H2020 2018-2020 CALL SELECTION SC2 DRAFT WP

TOTAL CALL	CODE	TOPIC/NAME	TYPE OF ACTION	TRL		BUDGET OF CALL	SUGGESTED PROJECT BUDGET	STAGE	OPENING DATE	DEADLINE
16				FROM	TO					
	LC-SFS-18	**Climate smart and resilient farming**	RIA							
	SFS-21	**Integrated water management at the small agriculture catchment**	RI							
	CE-SFS-24	**Bioeconomy cities: integrated system innovation in valorising urban biowaste**	IA		7					
	SFS-34	**Sustainable soils and land management**	RIA (A,B)							
	CE-RUR-08	**Closing nutrient cycles**	RIA [A] IA [B]		6-7					
	DT-RUR-14	**ICT Innovation for agriculture – Digital Innovation Hubs for Agriculture**	IA							
	LC-SFS-20	European Joint Programming on soil	EJP Co-fund							
	LC-SFS-03	Microbiome applications for sustainable food systems	IA [A] CSA [B]	5-6	7					
	SFS-07	Stepping up integrated pest management	RIA [A] CSA [B]							
	CE-SFS-23	Innovative and citizen-driven food system approaches in cities	IA							
	SFS-26	Monitoring the investments, policies and impacts of agricultural	RIA							

		and food research and innovation in Europe – An agri-food R&I observatory								
	SFS-28	Agri-Labs	RIA [C]							
	SFS-31	Sustainable Intensification in Africa	CSA [A] RIA [B]							
	SFS-32	Diversifying revenue in rural sub-Saharan Africa through bio-based solutions	RIA		5-7					
	SFS-33	Integrated approaches to food safety controls across the agri-food chain	RIA							
	SFS-35	High-quality organic fertilisers from biogas digestate	RIA		5-7					

LC-SFS-18-2018-2019 CLIMATE SMART AND RESILIENT FARMING

Scope: Proposals should address one of the following issues (A) or (B).

A. [2018] Microclimate management: from field to landscape

Actions should improve the resilience of farming systems to more variable climatic conditions and extreme weather events through innovations in field and regional landscape design. Work should take into account the potential of traditional and new, innovative techniques and test their effectiveness for mitigating/buffering the effects of different weather events including droughts and heat stresses, cold waves, wind, heavy rain and flood management.

B. [2019] Efficiency and resilience of mixed and agroforestry farming systems

Activities will enable the participative design of mixed and agroforestry farming systems not only focusing on the technical and agronomic but also taking on board socio-economic and environmental/climate related aspects of mixed farming modes. Particular emphasis should be given on developing structural solutions to reduce the water consumption in Southern and South Eastern Europe, as well as reducing emission of nutrients and agrochemicals, still leading to a significant deterioration of water quality.

SFS-21-2019 INTEGRATED WATER MANAGEMENT AT THE SMALL AGRICULTURE CATCHMENT

Scope: Proposed actions should look at the use of increasing water productivity, smart and precision irrigation, waste water re-euse and small water retention approaches for managing excess and surplus of water and nutrient recovery from water streams. They should assess and test different aspects of agricultural soil-water management (e.g. interactions, nutrient uptake, erosion, water retention in soil profile) and provide recommendations for its improvement. Work should focus on affordable and easy-to-implement farm level solutions**.** This should include and economic analysis of proposed measures. The analysis of proposed techniques for water management should consider the need for adaptation to climate change and its impact on ecosystem services. Proposals for this call fall under the 'multi-actor approach' ensuring cooperation between farmers and farmers associations, local water management organization, technology providers, research centers and public administration. Preference will be given to consortia focusing on Continental, Pannonia and Boreal biogeographical regions of Europe as defined by the European Environment Agency.

CE-SFS-24-2018 BIOECONOMY CITIES: INTEGRATED SYSTEM INNOVATION IN VALORISING URBAN BIOWASTE

Scope: Proposals shall focus on an integrated system innovation approach in urban biowaste recycling and valorisation for the production of high-value biobased products, including proteins for food and feed. Proposal shall ensure the full integration of the upgraded urban biowaste value chain into the existing local waste/wastewater management schemes. To this aim, proposal shall guarantee the active participation of local and regional authorities, waste/wastewater management utilities, (biobased) industries, the scientific community, local communities and citizens. Particular attention shall also be given to: Life Cycle Assessment (LCA) of the entire urban biowaste value chain; improving logistic models taking into account changing behaviours and participation of citizens and local communities towards the collection and use of this particular feedstock; increasing consumers' awareness and acceptance of urban biowaste-derived products; adapting/developing business models for successful market uptake; regulatory aspects; and facilitating the exchange of good practices and experiences between all stakeholders.

