



European project on assuring food security and biodiversity in times of climate change

1. ECO-Ready – Food security, biodiversity and climate change

The European project ECO-Ready has been set up for linking developments in climate change with food security and biodiversity. It is coordinated by the University of Life Sciences, Prague and supported by 18 European institutions. It will develop an Observatory as a real-time surveillance system offered as an e-platform and as a mobile application. This will function as a singular source of information, provide real-time assessments for the food system, and update forecasts frequently and consistently. The Observatory will be available to society, policymakers, the scientific community, and the agri-food industry, and integrated with a network of 10 Living Labs, covering all bioclimatic regions in Europe.

ECO-Ready will produce knowledge-based resilience strategies, and develop tools that will be embedded on the Observatory. The Living Labs network will facilitate ‘concept to action’ through the co-creation of scenarios addressing their regional needs, the development of policy recommendations, contingency plans, and resilience strategies.



[More about ECO-Ready project](#)

2. ECO-Ready at EFFoST 2023



Partners of ECO-Ready shared project insights at EFFoST2023 International Conference on ‘Sustainable Food and Industry 4.0: Towards the 2030 Agenda’, organized by the European Federation of Food Science and Technology in Valencia, Spain, November 6-8, 2023.

The presentations focused on projecting the long-term ecological resilience of European food systems, integrating scenarios with economic modeling. The ECO-Ready project took center stage in a special session with speakers Ioannis Manikas, Annamaria Bevivino, Luciana Di Gregorio, Markus Dettenhofer, Zuzana Smeets Kristova, Konstantinos Mattas, and Xu Wang.

[More about EFFoST](#)

3. ECO-Ready meets policy



A large panel, with many stakeholders from policy and industry on data utilization in policies was set up during ECO-Ready’s policy dialogue in Rome, December 4-5, 2023. During the panel, set up with support by ENEA and IUCN, different perspectives and discussions emerged, highlighting which issues are progressing toward effective sustainability and which ones remain open. The panel agreed that in order to understand whether policies are being implemented, sometimes new sets of data and methodologies must be introduced. Effectively, baseline data and forward-looking data collection is necessary to track policies’ effectiveness.

[Meeting agenda with policy session](#)

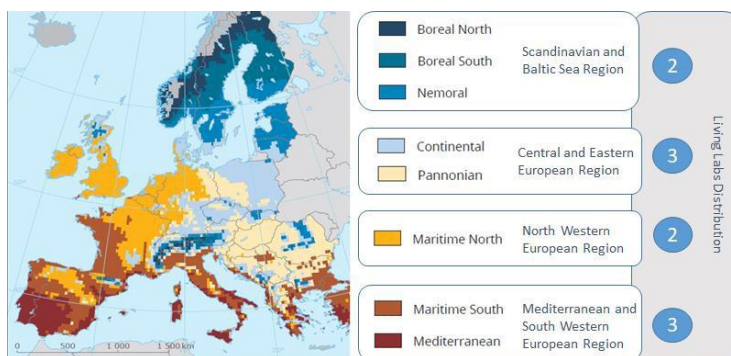
4. 10 Living Labs joining the consortium

The ECO-Ready project forms a lasting partnership with Living Labs with different geographical, climatic, and thematic background for sharing knowledge, tackling interdisciplinary problems related to food security and resilience, and providing short- and long-term local case studies for resilience building strategies across a broad geographical distribution.

Particular emphasis is placed on regions that are at high risk in terms of natural resources, in particular the Mediterranean, Central, and Eastern European regions.

ECO-Ready Living labs are close partners to the ECO-Ready Observatory, they will be cocreators to bring together knowledge from the Social Sciences and Humanities domain to explore, and clarify the issue of how to better inform policy formulation and enhance public understanding on the nexus of food resilience, climate change and biodiversity.

Through an open call organized by FoodScale Hub (FSH), the project has invited Living Labs with the requested backgrounds to join the project. 38 applications from 16 different countries are presently evaluated and about 10 Living Labs will be invited to join the project. The selected Living Labs will be presented in a future newsletter.



