



The PROJECT REPOSITORY journal

VOLUME 7 | OCTOBER 2020



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(Dr Natalie van der Wal - Delft University of Technology)

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The European Commission has brought together thousands of policymakers, researchers, innovators, businesspeople and citizens in a unique digital event.

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(Co-ordinated at University Deusto)

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Utilises the EU's supercomputing resources coupling them with some of the continent's best life-science research labs to counter international pandemics faster and more efficiently.
(Silvano Coletti - Project Innovation Manager at Exscalate4CoV and CEO at Chelonia SA, Switzerland)

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ERC starting grants 2020

The European Research Council (ERC) has awarded €677 million to 436 laureates to help unravel scientific mysteries.

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(Franziska Kläeger and Dr Sonja Oberbeckmann-Leibniz Institute for Baltic Sea Research Warnemuende)

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PROJECT - OSealce

Explores the two-way interactions between ocean heat transport and Arctic sea ice. Global climate models and remote sensing data are used in order to carry out the analyses. This project will provide more reliable model projections of Arctic sea ice.
(David Docquier - Swedish Meteorological and Hydrological Institute (SMHI), Sweden)

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PROJECT - Gold-Ice

Investigate deep layers of Antarctic ice cores for paleoclimatic signals. Laser-Ablation Inductively Coupled Plasma Mass Spectrometry is refined for glaciochemical ice analysis. 2D impurity imaging is performed for the first time on ice cores.
(Pascal Bohleber - Ca'Foscari University of Venice, Italy)

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European Green Deal Call

The European Commission has launched a €1 billion call for research and innovation projects that respond to the climate crisis and help protect Europe's unique ecosystems and biodiversity.

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Conducts detailed investigations of loess samples from three continents, with the purpose of obtaining a temporal quantification of the ending of the Late Tardiglacial and the beginning of the Holocene.
(Professor Alida Timar-Gabor - Babeş-Bolyai University, Romania)

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PROJECT - INADEC

The project INADEC (Impacts of the North Atlantic Decadal variability on the European Climate: mechanisms and predictability) identifies the limiting causes in our current capability in predicting the climate of the next decades in the goal to overcome those limitations.
(Yohan Ruprich-Robert - Barcelona Supercomputing Center, Barcelona, Spain)

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Has developed a prediction system for meteorological and snow conditions in ski resorts, spanning the range of weather (days/weeks) to seasonal forecast.
(Samuel Morin - Snow Research Center, Météo-France - CNRS, Grenoble, France)

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PROJECT - STOCOVAR

STOCOVAR combines ecophysiology, cellular physiology, genetics and high-throughput phenotyping to decipher how plants respond to rising atmospheric CO₂, opening new avenues to select and develop crop cultivars that will perform better in a changing global climate.
(Aude Coupel-Ledru and Alistair M Hetherington - University of Bristol, United Kingdom)

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PROJECT - BOND

The aim of the BOND project is to reach higher levels of organisation and networking and develop a healthier, more productive and harmonious farming sector in Europe for the long term. It helps unleash, strengthen, and organise the great potential for collective action and networking of individuals, groups and entities of farmers and land managers in selected countries across Europe.
(Dr Angela Hilmi and Lindy Binder - Coventry University, Centre for Agroecology)

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EUFIC

The European Food Information Council introduces the EU-funded

PROJECT - Smartchain

Aims to support collaborative SFSCs through specific recommendations and actions, increasing the competitiveness and sustainability of the European agri-food system.
(Susanne Braun - University of Hohenheim, Dr F^o Javier Casado Hebrard - University of Hohenheim, Dr Dimitrios Argyropoulos - University College Dublin)

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PROJECT - Stance4Health

Stance4Health's main objective is to develop a complete smart, personalised nutrition service based on the use of mobile technologies, as well as tailored food production that will optimise the gut microbiota activity and long-term consumer engagement.
(Daniel Hinojosa-Nogueira, Sergio Pérez-Burillo, Silvia Pastoriza and José A. Rufián-Henares - Universidad de Granada, Granada, Spain)

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Commission announces the winners of Horizon Impact Awards 2020

The European Commission has announced the winners of the second edition of Horizon Impact Award, a prize dedicated to EU-funded projects that have created societal impact across Europe and beyond.

