



European Commission



AGRI RESEARCH FACTSHEET SUSTAINABLE, CIRCULAR AND INNOVATIVE VALUE CHAINS

Why do R&I on sustainable, circular and innovative value chains matter?

Sustainable, diverse and resilient value chains are a prerequisite for sustainable rural growth, for food security and for the sustainable use of biological resources. Food and non-food supply chains operate in an increasingly complex and dynamic environment characterised by new consumer demands, new and sometimes game-changing technologies, changing structures and cooperation modes. The use of new and innovative business models can generate higher income for producers while keeping consumer prices affordable and improving the delivery of environmental and social benefits. Research has a role to play in unravelling the links between the complexity of food systems and their

efficiency, resilience and sustainability. It needs to help understanding food chain dynamics and the interaction between them and non-food chains. Farmers and foresters have for a long-time produced non-food products. The need to decarbonise the energy sector to meet climate change goals is compounded with considerations of resource efficiency, and an increasing interest in green chemicals, green growth and circular economy. R&I in this area addresses low-carbon, short-chain or circular delivery systems for innovative bio-based applications, using a systems approach for the provision of biomass for all uses, whilst preserving the delivery of ecosystem services.

Sustainable, circular and innovative value chains under Horizon 2020 Societal challenge 2



54

Projects or expected grants



367 M€

EU contribution 2014-2020



603

Participations in selected projects

Key themes

Valorisation of biomass resources and waste – Integrated biomass logistics – food chain sustainability – food safety/quality/authenticity – short food chains

Sustainable, circular and innovative value chains under EIP-AGRI activities

Circular and innovation value chains were covered by five focus groups and five workshops. Many operational groups are also working on these issues.

Focus on EIP-AGRI activities on value chains

Focus groups

- Agroforestry: woody vegetation
- Forest biomass
- Renewable energy on the farm
- Innovative Short Food Supply Chain management
- Reducing food loss on the farm

bit.ly/2v9BZ2h
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bit.ly/2qtS8Ln
bit.ly/2qvfcZ7
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Workshops

- Innovation in the supply chain: creating value together
- Cities and Food – Connecting Consumers and Producers
- New value chains from multifunctional forests
- Opportunities for agriculture and forestry in the circular economy
- Building new biomass supply chains for the bio-based economy

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Operational groups

Many Operational Groups deal with new value chains, food or non-food.

Non-food

- Valorization of wine industry by-products (Emilia-Romagna)
- Vegetable wastes: energetic and reuse opportunities (Emilia-Romagna)
- Recycling of fermentation residues and production of lignin in agriculture (Berlin/Brandenburg)

Food

Interesting examples were pooled in a booklet for the EIP-AGRI workshop “innovation in the supply chain”, like:

- Cooperation for the advance in the joint competitiveness of the value chain of Idiazabal cheese
- Improving sustainability through organizational efficiency in agri-food chain
- Melting Popote : A shared food laboratory in the Cluny region



Download the booklet: bit.ly/2vbKWZ8

SC2 Collaborative Projects – Non-food value chains

AGRIFORVALOR

www.agriforvalor.eu

Total cost: 2 M€

EC contribution: 2 M€

Coordinator: Steinbeis Zi GmbH

Mar. 2016 – Aug. 2018

AGRIFORVALOR aims at closing the research and innovation divide by connecting practitioners from agriculture and forestry with academia, associations and clusters, bio - industry, policy makers, innovation agencies, technology transfer intermediaries, etc., in multi-actor innovation partnership networks, to valorise and exploit side stream biomass resources from agriculture and forestry.

