



#InvestEUresearch

Horizon 2020 Work Programme for Research & Innovation 2018-2020

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Circular Economy Focus Area
Societal Challenge 2

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Research and
Innovation

Topics 2018



CE-SFS-25-2018

Integrated system innovation in valorising urban biowaste

Background

- ✓ Urban biowaste and sewage sludge mostly processed into compost and biogas, or landfilled → potential not fully exploited,
- ✓ Emerging technologies enable higher-value biobased products → Economic, social and environmental benefits.
- ✓ Successful innovations require both new technology and system innovation approach.



CE-SFS-25-2018

Requirements to keep in mind

- ✓ Focus on integrated system innovation approach
- ✓ Full integration into existing local waste/wastewater management schemes.
- ✓ Active participation of stakeholders.
- ✓ Life Cycle Assessment (LCA) of the entire urban biowaste value chain;
- ✓ Improving logistic models taking into account behavioural change and participation
- ✓ Consumer awareness and acceptance, market uptake; food and feed safety; regulatory aspects; exchange of good practices.
- ✓ Complementarity with related projects

Innovation Action - € 20 M (≈ € 10 M/project)

CE-SFS-25-2018

Impacts

- ✓ Validated technical and economic viability of the proposed approaches → TRL 7
- ✓ New models integrated into existing local waste/wastewater schemes;
- ✓ Improved perception, citizen participation, consumer acceptance;
- ✓ More sustainable and resilient protein supply chain;
- ✓ Safety assessment of biobased processes and products from urban biowaste;
- ✓ Reduced urban biowaste and its environmental impacts;
- ✓ Assessment of barriers;
- ✓ Evidence-based support for EU policies/targets.

CE-RUR-08-2018-2019-2020

Closing nutrient cycles

Background: Circular Economy Package (December 2015)

- Proposal for a revised **fertilisers regulation** (March 2016)
 - New fertilisers based on organic waste are expected to emerge
 - Need to understand **properties and impacts** (to maximise benefits and anticipate issues) → scope 1
 - Need to develop technologies → scopes 2 and 3
- Assess contribution of 2012 **EU Bioeconomy Strategy** to CE
 - Review completed in 2017 (SWD)
 - Significant contribution, but **bioeconomy to become more circular**

CE-RUR-08-2018-2019-2020

Scope A (2018): Understanding properties and impacts of bio-based fertilisers

Requirements to keep in mind

- ✓ Improved knowledge of
 - ✓ Agronomic performance
 - ✓ Broad environmental impacts across value chain
 - ✓ Regional dimension of nutrient flows
- ✓ Cluster with projects financed under this topic, SFS-39-2019 and other projects in Horizon 2020 (including BBI JU).

Research and Innovation Action – € 6 M (≈ € 6 M/project)

CE-RUR-08-2018-2019-2020

Impact

- ✓ Provide **technologies** for new fertilisers based on organic by-products, and **knowledge** to frame their use.
- ✓ This will help to:
 - ✓ Set a coherent policy framework
 - ✓ Replace conventional fertilisers
 - ✓ Regional balancing
 - ✓ Reduce impacts
 - ✓ Develop new business models
- ✓ In the long term: a thriving, sustainable and circular bio-economy, new business models, wealth and jobs in rural areas.

Topics 2019



CE-SFS-24-2019

Innovative and citizen-driven food system approaches in cities

Justification: Need to provide cities with affordable, safe, and nutritious food, and increase circularity of food systems through participative approaches. Good experiences are generally local and need to be demonstrated in different locations.

Requirements:

- Identify food-related innovative approaches based on citizen science and engagement. Explore application in a wider range of European cities.
- Action may include limited R&D activities; but focus on demonstrating, piloting; etc. in a (near to) operational environment with a view to replication.
- Classification and assessment of existing approaches for dissemination purposes.
- Co-creation and stakeholder involvement including municipalities and SME.

Innovation Action - € 12 M (≈ € 6 M/project)

CE-SFS-39-2019

High-quality organic fertilisers from biogas digestate

Justification: EU and CN promoting biogas. Digestate not a high-quality fertiliser; hence not a first option for farmers.

Requirements:

- ✓ Develop small-scale technologies: digestate to fertiliser/ soil amender → TRL 6-7
- ✓ Reduced hazards, improved properties, adequate format, formulation and handling.
- ✓ Product tests: agronomic properties, impacts on environment and food safety.
- ✓ Business model full assessment (economic, environmental and social)
- ✓ Policy recommendations, clustering with other projects
- ✓ **R&I cooperation EU-China** → Chinese co-funding mechanism

Innovation Action - € 5 M (≈ € 5 M/project)

CE-BG-06-2019

Sustainable solutions for bio-based plastics on land and sea

Justification: Need to decouple plastic production from fossil feedstock. Low reuse and recycling of plastics, with much ending up in in the oceans. Biodegradable or compostable plastics for maritime applications could be a positive development.

Requirements:

- Focus on strategies and solutions for bio-based products: product design and business models facilitating reuse and recycling. Existing barriers to be addressed.
- Address cross-contamination with conventional plastics or other contaminants.
- Contribute to a biodegradable plastics sustainability framework through increased knowledge, including pre-normative research.
- Support the development of international fora and platforms.
- Build on FP7 and H2020 projects, and on-going standardisation.

Innovation Action - € 18 M (≈ € 9 M/project)



CE-RUR-08-2018-2019-2020

Closing nutrient cycles

Scope B (2019): Bio-based fertilisers from animal manure

Requirements to keep in mind

- ✓ Demonstrate processes for nutrient recovery and production of novel, high-quality fertilisers (TRL 6-7)
- ✓ Address marketability, safety, sustainability and compliance,
- ✓ Integrated business model assessment
- ✓ Other
 - ✓ Multi-actor
 - ✓ Clustering with related projects
 - ✓ CELAC participation encouraged

Innovation Action - € 8 M (≈ € 8 M/project)

CE-RUR-10-2019

Circular bio-based business models for rural communities

Justification: Need for new bioeconomy business models that are easier to replicate, more inclusive and highly circular.

Requirements:

- Select **one agro-food system** that is common in the EU, identify bio-based products that could be integrated and are viable on **small scale**, and **demonstrate** → TRL 6-7
- Complete assessment, business plan, policy options and recommendations.
- Possible combination with sustainable exploitation of natural areas, use of marginal lands.
- Avoid: focus on bioenergy, negative effects on food security
- Multi-actor approach

Innovation Action - € 20 M (≈ € 10 M/project)

Topics 2020



CE-RUR-08-2018-2019-2020, scope C - *Bio-based fertilisers from other by-products of the agro-food, fisheries, aquaculture or forestry sectors* - **Innovation Action**

CE-SFS-36-2020 - *Diversifying farmers' income through small bio-based concepts* - **Innovation Action**



Thank you!

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www.ec.europa.eu/research/bioeconomy

www.ec.europa.eu/agriculture/research-innovation_en

Participant Portal <http://ec.europa.eu/research/participants/portal/desktop/en/home.html>