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Title: Testing and demonstrating systemic innovations for sustainable food from farm to fork

Specific Challenge:

European food is famous for being safe, nutritious and of high quality. It should now also become the global standard for sustainability. Although the transition to more sustainable systems is starting, it remains a big challenge to feed a fast-growing world population and bring food systems within a safe and just operating space - encompassing planetary health, economic viability and social welfare, and including human health. Current production practices and consumption patterns still result in air, water and soil pollution, contribute to the loss of biodiversity and to climate change, and consume excessive amounts of natural resources ,including water and energy, while an important part of food is wasted. At the same time, unbalanced diets contribute to obesity and diseases such as cancer. Here are some of the facts:

- About 20% of the food produced in the EU is being wasted;
- Globally, food systems are responsible for about 29% of total GHG emissions.;
- Nitrogen and phosphorus cycles exceed their safe operating space, respectively by a factor of 3.3 and 2¹ resulting in diffuse pollution of terrestrial, aquatic and atmospheric ecosystems;
- One in five EU adults are obese. Many Europeans die prematurely, or suffer from illnesses due to diet related diseases.

In addition, the COVID19 pandemic highlighted the importance of resilient EU food systems within a sustainable, circular bioeconomy to respond to global shocks and disruptions in supply chains, and to mitigate socio-economic impacts of crises notably as regards food poverty.

The Farm to Fork Strategy, which is at the heart of the European Green Deal, aims to address the challenges and accelerate the transition to sustainable food systems, to ensure that the economic, social and environmental foundations of food and nutrition security are not compromised for current and future generations. It places emphasis on enabling a “just transition” for all actors of the food systems, in which also social inequalities are reduced, food poverty is addressed, and a fair income for all actors is made possible. It requires and builds on innovative systemic solutions that can be scaled up, such as smart agro-ecological practices, new protein sources other than meat, sustainable food from the oceans and aquaculture, and personalised advice relating to sustainable healthy diets. Concerted efforts are needed to test and demonstrate such solutions and target impact in this decade.

Scope:

Projects shall test, pilot and demonstrate innovative systemic solutions (TRL 5-8) to one of the following five urgent and pressing food systems’ challenges:

- 1) Achieving climate neutral farms (on land, water and sea) by reducing GHG emissions and by increasing farm-based carbon sequestration and storage;
- 2) Achieving climate neutral food businesses by mitigating climate change, reducing energy use and increasing energy efficiency in processing, distribution, conservation and preparation of food;
- 3) Reducing the dependence on contentious pesticides and antibiotics; reducing the use and increasing the efficiency of fertilisers; reducing the losses of nutrients from fertilisers, towards zero pollution;
- 4) Reducing food losses and waste, while avoiding unsustainable packaging;
- 5) Shifting to sustainable healthy diets², sourced from land, water and sea, and accessible to all EU citizens, including the most deprived and vulnerable groups.

Successful projects should go well beyond technological solutions. They should focus on systemic innovations that maximise synergies such as with animal welfare and minimise trade-offs to deliver on the three dimensions of sustainability (social/health, climate/environmental and economic), that increase resilience of food systems to shock and stresses, bring them back in a safe and just operating space and contribute to sufficient, safe, nutritious, and affordable food for all.

² “Sustainable Healthy Diets are dietary patterns that promote all dimensions of individuals’ health and wellbeing; have low environmental pressure and impact; are accessible, affordable, safe and equitable; and are culturally acceptable.” (FAO & WHO. 2019. Sustainable healthy diets – Guiding principles. Rome, page 11)

Projects should pay particular attention to:

- Applying system thinking/systems approaches to define the challenge, including in-depth systemic analyses of its drivers and root causes; to identify possible innovative systemic solutions; to develop approaches and roadmaps to promote their uptake and upscaling in the EU; to assess their expected and actual impact including risks, synergies, and trade-offs with regards to the three pillars of sustainability (social/health, climate/environmental and economic), food and nutrition security, food system resilience and the objectives outlined in the Farm to Fork Strategy and the Green Deal.
- Adopting a multi-actor and cross-sectoral approach engaging practitioners (primary producers, processors, retailers, consumers), public and private institutions (NGO and governmental institutions) and citizens from farm to fork to co-create, test and demonstrate solutions in practice, on a European scale but with attention for geographic and sectoral needs and contexts. Foster collaboration, building bridges and breaking silos between actors of the food chain and between primary sectors as well as collective action. Take specific care to engage young professionals (e.g., young farmers, young fishers, young researchers, young entrepreneurs, etc.), SMEs and citizens.
- Including the most appropriate mix of innovations, such as novel and digital technologies, new business and supply chain models, new governance models, ecological and social innovations while taking into account geographic and sectoral contexts (including environmental) and needs, both for production and consumption. The projects shall focus on upscaling innovations (TRL level 5-8), and can include limited research activities to address specific gaps for solution building, testing and demonstration. Particular attention should be given to understand behaviours, motivations and barriers, with a view to maximizing the uptake of solutions.
- Where appropriate, federating existing testing and demonstration facilities to strengthen their capacity to address the challenge and showcase solutions.
- Delivering and implementing an action plan for dissemination, communication and engagement, for building awareness, education and skills relevant to the solutions on a European scale, in and beyond the regions where the activities take place, among businesses, investors, entrepreneurs, institutions, stakeholders and citizens. Promote their widespread uptake, realize behavioural change, and stimulate investment. Projects may link with other relevant European and national programmes, where appropriate.

Expected Impact: Projects are expected to:

- Test, pilot and demonstrate, across different geographical and sectoral contexts, innovative systemic solutions that lead to :
 - Climate neutrality
 - Reduced food losses and waste
 - Decreased dependency on the use of contentious pesticides, antimicrobials; reduced fertiliser use and nutrient loss;
 - Significant shift to healthy sustainable diets, including among the most deprived and vulnerable groups.
- Improve understanding of:
 - The potential to scale up and out these solutions by 2030 on an EU level; the enablers and barriers, including the behaviour and motivations of actors.
 - The impact of these solutions on the three dimensions of sustainability (social/health, climate/environmental and economic), on the capacity of food systems to operate in a safe and just operating space, on the resilience of food systems to shocks and stresses, and on the objective of providing sufficient, safe, nutritious, and affordable food for all.
- Explain and quantify, using Key Performance Indicators (KPIs), how the solutions will deliver on the expected impacts.

Type of Action: Innovation Action