban biowaste by developing circular bioproducts from urban biowaste for sustainable food, feed and agriculture by valorisation of anaerobic digestion streams	**1** People's response, especially citizens. Our perception is that they are ready, and they want the change to happen; it is thus our responsibility to meet their expectations. **2** Developed two sustainable alternative protein sources (a) and three circular fertilisers (struvite, ammonium sulphate, insect frass) and new high-added-value bioproducts from protein value chains (b); and designed and developed new food matrices (SCP) (process for food approval to be initiated).
FoodE Promoting urban–rural governance to transform food systems	**1** The sustainability assessment tool and its application in t he FoodE app.
HARMONIA To deliver an Integrated Resilience Assessment Platform (IRAP) to allow stakeholders to visualise the impact of climate change across different environments	**2** Leverage existing and innovative tools to deliver an interoperable service in GEOSS, integrate GEOSS urban and climate data with other local, regional and global datasets, and develop applications that support the adaptation and mitigation measures of the Paris Agreement for urban environments.
ERA-NET ICT AGRI-FOOD To fund transnational R&I projects involving multiple actors along the whole value chain to transform agri-food systems with the help of digital technologies towards sustainable, transparent, resilient and fair systems	**2** Projects on circularity and reduction of greenhouse gases with other ERA-NETs; and collaboration with various partners, e.g. International Bioeconomy Forum and European Space Agency, development of Knowledge Incubator.
ERA-NET SusAn To fund innovative solutions for sustainable animal production systems, involving different actors and disciplines and following the systems approach	**2** Change from a one-dimensional approach to the concept of a systems approach. Conduct projects on circularity and reduction of GAS with other ERA-NETs. SusAn common strategic research and innovation agenda (activities strengthening networking and giving early career researchers the opportunity to get involved).
EFUA To unlock urban agriculture's potential through achieving better networking, better knowledge, better deployment and better policies in the field	**2** Establish a community around urban agriculture; and create an up-to-date typology, type–benefit matrix and practice–governance matrix for urban agriculture.

| **FoodShift2030** The future of food is low-carbon, circular and plant-based | 2 | Innovative framework for establishing multi-actor food system network, including 9 front runner cities, 90+ local innovators, 27+ fellow cities, a lab establishment guide and core indicators. |
| **FoodCLIC** To build strong SPPIs in order to develop evidence-based and integrated food policies and render planning frameworks food sensitive, creating more sustainable urban food environments, which empower citizens to access, afford and choose healthier and more sustainable food | 2 | We will mobilise a wide range of food system actors across SPPIs and build their capacity; set up living labs; develop, implement, monitor and evaluate evidence-based integrated urban food policies and planning frameworks; and strengthen (new) networks of cities/towns to stimulate systemic intervention in the food system at higher levels of governance. |

Some project representatives only answered the survey (question 1), while others only joined the workshop (question 2). Projects are at different stages in their lifetime, and hence some refer to ambitions rather than achievements.

(a) Hydrolised protein, from black soldier fly larvae; lyophilised and pelletised SCP from methanotrophic bacteria.

(b) Chitin, lauric acid-rich fats, fatty acids, nucleic acids, peptides.

NB: CRFS = city-region food system; FLW = food loss and waste; GEOSS = global earth observation system of systems; PDO = protected designation of origin; PGI = protected geographical indication; SPPI = science–policy–practice interfaces; UCBE = urban circular bioeconomy; UBCE = urban circular bioeconomy hub; UFSE = urban food systems and ecosystems, SCP =single cell protein; GAS = greenhouse gases from agriculture and silviculture

Aspects that are going well for some projects and could serve as an inspiration are centred around various areas.

Networking and knowledge exchange within and across projects and living labs are of high value. This also includes multi-actor collaboration between consortium partners, peer-to-peer exchange, interactions between different stakeholders (private sector, municipalities, schools and universities) and cooperation with the REA project officer. Establishing a community as a local ecosystem is pertinent, by involving citizens in living labs, by building on already existing networks or through outreach activities.

Holistic and systems thinking is crucial. Connection to regions can be seen as one approach, while using gaming activities for cross and intersectoral collaboration is another. The connection to policymaking is important, for example through the development of tools for policy and practice: a type–benefit matrix and a practice–governance matrix.

Concrete solutions are another source of pride for the projects, for example guidelines for setting up living labs and innovation management or vocational training for food service businesses with a focus on reducing food waste, as well as creating apps and data spaces.

4. WORLD OF URBAN FOOD SYSTEM PROJECTS

Farm visit. © RURALIZATION, 2022. Source: RURALIZATION

4.1. BACKGROUND

Horizon Europe Cluster 6 dedicates a whole thematic section to **resilient, inclusive, healthy and green rural, coastal and urban communities**. It recognises that places and people matter in the achievement of a more sustainable Europe. The Sustainable Development Goals and the ecological and digital transitions brought forward by the European Green Deal and EU digital strategy[29] pose both challenges and opportunities for communities. Innovative solutions need to be created to enhance every community's

[29] https://digital-strategy.ec.europa.eu/en

resilience and capacity to contribute to the transitions needed in a Europe and a world that ensures a fair and just transition leaving no one behind.

This complements another of the programme part's thematic section 'fair, healthy and environment-friendly food systems from primary production to consumption' by focusing on the spatial differences between various urban food systems. Local solutions can be scaled up but need to account for local specificities and priorities. The European Green Deal and, in particular, the farm-to-fork strategy support a shift to the more resilient and environmentally, socially and economically sustainable food systems required to deliver safe, healthy, accessible and affordable food and diets for all sourced from land and sea, while respecting planetary boundaries. Finding solutions will involve a better understanding of the multiple interactions between the components of current food systems (European Commission, 2020a).

4.2. MAPPING OF PARTICIPATING CITIES

Projects that responded to the survey are present in a total of **41 countries** as can be seen in Figure 4.1.

Figure 4.1 Countries – Cities 2030 projects

Participating Countries
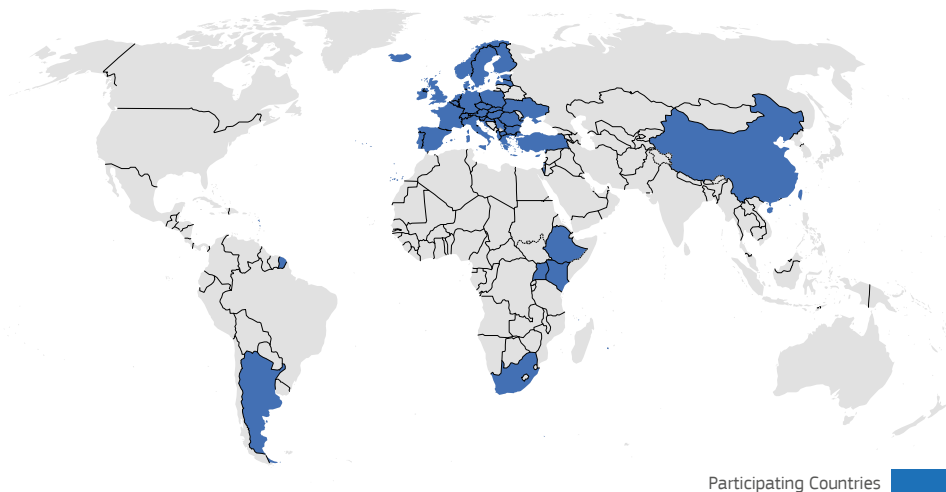
Source: Urban Food survey 2022

Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat. Cartography: Eurostat – GISCO, 04/2023. Projection: Robinson
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the European Union.
Kosovo*: This designation is without prejudice to positions on status , and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence. Palestine*: This designation shall not be construed as recognition of a State of Palestine and is without prejudice to the individual positions of the Member States on this issue

Twenty-five EU Member States are represented by city initiatives involved in food transformation. There is a clear concentration of city initiative projects in Spain, Italy, France and the Netherlands with 36 % of all place-based solutions covered by these countries. The number of projects with city initiatives ranges from one to more than five projects per country.