Living Labs objectives in ECO-Ready

5. Survey for analysing consumers' needs, interests and triggers of behavioural change towards more sustainable consumption



Great importance is placed by ECO-Ready on the food system's stakeholders (policy makers, end-to-end value chain practitioners, civil society, and the consumers of agri-food products). The task guided by WHITE Research did focus on understanding the most important challenges, needs, and trends of main stakeholders in the food system, regarding food security, biodiversity, and climate change. In addition, consumers' interests and triggers of behavioral change towards more sustainable consumption constitute a significant portion of the work. As a result, the main goal is to furnish essential information and contribute to the development of consumer-driven resilience strategies by addressing existing stakeholders' knowledge and skills gaps leading to a higher engagement around the food system and the digital observatory of the project.

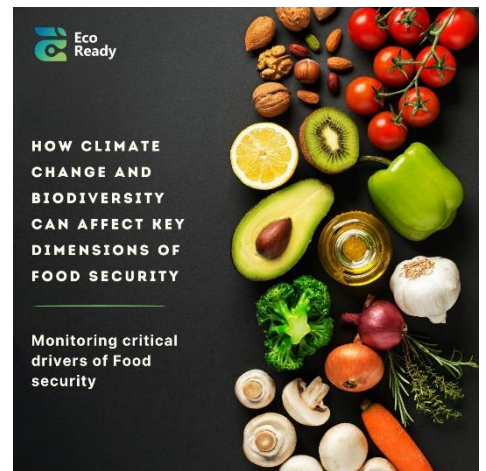
Finally, a report will be delivered based on bibliographic sources and existing relevant European policies, initially aiming to identify critical points regarding the sustainability of the food system. A combination of analysis methods of stakeholders connects experts' opinions with those of EU citizens, placing particular emphasis not only on knowledge but also on behavioral characteristics.

The results will contribute to the establishment and maintaining high levels of social and stakeholders' engagement throughout the project lifecycle, by understanding their level of awareness, their needs, perception, preferences, intentions and behavioral aspects around sustainable agricultural production, food security, climate adaptation, mitigation, and biodiversity loss. Additionally, the task contributes to driving European society towards changing consumption habits and behaviors by providing inputs for the creation of guidance and digital social innovation tools to the relevant stakeholders.

6. A review of data for Food Security, Biodiversity, Climate Change

The ECO-Ready project aims to identify climate change and biodiversity-induced drivers of food security and to compile relevant data (e.g., data sets, data sources, data platforms) that are used to monitor/report those drivers. A task completed by the team at Cranfield University School of Management highlights how climate change and biodiversity can affect key dimensions of food security (namely availability, accessibility, utilisation, and stability), and assesses the current availability of data for monitoring critical drivers of food security.

Through a robust and scientific process of reviewing relevant literature, 342 studies on the topic of climate change – biodiversity – food security were identified and synthesized. An in-depth synthesis of the literature revealed 20 important climate change and 18 important biodiversity drivers for food security. Climate change refers to the long-term shifts in temperature and weather patterns on Earth. The variability in climate can directly affect the environment in which plants and animals grow, as well as the health and development of such species. Climate change can also intensify extreme weather events (e.g. floods, heatwaves, glacier retreats, storms, etc) in terms of their intensity and frequency, thus aggravating the adverse effects of climatic conditions on food production. On the other hand, biodiversity refers to the variety of living species on Earth. Research shows that by utilizing the harmony and synergy between organisms' being and their services, various agricultural and fishery activities can be strengthened. Furthermore, a wider search and evaluation resulted in 27 data sets as the results of academic research, 27 projects (at national and European levels) with relevant data, 28 public data platforms (e.g. worlclim.org, bio-oracle.org, fao.org, eumetsat.int), and 5 EUROSTAT data sets for monitoring and reporting important climate change and biodiversity-induced drivers of food security. The assessment provided a positive outlook on data availability.



