



Up2Circ – Boosting the Uptake of Circular Business Model, Product and Process Innovation

Horizon Europe 2021-2027

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Sectorial catalogue

Agri-food



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Short introduction to the industrial ecosystem

¹The agri-food ecosystem is one of the fourteen industrial ecosystems identified in the updated [New Industrial Strategy](#). In this Strategy, the Commission proposed the co-creation of transition pathways with stakeholders, as an essential collaborative tool for the green and digital transition of industrial ecosystems. The pathways will contribute to forming a shared vision for 2030 in collaboration with all relevant public and private stakeholders for the green and digital transition and enhanced resilience of the ecosystems.

The agri-food ecosystem covers all operators in the food supply chain - farmers, fishers, aquaculture producers, the food and drink industry, food retail and wholesale, and food service. It also encompasses suppliers of inputs and services (seeds, pesticides, fertilisers, machinery, packaging, repair, transport, finance, advice and logistics), the research community (Universities, Research Centres, Clusters) and public authorities. For the sake of completeness, the term 'agri-food ecosystem' in this document, refers to the EU food system as a whole (referring more broadly also to the consumer side and socio-cultural and institutional component of food systems).

The main activities considered as part of the ecosystem include the manufacturing of food products, including beverages, crop, production of food, feed destined for food-producing animals, as well as products of hunting and related services, forestry and logging as well as fishing and aquaculture, destined for human consumption. The value added produced by the activities of the agri-food ecosystem corresponded to €585 billion in 2021 (representing 4,84% of overall EU value added). The ecosystem provides employment for around 16.3 million people. Small and Medium Enterprises (SMEs) are the backbone of the agri-food ecosystem: 99% of the 289 000 food and drink enterprises are SMEs. They provide around 48% of the turnover and employ over half of the workforce in food and drink manufacturing. The remaining 1% large food and drink companies generate over 50% of the turnover of the sector. Farms are officially not classified as SMEs in business statistics, but most farms could be seen as SMEs, since only 1% of the EU farm holdings have a turnover of over €500,000 per year.

Challenges for the sector with regard to sustainability demands, including a brief overview of relevant regulations

BUILDING THE FOOD CHAIN THAT WORKS FOR CONSUMERS, PRODUCERS, CLIMATE AND THE ENVIRONMENT

The EU's goals are to reduce the environmental and climate footprint of the EU food system and strengthen its resilience, ensure food security in the face of climate change and biodiversity loss and

¹ [Co-creation of a transition pathway for a more resilient, sustainable and digital agri-food ecosystem](#)



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lead a global transition towards competitive sustainability from farm to fork and tapping into new opportunities. This means:

- ✓ ensuring that the food chain, covering food production, transport, distribution, marketing and consumption, has a neutral or positive environmental impact, preserving and restoring the land, freshwater and sea-based resources on which the food system depends; helping to mitigate climate change and adapting to its impacts; protecting land, soil, water, air, plant and animal health and welfare; and reversing the loss of biodiversity;
- ✓ ensuring food security, nutrition and public health – making sure that everyone has access to sufficient, nutritious, sustainable food that upholds high standards of safety and quality, plant health, and animal health and welfare, while meeting dietary needs and food preferences; and
- ✓ preserving the affordability of food, while generating fairer economic returns in the supply chain, so that ultimately the most sustainable food also becomes the most affordable, fostering the competitiveness of the EU supply sector, promoting fair trade, creating new business opportunities, while ensuring integrity of the single market and occupational health and safety.

Schemes for circular economy in the agri-food chain:

REGENERATE- Regenerate and restore natural capital more resource-efficient agricultural practices. IT and automation are positively disrupting farming practices by enabling precision agriculture – a whole-farm management approach that leverages IT, big data, remote sensing, and satellite positioning data. These technologies optimise returns on inputs while reducing environmental impact.

SHARE - Keep product loop speed low and maximise product utilisation regenerative farming practices. Various sustainable and regenerative agricultural practices to preserve natural capital and optimise long-term yields are seeing growth. Organic farming is one of these examples. Other examples are agroforestry, holistic-planned grazing, silvopastoral systems, and pasture-based dairy systems with no/minimal fertiliser use.

OPTIMISE - Optimise system performance closed loops of nutrients and other materials. The potential to extract valuable bio-chemicals or recover energy and nutrients from various waste streams is significant. For example, phosphorus recovered from sewage sludge, meat and bone meal, and biodegradable solid waste in the EU-27 amounts to almost 30% of today's use of synthetic phosphorus fertiliser. Recovery of energy and nutrients through digestion and composting is happening at a larger scale.

LOOP - Keep components and materials in closed loops and prioritise inner loops restoration and preservation of natural capital. Restoration of large, damaged ecosystems is commercially viable. The most famous example is probably the Loess plateau in China, where 1.5 million hectares of degraded land have been restored. This project lifted more than 2.5 million people out of poverty, almost tripling their income, by replacing low-value agricultural commodities with high-value products.