There are 154 city initiatives as can be seen in Figure 4.2. Not surprisingly, the countries that are highly represented are also active and have several cities involved (Spain is active with 17 cities, followed by Italy with 15 cities, France with 13 cities and the Netherlands with 11 cities).

Figure 4.2 City initiatives – Cities 2030 projects
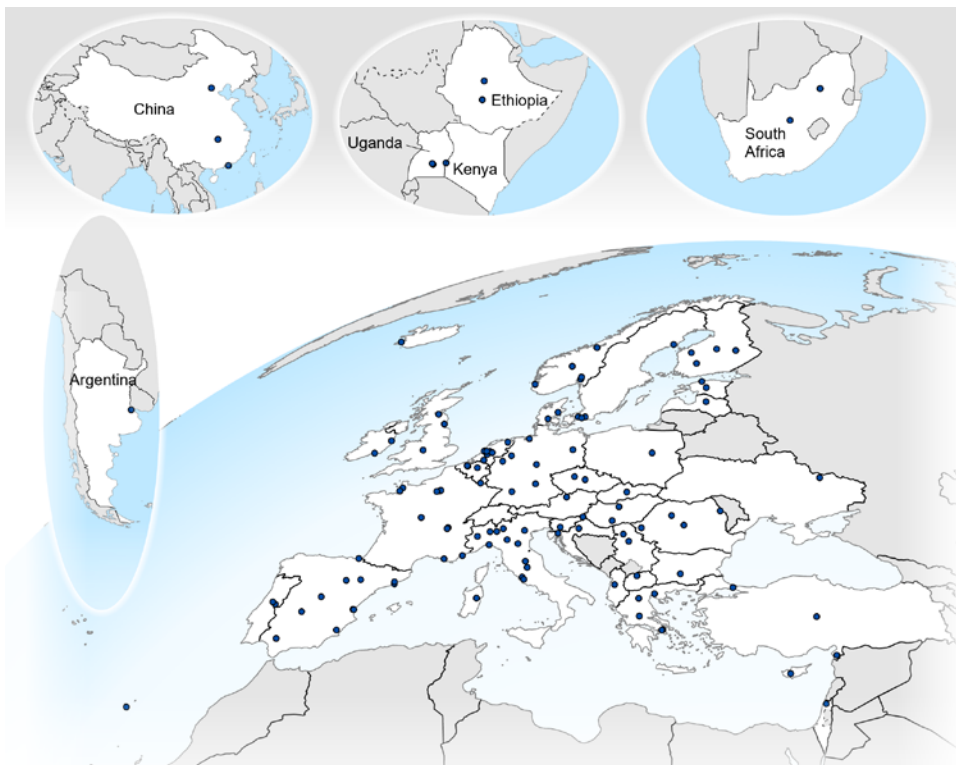
Source: Urban Food survey 2022

Cartography: Eurostat – GISCO, 01/2023. Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the European Union.
This designation shall not be construed as recognition of a State of Palestine and is without prejudice to the individual positions of the Member States on this issue.

Some cities are part of more than one project. Budapest hosts three different projects (SchoolFood4Change, FOODRUS and FoodCLIC). A few cites host two initiatives, for example Bologna (FoodE, SMARTCHAIN), Berlin (FoodCLIC, FoodE), Milan (FOOD TRAILS, SchoolFood4Change) and Murcia (HOOP, VALUEWASTE). Around 80 % of cities host only one initiative.

The type of cities ranges from capital cities to medium-sized and smaller cities. For example, Sweden is represented by three cities across the country, Malmö, Lund and Umeå, but not by the capital, Stockholm.

Urban food system transformation activities have good coverage across Europe with a broad range of cities involved. However, in the future more emphasis will be needed on developing these initiatives in less active countries and regions, in particular, in eastern European areas. For example, the results of the finished BioeatsUP project indicate that there is still a gap in understanding the functioning of the food systems in the BIOEAST macro-region with regards to the diversity, circularity, resilience, adaptation and scaling up and how sustainable food system evolves. Results indicate also that there is a need to seek more synergies in the EU but at the same time to support local priorities to safeguard the EU rich food cultural heritage.

5. FOOD 2030 PRIORITIES

This chapter presents four project testimonials based on in-depth interviews with representatives from selected projects and features highlights of the conversation[30.] Projects were selected based on their different Food 2030 priorities and lifetimes.

5.1. FOODCLIC

Integrated urban FOOD policies – developing sustainability Co-benefits, spatial Linkages, social Inclusion and sectoral Connections to transform food systems in city-regions – FoodCLIC – Cordis

INTERVIEWEE	PROJECT LIFETIME	BUDGET	TYPE OF ACTION
Jaqueline de BOERSE Project Coordinator & Professor at Vrije Universiteit Amsterdam	2022–2027	EUR 11.2 million	Innovation action

Kick-off event. © FoodCLIC, 2022. Source: FoodCLIC.

[30] Interview guideline (see Annex 2).

Food 2030 priorities implemented in project

FoodCLIC focuses on the development of integrated urban food policies with the main objective being to transform food systems in selected city-regions towards more resilient urban food environments that empower citizens. As FoodCLIC started only recently, we can only talk about our aspirations with respect to the four interconnected Food2030 priorities: circularity, nutrition, climate and innovation. These are strongly embedded and well balanced in the conceptual framework of the project (the CLIC[31] framework, (Sonnino, 2022)) to avoid trade-offs and exploit synergies. The framework will be applied throughout the project for analysing current policies and activities and subsequently for monitoring and evaluation purposes[32].

The project focuses on the urban food environment and considers the wider urban food system. We see the food environment in relation to the adjacent upstream and downstream food chains. To give you one concrete example, catering food should be locally sourced and fair to farmers, sustainable and accessible by all, and packaging should be reduced. All these aspects can be tackled in the procurement process, while communication with citizens can help to shape sustainable food choices.

Potential trade-offs

Considering that all four Food 2030 priorities are necessary to achieve substantial change, trade-offs between connected sectors become visible. To give you an example, the farm sector is changing by transitioning away from red meat and there will be losers such as cattle farmers. These trade-offs must be considered and addressed to allow for change and to compensate potential losers.

