ICT AGRI FOOD

ICT-AGRI-FOOD

ERA-NET Cofund on ICT-enabled agri-food systems

About

ICT-AGRI-FOOD is an ERA-NET Co-fund with 34 partners from 22 countries/regions. The network started in 2019 under Horizon 2020 and will run for five years. It is the successor of ICT-AGRI (2009, FP7) and ICT-AGRI2 (2014, FP7). ICT-AGRI-FOOD wants to underpin the transition towards more sustainable and resilient agri-food systems with digital technology. It started in 2009 as ICT-AGRI under FP7. Data from the entire food chain is used for this purpose. All stakeholders benefit, but ultimately it is the consumer who will be able to make smarter, healthier and more appropriate choices based on information about environmental impact, origin, nutritional value, safety and integrity.

Vision and aim

The vision for ICT-AGRI-FOOD is to bring together actors from across the entire agri-food system including primary producers (comprising both conventional and organic), SMEs, food processors, food retailers, consumers and the public sector (e.g. Ministries, funding agencies and regulatory bodies) in a multi-actor approach, to enable digital technology solutions for a transformation and transition towards sustainable and resilient agri-food systems. The vision for the ERA-NET Cofund ICT-AGRI-FOOD is to bring together actors from across the entire agri-food systems including primary producers, advisors, SMEs, food processors, food retailers, consumers and the public sector with researchers in a multi-actor approach, to enable digital technology solutions for a transition towards sustainable and resilient agri-food systems.

The aim of the ERA-NET Cofund ICT-AGRI-FOOD is consequently to foster, in a verifiable and perceptible manner, the use of smart digital technologies and to remove the barriers to their adoption to drive the transformation of European food systems making them more sustain-able, resilient, fair, responsible, responsive, adaptive, circular, transparent, safe and secure. This is addressed by strengthening the transnational coordination of research programmes and by providing added value to research and innovation by funding and supporting RDI on enabling digital technologies in the European Research Area and beyond. The overarching ambition for ICT-AGRI-FOOD is to join forces among public organisations (Ministries, funding agencies, programme managers) from interested EU countries and beyond. Furthermore, to connect related initiatives (such as JPIs, ERA-NETs, EIP-AGRI, the ESA, EIP Food, the S3 High Tech Farming partnership (S3HTFP) etc.) to support the digital transformation in the agri-food system through research development and innovation (RDI).

Challenges

The agri-food sector in Europe faces significant challenges in balancing the increasing demand for food (especially for resource intensive foodstuffs) and other outputs of the bio-economy with society's increasing demand for an agri-food system with less damaging impacts on the environment, and positive social and societal effects. Structural changes in the European agri-food sector are accelerating under the influence of societal demands, increasing competitive pressure, changing diets, demographic change, volatile national and global markets, diverging wages and new technologies. Adaptation to climate change will force significant changes to the agri-food system. In order to keep pace with these

increasingly complex relationships, the sector is more than ever forced to find innovative solutions for adaptation.

To tackle the challenges the agri-food sector is facing today and tomorrow, ICT-AGRI-FOOD is bringing together, joining and aligning forces with all relevant actors and stakeholders. In the consequence, ICT-AGRI-FOOD has the ambition to be a pivotal point where Member States can have an overview of relevant projects and initiatives all over Europe, and to connect the many projects and initiatives on a durable platform to ensure RDI funding policy for the future of food systems. With ICT-AGRI-FOOD's anticipated structuring effect, it is aimed to spread the uptake of digital innovations in MSs and the entire agri-food sector to make the transformation a reality.

Scope, goals and research topics

The digital technologies supported by ICT-AGRI-FOOD build on the standardisation efforts and platform developments from existing funded projects and integrate with existing major digital platforms from food actors, ICT solution providers and consumers. Collaborative research projects and networking structures aim to trigger dialogue between participating countries and create a common vision to improve coordination between national and EU funding and ensure better use of resources.