SFS-34-2018/2019/2020: SUSTAINABLE SOILS AND LAND MANAGEMENT

Scope:

A. [2018]: High-efficient management of soil quality and land resources -RIA 41

Harmonizing land information is crucial for building common understanding of the land resource base, (with special regard to prime land) and the prioritisation of targets for its use. Harmonization should be based on the Eurasian coverage of the new global soil map, incorporating local soil information. Indicators for sustainable intensification and delineation of both prime agricultural land and problem lands should be defined. Options for a new balance between ecology and productivity should be demonstrated for both prime land and problem lands. Influence of climate change and impact of land use change should be incorporated to the models, especially targeting the loss of prime land. The achievement of a new balance should also consider the socio-economic context. In order to achieve the suitability-based high-efficient land resources management, focus has to be on soil properties (carbon in particular), nutrient input (N, P, K), nutrient flows and N fixation. Research should focus more on priority areas in the optimization of land use and environmental protection taking into consideration the specific ecological and socio-economic conditions in China and Europe.

CE-RUR-08-2018/2019/2020 - CLOSING NUTRIENT CYCLES

Scope: Proposals shall address inter-regional and intra-regional nutrient imbalances through effective nutrient recovery from by-products of the agro-food sector (including animal by-products), and conversion into novel fertilisers. Activities shall cluster with the other projects financed under this topic and under topic SFS-35-2019.

Actions should address only one of the following:

A. [2018] Understanding properties, impacts and economics of bio-based fertilisers

The project shall analyse the performance of fertilizers based on organic resources30, notably those that are similar in composition to fertilizers of mineral origin. A comprehensive set of potential environmental impacts shall be identified and assessed along the fertiliser value chain31, along with criteria related to product agronomic performance, safety and quality. Parameters and reference values shall be proposed as a basis for future policies related to the application of new products. The project shall also propose reliable analytical measurement and testing methodologies for future compliance checks of new fertilisers. An analysis of nutrient imbalances between regions in the EU shall be carried out, and the economics of an organised nutrient flow between regions through a new organic-based fertiliser industry shall be established.

B. [2018, 2019, 2020] Bio-based fertilisers from abundant and widespread by-products of the agro-food industry

Projects shall demonstrate technologies and processes for selective recovery of mineral nutrients and production of novel fertilisers. Projects shall carry out a preliminary business model assessment, including supply & demand aspects, to determine the potential viability of the full concept.

Technologies that are currently under development shall be further improved, and possibly integrated, to produce high quality end-products. Feedstock collection and logistics shall be addressed as necessary.

Proposals shall demonstrate that the fertilisers produced are marketable, sustainable, safe and compliant with relevant EU regulations32. These can be mineral-type (i.e. with low organic matter content, allowing for low transport costs), or advanced organic-type fertilisers (i.e. with high organic matter content).

Proposals addressing biogas digestate, or a by-product addressed by a project under this topic in a previous year will not be eligible. Proposals shall perform a thorough analysis of the state-of-

art, and demonstrate that the activities proposed go beyond and do not overlap with past or ongoing projects.

Proposals shall fall under the concept of the 'multi-actor approach', ensuring solid collaboration between agro-food industry, technology providers, research centres, end-users (farmers and farmers associations), and public administration.

DT-RUR-14-2018 ICT INNOVATION FOR AGRICULTURE – DIGITAL INNOVATION HUBS FOR AGRICULTURE

Scope: The Digital Innovation Hubs should address the adoption of ICT-based solutions for a more productive and sustainable agriculture systems. The focus is on emerging innovative technologies which need to be customized, integrated, tested and validated not only by technology developers but also the farming community before being released on the market. Special emphasis is on the strengthening of European start-ups, SMEs and mid-cups by adopting new concepts linked to innovative business and/or service models, and bringing them into contact with actors that can provide access to finance and access to advanced training skills for farmers and agriculture businesses.