There are of course trade-offs when trying to contribute to all priorities; some aspects may be contradictory, for example sustainable food is not necessarily healthy and can be highly processed. Having the Food 2030 priorities in mind helps in designing synergies. Trade-offs can also appear in a broader context such as welfare or land use. Contrary to trade-offs, synergies do not happen by default and must be created by design.

In FoodCLIC, priorities are set through a participatory stakeholder process, including the most vulnerable groups to ensure that the food system transformation is inclusive. Networks must be strengthened through capacity building to motivate and engage new stakeholders. Various recent studies have shown that existing networks rarely include stakeholders across the quadruple helix (science, policy, business, civil society), because they often fail to include one or two of the stakeholder groups. They also particularly miss more vulnerable groups like the young, the elderly and those with a migrant background. We have also observed this in the networks that are participating in FoodCLIC. So, FoodCLIC will establish real-world experimental living labs to build a policy-relevant evidence base through learning in action. Our strategy is to equip the living lab coordinators and researchers with training and tools to ensure that they can involve all stakeholders and communicate the benefits of their participation and engagement in the project. For example, we provide training workshops on

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[31] See CLIC overview in chapter 7

how to conduct a stakeholder analysis, how to engage with different stakeholder groups, how to map food-deprived areas, and how to organise multi-stakeholder co-creation sessions. We will also build connections between different living labs to enable exchange of information; for example, we organise monthly sessions for the living lab coordinators and researchers, which enable us to transfer best practices and lessons learned.

Sustainability of project

We believe in the sustainability of what we create within FoodCLIC. Capacity building enables the living labs to attract resources and to continue beyond the lifetime of the project.

It is important that living labs are not reliant on individuals to avoid jeopardising the stability of the project but rather are institutionalised so that the structures continue after the project ends.

5.2. STRENGTH2FOOD

Strengthening European Food Chain Sustainability by Quality and Procurement Policy
– Strength2Food – Cordis

INTERVIEWEE	PROJECT LIFETIME	BUDGET	TYPE OF ACTION
Matthew GORTON Coordinator of Strength2Food & Professor of Marketing at Newcastle University	2016–2021	EUR 6.9 million	R&I action

Italian farmers' market. © Strength2Food, 2022. Source: Strength2Food.

Food 2030 priorities implemented in project

The degree to which waste is generated from different food systems is unclear. Strength2Food studied public procurement to understand what happens to food waste in schools and to identify ways to minimise it. Furthermore, we wanted to positively influence the social, economic and environmental impacts of quality foods. Hence, we used a holistic approach, which was also requested in the call text.

It is important that solutions are economically viable. Taking school meals, for example, all countries have nutritional guidelines, typically assuming that kids are eating the whole meal. However, in reality only two thirds is generally eaten. Nutritional guidelines are often exacerbated by the fact that usually the most nutritious parts are not being eaten. Strength2Food's solution was to work with schools and understand why some countries have less waste than others. Interventions at school level were very important in reducing waste. The 6- to 9-year-old age group is very critical, as their attitudes to food can be influenced. Here, small measures can make all the difference; for example, teachers eating with pupils and giving pupils enough time to eat reduced waste by 12 %.

Let me give you another example of how we served different priorities at the same time. We had an initiative on underutilised fish species and by-products, trying to increase the value of low-value goods. Whiting is not very popular in the United Kingdom, but we increased its value in collaboration with restaurants by coming up with new recipes for this underutilised food, and we trained chefs to add value to underutilised species in general.

What is sometimes missing is a clear roadmap on how to achieve the Food 2030 priorities, especially given the current cost of living crises.

Our next step involves strategies to get to net zero emissions. Businesses have often not engaged with the net zero agenda, but reducing energy use helps to cut costs and reduce carbon emissions. The recent increases in energy prices provide a window of opportunity to engage with businesses on decarbonisation, which Strength2Food partners intend to utilise.

Stronger interactions at different government levels

In Strength2Food, Serbia's Ministry of Education is a formal partner, and the involvement of national officials helped achieve impact on a national scale. In the case of Serbia there have been additional benefits, as schools typically oversee their own public procurement for meals, which makes communication more fragmented and complex. Once the ministry was involved, the engagement of schools increased. In other countries we worked with associations, such as regional institutions, and also a major grocery retailer. This cooperation gave us access to novel datasets and broadened interaction in the food environment.

Sustainability of project

The Strength2Food project is complete, but collaborations between partners are pursued and we continue to publish results. Some actions attracted national funding to continue work and some partners are involved in preparing future proposals. We developed a set of educational materials that are openly shared, like all our project results. Other projects have picked up our learnings; for example, results are shared with the Green Deal call projects, SISTERS and EU4Advice.

In general, I believe that the tools we developed ensure the sustainability of Strength2Food much more than academic journal articles.

5.3. INNOFOODAFRICA

African crops provide a nutrient-dense, gluten-free solution – InnoFoodAfrica – Cordis

INTERVIEWEE	PROJECT LIFETIME	BUDGET	TYPE OF ACTION
Raija LANTTO (Project coordinator) **Janne KERAENEN** (Lead, biomaterial development) **Natalia ROSA-SIBAKOV** (Co-coordinator, food product development) **Kaleab BAYE** (Lead, food consumption & nutrition) **Naushad EMMAMBUZ** (Lead, food product development)	2020–2024	EUR 6.5 million	R&I action

Food 2030 priorities implemented in project

InnoFoodAfrica focuses on nutrition with the overall objective of improving the nutrition and wellbeing of African people by analysis of diets, growing a wider variety of crops, and developing new food products and ingredients and new food processing technologies. This is complemented by using crop side streams to produce biodegradable composite materials for packaging and other end uses.

To get a deeper understanding of the nutritional situation in several African cities, we conducted a survey on sub-Saharan diets. Through the survey results, we analysed nutrient gaps and created recommendations to close these gaps. Here, the Food 2030 priorities become very tangible: affordability needs to be a key element in relation to nutrient availability, ensuring that healthy diets are affordable.

When it comes to product innovations and novel ingredients, we work, for instance, on novel drying procedures to keep micronutrients such as pro-vitamin A beta-carotene in foods as high as possible. We are also targeting the improvement of starch-based staple foods to make them more slowly digestible because only small amounts of dietary fibre are available in sub-Saharan countries. We also try to reduce the use of wheat while improving the use of local crops. For example, we are developing new products, such as crackers, high-fibre snacks, wholegrain pasta, instant porridge, texturised vegetable protein and sourdough bread, that are based on local crops. In this way, we are improving diets and sustainability because local crops are more resilient to harsh conditions. The latter links directly to community empowerment. Farmers can grow their own local crops that are more resilient, thus building a local market.

We also work on the valorisation of crop side streams as biomaterials with the aim of creating biodegradable packaging to combat fossil fuel-based plastic pollution. This will empower communities by providing new jobs and additional income from the same land.