Implications for industry and policy

7. Workshop on the identification of scenarios in food security and biodiversity

ECO-Ready aims to develop a collection of scenarios and proposed interventions for its Living Labs, positioned across Europe. These scenarios will be modelled to provide perspective on the mid- and long-term (2030 and 2050, respectively) impacts of the proposed interventions. A team of 28 experts gathered in The Hague, Netherlands on 9-11 October 2023, to conduct a series of co-creation exercises using pilot cases on wheat and sheep. The workshop guided



by CZU and Alternet was intended to link scenario development with modelling activities to stream-line the methodology, identify which scenario outputs link to modelling inputs, and to identify current gaps in the methodology.

The modelling focused on two different models, the ‘MAGNET’ model and the Life Cycle Assessment models (‘E-LCA’ and ‘S-LCA’) presented by Wageningen Research. MAGNET is a global general equilibrium model, which can be flexibly tailored to specific research questions and regions and products of interest. E-LCA is a systematic analysis of environmental impact over the course of the entire life cycle of a product, material, process, or other measurable activity; whereas S-LCA is an analysis of social inputs impacting the life cycle of products.

Important links in the input variables that MAGNET and LCA can handle will be focused on climate change and biodiversity drivers. The workshop participants identified that climate change and its effects on the sheep and wheat systems need to be realized through intermediate models to convert climate measures (e.g., temperature, humidity, extreme heat events) into yield. Intermediate models would also need to be found to translate biodiversity into yield and feed to provide inputs to LCA and MAGNET. Discussion around measurements of biodiversity included correlation with yield through the consideration of pollinators, natural enemies and plant and soil diversity. Gaps to this methodology were identified, but also solutions to resolve and link scenario design at the regional scale to the macro-scale models were addressed.

8. Connecting data with CAP, Green Deal and other EC Frameworks & Policies

In recent years, the effects of climate change and environmental degradation have placed food systems under increasing pressure across the world. Identifying the gaps between the current and the desired future status of food security, while

taking into account the drivers which impact the resilience of food systems, is urgent. Guided by ENEA, the project aimed to critically investigate whether the current policies are properly reflecting an attitude towards Climate Change, as well as Biodiversity and Food Security resilience.

The main objective was to connect data with Common Agricultural Policy (CAP), Green Deal, and other EC legislative frameworks and policies, for ensuring awareness and relevance of Food Security, Biodiversity, and Climate change issues in the European policies. The screening analysis resulted to a final output of approximately 100 documents. The assessment of the relevant EU policies and the identification of gaps between data and policy was carried out by selecting and using a list of keywords related to the main indicators and drivers of Climate Change, Biodiversity, and Food Security. Through a systematic approach, European policy documents on climate change, biodiversity, and food security, gaps and connections with data have been examined in order to provide information and tools for a sustainable transition resilient to climate change and biodiversity loss. The results highlighted the presence of gaps related to several important drivers and indicators, primarily associated to critical issues ranging from soil health, biodiversity, and soil management monitoring.

Given that science consistently generates research data/findings that have the potential to address these needs, it is essential to ascertain if -and to what degree- this integration occurs. In particular, the identification of gaps between policies and scientific evidence will be crucial to build a dialogue with policymakers and ensure improvements in the monitoring and management of Climate Change, Biodiversity, and Food Security.



[More on developing a dialogue](#)

More information

For more information on the project and its development during the coming years you may subscribe to the newsletter through the newsletter link on its website

[Subscribe for newsletter](#)



Project coordination

CZU - Czech University of Life Sciences Prague
Kamycka 129, 16500 Praha-Suchdol, Czech Republic
Dr. Ioannis Manikas, manikas@af.czu.cz

Project partners



For comments on newsletter contact info@proquantis.de
Responsibility for newsletter: Prof. Dr Gerhard Schiefer, proQuantis GmbH & Co. KG
Newsletter 2/2024 will be published in June 2024



This project has received funding from the European Union's HORIZON-CL6-2022 Research and Innovation Programme under grant agreement N°101084201