Many components of Digital Innovation Hubs already exist on the ground, for instance the knowledge and innovation communities (KIC) of EIT. Countries and regions are investing in Digital Innovation Hubs, through their initiatives on digitising their industries. Through the focus area of Digitising and transforming Industry, the European Commission is adding value to these investments by supporting highly innovative experimentation with a cross-border dimension. Hence, the following specifics are requested for this topic:

1. Organisations participating in the call should demonstrate that they are deeply rooted in a digital innovation hub that offers digital transformation services to companies in its proximity.

2. Every project should support a critical mass of dedicated innovation experiments (bringing together technology suppliers and the farming sector to work together in developing an innovation (a new product, improved production process or business model) that addresses the requirements of the farming sector. To remain flexible on which companies are supported, the action may involve financial support to third parties, in line with the conditions set out in part K of the General Annexes. The consortium will define the selection process of additional users and suppliers for which financial support will be granted (typically in the order of EUR 20 000 – 100 000 per party). Maximum 50% of the EU funding can be allocated to this purpose.

3. Activities to achieve long-term sustainability of the activities of the project. This includes the development of a business plan for the digital innovation hubs. In addition, investors should be attracted to support business development of SMEs and mid-cap actors in successful experiments. Training needs of the SMEs and mid-caps should be collected and shared with training providers in the eco-system, with the ultimate aim that sufficient training opportunities will be available for all companies. Such activities would include also dissemination of best practices and success stories. It is recommended to also use established networks reaching out to SMEs like the Enterprise Europe Network and the NCP network for calls publications and awareness raising towards SME's.

4. Selected projects are expected to collaborate on building a network of Digital Innovation Hubs, covering most regions in Europe

LC-SFS-03-2018 MICROBIOME APPLICATIONS FOR SUSTAINABLE FOOD SYSTEMS

Scope: Actions should address only one of the following:

A. [2018] Proposals shall focus on concrete microbiome applications which are of benefit to the food system. Building on knowledge already accrued from the isolation and characterization of agri-food-associated microbiota, proposals should look into ways to improve the quantity, quality and safety of the food we produce and consume in Europe. Microbiome applications in the treatment of food waste and alternative uses which promote sustainability and circularity are also included in the scope. Proposals are expected to develop holistic approaches across the food system from fork to farm. International collaboration, transdisciplinary research, and integration of SSH and RRI aspects to ensure long-lasting implementation of the results are encouraged.

B. [2018] Proposals should deliver a platform for collaboration and coordination across the diverse range of microbiome-related research programmes owners and project coordinators, throughout food systems and beyond (e.g. linkages with microbiome related work in the health/human and environment sectors). They should map the state of play at the different Member States, European and global levels, and propose strategic research agendas for future Microbiome activities addressing emerging technologies, and political priorities such as the sustainable development goals (SDGs).

Expected Impact: In the framework of SDG goals no 2, 3, 9, 12 and 15, the EU's Bioeconomy Strategy 2012, and the FOOD 2030 SWD9, proposals should explain how activities included are expected to:

• Use microbiomes to strengthen and future-proof food systems. Raise awareness of the potential behind Microbiomes in transforming food systems (scope A);

• Bring to market new and cost-effective commercial applications to assist different stages and processes throughout the food systems, by 2025 (scope A);

• Improve coherence and reduce the overlap between national and EU funding in microbiome research; reinforce collaborations and knowledge exchange with international networks to promote coherence and applicability of microbiomes; help establish internationally agreed microbiome definition, best practices, consistent protocols and pipelines (scope B);

SFS-07-2019/2020 STEPPING UP INTEGRATED PEST MANAGEMENT

Scope

Actions should address only one of the following:

A. [2019] Dashboards for decision making

Activities should integrate various individual models/Decision Support Systems (DSS) into an easy to use and to understand dashboard system which can be accessed by farmers or local advisers. Using composite indicators, the dashboard should quantify at farm scale important impacts on yields, resource use efficiency, and for planning at catchment level effects on future climate change vulnerability, related socio-economic development, consumption and renewal of water resources, biodiversity and soil health.

Ideally this should happen by a 'pick and pay' system in which country stakeholders (e.g. research centers, producer organisations, advisor teams) select the relevant models/DSS for the country/region/crop and make them available for the farmer. Most processes (such as pest and disease development, crop growth, water balances) described in models/DSS, need detailed local climatological data. Proposals should connect various local agro-meteorological networks to access and use weather data in all kinds of models/DSS offered on a platform.