<p>AGROCYCLE www.agrocycle.eu Total cost: 7,7 M€ EC contribution: 7 M€ Coordinator: Univ. College Dublin Jun. 2016 – May 2019</p>	<p>Agrocycle takes a holistic approach to understanding and addressing the operational efficiency and how to make best use of the full range of waste streams associated with the agri-food industry. The consortium comprises 26 partners from EU, China and Hong Kong. It will deliver a protocol for reducing food waste according to EU political targets, and to address increasing sustainability requirements in China.</p>
<p>NOAW noaw2020.eu Total cost: 7,8 M€ EC contribution: 6,9 M€ Coordinator: INRA Oct. 2016 – Sep. 2020</p>	<p>NoAW deals with innovative approaches to turn agricultural waste into an asset, in a circular economy approach, on a territorial and seasonal scale. For this purpose, NoAW intends to explore the potential of agro-waste and urban waste to be converted into a portfolio of eco-efficient products. The consortium comprises 26 partners from EU, China, Taiwan and Hong Kong.</p>
<p>AGROINLOG agroinlog-h2020.eu Total cost: 6,4 M€ EC contribution: 5,9 M€ Coordinator: CIRCE Nov. 2016 – Apr. 2020</p>	<p>AGROinLOG aims at demonstrating Integrated Biomass Logistic Centres (IBLC) for food and non-food products, evaluating their technical, environmental and economic feasibility. The project is based on three agro-industries in the fodder, olive oil and cereal processing sectors that are willing to deploy new business lines in their facilities, to open new markets in the bio-based sector.</p>
<p>DIVERFARMING www.diverfarming.eu Total cost: 10,5 M€ EC contribution: 10 M€ Coordinator: Universidad politecnica de Cartagena May 2017 – April. 2022</p>	<p>With the long-term objective to increase diversification and biodiversity in Europe and to foster sustainable development of the bioeconomy, Diverfarming will develop and deploy innovative farming and agribusiness strategies. Diverfarming will increase the long-term resilience, sustainability and economic revenues of agriculture across the EU by assessing the real benefits and minimising the limitations, barriers and drawbacks of diversified cropping systems under low-input agronomic practices, and by adapting and optimising the organisation of downstream value chains.</p>
<p>DiverIMPACTS www.diverimpacts.net Total cost: 11,2 M€ EC contribution: 10 M€ Coordinator: INRA June 2017 – May 2022</p>	<p>DiverIMPACTS seeks to achieve the full potential of diversification of cropping systems for improved productivity, delivery of ecosystem services and resource-efficient and sustainable value chains. It will assess the performance of crop diversification through rotation, intercropping and multiple cropping. It will also provide rural actors with key enablers and innovations that will help removing existing barriers and ensure the uptake of crop diversification benefits at farm, value chain and territorial levels.</p>
<p>ForestValue bit.ly/2Gxb2de Total cost: 15,3 M€ EC contribution: 5 M€ Coordinator: Finland's Ministry of agriculture and forestry Oct. 2017 – Sep. 2022</p>	<p>The ERANET Co-fund Action ForestValue aims to promote increased innovation and competitiveness of the forest-based sector in Europe and support its transformation from a resource-intensive to a knowledge intensive, productive, resource-efficient and resilient sector. It will seek to develop innovative business concepts and production technologies contributing to sustainable and modern forestry systems and downstream value chains.</p>
<p>MAGIC magic-h2020.eu Total cost: 10,5 M€ EC contribution: 10 M€ Coordinator: Centre for renewable energy sources and saving foundation July 2017 – June 2021</p>	<p>MAGIC aims to promote the sustainable development of resource-efficient and economically profitable industrial crops grown on marginal lands. To achieve this goal, an up-to-date database of existing resource-efficient industrial crops will be developed with information on their agronomic characteristics, input requirements, yield performance and quality traits for end-use applications.</p>
<p>COSMOS cosmos-h2020.eu Total cost: 10,8 M€ EC contribution: 10,8 M€ Coordinator: Wageningen Research March 2015 – August 2019</p>	<p>COSMOS aims at reducing the dependence of Europe's oleochemical industry on imported plant oils by turning domestic oil crops camelina and crambe into profitable, sustainable, multipurpose, non-transgenic European oil crops. Work includes plant improvement and large-scale field trials to assess potentials and, cultivation practices, etc.</p>

The **Bio-Based Industries Joint Undertaking** (BBI-JU) is a 3,7 bio € public-private partnership co-financed by Horizon 2020 SC2, devoted to the development of new biorefining technologies. It supports many projects related to the development of new, non-food value chains such as:

- **NEWFERT:** nutrient recovery from bio-based waste for fertilizer production (www.newfert.org, EC contribution: 1,2 M€)
- **FUNGUSCHAIN:** Valorisation of mushroom agrowastes to obtain high value products (<http://funguschain.eu/>, EC contribution: 5,7 M€)
- **AGRIMAX:** agriculture and food waste valorisation co-ops (<http://agrimax-project.eu>, 12,5 M€)
- **FIRST2RUN:** demonstrator integrated biorefinery for dry crops (www.first2run.eu, 17 M€)
- **BIOrescue:** cascading use of agricultural residues (<https://biorescue.eu>, 2,6 M€)