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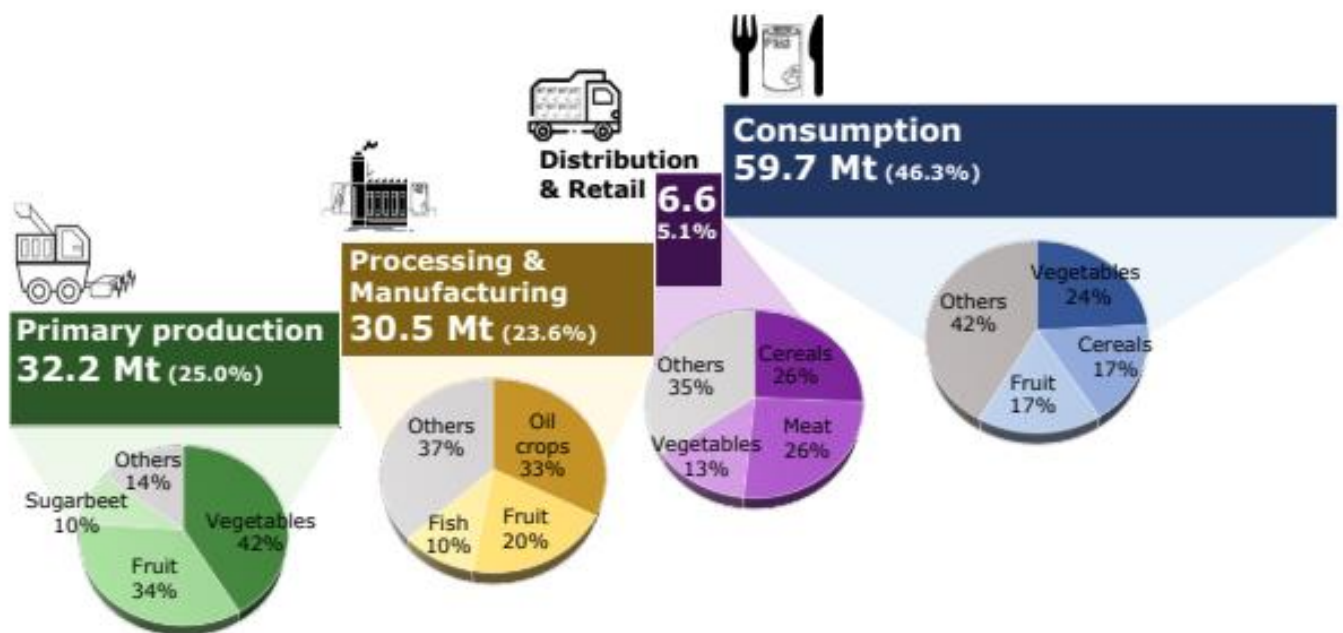


VIRTUALISE - Deliver utility virtually peri-urban and urban farming. Interest in peri-urban and urban farming to meet the increasing demand for local, fresh, relatively unprocessed food is growing. Organising short supply chains between local farms and retailers or consumers in nearby cities reduces so-called food miles and related food transport waste.

EXCHANGE - Select resource input wisely digital supply chains. Digital supply chains could reduce food waste. To address the 20% of food wasted from farm to retail, players are leveraging big data and IT to take inventory management to the next level. Digital solutions, such as smart refrigerators, on-demand e-commerce delivery, and wearable monitors, also address the food waste caused by consumers.

REDUCE FOOD WASTE

Food production is an area that is important to drive sustainable change, and we believe we can help. Efficient production facilities, food processing technologies and packaging solutions can improve food supply chains and build resilience into food systems.



source: [Brief on food waste in the European Union](#)



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² Member States are required to take the necessary measures to **reduce food waste by the end of 2030**:

- by 10%, in processing and manufacturing,
- by 30% (per capita), jointly at retail and consumption (restaurants, food services and households).

EU actions against food waste: [EU Platform on Food Losses and Food Waste \(FLW\)](#) has developed [Recommendations for Action in Food Waste Prevention](#)

💡 Discover SISTERS project <https://sistersproject.eu/>

SUSTAINABLE PACKAGING

Creating a circular economy for packaging is one of the key objectives of the European Commission to build a more climate-friendly Europe. As a key step to achieving it, the European Commission aims to ensure that “all packaging in the EU is reusable or recyclable in an economically viable way by 2030”, in line with the EU Green Deal and the EU Circular Economy Action Plan. That’s why the European Commission has decided to review the EU Packaging and Packaging Waste Regulation, with a proposal published on 30 November 2022.