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PROJECT - OLEUM

OLEUM is an EU-funded project aiming to develop innovative analytical techniques and tools, as well as to revise existing ones, with the goal to better guarantee olive oil quality and authenticity.
(Professor Tullia Gallina Toschi, Alma Mater Studiorum - Università di Bologna, Department of Agricultural and Food Sciences, Bologna, Italy)

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PROJECT - PATHEVOME

PathEVome studies how filamentous (fungi and oomycete) plant pathogens secrete virulence effector proteins and deliver them into living plant cells.
(Professor Paul Birch - University of Dundee at James Hutton Institute, Dundee)

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PROJECT - MEMETRE

MEMETRE combines laboratory and field experiments to raise the process-based understanding of methane emissions from soil-tree-atmosphere continuum, and constructs a sound model for the methane exchange within a forest to be utilised in regional or global methane emission modelling.
(Mari Pihlatie - University of Helsinki, Finland)

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PROJECT - EU HEROES

The EU HEROES project brings together community solar practitioners, network operators and energy specialists to develop robust models for solar energy deployment that encourage the continued growth of community solar energy.
(Rebecca van Leeuwen-Jones - Ministerie van Economische Zaken, Netherlands)

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PROJECT - CHESS SETUP

The CHESS SETUP project objective is to design, implement and promote a reliable, efficient and profitable system able to supply heating and hot water mainly from renewable sources to new and existing buildings.
(Sergio Fabian Sánchez - Urban Ecology Agency of Barcelona, Catalonia, Spain)

104 PROJECT - VADEMECOM

VADEMECOM (VALIDation-driven Development of Modern and Efficient COMbustion technologies, vademecom.eu) looks to drive the development of modern and efficient combustion technologies by means of experimental, theoretical and numerical simulation approaches.

(Alessandro Parente - Engineering Faculty of Université Libre de Bruxelles, Belgium)

108 Natural fibres threaded into satellites for safer missions

Threading fibres from the flax plant through satellite panel material can help space missions burn up more rapidly during atmospheric reentry – making their disposal safer for people and property on the ground.

110 PROJECT - GIESEPP

Gridded Ion Engine Standardised Electric Propulsion Platform—brings together Europe's leading companies in the field of electric space propulsion to develop a modular propulsion system for satellites that are not single-source bound, offers maximum efficiency and realises economic and ecologic benefit.

(Mr Cyril Dietz - ArianeGroup GmbH, Lampoldshausen)

114 PROJECT - RADIOSTAR

Radioactivities from Stars to Solar Systems' uses radioactive nuclei produced by nuclear reactions inside stars and supernovae to understand the history of the chemical matter that builds up our Sun, our planet and ourselves, generating a new understanding of our Solar System and the life within it.

(Maria Lugaro - Konkoly Observatory, Budapest, Hungary)

118 PROJECT - PAIRPLASMA

The project opens a new frontier in laboratory physics, allowing tests of predictions regarding stability in a plasma with equal mass constituents by creating the first magnetically confined electron-positron plasma.

(Thomas Sunn Pedersen - Max Planck Institute for Plasma Physics and University of Greifswald and Matthew R. Stoneking - Max Planck Institute for Plasma Physics and Lawrence University)

122 PROJECT - AUTOTADES

Develops new theory and academic tools to automate the timed automata design, a central modelling formalism for cyber-physical systems.

(Ebru Aydin Gol - Middle East Technical University, Turkey)

126 PROJECT - PULSE

Will look to advance industrial laser production in the EU automotive and renewables sectors by harnessing the unique characteristics of tapered double-clad fibre.

(Dr Regina Gumenyuk - Laboratory of Photonics, Tampere University, Finland)

132 PROJECT - SCCMMI

"Single Cell Correlates of Memory, Motivation and Individuality (SCCMMI)" combines cutting-edge single-cell transcriptomics with genetics and the small brain of the fruit fly *Drosophila* to identify cell-specific correlates of memory, motivation and behavioural differences between individual animals.

(Scott Waddell - University of Oxford, UK)

136 PROJECT - RECGLYCANMR

An innovative project that combines state-of-the-art chemistry and chemical biology methods and biophysics protocols to ask and answer pivotal questions related to sugar molecular recognition in nature that are intimately related to infection and inflammation diseases.

(Jesús Jiménez-Barbero - CIC bioGUNE, Spain)

139 Keep finding your way to junk food instead of healthy snacks? It's genetics, study finds

Research suggests humans are better at remembering the location of high-calorie foods over their healthy alternatives.

140 PROJECT - Homo-Symbiosis

Homo-symbiosis will provide novel tools for public health initiatives focused on preventing chronic diseases. It combines preclinical and human data with mathematical modelling to model dynamics of symbiosis-to-dysbiosis transition, and to design ways to prevent dysbiosis and restore homeostatic symbiosis.

(Joël Doré - INRAE Micalis & MetaGenoPolis, France)

143 Mapping microbiomes to improve food quantity, quality and safety

Fermented foods can be a major source of probiotic lactic acid bacteria (LAB) for the human gut, according to a new study.

