

Draft proposal for a

European Partnership under Horizon Europe Sustainable Food Systems for People, Planet & Climate

The partnership is part of a “partnership landscape” that will avoid overlaps and build synergies for win-win collaboration and solutions, in particular with the Partnerships Accelerating farming systems transition: Agroecology living labs and research infrastructures, Agriculture of Data and Animal Health and Welfare.

Preamble

The present candidate partnership is proposed to be published in the Horizon Europe 2023-2024 work programme. The format proposed is a co-funded partnership with financial and in-kind contributions by the partners and a Top Up by the European Commission. Co-funded financial contributions to this partnership will consist of and build on the successful food systems related parts of JPIs, ERA-Nets and KICs such as FACCE, HDHL and Oceans, JPI Urban, ERA-NETS: Surplus, ICT Agri Food, Core-Organic, ERA GAS, SUSAN, ERA HDHL, SusFood2, EU-Africa HLPD FNSSA pillar 2, EIT FOOD and the Climate KIC.

This document follows the proposal template of the European Commission of September 2019¹. It is based on the co-creation process convened by the Standing Committee of Agricultural Research (SCAR) Strategic Working Group (SWG) Food Systems. The SFS partnership proposal has benefited from the inputs received from the Horizon Europe Shadow PC, as well as the discussions with Commission Services (DG RTD, SANTE, MARE and AGRI) and other HE Partnerships to develop linkage points. The combined narrative of the SFS partnership was summarized as a fact sheet by DG RTD².

This document does not reflect the final views of the Commission, nor pre-empt the formal decision-making (comitology or legislative procedure) on the establishment of European Partnerships. During the next steps of preparation, the Commission Services will further assess these proposals against the selection criteria for European Partnerships. The final decision on launching a Partnership will depend on progress in their preparation (including compliance with selection criteria) and formal decisions on European Partnerships (linked with the adoption of work programmes, and legislative procedures).

¹ HE Partnership Proposal Template and Guidance Document (Sept 2019):

<https://www.era-learn.eu/news-events/news/european-partnerships-new-draft-guidance-document-and-proposal-template>

² Narrative:

https://scar-europe.org/images/FOOD/Main_actions/Food-Systems-Partnership_Narrative-06-2021.pdf

Fact Sheet:

<https://op.europa.eu/en/publication-detail/-/publication/ca9da79e-df96-11eb-895a-01aa75ed71a1>

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1 General information

1.1 Draft title of the European Partnerships

Sustainable Food Systems for People, Planet & Climate

1.2 Lead entity (main contact)

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1.4 Summary

Sustainable food systems (SFS) for people, planet and climate, provide and promote safe, nutritious and healthy food of low environmental impact for all current and future citizens. Building the SFS of tomorrow is central to the transition to a ‘Sustainable Europe by 2030’, and key to meeting the European Green Deal, the Farm to Fork strategy and Food2030 ambitions on ‘climate & sustainability’, ‘nutrition & health’, ‘circularity & resource efficiency’ and ‘innovation & communities’. Past experiences confirmed the need to implement a new and systemic approach to Research and Innovation (R&I)³ in food. SFS partnership combines a bottom-up and a top-down approach and engages all relevant stakeholders within the food systems actors as well business actors from large food companies to small and local actors in a balanced way. The SFS partnership drives food systems transformation through its four thematic areas: change the way we eat, change the way we process and supply food, change the way we connect with food systems and change the way we govern food systems. Systemic R&I approach includes problem-solving, policy supporting and programming that is inter- and transdisciplinary and applying a multi actor approach by prioritising the engagement and expertise of all stakeholders within the food system^{4,5}. The activities to reach the common goal include pooling R&I resources and joint programming set up a European network of harmonised observatories for food system monitoring, and implement a range of activities to increase the relevance, impact, and visibility of R&I and EU leadership further elaborated in the strategic research agenda (SRIA).

2 Context, objectives, expected impacts

2.1 Context, problem definition and opportunities

The future health of Europe’s people and the planet lies on our plate. The way in which food is produced on land, in fresh water and in oceans, as well as in aquaculture systems, fished, processed, packaged, distributed, valued, prepared, consumed, and wasted must change to ensure that environmental, social and economic sustainability of food become core assets of EU’s food systems, along with food safety and food security. Building the Sustainable Food Systems of tomorrow is central to the transition to a ‘Sustainable Europe by 2030’, and key to meeting the European Green Deal, the Farm to Fork strategy and Food2030 ambitions on ‘climate & sustainability’, ‘nutrition & health’, ‘circularity & resource efficiency’ and ‘innovation & communities’.

³ Xu, X., Sharma, P., Shu, S. *et al.* Global greenhouse gas emissions from animal-based foods are twice those of plant-based foods. *Nat Food* 2, 724–732 (2021). <https://doi.org/10.1038/s43016-021-00358-x>

EEA (2015). How does the food we buy, eat and don’t eat impact the environment? <https://www.eea.europa.eu/media/infographics/how-does-the-food-we/view>

EEA (2017). Air quality in Europe – 2017 report. <https://www.eea.europa.eu/publications/air-quality-in-europe-2017>

⁴ “Decade of nutrition” from FAO & WHO; HLPE report: Food security and nutrition: building a global narrative towards 2030; European Commission’s Food 2030 Policy framework; Willet *et al.*, 2019 in *The Lancet*.

⁵ IPES-Food (2016). From Uniformity to Diversity: diversity: a paradigm shift from industrial agriculture to diversified agroecological systems. Available at: https://www.ipes-food.org/_img/upload/files/UniformityToDiversity_FULL.pdf

Research and Innovation (R&I) is a critical resource for the EU in the transformation towards Sustainable Food Systems⁶ for People, Planet & Climate (SFS). **The prime condition for success is that a wide diversity of actors join forces in a partnership – with a mission for change.** With the Green Deal, the European Union has committed to a radical transformation of its economy into a sustainable, circular and inclusive economy. It aims to transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is disconnected from resource use. It also aims to protect, conserve and enhance the EU's natural capital, and protect the health and well-being of citizens from environment-related risks and impacts. The Green Deal is an integral part of the European strategy to implement the Paris Climate Agreement and the United Nation's 2030 Agenda for Sustainable Development. The Farm to Fork Strategy aims to accelerate the transition to a sustainable food system that 1) have a neutral or positive environmental impact 2) help to mitigate climate change and adapt to its impacts 3) reverse the loss of biodiversity 4) ensure food security and safety, nutrition and public health, making sure that everyone has access to sufficient, safe, nutritious, sustainable food 5) preserve affordability of food while generating fairer economic returns, fostering competitiveness of the EU supply sector and promoting fair trade.

Food systems are among the central leverage points for the transition; they are inextricably linked with the well-being of people and planet. This is reflected in the EU Farm to Fork and Biodiversity strategies, which are at the heart of the Green Deal. They identify ambitious targets and objectives for redesigning parts of the food system, outline actions, and pledge to monitor the progress towards them. The UN Global Food Systems Summit 2021 has addressed these issues globally.

There is consensus about the need for transformation of the current types of production and consumption in linear food chains towards healthy, sustainable, circular, fair and safe food systems. This transition needs an overarching food systems approach to address a number of challenges in an integrative manner. The objective of SFS is 'to collectively develop and implement an EU-wide committed research and innovation partnership to accelerate the transition towards healthy diets that are safe and sustainably produced and consumed in resilient EU and global food systems'. SFS should protect and restore the natural environment and its ecosystem services, should be robust and resilient, economically dynamic, just and fair, and socially acceptable and inclusive. They do so without compromising the availability and accessibility of nutritious, safe, tasty, culturally-diverse, and healthy food for people living inside and outside the EU, nor impairing their natural environment (SAM, 2019b).

The SFS partnership does not address primary production in itself, since crop and livestock production, will be covered in the Horizon Europe partnerships on Agroecology and Animal Health and Welfare. Thus, references to food production that will be part of the partnership scope mainly refer to food processing, extraction and combination of ingredients, and food preparation (such as by the catering and restaurant industry), packaging, logistics, distribution, consumption, food waste treatment and recycling and these aspects as seen in a Food Systems lens. From this perspective the SFS partnership will also address the relevant,

⁶ IPES-Food (2017). Unravelling the Food–Health Nexus: Addressing practices, political economy, and power relations to build healthier food systems. The Global Alliance for the Future of Food and IPES-Food. Available at: <http://www.ipes-food.org/reports/>

inspired also by Gliessmans (2016), five levels of agroecological transitions⁷. Following this approach, the levels 4 and 5 are most relevant for the SFS partnership and call for collaboration between the partnerships to ensure integration of important aspects and avoid redundancies in scopes and activities.

Gliessman's five levels of Agroecological transition	
Levels 4-5 Relevant for the SFS partnership	Level 5: Build a new global food system, based on equity, participation, democracy, and justice, that is not only sustainable but helps restore and protects earth's life support systems upon which we all depend.
	Level 4: Re-establish a more direct connection between those who grow our food and those who consume it.
Levels 1-3 Relevant for the Agroecology partnership	Level 3: Redesign the agroecosystem so that it functions on the basis of a new set of ecological processes.
	Level 2: Substitute alternative practices for industrial/conventional inputs and practices.
	Level 1: Increase the efficiency of industrial and conventional practices in order to reduce the use and consumption of costly, scarce, or environmentally damaging inputs.

First of all, it is estimated that **food systems are responsible for 25-34% of global greenhouse gas emissions**⁸ around half of which is linked to the production of animal-based foods including feed production⁹. In the EU, food systems account for 30% of greenhouse gas (GHG) emissions, and agricultural production of food, feed, fuel and fibre accounts for 11.3% of greenhouse gas (GHG) emissions and for 94% of ammonia emissions that negatively affect air quality. The use of livestock manure and synthetic fertilisers is linked to 50–80% of the nitrogen load in freshwater bodies in Europe, with adverse effects on water quality and aquatic

⁷ Steve Gliessman (2016) Transforming food systems with agroecology, *Agroecology and Sustainable Food Systems*, 40:3, 187-189, DOI: <https://www.tandfonline.com/doi/full/10.1080/21683565.2015.1130765>

⁸ Crippa, M., Solazzo, E., Guizzardi, D. et al. Food systems are responsible for a third of global anthropogenic GHG emissions. *Nat Food*, 198–209 (2021). DOI: 10.1038/s43016-021-00225-9.