Stronger interactions at different government levels
We believe that government support is needed to be able to make change happen. We have a national policy dialogue to present highlighted findings, and stakeholders from different governmental levels and sectors are invited to provide input for further innovations and implementations. For example, local crops are not yet competitive on the market and up to now are more expensive and less available; hence, we need support at different government levels.

Participation of all stakeholders from the beginning is crucial, especially with those that use innovations, such as farmers in the field. With this approach the adoption of practices was easy, as they were easily understood, co-developed and the benefits of innovations were clearly visible.

Sustainability of project
We share results via social media, stakeholder workshops, blog postings, and scientific and professional articles. We have a range of educational video clips to promote our message and make it easily accessible. We use the material in all settings, and educational content is spread into different regions.

We focus on adapting communications for different stakeholders. For example, there are manuals for farmers with low literacy levels and in different languages to distribute knowledge across the different countries.

5.4. CITIES2030

Co-creating resIlient and susTaInable food systEms towardS Food 2030 – Cities2030 – Cordis

INTERVIEWEE	PROJECT LIFETIME	BUDGET	TYPE OF ACTION
Raffaela LIOCE (Urban planning expert, Project management board member) **Selma VASKA** PhD (Research fellow in the Department of Economics, Ca' Foscari University of Venice)	2020–2024	EUR 11.7 million	Innovationaction

Cities2030 partners. © Cities2030, 2022. Source: Cities2030.

Food2030 priorities implemented in project

In Cities2030 we have different types of place-based solutions. The city-region food system (CRFS[32]) labs engage experimental teams looking for novel sustainable solutions. Policy labs design innovative policies and renew food governance in the city-region. These initiatives take place in Belgium, Germany, Finland, Croatia, Italy, Latvia and Romania. The approaches adopted are different – some cases follow an educational base and others a more practical one. Let me give you some examples from the labs. Continuing with the example of nutrition, we promote healthy snacks in different settings and take age and place into account. In Finland, we are working on creating the concept / promoting

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[32] CRFS – 'all the actors, processes and relationships that are involved in food production, processing, distribution and consumption in a given city region' (FAO Green Cities Initiative).

the initiative of Healthy Snack Kiosks that have several priorities interwoven into the activity, such as healthy food, food waste and sustainability. Another example is blockchain technologies that we test with farmers, and the results will be used for the community.

Considering the general scope of the Cities2030 project, we are also working on an app that connects consumers and markets, aiming to better connect both supply and demand for healthy and sustainable food. The ambition is to shape demand and then let the market adapt. Our priorities are set for city-region levels which could later be scaled up by the private sector. Two labs, in Slovenia and Croatia, are working on the app, a web-based experiment. The app will inform consumers about the food quality, food characteristics and food impact on the environment, including short supply chains. These experiments serve as testing beds for follower cities.

The Food 2030 priorities help us to have a holistic view of all potential threats and shocks in the food system (political or economic). The food system needs to be resilient, and hence all aspects need to be considered when embarking on innovations. We also believe that the impact of the project is higher when all Food 2030 priorities are considered, and a wide range of stakeholders are involved in addressing all priorities.

Translating all Food 2030 priorities for the good of the consumer is difficult because it is complex. Often achieving one priority does not simultaneously create other benefits or might even create a trade-off. For Cities2030, the solution is to target the priority with the biggest impact even if it may generate small trade-offs in other areas. The key is stakeholder participation in order to understand the benefits, but engaging and motivating stakeholders is not always easy. We aim for focus groups instead of large groups.

Sustainability of project
In Cities2030 we focus on the sustainability of the project. We have a self-assessment and impact assessment online tool to enable all labs to check on the project's sustainability.

As part of the project, we also have 'follower cities', so that dissemination goes beyond the existing living labs. Our observatory will run podcasts with experts who will facilitate the project's outreach to other projects and provide a flexible learning opportunity for all partners in the food value chain.

We will also create a video as an awareness-raising campaign tool. For that we will tap into the additional support provided by the Horizon Results Booster[33]. Together with four other EU-funded projects, part of the Food 2030 project family, we will create and disseminate a video based on the results achieved in our projects. This video and other materials will help to raise awareness of these innovations' impact on food system transformation (apps, services, societal norm changes). Dissemination of these joint materials provides added value and helps our projects sustain their continuity.

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[33] Horizon Results Booster (https://www.horizonresultsbooster.eu) is an initiative of the European Commission to maximize the impact of publicly funded research within the EU, and support projects in their dissemination and exploitation activities.

6. LEARNING BY INSPIRATION

ZeroW brainstorming session. © ZeroW, 2022. Source: ZeroW.

6.1. LEARNING FROM PAST CHALLENGES AND HOW THEY HAVE BEEN OVERCOME

The challenges encountered during the lifetime of a project can be clustered into several categories, as shown in Figure 6.1.

The main challenges are **lack of political support** and **lack of citizen engagement**, followed by lack of connection to other projects/initiatives. Support from other institutions and engagement from project partners was less of an issue[34].

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[34] Challenges falling under the 'other' category were connected to COVID-19 and the lack of personal connections, as well as the lack of skills in adopters or lack of raw materials.

Figure 6.1 Challenges projects faced: lack of inputs

Support from other institutions	Citizen engagement	Engagement from project partners	Political support	Connection to other initiatives	Other
9%	23%	9%	27%	14%	36%
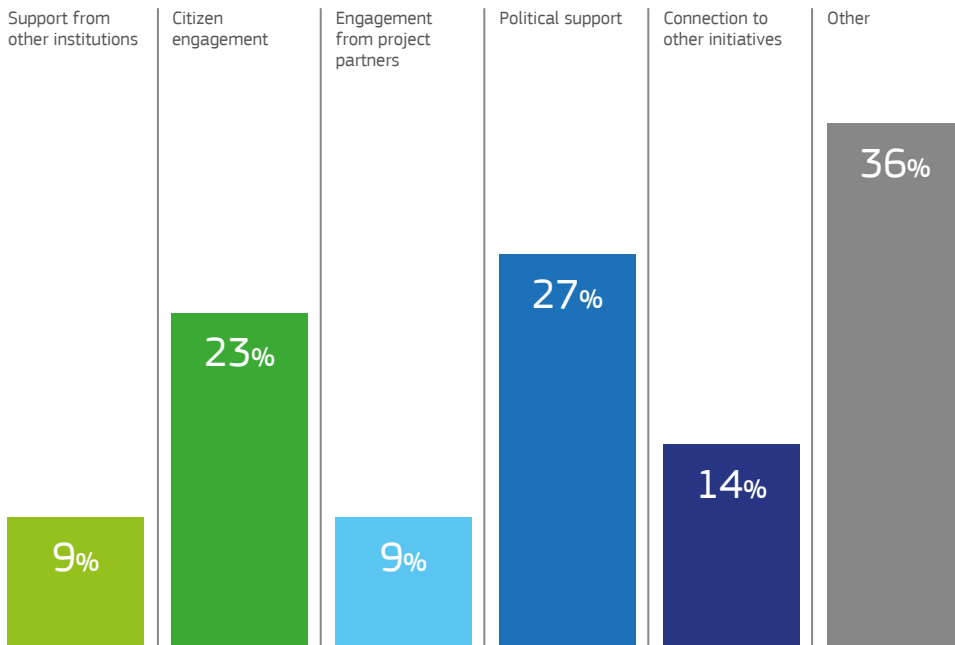
In practice, these challenges reflect very specific obstacles that project coordinators had to deal with and here we provide a snapshot of their biggest challenges and potential solutions, as outlined by the project representatives in the survey[35].