144 PROJECT - EXOCYTER

ExocyTher focuses on a cell-free therapy for digestive fistulas related to Crohn's disease. The aim is to investigate extracellular vesicles (EVs) released by stromal cells. The project proposes the concepts of turbulence vesiculation for high-yield and large-scale EV production in bioreactors, and thermocontrolled local EV delivery at the fistula.

(Amanda Silva)

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PROJECT - HIT-CF

HIT-CF Europe is a research project aiming to provide better treatment for people with cystic fibrosis and rare mutations.

(Elise Lammertyn, Hilde De Keyser - Cystic Fibrosis Europe, Brussels, Belgium. Fiona Dunlevy - European Cystic Fibrosis Society, Karup, Denmark. Marlou C Bierlaagh, Els van der Heijden, C Kors van der Ent - University Medical Centre Utrecht, Utrecht, The Netherlands)

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PerMedCoE: Exascale-ready cell-level simulations for European Personalised Medicine

This recently launched HPC centre of excellence will optimise codes for cell-level simulations in HPC/ Exascale and bridge the gap between organ and molecular simulations.

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PROJECT - ALATA

The Making of Angels in Late Antiquity: Theology and Aesthetics (ALATA) combines texts (in Ancient Greek, Coptic, and Syriac) and images (chiefly ancient mosaics) to research the origins of Christian angels' figures.

(Dr Delphine Lauritzen - Sorbonne Université, Paris)

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PROJECT - Symbodin

Combines historical and philological methods with the theoretical framework of cognitive linguistics to demonstrate how myths are based on conceptual metaphors. Myths are persuasive (even today) because they 'hijack' our mental associative networks.

(Jan A. Kozák - University of Bergen and Charles University in Prague)

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Humanitarian Aid: Commission awards five outstanding solutions

Five exceptional innovations that can make a big difference in the lives of the most vulnerable people around the world have won the EIC Horizon Prize on Affordable High-Tech for Humanitarian Aid.

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PROJECT - SLAFNET

The SLAFNET project aims to establish a scientific network of several institutions in Europe and Africa in the field of slavery studies.

(Marie Pierre Ballarin - Institute of Research for Development, France)



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Bonding bridging and linking

Dr Angela Hilmi and Lindy Binder

Coventry University, Centre for Agroecology, Water and Resilience

Building a healthier future for Europe's foods and landscapes

When Martin, a sheep cheese producer in the Northern Czech Republic, was selected for the BOND project, he was stuck—exhausted and disillusioned. He and his wife, Jana, were struggling to make a living for themselves and their five children from the family farm.

Farmers and land managers play a fundamental role in the environmental and economic stability of the European farming sector. They are vital in setting a solid basis to sustain food security, the natural resources base and sustainable growth path. The BOND project contributes to a healthier, more productive and harmonious farming sector in Europe for the long term by helping groups and individuals reach higher levels of organisation and networking. It is part of BOND's mission to identify, demonstrate and transfer effective collective solutions to the major challenges affecting Europe's agriculture across the agri-food chain from soil to society.

The BOND consortium is made up of 17 partners from 12 European countries, including both academia and practice

partners. Over three years, these partners organised 53 conferences and workshops attended by 816 stakeholders. Dissemination outreach is almost 400,000, and BOND's website has engagement from 123 countries. The project has seen significant positive shifts in regional and national agricultural policy as well as in the lives of individuals and their families.

To see, to learn, to tell

BOND's strategy is 'to see, to learn, to tell.' In order to **see**, farmer representatives went on a five-day study tour in a host country to witness best practice examples of collective action. BOND's consortium selected the 60 representatives across 34 European countries

Martin's study tour was in the United Kingdom where he was inspired by the farmers' union, Landworkers' Alliance. Others went to Italy, Norway, France and the Netherlands. Vojin Kopuz, a biological heirloom seed saver from Bosnia and Herzegovina, was one of ten who visited Spain. He was inspired by examples of

schools, kindergartens and restaurants successfully supplied by local and biological food producers. "That's the beauty of BOND", he says, "to go, to meet, to see, to experience. It is not 'it can be done', it is something happening already. I witnessed it, tasted it!" He has seen an acceleration in the development and reach of his work; for this, he thanks his team and "BOND, which gave us hope through the living examples."

"BOND has influenced the way we talk with farmers," says Gaz, who works for the Ministry of Agriculture, Forestry and Rural Development in Kosovo. "We decided to set up what we saw in France, The Green Basket (a farm shop cooperative). It started in Pristina in December 2018 with 20 farmers. This is a first in our country. BOND makes a bridge with the work we do with other EU projects."

Other representatives have started organic cooperatives and associations, developed new brands of origin after applying to the EU with BOND learnings, shared BOND ideas with their members, or via articles in their magazines and taken up leadership roles in their associations.