⁹ Xu, X., Sharma, P., Shu, S. et al. Global greenhouse gas emissions from animal-based foods are twice those of plant-based foods. *Nat Food*, 724–732 (2021). <https://doi.org/10.1038/s43016-021-00358-x>

ecosystems¹⁰. Adoption of more sustainable production, processing, delivery and consumption practises across food systems can thus greatly reduce some of the current adverse effects on climate. Thus, replacing part of livestock-based food with increasing production of crops for direct food consumption could be part of a solution to reduce global greenhouse gas emissions and pressures on water resources from the agriculture and food sector while ensuring resilient, equitable and sustainable food systems. Such a change would require a systems approach linking the specific innovations in primary production, processing, logistics and retail with consumption and consumer preferences, ensuring safety along the food chain and weighting their pros and cons in a benefit-risk approach.

Second, the agriculture and food industry is the largest producing and manufacturing sector in the world and in Europe, and yet in need of a viable, future-proof economic model. More than 10 million farms and 22,000 agri-food cooperatives in the EU create jobs for a workforce of 20 million employees, especially in rural areas, and more than 294,000 food processing companies provide jobs for 4.8 million people. Overall, the agri-food ecosystem is by far the biggest employment sector in Europe; it has a significant impact on rural and urban communities as an aggregated ecosystem that includes more than 99% of small and medium-sized enterprises (SMEs)¹¹(ref). Preserving and creating jobs and wellbeing as well as securing fair revenues for all involved is of great importance. Thus, promoting the development of sustainable food systems is a necessary contribution to the economic cornerstone of the Green Deal.

Third, food systems must transform to better support public health. Currently, unhealthy consumption patterns are leading to a triple burden of malnutrition and/or undernourishment, overweight and obesity, and micronutrient deficiency which in turn are responsible for a number of non-communicable diseases such as diabetes, cardiovascular diseases and certain cancers. A large body of literature indicates that as much as 30% of all cancer cases is linked to poor dietary habits, and is therefore preventable. Maintaining a healthy weight throughout life may be one of the most important ways to protect against cancer. It is probably the second most important factor, after avoiding tobacco use¹². The Future of Food and Farming, European Commission communication on the Common Agricultural Policy post-2020, addresses citizens' concerns regarding sustainable agricultural production, health and nutrition. Food nutritional quality and safety matter to the European consumers. At the same time, **global hunger is rising** and if the current trend continues, we could have 840 million undernourished people worldwide by 2030¹³.

Fourth, food systems feature systemic shortcomings in fairness and inclusiveness, which appear in the activities of food production, up to consumption. The economic and power structure of many current food value chains (from land use and market access to product availability and food environment) cause problems such as an increased social and economic vulnerability (e.g. many small-scale producers and workers in the agri- and aqua-food systems

¹⁰ EEA (2015). How does the food we buy, eat and don't eat impact the environment?

<https://www.eea.europa.eu/media/infographics/how-does-the-food-we-view>

EEA (2017). Air quality in Europe – 2017 report. <https://www.eea.europa.eu/publications/air-quality-in-europe-2017>

¹¹ [Joint press release: a Skills Partnership for the Agri-food Ecosystem - FoodDrinkEurope : FoodDrinkEurope](#)

¹² [WHO/Europe | Cancer linked with poor nutrition: https://www.euro.who.int/en/health-topics/disease-prevention/nutrition/news/news/2011/02/cancer-linked-with-poor-nutrition](https://www.euro.who.int/en/health-topics/disease-prevention/nutrition/news/news/2011/02/cancer-linked-with-poor-nutrition)

¹³ [Goal 2: Zero Hunger - United Nations Sustainable Development](#)

struggle to earn a decent income). Furthermore, **the current global and oligopoly food system structures lead to a disconnection between rural and urban areas, unequal access to and insecurity of food, which may lead to conflicts.** Many citizens can't afford or do not have access to healthy and sustainable foods. The importance of these societal challenges¹⁴ is even more accentuated by the current Covid-19 crisis, which is revealing social inequalities, vulnerabilities, a lack of resilience, global-local trade tensions, logistic problems and delays, deficiencies in food security due to interdependencies and lack of self-sufficiency, as well as comorbidity factors, such as diet-related chronic diseases. Those aspects may all evoke avalanches in globalised industrial food supply chains. The Covid-19 pandemic and further disturbances through Russian military aggression against Ukraine have demonstrated that **greater resilience must be a cornerstone of the food systems transformation.**

While the transition is imperative, it is also complex, due to the barriers to change built into social systems and the many interconnections. Industrial agriculture including types of livestock production and large-scale fisheries, and the food systems that have developed around them, are locked in place by a series of feedback loops. For example, **the way food systems are currently structured allows value to accrue to a limited number of actors,** reinforcing their economic and political power, and thus their ability to influence the governance of food systems. The IPES-Food¹⁵ report identified eight such lock-ins extending well beyond the food production gate, including export orientation, the expectation of cheap food, and “feed the world” narratives, but also current measures of success (in terms of total yields and productivity) and the concentration of power in food systems, which in turn reinforces all the other lock-ins. The lock-ins are reflected in the **7 key challenges pointed out by IPES-Food¹⁶.** Food systems impacts are systemic in nature, caused by many agents, and interact with factors like climate change, unsanitary conditions, and poverty, which are themselves shaped or even caused by food and farming systems. This calls for a systems approach, which acknowledges the interactions and interdependencies between farming, aquaculture and fishery, feed and food production, food processing, packaging, logistics, marketing, retail, food services, feed and food safety, food consumption and waste management. The relevance of the food systems perspective is to look for those synergies and trade-offs between the system elements that promote or are counterproductive to successful transformations. A holistic approach makes aspects visible that could not be seen from separate perspectives. It aims to better understand these processes and their distant effects, to assess the systemic impacts of policies, and to find leverage points and ‘game-changers’. Accelerating the transition towards sustainable food systems requires collaborative actions and work across boundaries. **Multi- and transdisciplinary research and innovation (R&I), as well as Responsible R&I, including real-life experiments with place-based solution (e.g. Living Labs, see later), are key enablers of this transition, as stressed by the Green Deal strategies and the Food 2030 R&I initiative.** To do so effectively, it will need to incorporate environmental, social, and economic sustainability dimensions through aspects such as financial, legal, cultural, ethical and philosophical dimensions into future R&I programmes, as well as co-creation and co-designing with all actors in the food system and collaboration with R&I organisations in

14 “Decade of nutrition” from FAO & WHO; HLPE report: Food security and nutrition: building a global narrative towards 2030; European Commission’s Food 2030 Policy framework; Willet et al., 2019 in The Lancet.

15 IPES-Food (2016). From Uniformity to Diversity: diversity: a paradigm shift from industrial agriculture to diversified agroecological systems. Available at: <http://www.ipes-food.org/reports/>

16 IPES-Food (2017). Unravelling the Food–Health Nexus: Addressing practices, political economy, and power relations to build healthier food systems. The Global Alliance for the Future of Food and IPES-Food. Available at: <http://www.ipes-food.org/reports/>

countries outside Europe where food systems may be affected by distant effects of the transition in European food systems.

To date, the relevant policy areas, regulation, R&I programming and funding are fragmented. This fragmentation corresponds to lock-in 4 identified by IPES-Food (2016), i.e. compartmentalised thinking/structures that govern the setting of priorities in policies, research and business. Integrating policies across the food system, integrating aquatic and agri-food systems, is a prerequisite for tackling urgent global challenges¹⁷. Similarly, issues of food access, nutrition, poverty and social exclusion still represent major blind spots in a result of biased concentration of power¹⁸. Moreover, **lack of coherence in legislation can distort the development of new sustainable, blue and green value chains.** Regaining trust and confidence in a One Health –Safety-Quality approach is imperative for the EU’s Food Agenda.

That is why a new European Partnership for Sustainable Food Systems for People Planet & Climate (SFS) is needed. The partnership takes into account the Food 2030 pathways for action. The Food2030 experience has identified 10 pathways leading into new opportunities: (i) governance and system change, (ii) urban food systems transformation, (iii) food from the oceans and fresh water resources, (iv) alternative proteins and dietary shift, (v) food waste, (vi) the microbiome world, (vii) health and sustainable personalized nutrition, (viii) food safety systems of the future, (ix) food systems Africa, and (x) food & data¹⁹. Through its focus on integration and a long-term perspective/commitment, SFS partnership will equally overcome the short-term thinking prevalent in the policy and investment sphere (lock-in 5). Current political, institutional and business approaches, bounded by short-term cycles, are ill-adapted to provide the long-term support needed to support the transition to sustainable food systems at European scale and beyond due to international trade and interdependencies. These pathways have been partly addressed in the previous R&I framework programme, H2020. A portfolio analysis shows that 1631 food-related projects were supported during the period of 2014-2020. Many of these projects relate to the application of generic technologies to help solve food production or processing, followed by consumption, food safety, food waste and food distribution²⁰. The European Commission will also release later in 2022 an in-depth analysis on past public research at EU and MS level dedicated to the Food2030 pathways.

The SFS Partnership provides the interconnections for the multi-actor approach to food systems R&I that involves a wide diversity of sectors and implements responsible research and innovation principles. Many successful transnational R&I initiatives, like ERA-Nets, ETP’s, EJPs, JPIs and BIOEAST have been initiated. These are thematically focused platforms and networks, tailor-made for the needs and requirements of a certain thematic researcher and funder community. Their clear focus on specific sectors or actors of food systems led to a

17 Buckwell A, Matthews A, Baldock D, Mathijs E (2017). CAP - Thinking Out of the Box: Further modernisation of the CAP – why, what and how? Brussels: Rise Foundation.

IPES-Food (2019). Towards a Common Food Policy for the EU. Available at: <http://www.ipes-food.org/pages/CommonFoodPolicy>

18 Walls HL, Cornelsen L, Lock K, Smith RD (2016). How much priority is given to nutrition and health in the EU Common Agricultural Policy? *Food Policy* 59, 23-34.

Zahrnt V (2011). Food security and the EU’s common agricultural policy: Facts against fears. Brussels: ECIPE.

Moragues-Faus A, Sonnino R, Marsden TK (2017). Exploring European food system vulnerabilities: towards integrated food security governance. *Environmental Science and Policy* 75, 184-215.