Lack of information, awareness and engagement are common challenges experienced by projects. It involves, for example, continuous awareness-raising campaigns among personnel and pupils in a school setting as personnel change and new pupils arrive (circwaste). Another example is raising awareness among the various stakeholder groups in cities and their surrounding rural areas. Doing so contributes to reducing potential conflict among these groups, such as between farmers and rural/urban citizens. Relationship building across different groups of stakeholders is not easy and needs to be tackled to improve engagement and encourage interdisciplinarity (Ruralization). Awareness and engagement are closely connected. Citizen engagement remains a challenge for several projects, and they need the right incentives and technologies if stakeholders are to participate (Cities2030, SiEUGreen, VALUEWASTE).

Information also means access to data[36]. A lack of data from parts of the food system, for example the private sector, has been indicated as a major challenge (HOOP). Food

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[35] Question: Please give a short outline of your biggest challenge you faced during the project and reflect on 1) reasons 2) potential solutions.
[36] The proposed EU Data Act is to ensure fairness in the digital environment, stimulate a competitive data market, open up opportunities for data-driven innovation and make data more accessible for all (https://ec.europa.eu/commission/presscorner/detail/en/ip_22_1113).

observatories can offer solutions. The envisaged Horizon Europe Partnership for Sustainable Food Systems for people, planet and climate[37] plans a food systems observatory and will connect various new data sources and use data for analysis and forecasting. As a concrete example, one of the main challenges for LIFE FOSTER was to find a suitable system to monitor food waste, that is, food that could be 'saved' through the adoption of solutions to prevent it in the first place. After analysing many available monitoring tools, LIFE FOSTER developed a new food waste monitoring tool – called Food Waste Flow Balance[38].

Scaling of the developed solutions can be challenging and is the next important step in urban food system transformation, from niche to market. For example, SCALIBUR aims to pilot the scaling up of solutions that are already in the lab. DECISIVE aims to assess the economic viability of its small-scale circular valorisation system so that treatment and valorisation of food waste need to be considered economically. EIT Food offers support for scaling up solutions[39].

Below are two selected case studies from projects, highlighting their main challenge and the solutions to inspire other projects.

Case study: FOODRUS

Our biggest challenge is to align solutions in territories at different stages of developing food waste reduction initiatives and to implement integral solutions involving the whole value chain. The reasons are the differing levels of development in the territories and the need for communication and cooperation with many agents with different interests, starting points and resources.

The solutions are manifold and could be, for example, to set binding regulations with stringent transition periods for adoption, so that public administrations are forced to take action to comply with the targets defined. It would also help to create different levels of co-working (among the partners in the pilot project and with technical partners), to use different channels and tools for cooperation and to create an atmosphere of trust among partners who are usually reluctant to share information.

Case study: UNaLab

The project's main challenge is the misalignment between short-term objectives and longer-term climate action goals. A partnership was formed to implement a specific nature-based solution that would create a public green space on privately owned land. The landowner was not part of the project consortium and requested economic concessions from the municipality in exchange for creating a public green space that would be collaboratively managed by the local community (the landowner felt that they were 'giving up' ownership of valuable land). The municipality was unwilling to provide the requested financial concession, and as a result the project identified a different location to implement the nature-based solution.

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[37] https://www.foodpaths.eu
[38] Reduce Waste | LIFE FOSTER
[39] https://www.eitfood.eu/entrepreneurship

A potential solution would have been to see an opportunity to strategically engage new (unknown at the time of the proposal) partners during the project and to allocate funds to each municipality implementing nature-based solutions to finance specific initiatives, for example via innovation challenges or similar, to offset the opportunity costs incurred by private landowners/developers.

6.2. AREAS FOR IMPROVEMENT

In view of the challenges raised, project representatives were invited to reflect on what could be improved and areas where they could do better[40].

Ways of working

- Engagement. There is a need for more flexibility in running projects and allowing bottom-up ideas to be taken up during the project – for example capturing and nurturing the needs of citizens and innovators during the project to enhance engagement and understanding, for example that it can be difficult for citizens to comprehend the creation of a food policy as part of the city's objective to enhance resilience and sustainability.
- Forward looking. Engage with the communities in the early stages of the project to anticipate future challenges on engagement and to determine how to implement the results, for example by a strategic research agenda.
- Systems approach. There is a need to address multi-level governance of the food system and to identify synergies.
- New products/processes. These are needed to navigate existing regulations and standards.

Collaboration

There is a need for:

- making connections with other stakeholders in relevant institutions and across the food value chain;
- collaboration between projects, for example coordination of the development of complementary indicators;
- data sharing, generating trust and mechanisms to receive data from stakeholders, clear guidelines on how data are being used and made available;
- communication between urban and rural areas;
- cross-fertilisation projects, involving more interaction with other projects to create more synergies.

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[40] Questions raised during the participatory workshop in breakout sessions.

Scaling up

- Local policies need to be scaled up: data and results available on local practices need to be used to propose policies at national and EU levels, while keeping in mind the different contexts across Europe
- Implement living labs and involve actors in supporting the commercialisation of innovations and process improvements.
- Ensure the sustainability of the activities to maximise the impact.

6.3. DREAM PROJECTS

Moving from challenges to visions, in the spirit of 'What if your vision board came true?', we asked project representatives about their dream project and list a range of inspirations in Table 6.1.

Table 6.1. Dream projects to support the Food 2030 strategy

PROJECT	Describe your dream project that you think would best support the Food 2030 strategy and its priorities
FOOD TRAILS	• Supporting scientific research in institutions interested in the most innovative solutions for urban food systems • Connecting different levels to improve governance of the urban food systems (local, regional, national and EU) • Capacity-building workshops for food policy officers working in municipalities • Knowledge-sharing workshops allowing cities to learn from each other
circwaste	Developing • local technologies to grow food inside in controlled circumstances, for example in old factories • local meat-replacing recipes • closed-loop circulation for agricultural and municipal biowaste streams • applications where people can easily find and order local food
RURALIZATION	Find the drivers of rural regeneration and city/countryside relations by: • giving significant space to agricultural and food issues • articulating social and food questions in terms of the environmental and sustainable priorities
HOOP	Symbiosis between urban and rural areas at city or regional levels: • sustainable local production and consumption • promotion of local circularity using both public and private feedstock • tailoring the model to the city or region • marketing vision: make sustainable food attractive (e.g. tasty)