“”

That's the beauty of BOND, to go, to meet, to see, to experience. It is not 'it can be done', it is something happening already. I witnessed it, tasted it!"



Building momentum

BOND articulates its activities step by step to build incremental momentum. Following the study tours, a major interregional forum in Córdoba enabled beneficiaries, partners and other key actors to meet and work together towards the creation of action plans to put the learnings into practice. Although the Netherlands would be considered to have higher levels of organisation, Alex, a permaculture market gardener, didn't feel represented by existing farmer institutions. She saw the new but unconnected organisations and "with the experience of BOND" she decided to "fill this gap and ... create a new federation of farmers from scratch." She hosted an informal meeting at her farm in November 2018, and by March 2019 they had established the Dutch Federation of Agroecological Farmers. After the interregional forum, there was a training of trainers (ToT). "Train the trainers was really useful," says Alex, "because it was about assessment of organisations so it could help a lot when we worked out the structure and organisation of our new federation. BOND gave me the push to try something new. The ToT in Coventry gave me the confidence to do it."

A total of 704 people have been trained in BOND methods and playful gaming techniques. When Martin returned to the Czech Republic, he set up a meeting for horse-powered farmers. "The training in Córdoba gave me the confidence and tools and methodology to stand up in front of other, sometimes more experienced, farmers," he says, "to talk and teach and organise." The progression from *see* to *learn* to *tell* is organic.

BOND Partner, Universidad de Córdoba (UOC) mobilised specific tools to analyse strengths, weaknesses, opportunities and threats to farmer groups, and FAO (Food

“... BOND gave me the push to try something new. The ToT in Coventry gave me the confidence to do it.”

and Agriculture Organisation of the United Nations) led the training in collective action (bonding, bridging and linking) spearheading the creation of a common vision and action plans for the many involved. During the project, over 70 action plans were developed.

Laura's action plan became one of the key themes in Portugal's national workshop and an internal activity to test methodology in CNA (Portugal's National Confederation for Agriculture, and BOND partner). She developed and trained three colleagues, changing the way CNA works and reinforcing its democratic spirit.

Gamification

One tool introduced in the project was gaming techniques. Researchers at Coventry University developed three playful methodologies for BOND to aid members of the agricultural sector to create playful working practices. Research has shown adding elements of play to work-based tasks helps develop skills in creative problem-solving, innovative thinking, communication and negotiation. Within BOND, it opened up

a new dimension for interaction: a different and unusual interface with policymakers and other players in the food and farming sector that creates the fruitful environment to resolve specific agricultural challenges.

BOND LEGO® Play, inspired by LEGO® SERIOUS PLAY®, was particularly popular. Biljana introduced it to a group of rural women farmers in Macedonia. "They can be very closed typically," she explains, "but the LEGO® game helped them open their minds and talk more about their challenges and come up with initiatives to work together as a network of rural women farmers." This group have now organised a market to jointly sell their products.

Impacting nations

After the commitment and connection of farmers, academics, policymakers, CSOs, businesses, environmentalists and consumers at the interregional forum, stakeholders had time to reflect and analyse their attitudes, constraints and weaknesses in order to develop a clearer perspective of solutions and challenges in the future. Bringing this heightened awareness and

Sharing best practice and training

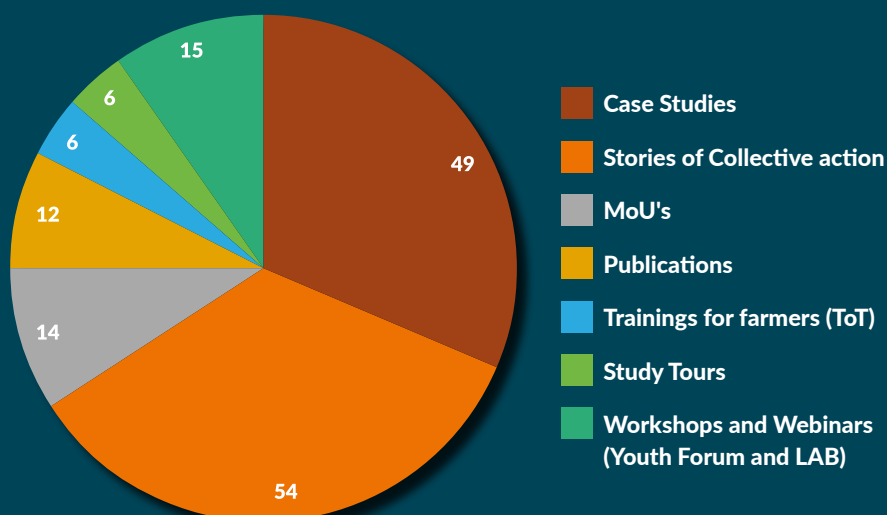


Figure 1: Proportion and numbers of BOND sharing best practice and training output by type.

their newly acquired skills, they were well placed to meet in 14 national thematic workshops.