19 <https://op.europa.eu/en/publication-detail/-/publication/86e31158-2563-11eb-9d7e-01aa75ed71a1>

20 <https://op.europa.eu/en/publication-detail/-/publication/86e31158-2563-11eb-9d7e-01aa75ed71a1>

multitude of excellent smaller and specific projects with variable funding geometry. In order to address broader themes, to close research gaps at intersections, and to effectively build on already existing knowledge, bigger networks with a broader thematic focus and strong inter- and transdisciplinary approaches are needed, with special attention to social sciences and humanities. The ambition of the food system partnership will be to search for solutions to complex challenges through research and innovation while also developing a common research language, which can help breaking down silos. This should lead to a transitioning to sustainable, circular and safe food systems benefitting from synergies and making use of interlinkages between actors and activities. This also means involving multiple actors across and beyond established communities of funders and researchers in order to reach impact. In this context, exploitation of results and making use of learnings from local and regional food systems initiatives need to be emphasized. We will also work towards ensuring coherence between other partnerships, the missions and initiatives supporting the ERA.²¹

The SFS partnership will foster inclusive food systems R&I governance. Stakeholders from the quadruple helix²² (i.e. policymakers, businesses/industry, researchers, and civil society), from different sectors of the food system, will be brought together on this overarching platform, with the aim of strengthening science-policy-society interfaces and increase transformative potential. The partnership will coordinate, align, and leverage European and national R&I efforts and investments to future-proof food systems for co-benefits through an integrated and transdisciplinary approach. Linkages to global R&I efforts will be explored and fostered. The partnership will function in synergy with existing initiatives and build on their work, to capitalise on current R&I and initiate much needed new R&I, with a strong focus on delivering impact and co-benefits. The partnership will cooperate with the other Horizon Europe partnerships (Agroecology, Animal Health and Welfare, Agriculture of Data), which will focus on addressing the challenges related to primary production also from a systems perspective, and work on win-win strategies. This will provide the scientific evidence, as well as the collaborative experience, to support the transformation of national and European FS including their links with global food systems, making them safe, sustainable, within planetary boundaries, healthy, resilient, fair and trusted – for everyone.

2.2 Common vision, objectives and expected impacts

The objective of SFS is ‘to collectively develop and implement an EU-wide committed research and innovation partnership to accelerate the transition towards healthy and safe diets that are sustainably produced and consumed in resilient EU and global food systems’. Table 1 is a summary of the intervention logic of the SFS partnership

²¹ Including ERA-NETs SusFood 1&2, SusAn, CORE Organic, ETPs such as Food for Life, JPIs FACCE, HDHL and Oceans, EIT Food, EFFoST, PRIMA, Food, Nutrition and Health Research Infrastructure (FNH-RI), FIT4FOOD2030, MicrobiomeSupport and many others.

²² <https://op.europa.eu/en/publication-detail/-/publication/6e54c161-36a9-11e6-a825-01aa75ed71a1>

Table 1. Intervention Logic - Summary of the SFS partnership impact, outcomes, objectives, activities and the policies behind it.

Impact (what we like to achieve)			
A European Sustainable food system in 2050 and beyond based on inter-connected, territorialized, Sustainable Food Systems (being fair, safe, healthy, biodiverse...)			
Outcomes:			
EU-wide functioning Partnership, based on collective and inclusive actions, providing the knowledge base for realizing European SFS Policies Strong foundation for a European SFS Research Area, connected to global initiatives, with harmonized EU-wide policies and regulations, while respecting locally diverse contexts			
General objective ('we like to'):			
<ol style="list-style-type: none"> 1. Understand <u>what SFS are</u>, how they function and how to enable their development; 2. Demonstrate that the partnership '<u>systemic approach</u>' functions as a <u>catalyst</u> – for many FS actors – to jointly transform FS into SFS (also beyond the lifetime of the Partnership); 3. Ensure that the <u>well-governed Partnership</u> contributes to SFS via frameworks and evidence-supporting policy options for EC objectives in F2F, missions, Green Deal and the UN-SDGs; 4. Co-create with various actors in a diversity of Living Labs to develop SFS concepts. 			
Specific objectives (leading to concrete outputs / results):			
<ol style="list-style-type: none"> i. Deepen insights in SFS research and innovation in particular in 4 thematic areas, all considered from a FS lens and supporting transition through Living Labs; ii. Develop an innovative, systems approach that changes our way of collaborative working in RIPE activities; iii. Establish a vibrant epistemic community based on common rules, joint activities, and pooled resources that works together with related Partnerships. 			
R&I&P&E Activities (R= research, I=Innovation, P = science-policy interface, E = education)			
Thematic Activity Area 1: <u>Change the way we eat:</u> Transition to healthy & sustainable diets everywhere: shifting to dietary patterns and sustainable consumption of safe, healthy, nutritious, affordable, accessible, equitable and culturally acceptable foods while tackling malnutrition in all its forms and promoting health.	Thematic Activity Area 2: <u>Change the way we process and supply food:</u> supply-side innovation towards carbon neutrality and circularity, reorienting the food environment	Thematic Activity Area 3: <u>Change the way we connect with food systems:</u> Citizen engagement and consumer trust in reoriented food systems	Thematic Activity Area 4: <u>Change the way we govern food systems:</u> Leverage points for local, national, EU and global transition pathways, co-creation, including private ones like F2F code of conduct & local initiatives (e.g. cities)
Transversal Activities			
Transversal Activity A: <u>Pooling R&I resources and programming.</u> Joint transnational R&I support via project funding and alignment of funding priorities and mechanisms enabling multi-actor and systems approaches	Transversal Activity B: <u>Launching a Food systems observatory</u> Platform for sharing metrics, data and assessments on the sustainability performance of food systems	Transversal Activity C: <u>Establishing a FS Knowledge Hub</u> for complex FS, transformative research and FS-labs on systemic innovations at different scales (using a 'vitrine' for demo's)	Transversal Activity D: <u>Knowledge sharing, and scaling</u> Adapting knowledge systems, innovation & demo platforms and science-policy interfaces for ensuring impact
Process cycle (for all Activity Areas)			
Foresighting & planning (strategy & portfolio management), acting and developing (collaborative activities in FS labs), monitoring (via KPI's), analysing and assessing, learning and deliberating, sharing and scaling, feeding back and adapting (the cycle of activities in different contexts), Impacting and strengthening (ERA)			
Contributions to EU Policies & International Initiatives, like			
Farm to Fork Strategy, Green Deal; Common Agricultural Policy / Common Fisheries Policy; Bilateral & Global Trade Policies; Circular Economy action plan, Blue Economy; Sustainable Aquaculture; Biodiversity Strategy; Single market for Green Products; Europe's Digital Decade; 2030 Climate Target Plan; Waste Framework Directive; Bioeconomy Strategy and Action Plan; Zero pollution action plan; Food2030; Open Science Policy, FAO/WHO ICN2 Rome Declaration & Framework for Action (FfA) 2014; 2030 Agenda for sustainable development & SDG, 2015; United Nations (UN) Decade of Action on Nutrition 2016-2025; EC-HLEG- International Platform for Food Systems Science (IPFSS) in food systems transformation 2022.			

The SFS Partnership embodies Europe's ambition to form a new societal pact for addressing the fundamental and transversal role of food in addressing the grand societal challenges of our time. The overarching vision is designing a fair, healthy and environmentally-friendly food system in order to help realise the EU goals of the Farm to Fork strategy and the global ambition of UN Sustainable Food Summit 2021. The SFS partnership will serve as means to implement the UN Food Summit goals.

The SFS partnership will deliver benefits in the form of better understanding of interlinked processes and their distant effects, identifying potential trade-offs and co-benefits, delivering systemic impacts, contribute to policymaking for sustainable food systems, and act on leverage points relevant to business, place-based communities and/or government driven action. The partnership will expand the EU's potential for context dependent, socially embedded and responsible research and innovation (RRI) as well as changes in practices relevant to food production²³ and processing methods, products, food environments, dietary habits, waste and circularity, business models, institutions and policies.

The core strategy of the SFS Partnership will build on the EU Green Deal and its Farm to Fork, Biodiversity strategy and Bioeconomy Strategy, relevant expert groups on FOOD 2030 and SCAR themes, Horizon Europe Mission Boards and various programming and technology platforms. The core strategy leads to new research needs and approaches. In order to bring about transformative change in food systems, new knowledge needs to arise in terms of methods and approaches for overcoming issues that cannot be solved using an orientation on value chains, but can be dealt with in a co-creation food system approach. Also linked to the core strategy is exploring how to enable society (and citizens in particular, whether as consumers or in other roles) to participate in the transition, in different regions with specific cultural and dietary habits and governance models.

We envision the SFS Partnership as an interlinking one, tapping from the available knowledge and experience of the initiatives more directly connected to the remit of Food Systems, as well as connecting to, or bridging towards adjacent relevant Partnerships. Additionally, make use of existing research outcomes, build visibly upon the knowledge we have, connecting knowledge parts and bringing them together in a systems approach. A food systems approach does not begin, nor stop at the 'plate'. Food processing, marketing and consumption can provide entry points for making production systems for crops, livestock and fish more sustainable, and similar perspectives are possible for feed chains, waste streams, urban challenges with regard to resilient food availability, chemical and biological food safety, as well as economic aspects in the food chain. Wealth distribution, one health and animal welfare issues are intimately connected to the way we produce, distribute, trade, consume and experience food. Another Horizon Europe partnership will tackle the issues related to Animal Health and Welfare. While the Partnership will need to focus on more specific themes, we suggest a mechanism to enable and ensure these interlinkages are taken into account. The proposed Partnership structure includes a Knowledge Hub and an Observatory. In both, there can be an opportunity to interlink with other relevant initiatives, such as the ETP's, EIT's, Partnerships and the five Missions, especially the mission on healthy soil and food, climate neutral and smart cities, restore our oceans, and the mission on beating cancer.

²³ Microbiome Support and many others. [Publication-detail/-/publication/6e54c1](#)

In particular the following other Horizon Partnerships are relevant: Partnership for the Assessment of Risk from Chemicals (PARC); European Partnership for One Health/AMR Antimicrobial Resistance (AMR); European Partnership on Pandemic Preparedness; European Partnership for Key Digital Technologies (KDT); European Partnership – driving urban transitions to a sustainable future (DUT); European Partnership accelerating farming systems transition: agroecology living labs and research infrastructures; European Partnership for Animal health and welfare (PAHW); Agriculture of data; European Partnership for rescuing biodiversity to safeguard life on Earth; European Partnership for a climate neutral, sustainable and productive Blue Economy; European Partnership for a Circular bio-based Europe; European Partnership Water Security for the Planet (Water4All).

Input from the relevant initiatives and securing the links between the areas is especially relevant for a Partnership with a Food Systems approach at its core. This however also demands clear, specific and focused goals and subsequent KPIs. Such an approach implies matching different pathways, and/or where trade-offs occur, mapping, analyzing and experimenting with novel ways forward. Pathways are amongst others: connecting agriculture, nature and food, which will be one of the objectives of the Agroecology partnership; healthy, safe and affordable diets for all; healthy and sustainable food, real food pricing and consumer awareness of pricing; sustainable production on land and in the sea in an overall system approach, including exploring a wider range of (non-) animal protein systems and climate neutrality. Sustainable food production on land will be the overarching objective of the Agroecology partnership under which the R&I activities in this area will be tackled.