The EU Packaging and Packaging Waste Regulation defines the essential requirements for packaging design and composition and sets out packaging collection and recycling targets. It aims to improve the environmental performance of packaging, reduce packaging waste and protect the free circulation of packaging in the EU Single Market.

[UNESDA](#) Soft Drinks Europe strongly supports the EU’s ambitious measures to drive the shift to a circular economy for packaging by promoting the collection, recycling and reuse of packaging. As part of its contribution to create more sustainable packaging, UNESDA is taking concrete actions to deliver fully circular beverage packaging in the coming years, as outlined in its [Circular Packaging Vision 2030](#).

[The beverage carton industry roadmap to 2030 and beyond](#) - according to it, the commitments by 2030 among others is: **90% of all beverage cartons are collected for recycling and at least 70% of all beverage cartons are recycled.**

[Beverage cartons design for recyclability guidelines](#)

💡 Discover R3PACK project <https://www.r3pack.eu/>

² [Food waste reduction targets](#)



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ORGANIC PRODUCTION

A sustainable food system is at the heart of the European Green Deal. Under the Green Deal's Farm to Fork strategy, the European Commission has set a target of **'at least 25% of the EU's agricultural land under organic farming and a significant increase in organic aquaculture by 2030'**.

Producing organically means respecting the rules on organic farming. These rules are designed based on general and specific principles to promote environmental protection, maintain the biodiversity of Europe and build consumer trust in organic products. These regulations govern all areas of organic production and are based on a number of key principles, such as:

- prohibition of the use of GMOs;
- forbidding the use of ionising radiation;
- limiting the use of artificial fertilisers, herbicides and pesticides;
- prohibiting the use of hormones and restricting the use of antibiotics to only when necessary for animal health.

This means that organic producers need to adopt different approaches to maintaining soil fertility and animal and plant health including:

- crop rotation;
- cultivation of nitrogen fixing plants and other green manure crops to restore the fertility of the soil;
- prohibition of use of mineral nitrogen fertilisers;
- to reduce the impact of weeds and pests, organic farmers choose resistant varieties and breeds and techniques encouraging natural pest control;
- encourage the natural immunological defence of animals;
- in order to maintain animal welfare and health, organic producers need to prevent overstocking.

[Regulation \(EU\) 2018/848 on organic production and labelling of organic products](#)

[Legislation for the organics sector](#)



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ENSURE FOOD SECURITY

Food security can be improved in the following ways:

1. Reducing food waste and food loss

Food loss is caused, among other things, by crop failures and incorrect storage of food. We can reduce food loss by improving storage and packaging. Packaging that indicates whether or not food has gone off already exists, for example.

2. Improving infrastructure

Optimising the infrastructure also ensures that less food is lost and improves food security. Doing so involves looking at the entire food chain. Sufficient people or machines must be available for sowing and harvesting, the crops must be protected against weeds, diseases and pests, storage must be in order, and good transport to markets or end users must be available.

3. Promoting fair trading practices

It is not just large commercial companies that need access to food markets; small farmers must also be paid a fair price for their products. Farmers working together in cooperatives have greater leverage to negotiate their purchase and sales prices, and thus make a better living from their produce.

4. Paying attention to diversification

Focusing on a single type of crop (monoculture) can exhaust the soil and make the crop more vulnerable to diseases and pests. Farmers have a big problem if their crop fails and they have no alternatives. Moreover, this can reduce the nutritional value of products. Diversification is important to guarantee food security.

5. Reducing the yield gap

Inefficient production methods mean that agricultural land yields are far less than should be possible in some places. Crop rotation and the use of sustainable production methods and new techniques increase production on these farmlands. This also results in more nutritious crops.

Smarter use of (artificial) fertiliser, water and better seeds can also lead to higher production.

6. Combating climate change

Droughts and floods are major causes of crop failure and in many cases are consequences of global climate change. Combating climate change will reduce crop failures. At the same time, it is also wise to introduce production methods that use less water.



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Agriculture can make a positive contribution to a better climate. Crops absorb CO², reducing the amount of greenhouse gases. Working crop residues into the soil later on makes a double contribution to a better climate.

On the other hand, poor farming practices are a major cause of climate problems. Examples include the felling of forests to create farmland. More sustainable agriculture offers the best of both worlds, helping combat climate change and better absorbing its consequences.

7. Addressing the indirect causes of food insecurity

Food insecurity is also caused by an imbalance between imports and exports. As not every country will be able to grow all the food it needs there must be sufficient capital available to import food. Healthy food must also be financially available to all population groups.

Wars and social insecurity can also lead to food insecurity. When inhabitants are mainly concerned with survival and it is too dangerous to work the land, there is less time to devote to food production.

By also working on these indirect issues, food security can be improved. Food security can also be under pressure because agricultural land is being used for other purposes, such as growing crops for biofuels.

FOOD SYSTEMS

[Food 2030](#) is the EU's research and innovation policy framework supporting the transition towards sustainable, healthy and inclusive food systems, that respect planetary boundaries.