KLT (Hungarian partner) brought together stakeholders to inspire and advance social economy, which has now taken its own momentum.

Spanish partners Sindicato Labrego (SL), COAGCV and UOC, held a national workshop in July 2019, bringing together agricultural organisations, NGOs, private sector and professional networks to work on the flexibility of existing regulations in Spain to benefit family, artisans and agroecological productions. As a direct result, they were able to negotiate with the Spanish government the opening of the farmer markets at a national level, two weeks earlier than officially planned during the COVID-19 lock-down. This had a tremendous benefit for the farmers

in Spain. They have made a memorandum of understanding (MOU) with government entities and are now influencing a significant shift in the flexibility of the sanitary rules.

Impacting policy

The Advocacy National Workshop in England crystallised in amendments to the UK Agricultural Bill, which was under debate concerning changes to the subsidy system from the EU to post-Brexit. Although the amendment was not approved, it received significantly more votes because of the lobbying and public interest generated by LWA (UK BOND partner).

Going through the process of **seeing** and **learning**, representatives were increasingly informed in their debates on policy, making

a list of recommendations to policymakers at every stage. End-users grew through these different processes and reaffirmed their position, demonstrating their contribution to society and the benefits of collective action, through dissemination material produced.

Four regional policy roundtables took place in Portugal, Hungary, Romania and Poland. Based on the participatory methods and using the gaming techniques, the roundtables facilitated 20 to 50 participants: farmers and stakeholders at local, regional, national and EU level to reach a mutual understanding of different realities (and sometimes conflicting worldviews, logics and interests) and resulted in coordinated action. Each roundtable resulted in a list of recommendations which were made widely available in the selected countries and to EU policymakers. As participants better understood each other, they concretised the process with a signed MOU.

“““

... the LEGO® game helped them open their minds and talk more about their challenges and come up with initiatives to work together as a network of rural women farmers.”



SIE, BOND's Polish partner, used their roundtable to bring the issue of farmers' rights into the political debate.

Portugal's policy roundtable centred around trade with international experts speaking about the EU regulation and impact of these policies on family farmers. Following the roundtable, CNA fed back to European Coordination Via Campesina at European level with their proposals regarding the Farm-to-Fork strategy. In April 2020 they entered discussions with members of the EU Parliament.

At the Hungarian roundtable, BOND partner, Védegylet, brought together a diversity of actors who wouldn't typically connect. Following the event, the Budapest municipality—the Maire's Office—invited three participants to speak about public procurement to the municipality staff. The issue is now on the agenda and being debated and publicised. The roundtable

also birthed a new collaboration for a detailed project proposal, with Italy and Sweden. Védegylet continues to use BOND tools and methods to strengthen the Hungarian Agroecology Network working this year towards a Hungarian Declaration on Agroecology.

The Norwegian Organisation of Cooperatives (NAC) presented policy recommendations from its BOND Norwegian Youth Forum to the Minister of Agriculture and Food. The recommendations were also published in a national newspaper and 13 regional ones.

Romanian partner Eco Ruralis mapped their network constellation to help them build a more diplomatic voice. They are now the facilitators of the food sovereignty network 'The Alliance of Small Farmers'. WWF and Greenpeace have joined up with them, as representatives of agroecology. Since BOND, WWF visits the Romanian ministry and promotes the rights of farmers.

Testing the model and Activating the Youth

A 'lab' was developed in Moldova by partner Proentrance to test the BOND model for 12 real-life farmer groups with the Ministry of Agriculture and Food Industry of the Republic of Moldova (the main national policy-making agency in the farming sector). This exercise aimed at fostering the development of social capital in Moldova—essentially, improving the functioning of social groups through interpersonal relationships, a shared sense of identity and understanding, shared norms, shared values, trust, cooperation, and reciprocity. This works on three levels: **bonding** within organisations, **bridging** between peer organisations to reach higher levels of aggregation, and **linking** with powerful actors such as governments and decision-makers to give a voice and negotiation position to farmers.

Applying the recommendations and using the methods and tools developed throughout the BOND project within the lab provided a demonstration field for other countries in Europe where the level of organisation is low, as a documented example to showcase what can be achieved. A participatory analysis and review of the regulatory environments provided a range of examples and good practices in Europe that facilitate a more enabling environment for farmers and provide solutions to overcome legal constraints, which often represent the main impediment for collective action.