The **potential impact** of the partnership is strongly related to the **capacity to align actors** of the food system around the goals identified by the Green Deal and to quantify contributions to the objectives in the Farm to Fork strategy. Besides, it should have qualified contributions to food and nutrition security, safety, efficient resource usage, and economic and social aspects in food system approaches at EU, national, regional and local levels. **Its success depends on the transformation capacity of food system actors** towards more sustainable outcomes, via an understanding of food systems, exploring systems approaches, searching for appropriate leverage points and solutions, and overcoming barriers and trade-offs. For this reason, **outcomes will be assessed in terms of conceptual development** (i.e. capacity to introduce new concepts in the knowledge ecosystem), **technology development** (i.e. capacity to deliver technological solutions tailored to the variety of the emerging problem and to foster their market uptake), **social and business development** (i.e. capacity to provide knowledge to new social configurations, new business models and bottom-up initiatives), **policy development** (i.e. capacity to provide new concepts and new technological solutions for policy consideration), and **territorial and context specific ‘RIPE’ (Research, Innovation, Policy advice, Education) activities**. The societal **impact** generated with these outcomes is a strong contribution to an accelerated transformation of national, European and global food systems, making them safe, sustainable, within planetary boundaries, healthy, resilient, fair and trusted – for everyone.

The **success factors, or better ‘Key Performance Indicators (KPI)’**, are highly diverse and, hence, categorised. The categories, with one concrete KPI as an example, are: (i) *commitment of stakeholders* (level of **political and financial commitment**), (ii) *contributions to more sustainable food system pathways* (level of **change towards a systems approach**), (iii) *relevant focus areas in sustainable food systems* (potential of a **focus area to establish leverage points**), (iv) *alignment of activities at EU level* (level of **monitored alignment of**

European and national R&I efforts), (v) *mutual benefits by strengthening local food system activities* (quality of the **network of FS-labs** in terms of exchanging best practices and co-funded actions), (vi) *performance of Partnership activities* (**programming structure** for management of calls and ‘RIPE’ agenda setting), (vii) *attractiveness and source of inspiration (via interactive communication) of the Partnership* (level of **spirit, joint ambition, belonging and engagement** based on realistic success stories). Further specification of these KPIs into concrete and measurable components will further secure delivery against the transformational changes needed across the whole food system. The final impact pathways with KPIs will be developed together with a Strategic Research & Innovation Agenda in a process engaging relevant stakeholders including funding bodies and beneficiaries of the R&I activities before launching the partnership.

2.2.1 Progress monitoring and the Exit Strategy of the SFS partnership

The strategies developed under the Green Deal, in particular the Farm to Fork strategy and the Biodiversity strategies, identify precise and ambitious targets and **pledge to monitor the progress towards them**. The time frame of the Partnership instrument is restricted with regard to its activities. It is noted that in any case, the EU will not continue to co-fund the SFS partnership if it continues its activities beyond the end of the normal 7-year period. However, its remit and subsequent challenges are likely to exist well beyond the lifespan of a network. A European Food System Observatory for performance monitoring will stay important even post-Horizon Europe. Activities of the Partnership aim to gradually give shape to, and be sustained by, a coordinated Mission on Food Systems. The Partnership will work in a coordinated manner with the Agroecology Partnership, Partnership of Agriculture of data, Sustainable Blue Economy Partnership, Water4All Partnership, One Health AMR, Biodiversa+ and other relevant initiatives such as the Eurobarometer action, the risk assessment of chemicals Partnership (PARC), the Animal Health and Welfare Partnership, digitalisation, and EIT-Food through joint meetings, common forums, coordination among SRIAs, and possible coordinated calls.

2.2.2 Process for developing a SRIA

The partnership will be guided by a common Strategic Research and Innovation Agenda (SRIA), jointly developed with input from stakeholder representatives and funding agencies. The SRIA will reflect knowledge needs within civil society, business development and strategic policy support and act as a guideline for formulation of more detailed scope and topics for the joint calls and for continuous portfolio management of funded activities and their results vis-a-vis the partnerships objectives. The first steps towards development of a SRIA was taken in a process guided by the SCAR SWG Food Systems and involving national representatives and a representation of trans-European umbrella organisations and stakeholder groups. This has resulted in the formulation of four provisional thematic areas framing different aspects of the Food Systems development needed. **Figure 1**. summarises how the SFS partnership enables R&I to drive food systems transformation.

Enable R&I to drive food systems transformation processes

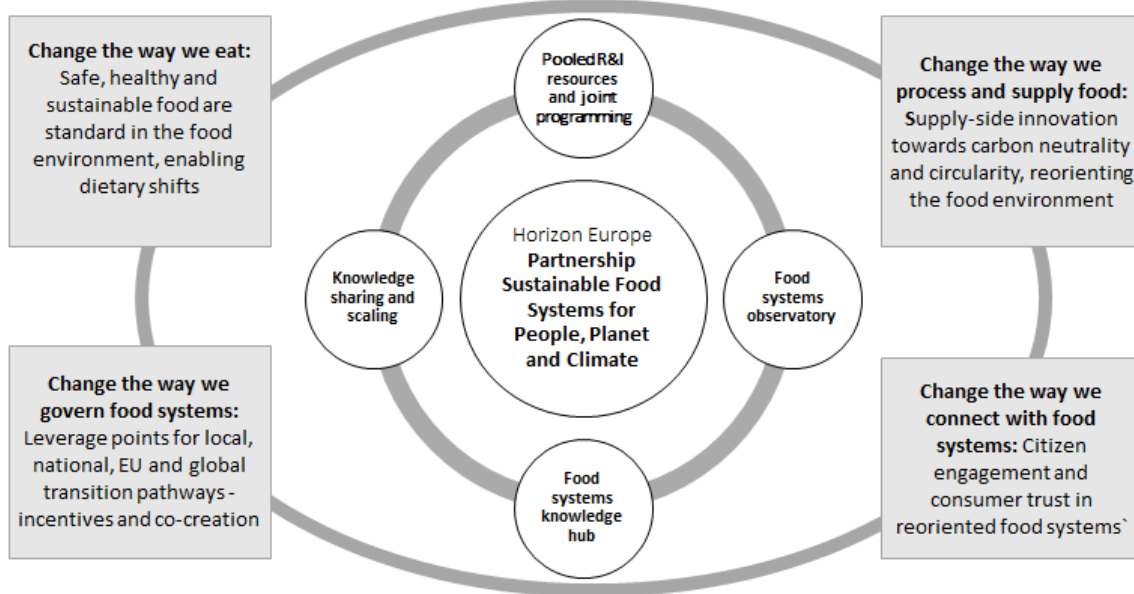


Figure 1. Summary of how the SFS partnership drives food systems transformation through its four thematic areas and activities (also see Table 1).

The SFS Partnership will fund activities mainly through competitive calls within four thematic areas and calls for transversal activities. The first draft description of the thematic areas for R&I and policy support is given below and transversal activities are described in section 3.1. The development of an actual Strategic Research and Innovation Agenda (SRIA) will be undertaken in processes engaging stakeholders and citizens in MS during second half of 2022. The SRIA will include a more elaborate Impact pathway with relevant KPIs. In order to produce the best possible solutions to the food system sustainability challenges the SRIA process will be supported by a specific CSA from the summer of 2022 onwards.

➤ **Change the way we eat**

Along with education, transforming current food systems to improve the availability, accessibility, and adoption of nutritious, safe, affordable, attractive, and sustainable diets and products is essential to combating malnutrition in all its forms and promoting health. Furthermore, the way we eat today has a significant negative impact on the environment, which extends far beyond the geography of Europe. Combining sustainability and health requires better understanding of the various strategies to bring both aspects into balance within culturally and culinary diverse dietary habits while adapting to changes in lifestyle, physical and health-related needs. Shift towards healthy and sustainable diets for all citizens requires a better understanding of a range of changes in the food environment and consumption that are oriented towards more plant-based diets. It also requires utilizing the untapped potential of sustainable consumption of animal-based foods, lower trophic level aquaculture, and alternative protein sources (both terrestrial and aquatic) without compromise for safety of the

products. Opportunities for beneficial microorganisms, including bacteria, viruses, fungi and protozoa, and their interaction with the microbiome for healthy organisms, should be further explored.

Public health nutrition interventions in the past have led to the insight that behaviour change campaigns, voluntary industry guidelines, and other freedom-of-choice measures²⁴ have positive but insufficient effects on shifting dietary habits. Such considerations are based on the notion that consumers make rational choices, which in itself has been proven over-optimistic to downright wrong. Today's consensus is that the food environment and food supply chains should be optimized to ensure that healthy and sustainable food is the standard choice. The food environment is where consumer's personal preferences and opportunities intersect with the supply of food. It has a personal dimension, which includes the role of food in different citizens' lives and how they view and value food in their social context. Food availability, prices, vendor and product properties and marketing shape the external dimension of the food environment. R&I is needed to improve food purchasing and choice to promote desirable changes in behaviour, reorienting the food environment towards affordable, accessible, sustainable, healthy choices and reducing inequalities. Research on nutritional behaviour, on social determinants of nutrition and on solutions that address the broader societal context and framework conditions should lead to social and business innovations, for example in the domains of food retail and property development. Potentially such R&I underpins a need for more restrictive and normative regulations and policies. New options should be explored for consumers to participate in the transition towards a different food system and how to raise awareness among consumers in different regions with different dietary habits. Novel technologies and approaches can be used to better understand behaviour and guide food choice, including digital approaches. Further R&I and strategy development are needed to ensure that diverse and resilient local food systems support dietary shifts. Indeed, the collaboration with the missions, especially missions on soil and beating cancer, will bring added value and facilitate concrete solutions to some of our greatest challenges.

➤ **Change the way we process and supply food**

If we change the way we eat, we need to change the way we supply, process and produce²⁵ food to provide the desired sustainable, safe, healthy and diverse diets. Hereby, EU food systems should strive to reach climate neutrality, and zero waste, preserve biodiversity, land and water resources, and eliminate biological and chemical hazards. This partnership focuses on new ways to process and supply sustainably, starting from a consumer orientation and FS outcomes, while connecting to green and blue production as targeted by other Partnerships.