More information on the BBI-JU: www.bbi-europe.eu

SC2 Collaborative Projects – Food value chains

REFRESH

eu-refresh.org

Total cost: 9,4 M€

EC contribution: 9 M€

Coordinator: Stichting

Wageningen Research

Jul. 2015 – Jun. 2019

REFRESH aims to contribute significantly towards the objective of reducing food waste across the EU by 50% by 2030 (SDG12.3) and maximizing the value from unavoidable food waste. It will deliver on this objective through the design and validation of a 'Framework for Action' model that is based on strategic agreements across all stages of the supply chain.

STRENGTH2FOOD

www.strength2food.eu

Total cost: 6,9 M€

EC contribution: 6,9 M€

Coordinator: University of

Newcastle Upon Tyne

Mar. 2016 – Feb 2021

Strength2Food aims to improve the effectiveness of EU food quality schemes, public sector food procurement and to stimulate Short Food Supply Chains through research, innovation and demonstration activities. The project will identify and implement strategies for: creating new and expanding existing markets for quality food products and fostering the development of an 'economy of quality'.

My Toolbox

www.mytoolbox.eu

Total cost: 5,2 M€

EC contribution: 5 M€

Coordinator: Universitaet Fuer

Bodenkultur Wien

Mar. 2016 – Feb. 2020

My Toolbox aims to develop novel interventions aimed at achieving a 20-90% reduction in crop losses due to fungal and mycotoxin contamination. It will not only pursue a field-to-fork approach but will also consider safe use options of contaminated batches, such as the efficient production of biofuels.

MycKey

www.myckey.eu

Total cost: 6,4 M€

EC contribution: 5 M€

Coordinator: Consiglio

Nazionale Delle Ricerche

April 2016 – March 2020

MycKey aims to generate innovative and integrated solutions that will support stakeholders in effective and sustainable mycotoxin management along food and feed chains. The project will contribute to reducing mycotoxin contamination mainly in Europe and China, where frequent and severe mycotoxin contaminations occur in crops, and where international trade of commodities and contaminated batches are increasing.

<p>AUTHENT-NET www.authent-net.eu Total cost: 0,5 M€ EC contribution: 0,5 M€ Coordinator: Fera Science Ltd Apr. 2016 – Mar. 2018</p>	<p>It is acknowledged that historically anti-food fraud capability within Europe has not been consolidated and lacks the coordination and support structures available to those working in food safety. AUTHENT-NET will address this need by mobilising and coordinating relevant research funders in order to facilitate the eventual development of a transnational European funding vehicle that will allow Members States (MS) to jointly fund anti-fraud research.</p>
<p>OLEUM www.oleumproject.eu Total cost: 5,3 M€ EC contribution: 4,9 M€ Coordinator: UNIBO Sep. 2016 – Aug. 2020</p>	<p>The overall objective of OLEUM is to better guarantee olive oil quality and authenticity by empowering detection and fostering prevention of olive oil fraud. It will generate innovative, more effective and harmonized analytical solutions to detect and fight the most common and emerging frauds and to verify the overall quality of olive oils.</p>
<p>SKIN www.shortfoodchain.eu Total cost: 2,2 M€ EC contribution: 2 M€ Coordinator: Uni. Foggia Nov. 2016 – Oct. 2019</p>	<p>SKIN will build and animate a community of about 500 stakeholders, with the strategic objective of setting up, at the conclusion of the project, a European association permanently working for the improvement of short food supply chains' efficiency and for the benefit of stakeholders and growth in the sector.</p>
<p>SUSFOOD2 susfood-db-era.net Total cost: 15,1 M€ EC contribution: 5 M€ Coordinator: Forschungszentrum Julich GMBH Jan. 2017 – Dec. 2021</p>	<p>The aim of the ERA-NET SUSFOOD2 is to foster research and innovation in the field of sustainable food systems through enhanced cooperation and coordination between EU Member States and Associated Countries. It focusses on sustainability in post-harvest food production, thus covering relevant fields from natural sciences to food engineering and social sciences.</p>
<p>VALUMICS valumics.eu Total cost: 6,3 M€ EC contribution: 6 M€ Coordinator: Haskoli Islands June 2017 – May 2021</p>	<p>VALUMICS aims to provide decision makers throughout food value chains with a comprehensive suite of approaches and tools that will enable them to evaluate the impact of strategic and operational policies, and enhance the resilience, integrity and sustainability of food value chains for European countries.</p>
<p>EU-CHINA-SAFE bit.ly/2pr8X94 Total cost: 11,4 M€ EC contribution: 5 M€ Coordinator: Queen's University of Belfast Sep. 2017 – Aug. 2021</p>	<p>EU-China-Safe aims to develop and implement a shared vision of best practice within the EU and China that will enhance food safety, deter food fraud, restore consumer trust, deliver mutual recognition of data and standards and support the flow of agri-food trade between the two trading blocks to promote economic growth. It will build the core components needed for a joint EU-China food safety control system.</p>
<p>PROTEIN2FOOD www.protein2food.eu Total cost: 8,8 M€ EC contribution: 8,8 M€ Coordinator: Kopenhavns Universitet Mar. 2015 – Feb. 2020</p>	<p>PROTEIN2FOOD aims to develop innovative, cost-effective and resource-efficient plant proteins –rich food sources with positive impact on human health, the environment and biodiversity. Research is expected to improve the quality of plant proteins, produced in Europe, and the sustainability of their production and processing.</p>