BOND's Youth Forum for the Future brought together 34 farmers under 34 years old from 34 European countries to draw a road map for the future of farming in Europe and inspire and guide national and EU policymakers to cultivate social capital. Scheduled to take place in Romania, this event had to move to a series of online workshops and webinars due to COVID-19 restrictions. Undeterred by the change of format, these young farmers learned and debated and together developed a declaration which will be put forward to Horizon 2020, and to the European Commission for Agriculture and Rural Development.



Figure 2: Youth Forum map.

Sharing knowledge, and lessons learned

BOND has had an enormous impact on those involved, but that impact must keep growing. Partners have published four regional reports, a [regulatory framework](#), papers on [land management](#), the Youth Forum, stories of collective action, and a synthesis report. The [repository](#) of collective action examples (called The Barn) has been adding stories throughout the project, and now holds 55 initiatives from 21 countries.

A [video](#) was produced demonstrating BOND's impact on all 17 partners, with increased dissemination of BOND tools and methods led by LEGACOOP (Italy). AMPI, the Czech partner, was a small organisation focused solely on consumer and environmental issues. With support from Spanish and Italian partners, AMPI learned to cooperate with groups it hadn't cooperated with before, realising the relevance of agroecology for the environment. It formed a coalition to help family farms and is now leading the Czech CSA (Community Supported Agriculture) Network. It has recognised small-scale farmers don't have time for political struggle, so AMPI has stepped into that role on their behalf, becoming the voice of Martin and others like him on a policy level. This is an essential aspect. Burn out is a

reoccurring theme among those farmers who work hard not only to produce quality food, agroecologically, but oppose unfair systems or try to bring about innovation and change. Working in isolation is exhausting. Driving collective action typically happens at a voluntary level and concurrently with managing a farm and a family. There needs to be support and routes forward.

Providing opportunities to see, learn and tell, BOND opens up those routes. Collective action, BOND-style, is all about motion—you begin with something static and difficult to move. Starting is where the most significant momentum is needed—to overcome fear, resentment, disappointment, apathy, lack of vision, lack of resources. But once the potential of individuals working together is unleashed, the gears begin to grind, and the whole system begins to move. Collective action is, by nature, a dynamic, rolling thing. As the BOND project facilitates and unites individuals—providing them with an environment to test, try, debate, agree and even agree to disagree—the momentum grows. Connections spark. Healthy, resilient communities are formed. Those who know the land can inform decisions that affect the land. This movement is happening now, and with continued fuel (follow-up projects, wider understanding and investment) collective action will yield healthier, more harmonious food and farming for everybody.



PROJECT SUMMARY

The aim of the BOND project is to reach higher levels of organisation and networking and develop a healthier, more productive and harmonious farming sector in Europe for the long term. It helps unleash, strengthen, and organise the great potential for collective action and networking of individuals, groups and entities of farmers and land managers in selected countries across Europe.

PROJECT LEAD PROFILE

Dr Angela Hilmi is an Associate Professor at Coventry University. A biologist, agronomist and socio-economist, with studies in anthropology and sociology of politics, Dr Hilmi has worked with farming communities, governments and the private sector worldwide. She was Senior Officer in FAO-UN, Expert in Partnerships and Alliances for Latin America and Caribbean, and French Foreign Trade Advisor named by French ministerial decree.

PROJECT PARTNERS

The BOND project is led by Coventry University in the UK in close collaboration with the consortium members consisting of 17 partners from 12 countries in Europe, including universities, large federations of cooperatives, farmer and land manager networks, NGOs and CSOs, organisations in the consumer, legislative and environmental fields, and an international UN development organisation.

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Towards innovation-driven and smart solutions in short food supply chains

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Dr. Dimitrios Argyropoulos, University College Dublin

The agri-food industry is of particular strategic interest in Europe, being essential for rural development as it provides jobs and incomes in many remote regions. However, a more sustainable and competitive European agri-food industry is urgently needed, addressing its impacts on the environment, health and climate. A major transformation of the whole sector is required to respond to these challenges, with important changes in both production and consumption of agricultural products.

In recent times, short food supply chains (SFSCs) and local productions (e.g. farmers' markets, farm shops, community-supported agriculture, direct sales and delivery schemes) have flourished in all European countries, both in rural and urban areas. They represent a constructive alternative to conventional longer food chains where farmers or small cooperatives often have little bargaining power, and the consumers cannot trace their food back to a known producer or local area. Such food systems are of considerable interest, responding to a number of needs and opportunities, both of farmers and consumers.

The current COVID-19 crisis has brought to light the need to explore the development of collaborative SFSCs further, stressing the need to adopt a number of sustainable, innovative solutions to practical problems faced by farmers and food producers. The effective implementation of collaborative SFSCs—bringing together farmers, farm cooperatives, food producers, consumers and other stakeholders for their mutual benefits—may offer an additional

mechanism in coping with food availability issues as local productions are less affected by international restrictions. This will help create a richer ecosystem of foods in the territory, closer to consumers.