It is in line with, and supports the goals of the European Green Deal, Farm to Fork strategy and Bioeconomy strategy. Food 2030 is underpinned by the need to foster a multi-actor and systemic approach to research and innovation capable of delivering co-benefits for people's health, our climate, our planet and communities.

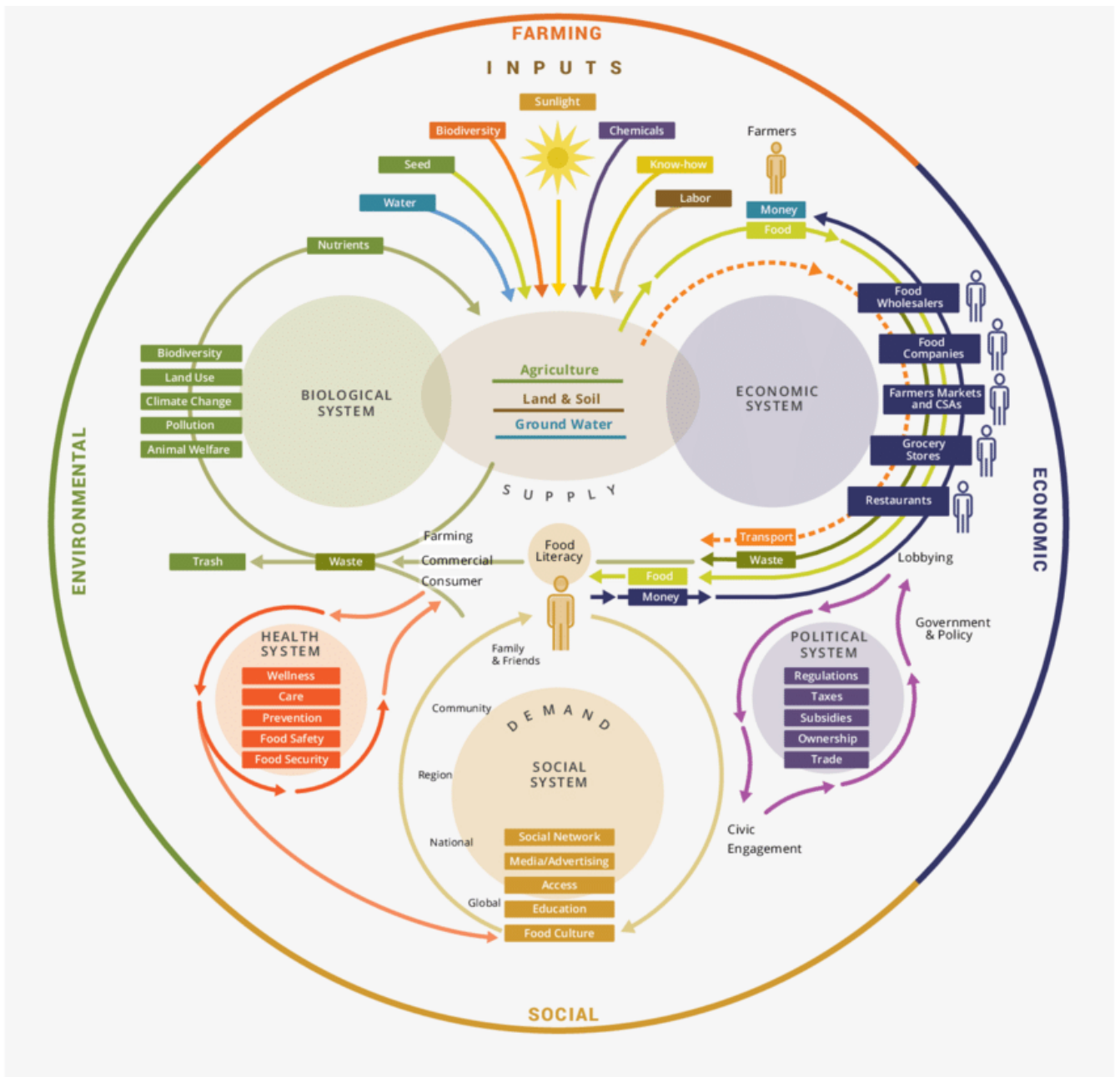
The ambition of Food 2030 is to support research and innovation that can deliver co-benefits to these 4 thematic priorities:

1. Nutrition for sustainable and healthy diets
2. Food systems supporting a healthy planet
3. Circularity and resource efficiency



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4. Innovation and empowering communities