Interesting activities under other Horizon 2020 sections

Industrial Leadership Pillar - Work Programme Part Innovation in small and medium-sized enterprises (INNOSUP call)

In the scope of Horizon 2020 INNOSUP calls, there is a re-current call on “**Cluster facilitated projects for new val-**

ue chains” (INNOSUP-1). **KATANA** (Emerging industries as key enablers for the adoption of advanced technologies in the agrifood sector) is an example of a project funded under INNOSUP call looking at emerging industries as key enablers for the adoption of advanced technologies in the agrifood sector (katanaproject.eu).



More information about the currently ongoing calls INNO-SUP-01-2018-2020: Cluster facilitated projects for new industrial value chains can be found here: <http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/innosup-01-2018-2020.html>

European Research Council (ERC)

The ERC's mission is to encourage the highest quality research in Europe through competitive funding and to support investigator-driven frontier research across all fields, on the basis of scientific excellence. The ERC 'bottom-up' approach allows researchers to identify new opportunities and directions in any field of research, rather than being led by political priorities.

FOOD CITIZENS is a project supported through an ERC call looking at Collective food procurement in European cities: solidarity and diversity, skills and scale.

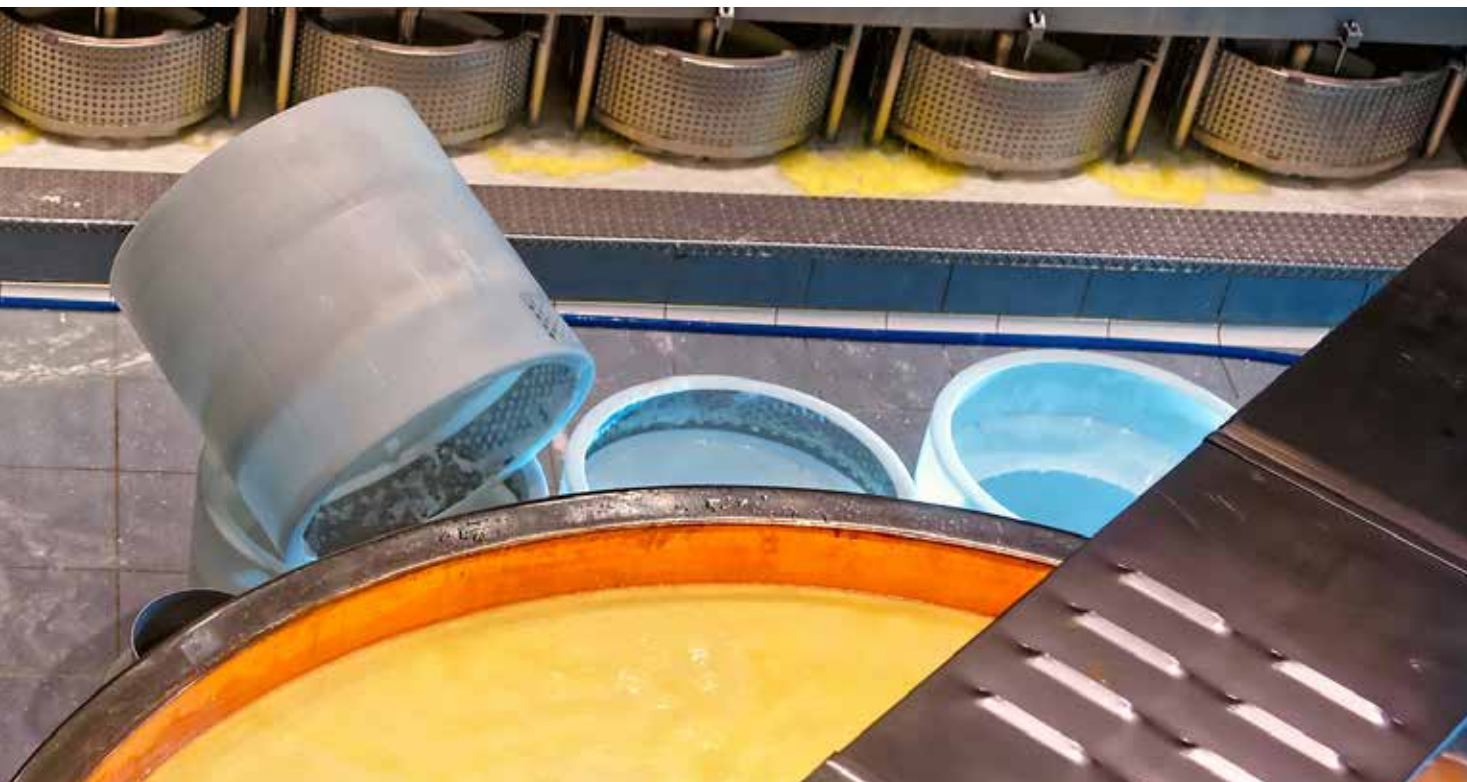
Marie Skłodowska-Curie actions (MSCA)

The MSCA enable research-focused organisations (universities, research centres, and companies) to host talented foreign researchers and to create strategic partnerships with leading institutions worldwide. It supports research networks as well as individual fellowships.

An example of a grant supported through MSCA individual fellowships is the **FreshProof** project proposing an innovative systems approach to address existing food supply chain waste and shortcomings in food safety, integrity and traceability (bit.ly/2GUTa9q).