Given the complexity of the European food system—with many different involved actors and several interrelated factors (e.g. the socio-economic and political context, the scarcity of natural resources)—all its challenges cannot be met by individual

actions. A multi-stakeholder perspective and coordinated initiatives are required along the entire value chain—from farmer to consumer.

Supporting collaborative SFSCs in Europe

By bringing together 43 partners from 11 countries across Europe, of a distinctly multi-actor mix, and including key stakeholders from the SFSC domain,



Figure 1: SMARTCHAIN consortium at the first annual meeting in Utrecht.





SMARTCHAIN project unites the necessary multidisciplinary knowledge, expertise and skills to constitute a complete value chain of actors. Therefore, it can capitalise on the opportunities of transitioning towards collaborative SFSCs at a systems level. In particular, the project sees the collaboration of farmers and their associations, food processing industries, technology providers, agricultural and environmental consultancies, consumers and beyond. A key feature of the project is its focus on 18 representative case studies of widespread SFSC models that have remarkable social, economic and ecological impact on their rural, peri-urban and urban communities. Thanks to its truly multi-actor nature, SMARTCHAIN can adopt a holistic approach to address the multi-faceted challenges of the agri-food system. The analysis takes place both at the national level, through the cooperation of nine innovation and collaboration hubs located in France, Germany, Greece, Hungary, Italy, the Netherlands, Serbia, Spain and Switzerland, as well as at a European-wide level.

The central objective of SMARTCHAIN is to foster and accelerate the shift towards collaborative SFSCs as well as, through specific actions and recommendations, to introduce new robust business models and innovative, practical solutions that enhance the competitiveness and sustainability of the agri-food system in Europe. To achieve this objective, SMARTCHAIN leverages an overarching open innovation concept where the various actors involved work together in a trust-enhancing environment to make the best use of complementary types of knowledge for the co-creation and diffusion of solutions that are ready to implement in practice.

The results of SMARTCHAIN will unlock the potential for sustainability by stimulating practical, innovative solutions to problems in the SFSC domain. The SMARTCHAIN consortium will identify the main needs and instruments required to implement collaborative SFSCs, with a view to providing an exhaustive inventory of practical solutions and to inspiring the approval of policy recommendations, ultimately leading to an increase in farm incomes.

Multi-perspective analysis of 18 short food chains

As the starting point for the project, multi-perspective analysis of the 18 case studies has been carried out in terms of technological and non-technological innovation potential, social innovation, consumer perceptions, sustainability, business and their national and regional regulatory contexts in seven EU and two associated partner countries. Based on nine multi-actor workshops to refine results towards the needs of end-users under regional conditions, the project has identified:

- challenges and barriers of SFSCs
- existing innovations ready to implement in practice
- factors of success (technological, regulatory, social, economic and environmental).

From this initial information, additional studies and analysis have been performed.

All these results, together with those of future studies during the project, will allow the SMARTCHAIN consortium to identify the key factors that influence sustainable food production and rural development among different regions across Europe.

Policy framework and social innovations in SFSCs

As an initial step, the specific regulatory context (e.g. obstacles, facilitations, regulatory and institutional settings) of the regions where the 18 case studies are situated has been analysed to determine the influence of the regional governance in successful SFSCs models. Currently, SMARTCHAIN is exploring the policy, legal and regulatory requirements for SFSCs, taking into account the different national and regional contexts. Building on this analysis and the regulatory barriers that currently hamper the scaling up of SFSCs, the project will develop evidence-based recommendations for policymakers at the EU, national and regional levels.

In the meantime, SMARTCHAIN has provided an operational and inclusive definition of what social innovations are in the context of SFSCs, as well as their key drivers and best practices. These were validated by SMARTCHAIN partners and relevant stakeholders during 12 community

of practice events (World Café) that took place in nine countries.

Consumer perceptions toward SFSCs

Consumer perceptions and attitudes to SFSCs have been examined to understand underlying mechanisms and define perceived risks, benefits and opportunities related to SFSCs. Eight focus groups (rural vs urban) investigated consumer views regarding SFSCs, their attitudes, preferences and value perceptions in Germany, Greece, Spain, and Hungary. To create a more holistic view of opportunities and risks involved in SFSCs offerings, 32 expert interviews were conducted with consumer, producer, intermediary, associate and policy stakeholders in Belgium, Switzerland, Germany, Greece, Spain, Hungary, the Netherlands, and at the EU level. Among other findings, it was felt that consumers would be more willing to purchase from SFSCs if it was more convenient for them to do so.