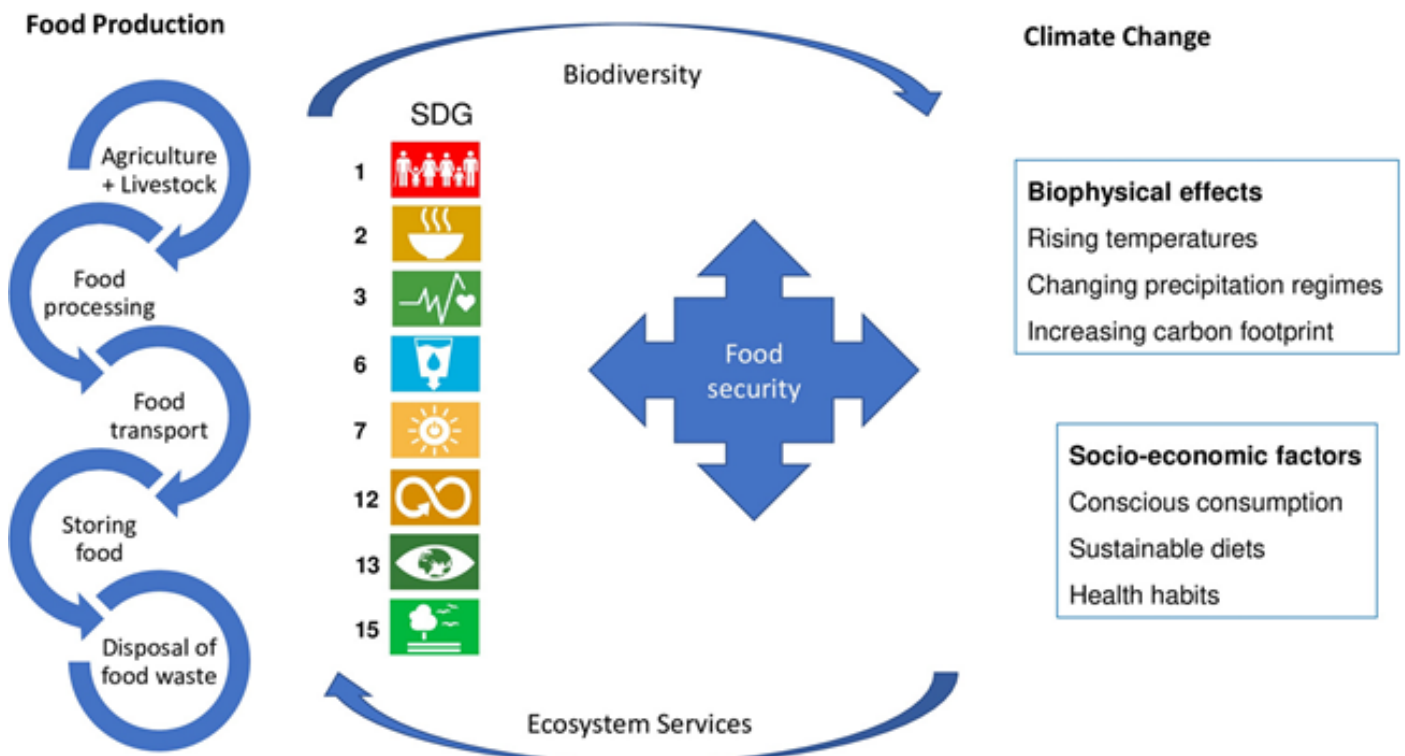


source: Food systems map that shows how multiple subsystems interact

CLIMATE IMPACT OF THE EU AGRI-FOOD SYSTEM

³The EU supports the transition towards sustainable agrifood systems. While total EU GHG emissions have dropped by a third since 1990, emissions from agrifood systems have fallen more slowly (...).FAOSTAT reports that the agrifood system is responsible for a third of global GHG emissions. They are generated by farm production activities (crop and livestock); land use change (such as deforestation and peatland drainage); and pre-/post-production processes (for instance, retail, consumption and disposal). In 2020, the contribution of agrifood systems to total EU emissions was 31 %, within which the shares of emissions from 'farm gate' and 'pre- and postproduction' activities accounted for circa 48% and 48% respectively, while 4% was due to land use change.

Interactions between Food Production and Climate Change



source: <https://www.sciencedirect.com/science/article/abs/pii/S0048969722035355>

³ [Climate impact of the EU agrifood system](#)

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COMBATING FOOD FRAUD ALONG THE FOOD SUPPLY CHAIN

Fraud affects businesses and consumers. The consequences are mainly financial, particularly when the fraud is related to quality. However, these intentional infringements of the EU agri-food chain legislation may hinder the functioning of the EU Single Market and may also constitute a risk to human, animal or plant health, to animal welfare or to the environment. Fraudulent practices can happen at any stage of production, processing and trade and the purchaser that is the victim can be the final consumer as well as a business operator.

The EU Agri-Food Fraud Network (the FFN) links the Commission and each liaison body designated by Member States, Switzerland, Norway and Iceland. In collaboration with the FFN, the EC Knowledge Centre for Food Fraud and Quality (in the Joint Research Centre) provides its expertise in food science, and the European Anti-Fraud Office (OLAF) and the European Union Agency for Law Enforcement Cooperation (Europol) carry out necessary investigations.