In the pipeline – 8 projects to start under 2017 and 2018 SC2 calls (51 M€)

Business models for modern rural economies	(2 projects, 8 M€)
Towards innovation-driven and smart solutions in short food supply chains	(1 project, 6 M€)
Towards Healthier and Sustainable Food	(2 projects, 14 M€)
Integrated system innovation in valorising urban bio-waste	(2 projects, 20 M€)
Realising the potential of regional bio-based economies	(1 project, 3 M€)



Funding opportunities - Open SC2 calls for 2019 (68 M€) - 2020

CE-SFS-24-2019 - Innovative and citizen-driven food system approaches in cities	(2 projects, 12 M€)
SFS-37-2019: Integrated approaches to food safety controls across the food chain	(2 projects, 8 M€)
CE-RUR-08-2018-2019-2020: Closing nutrient cycles	
B.[2019] Bio-based fertilisers from animal manure	(1 project, 8 M€)
C.[2020] Bio-based fertilisers from other by-products of the agro-food, fisheries, aquaculture or forestry sectors	
CE-RUR-10-2019: Circular bio-based business models for rural communities	(2 projects, 20 M€)
LC-RUR-11-2019-2020: Sustainable wood value chains	
A. [2019] Building with wood	(2 projects, 20 M€)
B. [2020] Resilient forest systems	
CE-SFS-36-2020 - Diversifying farmers' income through small bio-based concepts	
RUR-05-2020 - Connecting consumers and producers in innovative supply chains	
RUR-06-2020 - Innovative agri-food chains	
RUR-07-2020 - Reducing food losses along the value chain	

The knowledge and innovation community on food

EIT FOOD

EIT Food is a European Knowledge and Innovation Community (KIC), part of the European Institute of Innovation and Technology, which was set up to transform our food ecosystem. By connecting consumers with businesses, start-ups, researchers and students from around Europe, EIT Food supports innovative and economically sustaina-

ble initiatives which improve our health, our access to quality food, and our environment.

More information: www.eitfood.eu