SCALIBUR	• Development of new technologies for the collection, transport, sorting, pre-treatment and valorisation of urban waste fractions (organics, packaging, paper, cardboard, etc.) with a view to improving the quantity and quality collected, associated carbon footprint and valorisation rates
DECISIVE	• A project considering all the steps in food systems (production, preparation (including cookery lessons), consumption, waste valorisation) with emphasis on the impact of each step on the others
FOODRUS	• The ambitious EU greening goals need to be integrated into new food policies, providing fertile ground for a paradigm shift towards sustainability, environmental benefits and resilience • The voices of those that are most affected need to be included with those of global, regional, national and local stakeholders interconnecting, co-working and recognising the mutual benefits
ZeroW	• Demonstrate ways to reduce food waste and at the same time support food security • Overcome the data deficits on the drivers of food waste generation by consumers and businesses • Reduce plastic packaging and replace it with sustainable alternatives • Overcome barriers preventing stakeholders – such as consumers and food system actors – from adopting innovations
UNaLab	• Bottom-up socioeconomic renewal focused on inclusive revitalisation and 'greening' of primary industries
Cities2030	• Promoting holistic and universal solutions by working with any kind of region and city, thereby also providing support to underdeveloped and poor regions
I-REXFO LIFE	• Demonstration/replication of a sustainable business model • Shifting public funding from financing actions to financing carbon reduction • Linking food waste reduction to biogas production
VALUEWASTE	Create pilot cities that produce and consume most of their food locally and where food is produced sustainably and organically where possible, while inputs are also sourced locally. The outputs are returned to the system with the following priorities: • local production and consumption • use of recycled/reused inputs • regenerative / low-impact farming systems • reducing food loss/waste • citizen awareness / social innovation

InnoFoodAfrica	The characteristics of our dream project are: • all partners have a joint vision of how to enforce the ambitious objectives of the project • visibility/communication of the project to engage the private sector and further develop food and biomaterial prototypes for markets in Africa and Europe • create scalable commercial innovations
Strength2Food	A multi-actor project designed to: • reduce carbon emissions from short food supply chain logistics • improve access to, and for, consumers of quality food
SISTERS	• Help policymakers to favour the use of local resources and the digitalisation of the sector with economic subsidies • Packaging that helps to maintain food quality, reducing food waste while reducing environmental pollution and waste
FoodE	• Comparative assessment of different urban vs rural food production systems

7. WHAT HAPPENS NEXT?

Replication visit in Copenhagen. © FOOD TRAILS, 2022. Source: FOOD TRAILS

We have seen plenty of examples of urban food system transformation on the ground, making a difference in cities across Europe and supporting urban food system transformation from different angles. Solutions range from network building, through new processes and new applications, new products, new ways of working and living, and education and awareness raising to creating business opportunities.

These solutions now need to be transformed into **sustainable solutions** that outlive project lifetimes and need to be scaled up, from niche to the market. Availability and access to data should be mainstreamed, already required by Horizon Europe projects, and we need to find innovative ways to engage citizens and other actors beyond the usual.

The list of **dream projects** is long, outlining a range of promising R&I solutions that focus on better connecting urban and rural areas, short supply chains and local technologies, alternatives to meat, supplementary projects to reduce food waste, and improved food governance, while using multi-stakeholder approaches, digitalisation of the sector and inclusion of the private sector.

Across what has been done and what still needs to be done for urban food systems based on the project insights, **three key takeaways** have become clear:

1. Place-based solutions provide huge potential for facing our global challenges with local solutions – let's use the potential of space (e.g., through experimenting EU widely in knowledge hubs and locally in Food System labs).
2. Food needs to be seen in connection with climate, community, and circularity (Food 2030 priorities) and be embedded in a systemic approach – let's apply a systems approach for exploiting the full potential: 'If we fail on food, we fail on all'.
3. The diversity of approaches showcased provides plenty of options to start enabling change today – let's not wait for perfect solutions, let's get our hands dirty and start today and let's work collectively across the EU

A useful framework based on the above learning is the recently developed **CLIC framework** (Sonnino, 2022). CLIC stands for 'conceptual framework for integrated food policies and intervention design' and is conceptualised by four pillars:

1. co-benefits[41] across social, environmental and economic objectives;
2. linkages between rural and urban areas;
3. inclusion of all stakeholders and their knowledge;
4. connectivity between food and other policy priorities (e.g. Food 2030).

In terms of ways of working, solutions require the involvement of all stakeholders. The European Commission established the High-Level Expert Group (HLEG) to assess the needs and potential for, feasibility of and approach to an international platform for food systems science to contribute to the Food 2030 initiative, whose mandate would also include contributing to the farm-to-fork strategy and wider European Green Deal policy priorities. The report Everyone at the Table: Transforming food systems by connecting science, policy and society[42], published in June 2022, outlines the importance of science–policy–society interfaces (SPSIs). Effective SPSIs of the future must act as platforms that facilitate networking and greater understanding, while being based on the principles of transparency, legitimacy, rigour and equity of process. SPSIs must also ensure the engagement of all stakeholders, not only in discussing the interpretations of evidence but also in the policy process that determines which action pathways to pursue and to which end.

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[41] Co-benefits are the Food 2030 priorities identified.
[42] https://op.europa.eu/en/publication-detail/-/publication/28ef3336-ec56-11ec-a534-01aa75ed71a1/language-en/format-PDF/source-272970465

The HLEG proposes **three potential pathways for enhancing SPSIs**, each of which could be independent but would have far greater impact if implemented as a cascading series of interlinked and mutually supporting goals:

1. widening the scope of the current landscape under a broader mandate and boosted by additional resources;
2. enhancing the current landscape with multisectoral task forces;
3. coordinating agendas by creating a network of networks.

Although the assessment of SPSIs was carried out at an international level, the findings are relevant at all geographical levels. Connecting science and knowledge for evidence-based policymaking and decision-making is also key in cities, especially to tackle systemic issues.

The next generation of Horizon Europe projects is under way, the Horizon Europe work programme 2023/2024[43] was launched in November 2022 and calls are open to applications. Under the Food 2030 action pathway urban food system transformation, the focus is on the connection with urban living, an enlargement of the vision of the New European Bauhaus to food environments[44], and support for the envisaged farm-to-fork sustainability labelling framework[45].

The next Horizon Europe strategic plan for 2025–2027 will incorporate lessons learned from these projects to define relevant R&I needs in an urban setting and beyond.

The European Commission invites everyone involved in food system transformation or who is eager to know more, to connect to EIT Food[46], URBACT[47], Cities Mission[48], and the anticipated Horizon Europe Sustainable Food Systems Partnership[49] and benefit from the networks, training and engagement with R&I projects.