Read more: <https://www.eitfood.eu/blog/food-fraud-can-we-trust-the-authenticity-of-our-food>

REGULATIONS

- [European Green Deal](#) - a roadmap for Europe becoming a climate-neutral continent by 2050

The EU's goals as far as agri-food ecosystem is concerned are:

- ✓ to ensure food security in the face of climate change and biodiversity loss
- ✓ reduce the environmental and climate footprint of the EU food system
- ✓ strengthen the EU food system's resilience
- ✓ lead a global transition towards competitive sustainability from farm to fork

- [The common agricultural policy \(CAP\): 2023-27](#) - on 2 December, 2021, the agreement on reform of the common agricultural policy (CAP) was formally adopted. The new legislation, which entered into force on 1 January 2023, paves the way for a fairer, greener and more performance-based CAP. It seeks to ensure a sustainable future for European farmers, provide more targeted support to smaller farms, and allow greater flexibility for EU countries to adapt measures to local conditions.

Agriculture and rural areas are central to the European Green Deal, and the CAP 2023-27 will be a key tool in reaching the ambitions of the [Farm to Fork](#) and [biodiversity](#) strategies.

For the period 2023-27, the common agricultural policy (CAP) is built around ten key objectives. Focused on social, environmental and economic goals, these objectives are the basis upon which EU countries designed their [CAP Strategic Plans](#).



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source: [Key policy objectives of the CAP 2023-27](#)

[CAP specific objectives by country](#)

- **Farm to fork strategy (F2F)** - is at the heart of the European Green Deal aiming to make food systems fair, healthy and environmentally-friendly. Food systems cannot be resilient to crises such as the COVID-19 pandemic if they are not sustainable. We need to redesign our food systems which today account for nearly one-third of global GHG emissions, consume large amounts of natural resources, result in biodiversity loss and negative health impacts (due to both under- and over-nutrition) and do not allow fair economic returns and livelihoods for all actors, in particular for primary producers.

Putting our food systems on a sustainable path also brings new opportunities for operators in the food value chain. New technologies and scientific discoveries, combined with increasing public awareness and demand for sustainable food, will benefit all stakeholders.



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The Farm to Fork Strategy aims to accelerate our transition to a sustainable food system that should:

- ✓ have a neutral or positive environmental impact
- ✓ help to mitigate climate change and adapt to its impacts
- ✓ reverse the loss of biodiversity
- ✓ ensure food security, nutrition and public health, making sure that everyone has access to sufficient, safe, nutritious, sustainable food
- ✓ preserve affordability of food while generating fairer economic returns, fostering competitiveness of the EU supply sector and promoting fair trade



source: https://food.ec.europa.eu/horizontal-topics/farm-fork-strategy_en

One of the flagship initiatives of the Farm to Fork Strategy is the proposal for a **legislative framework for sustainable food systems (FSFS)**. As announced in the Strategy, it will be adopted by the Commission by the end of 2023. Its goal is to accelerate and make the transition to sustainable food systems easier. It will also have as its core objective the promotion of policy coherence at EU level and national level, mainstream sustainability in all food-related policies and strengthen the resilience of food systems.



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- **General Food Law (GFL)** - ([Regulation \(EC\) No 178/2002](#)) is the cornerstone of the EU regulatory framework since it covers the entire agri-food sector, i.e. 'from farm to fork', and all stages of production, processing and distribution of food and feed.
- **Circular Economy Action Agenda Food** <https://pacecircular.org/action-agenda/food>
- **Packaging and Packaging Waste Directive (PPWD)** – its objectives are to continuously improve the environmental performance of packaging and to facilitate the correct functioning of the EU Internal Market, thereby protecting the free circulation of packaging and packaged goods in all Member States.
- **Biodiversity strategy for 2030** - is a comprehensive, ambitious and long-term plan to protect nature and reverse the degradation of ecosystems. The strategy aims to put Europe's biodiversity on a path to recovery by 2030, and contains specific actions and commitments.

CE opportunities for the sector, including best practices

Best practices

[EcoBean](#) – this Polish company turns coffee waste into sustainable chemicals. EcoBean is the most advanced coffee waste processor with a scientific background. It is a tech company with a mission to reduce coffee waste and decrease the environmental footprint of the entire coffee value chain.

PROBLEM

Coffee is a cherished morning tradition for many, but the environmental impact of the coffee industry cannot be ignored. Coffee is the fifth most CO₂-intensive food product, emphasizing the significant carbon footprint associated with its production.

To put this into perspective, approximately 2.5 billion cups of coffee are consumed every day globally, which generates a staggering 25,000 tonnes of coffee waste annually. Just in Europe, 9,000 tonnes of SCG are wasted every day.