B. [2020] EU wide demonstration farm network

LC-SFS-20-2019 EUROPEAN JOINT PROGRAMMING ON SOIL

Scope: The overall objective is to create a European joint programme on soil research addressing systematically the various soil functions. Due attention will be given to exploring the mitigation and adaptation potential of (agricultural) soils and providing management solutions for the

diversity of farming systems and conditions in Europe. Activities shall take advantage of global initiatives and contribute to building a global knowledge base.

CE-SFS-23-2019 INNOVATIVE AND CITIZEN-DRIVEN FOOD SYSTEM APPROACHES IN CITIES

Scope: Proposals shall identify several food-related innovative approaches that should be based on citizen science and engagement, to be practiced in cities to foster sustainability of the food system. The proposals shall explore and share the application of these approaches in a wider range of European cities and shall be built on results of existing research or best practices. Proposals could comprise activities such as prototyping testing, demonstrating and piloting in a (near to) operational environment, as well as experimental production, all with a view to subsequent replication and application in further cities. Proposals shall include the development of an online-accessible pan-European mapping with a classification and assessment of existing approaches. Proposals may include limited R&D activities. In cases where there are clear market failures or barriers to uptake, proposals could comprise activities such as validating the benefits for the users/buyers of the first application in real life operating conditions, validating technical and economic performance at system level, validating standards, as well as activities to prepare market uptake and ensuring optimal access to and dissemination of results. The action shall cover cities in rural and coastal areas and urban agglomerations. Proposals shall also include co-creation between social innovation and technological innovation. Following the RRI principles, proposals will ensure that societal actors work together during the whole research and innovation process in order to better align both the process and its outcomes with the values, needs and expectations of society. Participation of city municipalities and SMEs in the action is strongly encouraged.

SFS-26-2018: MONITORING THE INVESTMENTS, POLICIES AND IMPACTS OF AGRICULTURAL AND FOOD RESEARCH AND INNOVATION IN EUROPE – AN AGRI-FOOD R&I OBSERVATORY

Scope: Taking into account the main results of recent projects such as Impresa (FP 7) as well as of ongoing policy initiatives, activities will establish strategies, methodologies and tools to improve the monitoring of public and private investments in agricultural and food (agri-food) research in Europe. This assessment shall take due account of different levels of investments over time and for major research areas. The network will also look into the measurement – quantitative and qualitative - of impact of research, at micro and macro levels, following different methodologies (quantitative, impact pathways, etc.) and taking into account EU policy objectives such as those related to the UN Sustainable Development Goals. It will monitor research and

innovation policies, foster policy discussions and debates and provide recommendations for agri-food research and innovation policies and investment strategies as part of a foresight exercise. Proposals will take account of relevant initiatives related to agri-food research and innovation (e.g. the ESTI initiative of IFPRI or the monitoring of innovation in food and agriculture by the OECD)

SFS-28-2018/2019 AGRI-LABS

C. Managing water scarcity and drought

Specific Challenge: The setting up of open innovation platforms are proven instruments to create new partnerships, to innovate value chains, and to bring new impulses for a rural development, to increase resource use efficiency, and to identify solutions within a circular economy. Yet the value of innovation platforms for identifying economic alternatives for current irrigated agriculture, further spreading the use of precision irrigation, waste water reuse is less exploited. Research and innovation projects should demonstrate the use of living labs to reach a stronger link between innovating agriculture and an increasing the use of scarce water resources throughout Europe.

SFS-31-2018/2019/2020: SUSTAINABLE INTENSIFICATION IN AFRICA

Scope: A portfolio of projects supporting the implementation of the EU-Africa Research and Innovation Partnership on Food and Nutrition Security & Sustainable Agriculture (FNSSA), addressing primarily pillar I - sustainable intensification - of the R&I Partnership, but also horizontal aspects such as innovation, research infrastructure, human capital development and data availability and access and strong links to the other two thematic pillars: agriculture and food systems for nutrition, expansion and improvement of agricultural markets and trade.