Circularity, to close nutrient cycles and efficiently use resources, will be a first driver for sustainably processing and supplying foods, and feed. This requires new recycling and processing on-demand methods, food waste reduction guidance tools (for households, food service and retailers), safety tools and measures (e.g. avoiding migration of non-intentionally added substances from recycled food contact materials to the food), conservation methods,

²⁴ Griffiths PE, West C. A balanced intervention ladder: promoting autonomy through public health action. *Public Health*. 2015 Aug;129(8):1092-8. doi: 10.1016/j.puhe.2015.08.007. Epub 2015 Aug 29. PMID: 26330372.

²⁵ Food production does not refer to agricultural production, but to food processing, extraction and combination of ingredients, and food preparation (such as by the catering and restaurant industry).

hygienic designs and even disease control (e.g. zoonoses; viruses, bacteria and parasites that spread to humans from animals).

Diversification is a second driver for processes and supply chains to provide diverse diets and handle biodiverse (agro-ecological) resources. This also includes innovative food products from alternative protein crops, forgotten (ancient) crops, algae, low-trophic fish species and invertebrates, insects, etc. Diversification also evokes challenging research questions in the microbiome field and also potentially adverse contaminants, from fermentation (biotechnological processes) till the gut microbiota.

The move towards more circular and diversified farming systems will be the focus of the agroecology partnership.

Re-localisation and adapted logistic schemes will become the third driver resulting in re-scaling of processes and alternative (short and long) supply chains. This also includes cascading methods for locally transforming main and by-products into food 'first', then feed, and non-food applications (in pharma, cosmetics, biomaterials, bioenergy; the latter with the Partnership Circular Bio-Based Europe). Here, technological, social and organizational innovations are integrally addressed.

A key transversal topic is mild and targeted food processing that preserves the freshness of natural resources as well as nutritional density, limits the use of additives and seeks optimal health properties of food. This will be combined with novel preservation schemes (storage, packaging), adaptable to various supply chains. These should be more resource efficient, diminish environmental impact and reduce the use of fossil fuels, while keeping shelf-life all along the food chain.

Finally, digitalization of processes and of food supply chains requires R&I efforts to enhance efficient resources usage, food safety and food authenticity. Complex food system modelling, predictive benefit-risk and fraud modelling (AI, block chain technologies, etc.), early warning signalling, and data management, are key themes to be addressed.

Responsible research and innovation schemes for (new) processes and supply chains, in addition to skills development and education, should help food actors in the EU; this, to increase the diversity of healthy and safe food products, sustainably produced in a fair and inclusive manner. Special attention will be given to addressing technological and financial lock-ins, at all TRL scales, that build on the HE Partnerships and Missions.

➤ **Change the way we connect with food systems**

Improve citizen engagement and consumer understanding and trust in transparent and sustainable European food systems. Achieving this requires novel tools and practices for improved consumer/citizen engagement, and empowerment as well as awareness raising of sustainable food systems. The transformation requires taking up responsibilities and decision making of own diets as well as for influencing how food is produced, distributed and consumed. The social context, socio-economic inequalities in access, and discrepancy between citizens' reported intent and actual consumer behaviour are all underexplored. Innovating in local terrestrial and aquatic farming and food systems, short supply chains, distribution and business

models, support to foster food cultures with local and authentic products while preventing food fraud and food safety hazards. With a view of not compromising consumer trust and food safety in the transition of food systems, e.g. in the expanding use of novel sources of protein, multi-criteria risk-benefit assessment approaches are needed to integrate and link safe, high-quality, affordable, appealing and sustainable nutrition including the development of new practices in complex local food systems as well as improved or increased share of information. Research and innovation will contribute to fostering feed and food safety (including food packaging), authenticity, integrity, and the necessary transparency across the food systems, through innovation in digital technologies like Artificial Intelligence (AI) and block chain, data-driven services or other.

➤ **Change the way we govern food systems**

Ensure effective and inclusive governance of the transition towards sustainable EU food systems. This will support the use of evidence-based levers, incentives and steering mechanisms in local, regional, national and global transition pathways towards sustainable food systems through R&I contributions that support the design of innovation-friendly food systems-related policies at all levels. R&I efforts may foster collaboration across ‘food policy councils’, rural, coastal areas, islands and urban networks and city-regional collaboration models, regional innovation platforms and support involvement of a plurality of food system actors including non-traditional actors, e.g. from housing, public health, insurance and banking sectors. The partnership would thus contribute to policymaking and implementation by providing R&I support to sustainable food system policies, providing -where relevant - support to the future EU legislative framework for sustainable food systems as well as legal obstacles to development of new value chains including land-water interaction. It will analyse the impact of governance in fields such as breeding, aquaculture, fisheries, agriculture, food processing, food services, retailing and marketing, food packaging, food safety and international trade in order to identify aspects restricting innovation and the sustainability of food systems. In this regard, overlap will be avoided and synergies will be ensured with related activities of other partnerships focusing on land-based production. Focus on practices in incentivising sustainable businesses would contribute to implement the code of conduct for responsible business and marketing in the food supply chain that is an action of the Farm to Fork strategy. The partnership will also examine ways to strengthen decision-making based on true cost accounting in food business that also embed environmental and social (incl. health) externalities.

A more complete SRIA including clearly identified milestones and outcomes and impact pathways for their planned uptake will be developed in dialogue with potential funding agencies, EC services, stakeholder representatives and other Horizon Europe Partnerships. The Partnership will be designed to match different R&I pathways, facilitating more fundamental knowledge questions, as well as closer-to-market questions where the link with SMEs and larger companies, as well as the relevant players such as EIT FOOD will be established.

2.3 Necessity for a European Partnership

A recent report of the Standing Committee on Agriculture Research (SCAR) SWG on Food Systems research by European MS has signaled that food safety, sustainability and health are of particular interest in MS research policies. This is underlined by the joint statement letter of the SCAR and 3 JPIs (HDHL, FACCE and Oceans) and of EFFoST, EIT Food, FoodDrinkEurope, FoodNexus, ETP Food for Life and Foodforce. At the World Food Day 2019, the need for innovations at EU and national levels was emphasized by the EC representatives.

According to the SAM-SAPEA report²⁶ on Food Systems, the coordination, alignment and leveraging of European and national R&I efforts is essential for tackling the challenges associated with sustainable food systems through a transnational, integrated and transdisciplinary approach. This will provide the necessary scientific evidence to help civil society, policymakers, businesses and primary producers to take concerted action on European, national, regional and local levels that deliver co-benefits on nutrition, climate, circularity and place-based innovation and avoid detrimental effects in particular to developing countries.

Citizens' concerns on food safety, healthiness, and sustainability of foods are further emphasized by the lack of trust in the food systems including parts of science and innovation. For example, increasing transparency of the EU food safety system, as brought forward by the Commission proposal amending the EU General food Law, contributes to meeting citizens' expectations. This requires both a bottom-up approach in local food systems with citizens and a European guidance approach.

The references in this document are in line with the Farm to Fork strategy and Food2030 agenda priorities, all underlining needs for a joint system approach by a real Partnership mobilizing all complementary skills and competences. Only in this way can the overwhelming challenges be tackled such as climate change, triple burden of malnutrition and rising non-communicable disease, loss of biodiversity, lack of stakeholder engagement, loss of cultural heritage, etc. This is particularly true for the agri-food domain, who find themselves also impacted by the same issues, but is partly at the origin of these problems. These actors are however also equipped to find solutions including improving animal-based food systems as well as developing alternatives such as more plant-based food.

An impact-oriented partnership with strong guidance at EU level, and well embedded in all regions in Europe, is therefore the most suitable tool to support future long-term EU coordination, cooperation and capacity building of R&I in these areas.

2.4 Partner composition and target group

Co-funded financial contributions to this Partnership will consist of and build on the successful food systems related parts of JPIs, ERA-Nets and KICs such as FACCE, HDHL and Oceans,

²⁶ <https://www.sapea.info/topics/sustainable-food/>

²⁶ https://ec.europa.eu/info/research-and-innovation/strategy/support-policy-making/scientific-support-eu-policies/group-chief-scientific-advisors/towards-sustainable-food-system_en

JPI Urban ERA-NETS: Surplus, ICT Agri Food, Core-Organic, ERA GAS, SUSAN, ERA HDL, SusFood2, EU-Africa HLPD FNSSA pillar 2, EIT FOOD and the Climate KIC.

The Partnership SFS is an ambitious venture, bringing together parties at all scales in a new framework to foster collaboration (described in 2.2), in line with the Green Deal's call for a "new pact", working together with actors on the ground to deliver transformation. It will establish a new kind of mechanism that can implement unprecedented change, going beyond the above mentioned ERA-NETS and JPIs to also include groups that could not be included until now. The Partnership SFS is complementary to other partnerships and enables synergy and cross talk between existing research networks and knowledge hubs taking a holistic approach in transforming the food systems.

In the Partnership SFS three types of partners will be involved **co-funders (beneficiaries building the consortium)**, **beneficiaries of open calls** and **wider public**. To the **co-funders** belong the regular research and innovation funders of successful transnational R&I initiatives and networks, and new research funding organisations on national but especially also on regional and local level from Member States, Associated Countries and third countries. Public-private funding, philanthropic organisations as well as in-kind funding modalities will be invited. The direct **beneficiaries** (or third parties) of the Partnership SFS joint funding activities will depend on the eligibility of national and regional funding organisations. This Partnership aims to fund the whole R&I ecosystem in a fully open and transparent way. The **wider public** will be engaged via pathways to deliver creative initiatives and participation opportunities in sustainability-oriented projects especially the FS Living Labs. Timely dedicated and targeted communication and dissemination of exploration pathways will be key.

The ambition behind the Sustainable Food Systems Partnership is that this new instrument can provide a platform that connects new types of partners and enable innovative working methods relevant to the entire food system. The Member States and regional governments have already started deliberating on what the new instrument could bring back home. The Flemish Department of Agriculture and Fisheries has started working on supporting a Food Hub aiming at bringing different stakeholders from the entire food value chain together. When it comes to food systems, it is important to recognize all food producers, including aquaculture and fisheries, and that retailing and processing (industry) have a key role as intermediaries between production and consumption. Also local and regional governments, as well as philanthropic organisations, are paramount for the food systems of tomorrow. **Alignment of private and public goals is thus a condition for success of public strategies.**

The Sustainable Food Systems Partnership will engage and involve an extended stakeholder's community including researchers and academia, policymakers, industry (small, medium and large companies), NGO, educators, knowledge brokers, consumers and civil society including youth and young professionals working together **in a living lab approach**. This partnership is built on networks composed of a wide variety of actors and other stakeholders from across the food system, from food production to food consumption and health, and linking the terrestrial and aquatic dimensions (the blue-green continuum).

