AGRIRESEARCH
FACTSHEET

SUSTAINABLE, CIRCULAR AND INNOVATIVE VALUE CHAINS

Why do research and innovation on sustainable, circular and innovative value chains?

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 models. 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 helps 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 economy 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 and Horizon Europe

CORDIS search keywords
bioeconomy, renewable energy, rural biorefining, waste valorisation, rural growth

Nb of projects
71 Horizon 2020
25 Horizon Europe

EU contribution
€ 395 million
€ 122 million

Figures comprise Horizon 2020 Societal Challenges 2 and Horizon Europe Cluster 6 projects, including Work Programme 2023-2024 expected projects / Selection of a few projects logos

AGRO FOSSIL FREE
RES4LIVE ENERGY SMART LIVESTOCK FARMING TOWARDS ZERO FOSSIL FUEL CONSUMPTION
the Green Deal
POWER4BIO REGIONS FOR BIOECONOMY
BE-Rural
SCALE UP community-driven bioeconomy development
FOX Food processing in a box
BIOrural
AGRO in LOG INTEGRATED BIOMASS LOGISTICS CENTRES FOR THE AGRO-INDUSTRY
FODRUS
AQUACOMBINE

Success stories dedicated to sustainable, circular and innovative value chains

Towards a fossil-energy-free farming

Many different forms of renewable energy can be produced in rural areas, ranging from wind, solar (including agri-voltaics) and geothermal sources to different forms of bioenergy. To unleash the potential for the production and use of renewable energy in EU agriculture, **AgroFossilFree**, **RES4LIVE**, **TheGreefa** and **HyPErFarm** bring together key stakeholders from different sectors to identify, evaluate and test available fossil energy-free technologies and strategies.

Mainstreaming inclusive small-scale bio-based solutions in European rural areas

The bioeconomy is an opportunity for reviving rural areas, creating more innovative jobs in primary production and processing, rural development and sustainable growth, contributing to generational renewal and fighting de-population of rural areas, among other co-benefits. There is already a wide range of small-scale bio-based solutions available for the deployment in rural areas, as identified by the two Coordination and Support Actions **POWER4BIO** and **BE-Rural**. **BioRural**, **MainstreamBIO**, **RuralBioUp** and **SCALE-UP** aim to get small-scale bio-based solutions into mainstream practice across rural Europe, providing a broader range of rural actors with the opportunity to engage in and speed up the development of the bioeconomy.

Diversification and increased sustainability of agricultural production systems

The diversity and diversification of farming systems can contribute to a sustainable European bioeconomy by securing stable revenues for farmers, lowering negative environmental impacts and increasing resilience to climatic, economic and biological risks. **MAGIC** and **PANACEA** demonstrated that the cultivation of industrial crops can provide new market opportunities and business models that do not interfere with food production. **CARINA** focuses on new sustainable and diversified farming systems including 2 new oilseed crops, carinata and camelina, able to provide multiple low iLUC feedstocks for the bio-based economy. Other projects, such as **AGRIFORVALOR** or **AgriLoop**, convert underexploited residues into a portfolio of high added-value bio-based products.

Short and sustainable food supply chains

The development of innovative and sustainable food chains supports the diverse needs of communities and businesses, in a responsible and ethical way, hence leveraging the position of farmers in supply chains and fostering sustainable growth and jobs in rural areas. The **FOODRUS** and **FOX** projects are creating sustainable and competitive fruits and vegetables value chains avoiding food losses from farmers by deploying technological, social, financial, legal, educational, political, labelling and organizational innovative solutions. The **COCOREADO** project connected consumers and producers and trained farmers to leverage their position in the food chain.

Horizon 2020 and Horizon Europe collaborative projects on sustainable, circular and innovative value chains

Follow the CORDIS link for more information on the start-end date, EU contribution, coordinator and results.
List sorted by ascending project acronym.