A. [2018]: Support towards implementation of EU-Africa Research and Innovation Partnership on Food and Nutrition Security & Sustainable Agriculture (FNSSA)

The coordination and implementation of the EU-Africa Research and Innovation Partnership on Food and Nutrition Security & Sustainable Agriculture (FNSSA) will be supported by a CSA that will provide:

- A platform to give oversight to the coherent implementation of the R&I Partnership on FNSSA through a cluster of projects, including, but not exclusively, funded from Horizon 2020. Strong links to projects funded by the EU's development programmes or bilateral projects funded by the EU Member States and African partners are encouraged. This platform will give full

support to the Bureau of the EU-Africa High Level Policy Dialogue (HLPD) on science, technology and innovation, who is final responsible organ;

- Support to the Bureau of the EU-Africa High Level Policy Dialogue (HLPD) on science, technology and innovation in monitoring and evaluating the outputs of the R&I Partnership and its cluster of projects (the exact request will be defined yearly by the HLPD);
- Provide analysis of impact of relevant past EU funded research EU-Africa projects in the domain of FNSSA;
- Human and institutional capacity building;
- The basis for turning the EU-Africa R&I Partnership on FNSSA into a long-term platform for collaboration, for instance through the establishment of an International Research Consortium.

SFS-32-2018/2019 - DIVERSIFYING REVENUE IN RURAL SUB-SAHARAN AFRICA THROUGH BIO-BASED SOLUTIONS

Scope: Proposals shall screen existing bio-based concepts that can be adapted and successfully transferred to sub-Saharan rural contexts. The focus shall be on simple, robust technologies that can be operated and maintained locally, and suitable to operate at farm, village or rural community level (including mobile systems) that helps to increase water productivity and harvest security. A variety of end-products can be considered26, and the business models developed shall be highly circular, water wise and sustainable. Projects focusing mainly on bio-fuels or bio-energy are not eligible.

The selected technologies shall be integrated into existing agro-food systems without compromising food production, and without changing fundamentally established agricultural practices, provided that these are sustainable. The integrated model shall be widely replicable, based on abundant and widespread agricultural residues and by-products, or dedicated crops that can be incorporated through multi-cropping or intercropping practices.
Integrated models shall be tested and adapted in real conditions, at a scale permitting replication shortly after the project. A thorough assessment shall be performed on the agronomic, environmental, social and economic sustainability of the whole models, including an assessment of potential risks.

Proposals shall ensure solid collaboration between farmers, farmers associations, local industry, technology providers, research centers and public administration. Development partners and relevant international organisations shall be involved as adequate.

SFS-33-2018: INTEGRATED APPROACHES TO FOOD SAFETY CONTROLS ACROSS THE AGRI-FOOD CHAIN

Scope: Proposals should look at the development of an integrated approach to detecting, assessing and mitigating risks from biological and chemical hazards (whether emerging or not) through the whole agri-food chain/s (from primary production to consumers). It should tackle specific sector/s while taking into account diversity of the supply chains within sector(s). The research activities should gather relevant data for assessing risks and deliver practical solutions (technical and management wise) to control those hazards and their combinations at specific stages of the agri-food chain where interventions can deliver the most efficient and greatest possible impact in public health. Building a common platform for detection and monitoring will allow collecting and validating a large amount of data. In addition, it will establish and validate non-targeted and targeted rapid detecting methods for screening and identification of biological and chemical hazards. Special attention will be given to developing and/or improving systems for ensuring process efficacy and validation for hazard control. Proposed activities will encompass work within the food safety risk analysis framework while at the same time developing simple and practical decision tools tailored towards the needs of agri-food businesses (SMEs in particular) on one hand and scientific stakeholders on the other. Proposals will fall under the concept of the 'multi-actor approach' and allow for the adequate involvement of agri-food sector (SMEs in particular) and food safety control authorities.

SFS-35-2019: HIGH-QUALITY ORGANIC FERTILISERS FROM BIOGAS DIGESTATE

Scope: Projects shall develop treatment technologies able to make digestate a suitable fertiliser and soil amender. Such treatment shall reduce risks linked to biological and chemical contaminants (including AMR) to acceptable levels, improve fertilising properties and address issues related to format, formulation and handling (including odour issues and adaptation to existing farm machinery).

Projects could focus on a specific digestate type28, provided that it is abundant and widespread, or develop a flexible process covering a variety of digestates. Proper solutions shall be sought for the liquid phase, either through valorisation or treatment, to avoid pollution.
The fertiliser developed shall be suitable for direct use, or for mixed formulation with other fertilisers (organic or inorganic). Field tests shall be implemented over an adequate period of time, to assess their agronomic properties, as well as their effect on the environment (notably soil and water) and on food safety. Projects shall also generate the needed harmonised reliable

analytical measurement and testing methodologies allowing for future satisfactory compliance check

WSSTP