The envisaged food system living labs will be inclusive, inter and trans-disciplinary, and multi-sectorial platforms with a multi-actor approach involving a wide diversity of sectors including primary production, harvest, food processing and packaging, logistics, retailing, food services (e.g. restaurants, canteens) and public health.

Overlaps will be avoided and coordination of activities will be ensured with other Horizon Europe partnerships and missions also using living labs as implementation, in particular the Agroecology partnership. Where relevant, international collaborations with third countries having international trade of foodstuff and feedstuff with Europe will be supported to share ideas, progresses and impacts, and finally achieve the development of sustainable food systems at various scales, leaving no one behind. With a view of not compromising consumer trust and food safety in the transition of food systems, new holistic risk-benefit assessment approaches are needed to integrate and link safe, high-quality, affordable, appealing and sustainable nutrition including the development of new practices in complex local food systems.

Modern digital technologies have a great potential to make the EU food systems more transparent and fair and could also allow more citizens and SMEs to engage themselves in the development of their food systems.

2.5 International and European dimension

European food systems rely on global inputs. The import of for example soy bean and palm oil challenges sustainability in distant areas. The EU's relationship with Africa is a key priority for the EU. EU – Africa jointly tackle climate change and environmental-related challenges (e.g. biodiversity loss, natural habitats alteration, landscape degradation). They strive to meet the objectives of the Paris Agreement on climate change, and contribute to the Sustainable Development Goals, in particular ensuring food and nutrition security and decent livelihoods. There is an urgent need for more concerted action and financing to accelerate innovation in adaptation because, in many current agricultural systems, the operating environment for agriculture will soon shift beyond what can be managed through incremental adjustments. Food systems are at the center of these challenges, e.g.: OneHealth and food systems, Agro-ecological approaches in African agriculture systems, Rural innovation, AU-EU Combatting all forms of malnutrition, African food cities. A focal point for collaboration is given by the EU-AUHLPD-FNSSA priority and its roadmap for science and technology collaboration²⁷ supported by different funding sources including Horizon 2020 and Horizon Europe, ERA-Nets, African Union research grants, and linking to DeSIRA or PRIMA. They should contribute to the work of the FNSSA-working group (WG) by liaising with the LEAP4FNSSA project supporting the FNSSA-WG secretariat.

The SFS Partnership will liaise with intergovernmental organisations and initiatives (e.g., UN, FAO, WFP, WHO, OECD, WEF, Project Drawdown, etc.) and private funders (EIT FOOD KIC and relevant European Technology Platforms and foundations), urban and regional food systems strategies (including actions relevant to smart specialization strategies). It will link to international networks of universities and research centres working on food systems transition, for example in the EU-AU HLPD Partnership on food and nutrition security and sustainable

²⁷ https://ec.europa.eu/info/files/eu-africa-fnssa-roadmap_en

agriculture. WHO's recent report "Safer food for better Health"²⁸ promotes the same approach at international level. Food safety is imperative and strong collaboration around this topic is a key. The high level of food safety in the EU is best maintained with strong public activity, bringing together public bodies including EU and National Food Safety Agencies and regulatory bodies including those responsible for risk assessment like EFSA.

3 Planned Implementation

3.1 Activities

The SFS partnership will enable network partners to co-create and deploy R&I actions in support of food systems transition. The objective of SFS is *'to collectively develop and implement an EU-wide committed research and innovation partnership to accelerate the transition towards healthy diets that are safe and sustainably produced²⁹ and consumed in resilient EU and global food systems'*. The partnership will address challenges and thematic focus areas from **a food systems approach** in complementarity with other initiatives and partnerships that will address the challenges of specific parts of the system, e.g., accelerating transition of land-based production towards sustainability under the Agroecology partnership.

The SFS partnership will deliver benefits in the form of better understanding of interlinked processes and their distant effects, identifying potential trade-offs and co-benefits, delivering systemic impacts, contribute to policymaking for sustainable food systems, and act on leverage points relevant to business, place-based, communities and/or government driven action. The partnership will expand the EU's potential for context dependent, socially embedded and responsible research and innovation (RRI) as well as changes in practices relevant to production methods, products, food environments, dietary habits, waste and circularity, business models, institutions and policies. This includes the regulation of novel ingredients in feed and food.

The core strategy of the SFS Partnership, will be informed and build on the EU Green Deal and its Farm to Fork and Biodiversity strategies, relevant expert groups³⁰ on FOOD 2030 and SCAR themes, Horizon Europe Mission Boards and various programming and technology platforms to deploy across the SRIA's *four thematic areas for transformative R&I* described above.

➤ Change the way we eat

²⁸ <https://www.who.int/publications-detail-redirect/9789240031739>

²⁹ Food production does not refer to agricultural production, but to food processing, extraction and combination of ingredients, and food preparation (such as by the catering and restaurant industry)

³⁰ 36a9-11e6-a825-01aa75ed71a1" <https://op.europa.eu/en/publication-detail/-/publication/6e54c161-36a9-11e6-a825-01aa75ed71a1> roupID=3543&news=1" [Food 2030 Expert Group](#); [IPFSS Expert Group](#), [SAM Opinion Food Systems](#)

- **Change the way we process and supply food**
- **Change the way we connect with food systems**
- **Change the way we govern food systems**

A Horizon Europe Partnership should make use of **collaborative and integrated policy design and governance engaging stakeholders with coordinated bottom-up and top-down approaches**. The SFS Partnership will invest in a new narrative for sustainable EU food in the global marketplace, in which maintaining EU cultural diversity, quality and safety standards above international levels is considered an asset in global competition. In this respect, initiatives for the development of practices for accountability and transparency - including building on the EUs Product Environmental Footprint initiative³¹ - are essential to nurture and **create shared values in food**. Thus, the SFS Partnership will advocate for a more extended view on food, not only as a commodity but also as a common and a human right.

Overall, the partnership will achieve its ambition to coordinate, align and leverage European and national R&I efforts on future-proof food systems through *four interconnected activities*:

- **Pooling R&I resources and programming**

A main objective of the partnership is to strengthen the European Research Area in Food Systems via joint funding of R&I based on interactively developed Strategic Research and Innovation Agenda (SRIA) and a Roadmap. A key aim is to attract contributions from important public funding agencies and – where possible – private funds in MS, and associated countries to complement the EC co-funding. The partnership including EC will agree on scopes for competitive calls based on the SRIA and will select and fund relevant, high-quality and impact oriented R&I projects engaging a wide array of scientific disciplines and stakeholders in multi-actor and Food Systems approaches including - where relevant – Living Lab initiatives. While the mentioned thematic areas describe a large set of specific knowledge needs, the FS approach will ensure that funded projects will address challenges from a multi-node and multi-actor perspective including relevant interactions among agents as well as linked sustainability outcomes – intended and unintended. Thus, the Co-fund competitive calls will enhance a food systems approach at various scales (local, regional, national, EU, transnational and global level) while respecting division of labour with partnerships and Missions specifically addressing primary production. The approach will also involve jointly accelerating coordinated action on the most pressing public-private R&I priorities: agenda-setting and legal frameworks for involving industry and SME representatives in programming and for involving SMEs in projects. Coordinated calls with other partnerships and associated partners for specific objectives such as the World Food Programme, the European Space Agency or foundations that are active within the scope of sustainable food systems (e.g. the Rockefeller Foundation, the Ellen MacArthur Foundation, the Daniel and Nina Carasso Foundation, the Bill & Melinda Gates Foundation) could be explored. When transformation in Europe is expected to generate distant effects on food systems in other non-Europe countries, particularly

³¹ [PEF-Webinar-Sphera-2021-05-25_v7_1.pdf \(europa.eu\)](#)

in Africa, R&I projects involving collaboration with R&I organisations in these countries will be encouraged with the aim to mitigate negative effects, thus leaving no one behind the European FS transformation.

➤ **Launching a food systems observatory**

The food systems observatory will create a European platform and network with the objective of following and describing the status, challenges and sustainability of European Food Systems at relevant scales. The aim is to assist decision makers and stakeholders with updated assessments and trends regarding food systems development at regional, national and European scales including international FS linkages and interrelations. The data obtained will be used for diagnoses, forecasts and for monitoring the impacts of the SFS partnerships activities. The observatory will contribute to co-developing – where possible - harmonized data recording to supplement existing monitoring efforts by national and EC research agencies/ministries on the sustainability performance of European food systems including distant effects (outside Europe). At present, capacities and protocols to monitor and map food systems drivers and outcomes differ widely across the EU. The observatory will build on future Farm to Fork strategy's policy initiatives and develop protocols for defining and delineating specific EU food systems at various scales in the global context following science-based methods using data and modelling and translating these into policy relevant findings. The observatory will seek collaboration with international institutions and initiatives to jointly cover the widest possible FS linkages in a global perspective including trade related impacts on land use, food availability and other sustainability aspects. A fostering institutional setting of the FS observatory will be considered in order to ensure contribution from MS and sustainability of the effort beyond the partnership as well as avoiding overlap with existing institutions. At a mature state of the partnership, the food system observatory model can be expanded to seek synergies beyond Europe in order to develop concerted sustainable food system approaches, sharing innovations and changes at a global scale. These activities will be complementary to the partnership on Agriculture of Data.

➤ **Establishing a food systems knowledge hub**

The food systems knowledge hub will identify, build on and make available relevant knowledge and experience generated from previous national and EU R&I programmes and projects on FS and FS Living Labs. The hub will encompass a network of transformative research and innovation labs (FS-labs) for the co-creation of systemic innovations at different scales across Europe and considering innovations generated by R&I collaborations with third countries, in particular from Africa in the framework of LEAP4FNSSA. The food system labs will be inclusive, multi-actor, inter and trans-disciplinary, and multi-sectorial platforms, with consumers, public sector, and all other actors in food systems (e.g. citizens, industry, retailers, food services, farmers, aqua culturists and fishers, investors, planners, policymakers, knowledge brokers etc.). Partners will work together in the Living Lab approach, fostering diverse forms of innovation that starts from the prevailing multi-objective societal problems to be addressed and the associated risks and benefits. The FS knowledge hub will ensure that

experiences and results gained via the FS-labs will be recorded and synthesized as best possible across regions and food system types. For this purpose, the knowledge hub will also provide the FS labs with scientific insights in the complexity of food systems, the elaboration of concepts and models for complex systems, science-based joint protocols, benchmarks, methodologies and tools for food systems approaches in R&I action.