[43] https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/how-to-participate/reference-documents;programCode=HORIZON
[44] Unlock the potential of the New European Bauhaus in urban food system transformation – HORIZON-CL6-2024-COMMUNITIES-01-1
[45] Inclusive and smart ways to communicate sustainability of food – HORIZON-CL6-2023-COMMUNITIES-01-6
[46] https://www.eitfood.eu
[47] https://urbact.eu
[48] https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe/climate-neutral-and-smart-cities_en
[49] https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/european-partnerships-horizon-europe/food-bioeconomy-natural-resources-agriculture-and-environment_en, https://www.foodpaths.eu

REFERENCES

Artioli, F., Acuto, M., & McArthur, J. (2017). The water-energy-food nexus: An integration agenda and implications. Political Geography, 61, 215-223. Retrieved from https://doi.org/10.1016/j.polgeo.2017.08.009

Brecic, R., Sincic Coric, D., A., L., & Gorton, M. (2021). Local food sales and point of sale priming: evidence from a supermarket field experiment. European Journal of Marketing, 55, 41-62. Retrieved from https://www.emerald.com/insight/content/doi/10.1108/EJM-07-2019-0604/full/pdf?title=local-food-sales-and-point-of-sale-priming-evidence-from-a-supermarket-field-experiment

EAT. (2022). EAT - Cities. Retrieved 11 28, 2022, from https://eatforum.org/initiatives/cities/

European Commission. (2020a). Horizon Europe Work Programme 2021-2022. Brussels: European Commission. Retrieved from file://net1.cec.eu.int/offline/02/luethda/Desktop/wp-9-food-bioeconomy-natural-resources-agriculture-and-environment_horizon-2021-2022_en.pdf

European Commission. (2020b). Resilience and Transformation - Report of the 5th SCAR Foresight Exercise Expert Group. Luxembourg: European Union. Retrieved from https://scar-europe.org/images/FORESIGHT/FINAL-REPORT-5th-SCAR-Foresight-Exercise.pdf

European Commission. (2020c). Food 2030 pathways for action : research and innovation policy as a driver for sustainable, healthy and inclusive food systems. Brussels: Publications Office. Retrieved from https://data.europa.eu/doi/10.2777/104372

European Commission. (2021a, November 12). European Commission adopts contingency plan for food supply and food security in times of crisis. Retrieved 01 14, 2023, from Commission adopts contingency plan for food supply and food security in times of crisis: https://ec.europa.eu/commission/presscorner/detail/en/IP_21_5903

European Commission. (2021b). European Research Area Policy Agenda. Directorate General for Research and Innovation. Brussels: European Commission. Retrieved from https://research-and-innovation.ec.europa.eu/system/files/2021-11/ec_rtd_era-policy-agenda-2021.pdf

European Commission. (2021c). The new European Research Area, Publications Office of the European Union. Brussels: Publications Office of the European Union. Retrieved from https://data.europa.eu/doi/10.2777/2736

European Commission. (2022a, June 10). Cities 2030 workshop. Brussels.

European Commission. (2022b). Safeguarding food security and reinforcing the resilience of food systems. Brussels: Publications Office of the European Union. Retrieved from https://data.europa.eu/doi/10.2777/51295

European Commission. (2022c). European Commission - Food Safety. Retrieved 12 11, 2022, from https://food.ec.europa.eu/safety/food-waste_en#:~:text=In%20the%20EU%2C%20around%2088,day%20(Eurostat%2C%202020).

Eurostat. (2020). Urban and rural living in the EU. Retrieved 12 9, 2022, from Urban and rural living in the EU: https://ec.europa.eu/eurostat/web/products-eurostat-news/-/edn-20200207-1

FAO. (2018). Sustainable Food Systems - Concept and framework. Rome: FAO. Retrieved from https://www.fao.org/3/ca2079en/CA2079EN.pdf

FAO. (2023). FAO – The Right to Food. Retrieved 02 14, 2023, from https://www.fao.org/right-to-food/en/

Feedback EU. (2022). No time to waste – Why the EU nees to adopt ambitious legally binding food waste reduction targets. Rijswjk: Feedback EU. Retrieved from https://feedbackglobal.org/wp-content/uploads/2022/09/Feedback-EU-2022-No-Time-To-Waste-report.pdf

FUSIONS. (2016). Estimates of European food waste levels. Stockholm. Retrieved from http://www.eu-fusions.org/phocadownload/Publications/Estimates%20of%20European%20food%20waste%20levels.pdf

Kapucu, N., Ge, Y., Martin, Y., & Williamson, Z. (2021). Urban resilience for building a sustainable and safe environment. Urban Governance, 10-16.

Mattioni, D., Milbourne, P., & Sonnino, R. (2022). Destabilizing the food regime "from within": Tools and strategies used by urban food policy actors. Environmental Innovation and Societal Transitions , 44, 48-59. Retrieved from https://reader.elsevier.com/reader/sd/pii/S2210422422000648?token=E0AAC98898 5B5ED057D0F1AB460C9EA147205C96C7B8385F64AFF2143366EA2668E136E9E8B07000107168D 40DAA48ED&originRegion=eu-west-1&originCreation=20230329130737

Raworth, K. (2018). Doughnut Economics - Seven ways to think like a 21st Century Economist. Random House Business.

Sonnino, R. (2021, November). CITY-TO-CITY COOPERATION FOR MORE DEMOCRATIC AND INCLUSIVE FOOD SYSTEMS: What has been achieved and what remains to be done. CIDOB OPINION. Retrieved from https://www.cidob.org/es/publicaciones/serie_de_publicacion/opinion_cidob/2021/city_to_city_cooperation_for_more_democratic_and_inclusive_food_systems_what_has_been_achieved_and_what_remains_to_be_done

Sonnino, R. (2022, October 24). CLIC framework by Roberta Sonnino. Amsterdam.

Sonnino, R., & Milbourne, P. (2022). Food system transformation: a progressive place-based approach. Local Environment, 27, 915-926. Retrieved from https://doi.org/10.1080/13549839.2022.2084723

TRANSIT. (2017). European Network of Living Labs (ENoLL). Retrieved 11 10, 2022, from http://www.transitsocialinnovation.eu/resource-hub/european-network-of-living-labs

UNFSS. (2022). The Sustainable and Inclusive Urban Food Systems Coalition – "THE UFS COALITION". The Sustainable and Inclusive Urban Food Systems Coalition. Retrieved from https://ufs-coalition.org/wp-content/uploads/2022/11/Urban-Food-Systems-Coalition-Declaration-of-Engagement.pdf

United Nations. (2021a). Coalition on Sustainable and Inclusive Urban Food Systems. Retrieved 01 12, 2023, from https://foodsystems.community/commitment_to_action/coalition-on-sustainable-and-inclusive-urban-food-systems/

United Nations. (2021c). UNFSSS - Coalitions in the context of the Food Systems Summit. Retrieved 01 08, 2024, from https://foodsystems.community/coalitions-in-the-context-of-the-food-systems-summit/

ANNEX 1. Urban food survey

*Fields marked with * are mandatory.*

This survey is addressed to project coordinators, who are also invited to collect input from their consortium partners before providing a joint response where needed.

It aims to explore the contribution of EU-funded projects to the Food 2030 initiative of the European Commission. You are invited to express your views and make suggestions based on your project experience.

The results of this survey will support the European Commission in creating a **Food Cities 2030 report on urban and place-based food system transformation**.