SOLUTION

At EcoBean, they are committed to sustainability and environmental responsibility. While they acknowledge that the coffee industry has a significant carbon footprint, they also recognise the untapped potential of Spent Coffee Grounds. Rather than seeing them as mere waste, they view them as a valuable resource that can be transformed into advanced, sustainable chemicals.

Its innovative process allows to extract five different fractions from Spent Coffee Grounds: coffee oil, antioxidants, lactic acid (PLA), lignin, and protein additives. These fractions can be used in a



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multitude of industries, including biodiesel additives, cosmetics, and the production of biodegradable cups, straws, pots, tiles, and plates.

OUTCOME

Its chemicals not only serve as high-quality alternatives to existing intermediates on the market, but they also boast up to 50% lower carbon footprint on average. This makes its offerings the most sustainable choice available, meeting the increasing demand for low carbon raw materials. By upcycling spent coffee grounds, they are not only reducing waste, but also contributing to a more sustainable future.

More cases of best practices in food and beverage: <https://knowledge-hub.circle-lab.com/frameworks/5/115?n=Food-and-Beverage>

Biomede - extracting heavy metals from agricultural and urban soils using hyper-accumulative plants to regenerate them and provide industrial actors with interest metals.

The European soils are highly contaminated with heavy metals. Phytoremediation extracts heavy metals using plants and can provide the sectors of interest with metals which are in growing demand especially because of the energy transition.

PROBLEM

As a matter of fact, about 2.8 million sites are contaminated in Europe and about a quarter with heavy metals. This pollution contributes to a decrease in soil fertility and biodiversity, through strong impacts on micro-biology but also on food chain. Moreover, it addresses economic and health issues through the quality of products and intoxications by these carcinogenic elements. In the meantime, some metals are necessary to the energy transition as electrical and electronical systems rely on them.

SOLUTION

Since 2018, Biomede has developed phytoremediation solutions based on nature. Phytoremediation rely on the ability of very particular plants species, called hyper-accumulative, to extract certain elements from the soil. Thanks to varietal selection, this ability is improved to maximize extraction yield and accelerate the depollution of plots of land using only plants. In the same time, each plant when growing extract and stock the target element. Then, Biomede works at separating the metals from the biomass in order to valorise them to create added value in addition to soil remediation. For example, some plant species can be used in cosmetics, textile industry, or biomass-energy and some metals such as copper, nickel, etc. that are highly demanded elements in several industries.

Phytoremediation is an alternative to soil excavation, consisting of moving large quantities of soil and processing them at specific sites, then bringing in new soil from another location. Here, the soil stays where it supposed to be and only the pollutants are removed, which drastically reduces both carbon footprint and costs of depolluting a plot of land.



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OUTCOME

Thanks to phytoremediation, Biomed addresses agricultural problematics but also helps territorial authorities with renaturation projects in urban areas, and individuals who are concerned about what they grow in their garden or what they would like to grow. The soils that are free from this pollution can be used for regenerative agriculture, restoring their fertility, fostering biodiversity and improving the quality of products. Thus, Biomed aims at regenerating ecosystems and supplying metals of interest within a circular economy framework.

More cases of best practices in agriculture: <https://knowledge-hub.circle-lab.com/frameworks/5/114?n=Agriculture>

Overview of tech-savvy SMEs that develop/offer solutions to increase circularity in the sector

Irriot

IRRIOT is known because it develops IoT-based solutions for irrigation. Their revolutionary wireless irrigation platform connects to 32 remote units and 34 sensors, ensuring 24/7 control over the watering schedule. Also, the remote units of IRRIOT are solar-powered and relay sensor data while also providing a web app that lets users configure and monitor remote units and sensors.

Their solar-powered watering stations are environmentally friendly and maintenance-free, and additionally, in the backbone, they have a full-scale industrial irrigation controller. That includes access to the IoT cloud for the controller, intelligence, alarms, and weather forecast through mobile and web apps.

Dahlia Robotics

Dahlia Robotics creates autonomous robots that drive through the field, and identify and mechanically remove weeds. To avoid damage to crops, the robots use artificial intelligence algorithms to precisely control the end-effector. According to their innovative team, sustainable food production is possible by autonomous farming robots, hence they are aiming to develop robots that will revolutionize the agriculture industry.

Their solution will eliminate the requirement to use herbicides, therefore it contributes to the transition to a circular economy and a more sustainable form of agriculture. Their future goals are to upgrade the robot so it can detect pests and diseases, lack of nutrients, growth stage, damage from weather events, and other information that can add value to the users.

Cropx

Cropx works with the world's best farmers, to develop a new generation of precision agricultural technologies that improve crop yields and reduce water consumption. This agriculture startup



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developed the world's first and only automated adaptive differential irrigation solution, which successfully addresses this challenge.