The reason is that the complexity of food systems is huge, due to its enormous diversity in (interacting) food actors, food environments or contexts, resources and products and services, food handling schemes and supply-demand chains, regulations and incentives, outcomes and time-schemes for operations. Hence, targeted interventions, leveraging measures or external stress factors may lead to unforeseen outcomes and trade-offs. The resilience and the capacity of food systems to adapt is not for granted, as for example the recent COVID crisis has shown. A deeper insight in the complexity of highly different food systems is thus needed. Even more these insights are imperative for understanding when food systems evolve sustainably or not. In addition, the interactions between different (e.g. territorialized) food systems should be researched in order to develop appropriate, innovative, exchange mechanisms to jointly reach sustainable outcomes. This requires insights in complex system science (like complex adaptive systems, agent-based modelling, scaling rules across levels, etc.), elaborating complex systems, concepts and models, and capacities to translate insights into practice via well-designed case studies and guidelines.

- **Knowledge sharing and scaling** , adapting knowledge systems, innovation platforms and science-policy interfaces

The knowledge hub will organise the sharing of existing knowledge and co-create new knowledge at transnational, national or subnational level, through joint protocols and methodologies for designing, organising and evaluating participatory R&I food system activities including Living Labs. Activities are 1/Community of practice/learning network for food system labs. 2/ Reflect on the value-added of the activities in the hub. 3/ "R&I roadmap activity". 4/ Innovation Nest: Liaison with existing tools (EIT Food; EIC; national incubators) for SME and start-up engagement including business development. The SFS will invest in several types of knowledge transfer and training on food systems awareness:

1. Develop formal and informal education programme and competence building for food system transformation at all levels (e.g.: schools, Higher Education Institutions and Vocational training);
2. Knowledge transfer for scaling innovations and policy coherence;
3. Knowledge transfer to industry organized through the stakeholders and the individual project consortia and
4. Science-policy interfaces in the EU at various levels (local to national), including Intergovernmental EU and global levels.

SFS partnership will ensure collaboration with EC SAM and related activities as well as international initiatives for policy advice in FS. The activities in this area may result in the

development of a Food Systems Mission for the medium-term. Particular support will be made to relevant EU Agencies and the Joint Research Centre (JRC) of the European Commission, who are key research stakeholders that provide scientific advice for policymaking.

SFS partnership creates strong synergies with national policies and programmes. The interconnected activities, as described above, enable aligning EU, trans-European and MS/AC funding for the targeting of EU-wide common topics as well as national-regional-local priorities. Insights in the complexity of both local and (inter-)national food systems, sharing of knowledge and insights of (local) best practices, joint datasets and metrics, are beneficial to reach sustainable outcomes at all scales. It also respects the differences in local, regional, national and global priorities in policies and programs, and the process of sharing mutual interests. In this sense, the Partnership really follows **both a bottom-up and top-down – or better formulated a collective intelligence** – approach which allows **co-funders** to better estimate benefit-investment ratios and the relevance for their policies and programs. Also, **beneficiaries – and in particular local players** – are provided with calls where their local actions can be transformed into value, both in economic, social and environmental terms. The **wider public** is also better served because local and (inter-)national objectives are put in harmony, according to their expectations, preferences and needs.

3.2 Resources

Co-funded Partnership on Sustainable Food Systems

To speed up Food System transition, the involvement of all relevant stakeholders is necessary. **The Partnership on Sustainable Food Systems** will be a **co-funded partnership** where the co-fund owners and the EC are considered as the first circle of partners in order to finance activities of the Partnership. However, the following elements should be taken into account for commitment and alignment of all relevant stakeholders: (i) possibility for in-kind contributions from both private and public stakeholders, (ii) the flexibility in programming and (iii) long-term implementation frameworks.

The advantages of the Co-funded Partnership model include the direct involvement of the European Commission (EC), direct benefits in terms of mobilised national funding being co-funded, and the possibility to design and implement a common programme within the Member States/Associated Countries, thus mobilising even more national R&I funding under a jointly programmed Partnership. This is an attractive and proven model that has served well in a large number of JPIs and ERA-NETs³² showing that it is possible to include private partners in such programmes. For the private sector, contributing to sustainability goals is an important source of legitimacy and a driver of innovation, not to speak of mitigation of reputation and liability risks related to environmental or social hazards. Moreover, **a well-structured and balanced and sustained interaction between the private sector, the public sector and societal actors on R&I policy can contribute to highlight the critical points of present and future regulation and help identify potential barriers to implementation.**

³² <https://www.era-learn.eu/partnerships-in-a-nutshell/type-of-networks/partnerships-under-horizon-2020>

When it comes to food systems, it is important to recognize all food producers, including aquaculture and fisheries, and that retailing and processing have a key role as intermediaries between production and consumption. **Alignment of private goals and public goals is thus a condition for success of public strategies. In particular, innovative food businesses implementing the European Green Deal, Farm to Fork and Bioeconomy objectives could play a lighthouse role.** Governance of partnerships should then be able to guarantee a balance between all interests (small and big, different phases of the chain, different sectors, geographical differences), and should be based on a clear commitment of the private sector in relation to common values, public goals and the related targets.

The shift to sustainable food systems require a transition in perspective and a recognition of the interlinkages among agriculture, food and environmental policies. Therefore, one aim is to find these win-win or leverage–points, where specific changes take place, which again creates synergies by facilitating other shifts in the food system. The objective is that changed behaviour by conscious actors may create positive feedbacks from other actors in the system. These transformations thus catalyse co-benefits and synergies between healthy diets, behavioural change, and circular and affordable food production, processing and marketing with low waste and sustainable outcomes contributing to the livelihoods of people. Such successful changes will require food systems inspired by research, innovation and real-life experiments and demonstrators. No single solution will be suitable for all food systems. Hence, the Partnership will benefit if it can identify: (i) the nodes where we as a part of the system on the societal level are underperforming and (ii) provide opportunities to **incredible partners** who can make a difference. **Commitment to stakeholders' involvement in the spirit of responsible research and innovation (RRI) at all stages of the Partnership (including the agenda setting) and consequent responsibility should be at the basis of any governance model.** Budget allocation is summarised in the **Table 2**.

Table 2. Budget allocation of the sustainable food systems partnership.

Focus Area (F.A)	Title All topics considered from a systems approach	Key Issues	Kind of activities	High cost categories Utilising expensive equipment/infrastructure	Percentage Part of over all activities	Amount In M €, balanced mix of in-cash and in-kind	Remarks
R&I Area 1	Change the way we eat	Safe, healthy and sustainable food are standard in the food environment, enabling dietary shifts	R&I projects with expensive facilities / equipment	very high	17,5%	102	
R&I Area 2	Change the way we process and supply food	supply-side innovation towards carbon neutrality and circularity, reorienting the food environment	R&I projects with expensive facilities / equipments	Very high	17,5%	102	
R&I Area 3	Change the way we connect with food systems	Citizen engagement and consumer trust in reoriented food systems	R&I projects, mainly via case, laboratory and desk studies	Medium	10,0 %	58	
R&I Area 4	Change the way we govern food systems	Leverage points for local, national, EU and global transition pathways - incentives and co-creation	R&I projects, mainly via interactive case and desk studies	Low	7,5%	44	
Activity B and C	Transversal activities, SFS Observatory and LLs Knowledge hub	Running the integrative complex FS program, developing systemic models for complex FS. Developing approach to SFS monitoring, data recording and processing. Developing SFS via transformative Living Labs approaches at local, regional and trans-regional scale	R&I projects, mainly via case, laboratory and desk studies. Engaging stakeholders in transformative Living Labs at various scales	Very high	25,0%	146	In particular case studies in expensive Living Labs in different MS may become expensive (costs for the development of concepts)
Total R&I Budget, competitive funding						453	
Activity A	Pooling R&I resources, programming and call management	Joint calls, joint Programming, and strategic research and innovation agendas (SRIA)	All organisational and operational activities (using a systems approach, organisation of	Low	7,5%	44	In general 6% of the EC budget for running an office is calculated. Here additional costs are for

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			calls, including project cycles, management etc, meetings, advisory board and governance council activities, communication				inclusive stakeholder meetings and consultations, communication issues and events, etc.
Activity B	Launching a Food systems observatory	Platform for sharing metrics, data and assessments on the sustainability performance of food systems	Synchronising methods, managing databases and synthesizing results from competitive projects as basis for system approaches	High	2,5%	15	Possibly co-funded or with in-kind from MS and JRC. The initial costs may be high due to installing the observatory but when running the annual budgets are lower
Activity C	Establishing a Food systems knowledge hub	Network of transformative research and innovation labs (FS-labs) on systemic innovations at different scale	Running the integrative complex food systems program, developing systemic models for complex FS, integrating insights of all individually financed projects, co-creation studies in Living Labs	Very high	2,5%	15	In particular case studies in expensive Living Labs in different MS may become expensive (costs for the development of concepts)
Activity D	Knowledge sharing, and scaling	Adapting knowledge systems, innovation platforms and science-policy interfaces for ensuring impact	Desk studies, exploration in city and policy labs, questionnaires, reports, science-policy events (partly funded as complete calls)	Medium	10,0%	58	
Total budget for activities							131 M€
TOTAL					100%		584 M€
					Contribution of the European Commission		175 M€

3.3 Governance

Governance structure of the Partnership:

In order to guide the Transition towards Sustainable Food Systems as the new Partnership, the governance structure should be inclusive and capable of aligning strategies, as well as agendas and work programmes. Even more, it should be structured in such a way that the 4 thematic areas will be successfully implemented and operationalized. Finally, it should guarantee a coherent and systematic way of operating and address the 4 inter-connected activities. This is even more important in this particular Partnership because each thematic area is considered via a food system lens; also, it's systematic way of working is needed to unravel the complexity of food systems, to select most appropriate leverage points and adapt R&I strategies based on latest insights and lessons learnt in case studies. Consequently, a possible governance structure of the partnership considers:

- **Governing board (GB):** the highest-level decision-making body. Will be formed by partners representing program owners across Europe and from the European Commission. It should also ensure that both macro and place-based priorities are considered and that all actions at the science-policy interface are well taken into account.
- **Management board (MB):** will support the GB and is responsible for day-to-day management, initiating and overseeing the Partnerships' activities. Will include the coordinator, co-coordinator and hub leaders.
- **EU Food Systems Executive Office (FSEO):** will implement the defined actions according to the established work plans, performing the R&I activities and establishing an interface between science and policy. FSEO will be constituted by the Hub leaders, Work Package and Task leaders, and Partners involved in the daily activities.
- **EU Food Systems Hub of Hubs (FSHH):** will consider the thematic Hubs (TH), national hubs (NH), and European Hub (EH) which will closely interact with the Collaboration Partners Platform (CPP).
 - **Thematic hubs (TH):** transnational hubs dedicated to specific subjects/common themes under the umbrella of the partnership, corresponding to "system thinking hubs".
 - **National hubs (NH):** national networking bodies regarding the thematic of the partnership, gathering the national expertise on these subjects and federating/framing relevant initiatives at local and regional levels.
 - **European Hub (EH):** the European Hub is the central hub in which all insights in the variety of food systems will be considered from a food systems lens thanks to a common complex food systems program.