Website	Project	CORDIS
AgroFossilFree	Strategies and technologies to achieve a European Fossil-energy-free agriculture	101000496
AGROinLOG	Demonstration of innovative integrated biomass logistics centres for the Agro-industry sector in Europe	727961
AQUACOMBINE	Integrated on-farm Aquaponics systems for co-production of fish, halophyte vegetables, bioactive compounds, and bioenergy	862834
BE-Rural	Bio-based strategies and roadmaps for enhanced rural and regional development in the EU	818478
BioRural	Accelerating circular bio-based solutions integration in European rural areas	101060166
CARINA	CARinata and CamelINA to boost the sustainable diversification in EU farming systems	101081839
COCOREADO	Connecting COnsumers and producers to REbalance farmers' position through AmbassaDOrs trainings	101000573
COOPID	COOPeration of bioeconomy clusters for bio-based knowledge transfer via Innovative Dissemination techniques in the primary production sector	101000519
CO-FRESH	CO-creating sustainable and competitive FRuits and vEgetableS' value cHains in Europe	101000852
DIVINFOOD	Co-constructing interactive short and mid-tier food chains to value agrobiodiversity in healthy plant-based food	101000383
FOX	Innovative down-scaled FOod processing in a boX	817683
FOODCoST	FOOD Costing and Internalisation of Externalities for System Transition	101060481
GO-GRASS	GRASS-BASED CIRCULAR BUSINESS MODELS FOR RURAL AGRI-FOOD VALUE CHAINS	862674
HyPErFarm	HYDROGEN AND PHOTOVOLTAIC ELECTRIFICATION ON FARM	101000828
LOWINFOOD	Multi-actor design of low-waste food value chains through the demonstration of innovative solutions to reduce food loss and waste	101000439
MAGIC	Marginal lands for Growing Industrial Crops: Turning a burden into an opportunity	727698
Ploutos	Data-driven sustainable agri-food value chains	101000594
RES4LIVE	Energy Smart Livestock Farming towards Zero Fossil Fuel Consumption	101000785
THEROS	An integrated toolbox for improved verification and prevention of adulterations and non-compliances in organic and geographical indications food supply chain	101083579
VISIONARY	Food Provision through Sustainable Farming Systems and Value Chains	101060538

Relevant sources of information supporting sustainable, circular and innovative value chains

Other instruments like the 'European Innovation Partnership for Agricultural productivity and sustainability' (**EIP-AGRI**), Partnerships and EU missions also help enabling sustainable and circular management and use of natural resources.

Sustainable, circular and innovative value chains under EIP-AGRI activities – Focus Groups and Operational Groups

Focus groups examples

- Enhancing production and use of renewable energy on the farm
- Sustainable industrial crops in Europe: new market opportunities and business models which do not replace food production
- Diversification opportunities through plant-based medicinal and cosmetic products
- Reducing food loss on the farm.
- Innovative Short Food Supply Chain management

Operational Groups (OGs) examples:

- Biorefinery Glas -Small-scale Farmer-led Green Biorefineries
- From ecological intercropping to fine fiber
- MUNTER
- BIOALLIFUNGI
- Short Food Chains in the Liemers Region

In the pipeline and future funding opportunities

- HORIZON-CL6-2023-CIRCBIO: Business models that balance the share of power and profit in the bioeconomy
- HORIZON-CL6-2023-CLIMATE: Enhancing the sustainable production of renewable energy at farm-level
- HORIZON-CL6-2024-CIRCBIO: From silos to diversity – small-scale bio-based demonstration pilots
- HORIZON-CL6-2024-FARM2FORK-02-2-two-stage: Sustainable organic food innovation labs: reinforcing the entire value chain
- HORIZON-JU-CBE-2023-IA-01: Small scale biorefining in rural areas
- HORIZON-JU-CBE-2023-IA-02: Production of safe, sustainable, and efficient bio-based fertilisers to improve soil health and quality
- HORIZON-JU-CBE-2023-R-01: Phyto-management; curing soil with industrial crops, utilising contaminated and saline land for industrial crop production

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