Accurate, real-time soil data was a missing piece of the precision agriculture puzzle for a long time. But, fortunately, Cropx solved this problem by developing a platform comprised of a unique and proprietary soil sensor, integrated into a big data platform along with all of the additional relevant data layers.

Infarm

Infarm is growing a global network of urban farms that are closer to our communities and kinder to our environment. This agriculture startup grows a diverse range of top-quality produce all year round, with zero chemical pesticides and fewer miles. This is also one of the many agriculture startups that think that technology is the greatest gift of farming in 21 century, and they leverage it for good purposes.

Their farms are climate machines and they each have their unique climate perfected for whichever crop it's hosting. Additionally, they're able to watch over all their plant babies with their 'farmer in the cloud', which picks up-to-the-minute data about how they respond to the slightest changes in their environment.

Links to sector specific online contents, including sector specific funding opportunities

- [EIT Food](#) - the world's largest and most dynamic food innovation community
- [Ellen MacArthur Foundation](#):
 - [The big food redesign study](#)
 - [Redesigning food series - podcasts](#)
 - [Circular Design for Food: Rethinking Products to Regenerate Nature](#)
 - [Examples of circular economy in the food industry](#)
- [DRG4FOOD](#) is an EU project about achieving trust in a data-driven food system by implementing Digital Responsibility Goals (DRGs) for the food sector.
- [Colab4Food](#) provides services developing innovative solutions in the areas of new ingredients and formulation of functional, more nutritious, and products of added-value to the consumers, more efficient and sustainable food processing and technologies, and integrated solutions aligned with the circular economy perspective.



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- [SISTERS](#) aims to reduce food loss and food waste in the main different stages of the Food Value Chain in Europe through innovations targeted to each link of the value chain: new tools to primary producers for promoting direct and Short Chain sales (farmers); new technological innovations in packaging for processors and retailers; and awareness campaigns for retailers and consumers on food loss and food waste.
- [Safe Food Advocacy Europe](#) – striving for safer food for European consumers
- [FOODRUS](#) - e-learning platform for learning about different aspects and solutions for food waste and loss through choosing between 8 thematic modules
- [European Food Safety Authority](#) – science, safe food, sustainability
- [ZeroW project \(Systemic Innovations Towards a Zero Food Waste Supply Chain\)](#) that aims to provide significant contributions to preventing and reducing food waste and enhancing the sustainability of food supply chains.
- [FOLOU project \(Bringing knowledge and consensus to prevent and reduce Food Loss at the primary production stage\)](#): works on the identification and interpretation of existing legislation addressing food losses in primary production. Project partners are reviewing existing national regulations on food losses (and food waste) across 8 countries in Europe and are also looking at the overall EU legislation governing the sector, while also capturing regional initiatives that act in this sense.
- [Benefits of the Circular Economy in the Agri-Food Sector](#)

Funding opportunities

- [Circular Bio-based Europe Joint Undertaking](#): European Partnership that organises yearly open calls for proposals to fund projects in research, demonstration, and industrial deployment.

Its main goals are:

- accelerate the innovation process and development of bio-based innovative solutions
 - accelerate market deployment of the existing mature and innovative bio-based solutions
 - ensure a high level of environmental performance of bio-based industrial systems
- [PRIMA Med \(Partnership for Research and Innovation in the Mediterranean Area\)](#): is an Initiative launched by 19 Euro-Mediterranean Countries, including 11 EU States (Croatia, Cyprus, France, Germany, Greece, Italy, Luxembourg, Malta, Portugal, Slovenia and Spain)



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and 8 non-EU countries (Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Tunisia and Turkey) to participate in a EU joint research and innovation programme.

Three thematic areas are identified in this framework:

- **MANAGEMENT OF WATER:** Integrated and sustainable management of water for arid and semi-arid Mediterranean areas

- **FARMING SYSTEMS:** Sustainable farming systems under Mediterranean environmental constraints

- **AGRO-FOOD VALUE CHAIN:** Sustainable Mediterranean agro-food value chain for regional and local development

- [LIFE Programme](#): is the EU's funding instrument for the environment and climate action
- [European Innovation Council \(EIC\)](#): the EIC is Europe's flagship innovation programme established under the EU Horizon Europe programme to identify, develop and scale up breakthrough technologies and game changing innovations.
- [EIC Pathfinder](#): supporting research and deep tech projects with a high degree of scientific ambition and risk.
- [EIC Transition](#): supporting maturation and validation of novel ideas from lab to business. A bridge between research and application development.
- [EIC Accelerator](#): supporting start-ups and small and medium-sized enterprises to develop and scale up to new markets or disrupt existing ones.
- [Plant2Food](#) is an Open Innovation Science network sponsored by the Novo Nordisk Foundation. They fund open research projects across academia and the food sector.



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