Important thematic areas within the scope of ICT-AGRI-FOOD are:

- Foster agri-food systems enabled by interconnected digital technologies that are more transparent to consumers, farmers and other stakeholders along the agri-food value chain.
- Identification of barriers, addressing and removing barriers for adoption of ICT technologies in the agri-food systems.
- Development and impact estimation of data-driven reward and incentive systems to support sustainable and resilient farm management practices.
- Digital solutions for sustainable agriculture: this includes technology that contributes to precision farming, sustainability of agriculture, digital tools for efficient use of resources such as water and fertilizers and to mitigate the impact of climate change.
- Digitalization of supply chains: this involves using digital technologies to optimize supply chains, reduce waste and improve traceability and transparency.
- Farm management systems: this includes research on the development and use of integrated farm management systems that use ICT tools to improve the efficiency and sustainability of agricultural production.
- Data analytics and decision support systems: this includes research on the development of data analytics tools, remote sensing, and decision support systems that leverage big data and machine learning to improve the efficiency and sustainability of agricultural production.
- Robotics, sensors and automation: this includes research on the use of robotics and automation in agriculture to reduce labour costs, increase efficiency, and improve crop quality.
- Cross cutting solutions: this includes interdisciplinary research, addressing barriers, knowledge exchange, capacity building, and working with the industry, retail, consumers, policy makers and other stakeholders in the sector.

Overall, these areas are crucial for the development of a more sustainable and efficient agriculture sector that can meet the challenges of the future.

CHALLENGES	GOALS	STATE OF ART AND TRENDS IN ICT	CHALLENGES RELATED TO ITC AND ITS ADOPTION
Global food security	Increase productivity	More sensors and UAVs	Compatible software systems
Sustainable resource management	Reduce waste in the food chain	More robotics	Data ownership
Energy consumption	Optimize fertilizer and pesticide use	Network connectivity	Training of farmers
Food quality and safety	Optimize water management	Big Data	Directly usable
Climate change	Maintain soil quality	Open/FAIR data	Change of farmers' way of life
Social aspects and demands	Protect and promote biodiversity	Apps everywhere	Bandwidth
	Minimize air pollution	Farm to fork integration/standards	Change of business model
	Increase energy efficiency	Explosion of start-ups	Society's (consumers) support
	Ensure food quality and safety	Consolidation and market dominance	Financial investment
	Food traceability and information		
	Reduce greenhouse gas emissions		
	Increase animal welfare and health		
	Less tedious and hazardous work		

Challenges, goals and trends related to ICT and its adoption as identified by ICT-AGRI2. *From: ICT-AGRI2, Digital Technologies for a sustainable Agrifood System: A Strategic Research and Innovation Agenda, 2019.*
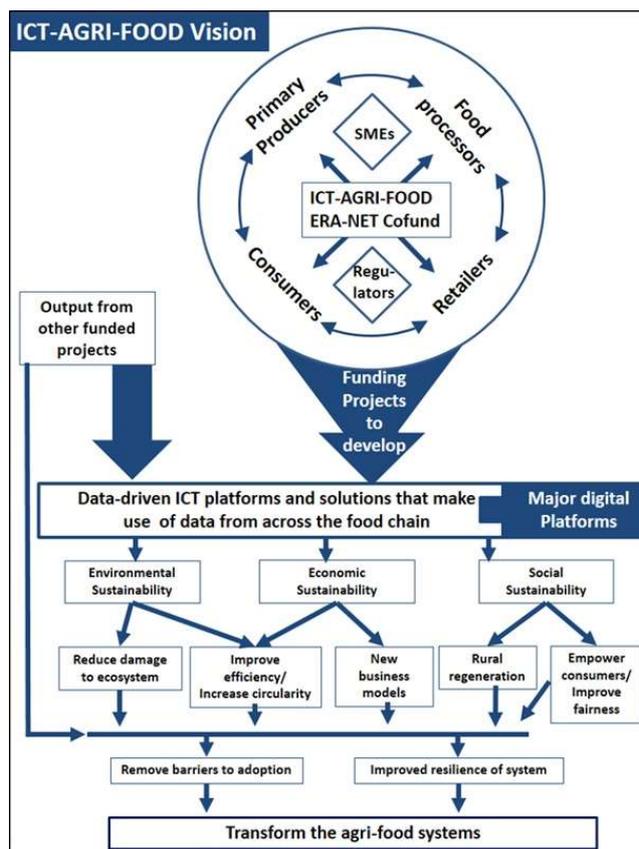
ICT-AGRI-FOOD Vision: Enabling digital technology solutions for a transformation towards sustainable and resilient agri-food-systems.