- **Collaboration Partners Platform (CPP)/Ambassadors:** should include the representatives of the different actors playing a role in the definition and implementation of sustainable food systems. CPP will include the Food Systems Community of Practice, Private Partners, and Representatives of diverse civil society and other stakeholder groups such as industry. A youth group or youth ambassador system should be part of it.
 - **Citizens Service Desk (CSD):** this is the entry point for citizens that are willing to contribute to sustainable food systems trajectories, sharing their creativity (like new community activities in the food domain), comments, questions and feedbacks to actions undertaken by the Partnership. The Service Desk will also serve to inform citizens around Europe and beyond about benefits and trade-offs of actions, with the intention to mobilize citizens in reaching sustainable outcomes.
- **Advisory board (AB):** provides advice to the MB on the planning and implementation of the main activities of the partnership and several different stakeholders can be envisioned.

It should be noted that further elaboration of the Governance structure in the template would include a reflection on a most suitable governance structure for a committed approach to the Partnership, which may ensure that over time the portfolio of projects funded through competitive calls will cover as much of the SRIA and Roadmap as possible and that results (outputs) from individual projects feed into the necessary outcomes in terms of sustainable food systems following an explicit impact pathway. This means the R&I solutions aim to respond to the grand food system challenges in a holistic and systemic manner: economy, environment and societal solutions require horizontal collaboration. It should include reflections on a potential role for the SCAR Food Systems Strategic Working Group, which is the convening platform for co-creating the Partnership. Moreover, a comparison of different governance models is then recommended.

Governance of partnerships should then be able to guarantee a balance between all interests (at different scales: small and big production units, SME, agroindustry, from farm to landscape, different phases of the chain, different sectors, from local, territorial, regional, and intergovernmental, taking into account geographical differences), and should be based on a clear commitment of the private sector in relation to common values, to public goals and the related targets. Structural differences across small- and largescale aquaculture, farming and fisheries are also reflected in public strategies and acceptance. Therefore, one aim is to find loci and leverage points in food systems, where specific changes by conscious actors may create positive feedbacks from other actors in the system, resulting in transformations that catalyse co-benefits and synergies between healthy diets, behavioural change, and circular and affordable food production, processing, marketing and consumption with low waste and with sustainable outcomes (Meadows, D. (1999). Leverage points: Places to intervene in a system. Hartland, WI: The Sustainability Institute). Such successful changes will require food systems inspired by research, innovation and real-life experiments and demonstrators. Hence, the Partnership will benefit if it can identify: (i) the nodes where the stakeholders of the part of the system at a societal level are underperforming and (ii) provide opportunities to **partners** who can credibly make a difference in terms of an exemplary niche innovation or shift in the mainstream practice. A challenge for the partnership is to bring on board representatives from

all stakeholder groups, including citizens, and to incorporate or develop mechanisms to support R&I with both public and private funding, in cash as well as in-kind. Within the governance of the Partnership, modalities are designed to enable **in-kind contributions** from relevant (national) actors, and to make them explicit in the Partnership activities, e.g. sharing of national/regional data sets, joint development of indicators, addressing policy questions or regulatory affairs is a collaboration across member states.

3.4 Openness and transparency

The partnership preparations have been carried out in an open and interactive manner. The co-creation process started in 2019 with the **1st workshop** to identify the main challenges the partnership should address. The workshop participants were SCAR Food Systems SWG members (representatives of national public authorities and research centres of 14 countries) and JPIs HDHL, FACCE and OCEANS representatives; 37 people participated in a physical workshop in Brussel on 18th September 2019.

During the summer of 2020 a **public survey** with targeted mailing to 160 stakeholder groupings was carried out to collect the opinion of various stakeholders on challenges and opportunities for the development of a Horizon Europe R&I partnership on Sustainable Food Systems for People Planet and Climate. Representatives of research centres, national public authorities, NGOs as well as the industry have provided consolidated responses (79 responses). Their contributions and the information gathered was further refined in a **2nd workshop** on the 1st October 2020 to exchange opinions and opportunities with the stakeholders. Representatives of 16 EU and associated countries and representatives of EFSA, FAO; ERA-NETs SUSFOOD2 and CORE ORGANIC, JPIs, EIT FOOD, BIOEAST, FoodDrinkEurope (103 people in total) took part in the workshop. The first outline of the partnership took shape after the second workshop and gave path to the partnership narrative.

In the 1st quarter of 2021, four drafting groups were established, involving 47 experts from 14 countries and different networks to draft a document containing the reasoning for the partnership: why, what and how this partnership is to be.

The **3rd workshop** took place in the spring of 2021 (3rd March 2021) to explore synergies with the other partnerships and identify complementarities. This workshop brought together the experts involved in the drafting process of the narrative and the representatives of other relevant Horizon Europe partnerships such as: Agroecology, Animal Health and Welfare, Blue economy, as well as the chairs of all SCAR Strategic and Collaborative Working groups (SCAR SWGs and CWGs). 78 people participated in the 3rd online workshop. There is e.g. certainly a link with food safety between the PSs on Food Systems and Animal Health and Welfare under the One Health approach to properly monitor and as much as possible prevent the spread of zoonoses and antimicrobial resistance from animal production via food and other sources. Cross collaboration around One Health is therefore one of the pillars on which activities for both partnerships can take place.

The template drafting of the partnership took place during the summer of 2021, and the **4th workshop** held on the 29th of September 2021 gave the stakeholders the opportunity to reflect the scope and the outcome expectations of the partnership. The 4th workshop involved even further stakeholders as 128 participants gave input. The participants were representatives of 26 EU and associated countries, funder and foundation representatives, ERA-NETs,

(SUSFOOD2, CORE ORGANIC, ICT-AGRI-FOOD); COPA COGECA; BIOEAST, FoodDrinkEurope and ETP 'Food for Life', EIT FOOD, EFSA, as well as a large number of EC representatives (DG RTD, DG AGRI, DG SANTE, DG ENVI, DG REGIO, DG INTPA, DG CLIMA).

In addition to the invited parties at the Partnership SFS organised workshops, representatives of the 'SFS Partnership in preparation' have presented the narrative and factsheet findings at meetings of other relevant stakeholder meetings: TP Organics, SCAR FISH and SCAR AKIS, JPI HDHL, BIOEAST initiative, ERA4Health (16/11/2021), Foodforce meeting of food research institutes and universities (25/11/2021), FACCE-JPI, ETP Food for Life (2/12/2021).

The further design of the Partnership will continue to be done in an open, stakeholder-oriented process under the guidance of SCAR Food Systems SWG, supported initially by an active group of experts, and from Spring 2022 onward also by a CSA project. The targeted stakeholders' groups for consultations are national ministries and funding agencies, regional and local governments, international institutions, philanthropic organisations, academic institutions and research centers, farmers and private sector parties directly and indirectly involved in food systems (like food manufacturers, food service, legal offices, logistic suppliers, etc.). Citizens will be included not only by consumer organisations such as BEUC or citizen organisations like ICLEI, but also by making use of living lab approaches. Steps foreseen are the formulation of missions for the partnership, establishing procedures for developing a Strategic Research and Innovation (SRIA) Agenda and subsequent implementation, open access research and innovation cases inspiring others, feedbacks on code of conduct and potential trade-offs, etc. The SRIA will be established, based on analyses of the major needs, gaps and leverage points, building on work from FOOD2030, challenges specified in the Green Deal and Farm to Fork strategies and leading studies and reports. This may lead to further development of the objectives, specific objectives, priority areas for alignment of research priorities and gaps, identification of additional leverage points and stakeholders.

The Partnership distinguishes 'co-funders', 'beneficiaries' and 'wider public'. For all, the Partnership will develop dedicated tasks. For the first, attention will be on the exploration of funding partners and modalities that are suited for several levels of engagement of actors/stakeholders. This will include public-private funding modalities as well as options for in-kind funding. A specific point of attention will be the exploration of alignment of funding instruments in the partnership with other funding options that specifically address regional and local levels: i.e. ERDF, EAFRD (POP), Interreg, URBACT; or funding for nature-based and environmental solutions such as LIFE. The partnership could open new opportunities for more synergistic funding in the EU. For example, ERDF funding is tailored to higher, closer-to-market TRL levels than Horizon actions, and explicitly encourages local needs, public (knowledge partners) and private (SME) coupling through their RIS3 Strategies. Such financial and programming partners will be invited to explore possibilities for local experiments under the knowledge transfer and competence building/education including science to policy advice action of the Partnership. Throughout the entire duration of the partnership, best efforts will be made in order to widen the partnership with additional partners, providing added value to the already existing consortium.

For the second (beneficiaries), the Partnership will guarantee open access to calls and all relevant information flows, presentation of best cases, interactive tools for providing the opportunities to give feedback and input. The objective here is to be both transparent as well as to inspire all individual and clustered parties to contribute to sustainable development trajectories.

For the third (wider public), the Partnership will provide timely communication, dissemination of new findings and insights in exploration pathways. In particular, attention will be paid as to how the wider public can be partner in sustainability-oriented projects or even propose creative initiatives to be seriously taken into account. Here, the Observatory will also play a key role in monitoring best and worst practices. The Knowledge Hub is foreseen to provide evidence – in an open manner – to the pros and cons of proposed pathways.

Overall, Open Access and Open data procedures, as foreseen to be elaborated in the CSA, will be included in the functioning of the Partnership.

The Partnership will ensure that all funding bodies are represented. This will be done in two ways:

First, a core group will be recruited that is commitment to serve the needs, preferences and demands of all funding bodies in an objective manner. Together with the Board of Funders-representatives – that will be installed at the start of the Partnership – eventual conflicting issues will be discussed, prioritized and translated into democratically well-selected actions. Since, both the Board of Funders representatives, the core group as well as topics and context evolve over time, the procedures for objectively proposing actions will be reviewed annually (only in case of major changes).

Second, the core group will be assisted by temporary staff members provided by the funding bodies. This enables the communication flow between the funding organisations and the partnership core group. It will also support the core group in better digesting all potential demands and requirements. Again, the Board of Funder's representatives will annually review if these demands and requirements are taken into account in a balanced manner. A yearly report will be provided with major observations, conclusions and actions points for the following period. Since this concerns a challenging activity for all Partnerships, each two years, an exchange meeting for lessons learnt will be organised by the Partnership SFS with invited Partnerships in its wider field of interest.