The report will, based on your survey input, provide:

- Graphical mapping of activities in Europe and different levels of support
- Contribution of projects to relevant EU policies, including the Food 2030 priorities
- Thematic mapping of focus areas
- Failures/challenges to learn from
- Inspiration based on impact achieved, your advice and recommendations to cities, towns and local authorities, citizens and policymakers

Your opinion matters to us. Please reply by 25.4.2022.

1. POLICY RELEVANCE

*QUESTION1.1. To which of the four **Food 2030 priorities** has your project contributed? You can pick more than one option. Additional help available:

Food 2030 is the EU's research and innovation policy to transform food systems and ensure everyone has enough affordable, nutritious food to lead a healthy life. The ambition is to achieve a resilient food system that is fit for the future. Food systems need to also deliver co-benefits for people's health, our climate, planet and communities. It is in line with, and supports, the goals of the European Green Deal, farm-to-fork strategy and bioeconomy strategy. The four Food 2030 overarching priorities are mentioned below.

At least 1 choice(s) from:

1. Nutrition for sustainable and healthy diets ☐
2. Climate and environment ☐
3. Circularity and resource efficiency ☐
4. Innovation and empowering communities ☐

QUESTION 1.2. What would you consider as the **3 most pressing issues/needs identified by your project** that we should focus on to accelerate sustainable food system transformation in cities and towns?

Indicate one issue in each row.

1. ....
2. ....
3. ....

QUESTION 1.3. The current Ukraine crisis has particularly shown that building resilient food systems is more important than ever, also in the light of climate change and other shocks/disturbances.

Indicate max. 5 elements – one in each row.

1. ....
2. ....
3. ....
4. ....
5. ....

2. GEOGRAPHICAL PROJECT MAPPING AND SUPPORT

QUESTION 2.1. Please indicate the cities (and associated countries) where your project is active, and how (living lab, policy lab, demonstrator, science shop, etc.)

	COUNTRY	CITY	TYPE OF CITY *(if applicable)*
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

QUESTION 2.2. Indicate how your project connects with rural areas/exploits synergies between rural and urban/peri-urban areas

1   We do not have any connections to rural areas in our project

2   We leverage rural–urban connections partly, but not in a systematic way

3 We leverage rural–urban connections systematically, but it is not a focus of the project ☐

4 We leverage rural–urban connections and it is a main focus of the project ☐

5 None of the above ☐

QUESTION 2.3. Indicate the support/interactions from/with the following administrative levels/other initiatives. Please indicate all that apply.

1 The project is not/very little affiliated with any other level of administration ☐

2 The project is not/very little affiliated with any other projects/initiatives ☐

3 We interact closely with the city administration ☐

4 We interact closely with administration at regional level ☐

5 We interact closely with administrations at national level ☐

6 We interact closely with other projects and/or initiatives in Europe ☐

7 We interact closely with initiatives outside of Europe ☐

8 Other ☐

3. THEMATIC MAPPING

QUESTION 3.1. Please indicate all thematic areas your project is connected to: Additional help available:

Sustainable urban food system transformation is closely connected to several thematic areas. We would be interested to know which areas your project is connected to.

1 Child and youth education ☐

2 Adult education ☐

3 Public procurement ☐

4 Urban planning ☐

5 Citizen engagement ☐

6   Social inclusion

7   Biodiversity actions

8   Climate actions

9   Other

4. FAILURES TO LEARN FROM

QUESTION 4.1. What are the challenges you have faced in your project? Please indicate all that apply.

1   Lack of support from other institutions

2   Lack of citizen engagement

3   Lack of engagement/responsiveness from project partners

4   Lack of political support

5   Lack of connection to other relevant initiatives

6   Other

QUESTION 4.2. Please give a short outline of the biggest challenge you faced during the project and reflect on 1) reasons 2) potential solutions.

5. INSPIRATION

QUESTION 5.1. Describe your dream project that you think would best support the Food 2030 strategy and its priorities in maximum 5 bullet points in the below text box.

QUESTION 5.2. How do you see academic research and innovations developing in the field of urban food system transformation?

*QUESTION 5.3. What are you most proud of so far in the project? Explain in one sentence.

QUESTION 5.4. What are you doing to ensure that your activities/labs remain active after the life of your project?

*QUESTION 5.5. Please share in one sentence any recommendation you would give to other projects working on sustainable urban food system transformation.

6. GENERAL INFORMATION

*QUESTION 6.1. Please provide the project name(s) you are representing in this survey.

*QUESTION 6.2. Please provide your email address

*QUESTION 6.3. Please indicate the funding programme for your project.

Horizon 2020   ☐

Horizon Europe   ☐

FP7   ☐

INTERREG/LIFE   ☐

EIT KIC (Food, Climate, etc.)   ☐

Other programme   ☐

*QUESTION 6.4. I agree that the information provided can be used in the Food Cities 2030 report on urban and place-based food system transformation.

Yes   ☐

No   ☐

Thank you!

ANNEX 2. In-depth interview with representatives of selected projects

Set-up: Individual interview with project coordinator, project officer and drafting team (tbd), 45 min, online during November

QUESTIONS [Instructions]

Please elaborate how [Name of project] concretely contributed (e.g. any key deliverables or other key results) to the [Nutrition, Climate-smart, Circular, Innovation – based on project] Food 2030 priorities.

Please explain why [Name of project] focused on these particular priorities.

Please explain how you incorporated these priorities in [Name of project]:

For those with more than one Food 2030 priority –

Have you faced any trade-offs when contributing to more than one Food 2030 priority?

[If answer yes to contribute to more than one Food 2030 priority]

Please explain. And how did you deal with this situation?

[To all]

What are the advantages you see in contributing to more than one Food 2030 priority?

What would you need to also contribute to the other Food 2030 priorities, i.e. [Nutrition, Climate-smart, Circular, Innovation – based on project's priorities]?

[For those who contributed to all 4 priorities]

What advice would you give to other projects to contribute to all 4 Food 2030 priorities?

[Additional question on chapter 02]

What would you need to create stronger interactions at different government levels and enable stronger exchange and support across the government institutions?

What is needed to ensure that the co-creation process between the actors you have mobilised actually continues and grows after the life of the project, i.e. what would be needed to sustain the value you created with your project in the long-term?

Would you be interested in helping other cities or regions learn to deploy and adapt your methodology in a twinning or mutual learning scheme for food systems transition? If so, how?

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The portal **data.europa.eu** provides access to open datasets from the EU institutions, bodies and agencies. These can be downloaded and reused for free, for both commercial and non-commercial purposes. The portal also provides access to a wealth of datasets from European countries.

Urban food system transformation in the context of Food 2030

This report on urban food system transformation reflects on the future of sustainable food systems in line with the priorities of the Food 2030 initiative. It seeks to share good practices and to serve as inspiration for other urban areas wishing to transform their food systems.

The report starts by presenting relevant concepts and policies, followed by an outline of urban food systems in the context of resilience and an overview of EU-funded projects and their geographical distribution. The report closes with lessons learned from projects and an outlook to next steps, including outreach beyond the projects' lifetimes.

Studies and reports