Assessment of the environmental, economic and social impacts of SFSCs

The project has adopted a life cycle assessment (LCA) approach for the assessment of SFSC innovations from an environmental perspective in comparison to conventional food chain practices considering, among others environmental impacts, GHG emissions, energy demand (e.g. transportation), land use and loss of local biodiversity. Additionally, SMARTCHAIN is evaluating the overall sustainability from selected case studies taking into account the social and economic impacts related to SFSCs. Based on the results, recommendations to reduce the environmental and socio-economic impacts of different SFSCs will be developed.

New business models and opportunities for SFSCs

Based on the analysis and identification of key factors (organisational, economic, social, etc.) concerning their successful application, SMARTCHAIN has produced an inventory of successful cases focusing on the application of innovative solutions in SFSCs. Additionally, the project has started to compile another catalogue of

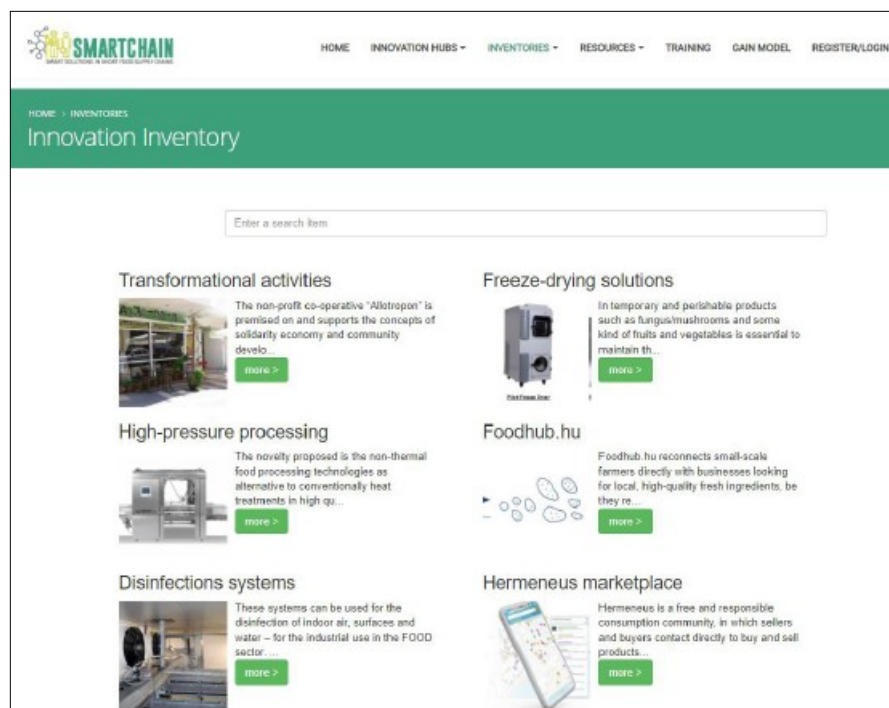


Figure 2: The Innovation Inventory collecting 150 available technological and non-technological innovative solutions for SFSCs.

reference exploitation models for SFSCs, that draws on the business models of the 18 case studies. The final inventory will also include new reference models for novel business approaches and will be available by the end of the project.

SMARTCHAIN innovation platform

As its main dissemination tool, the project has developed a sustainable virtual environment, the SMARTCHAIN innovation platform. This entirely digital platform was created as a major channel for building a stakeholder community, facilitating engagement, communication, knowledge exchanges and dissemination across stakeholders (farmers, processors, consumers, etc.). The digital platform serves as a forum for knowledge exchange between key stakeholders in the SFSC domain and allows the dissemination of the results generated by the project, the collection and sharing of relevant information, best practices, innovations and successful initiatives related to SFSCs. It is also a place for interaction among the project's hubs and their respective case studies.

A key feature of the innovation platform is the 'Innovation Inventory', a searchable catalogue of around 150 available technological and non-technological innovative solutions for SFSCs. A second database, the 'Initiative Inventory', is

also available on the platform. It collects information regarding relevant and successful initiatives related to SFSCs for all types of stakeholders (e.g. projects, networks, best practices).

In the 'Publication' section of the platform, the results of the project are available in different formats, also including presentations with summaries of the most relevant analysis and studies carried out by the SMARTCHAIN consortium.

SMARTCHAIN workshops

SMARTCHAIN will generate concrete actions for knowledge transfer through the organisation of **18 national multi-stakeholder workshops in France, Germany, Greece, Hungary, Italy, Serbia, Spain, Switzerland, and the Netherlands**. The first round of workshops, aimed at an internal audience of stakeholders involved in the 18 SMARTCHAIN case studies, is organised for this autumn, between September and November 2020.

The second round of nine workshops will take place between April and June 2021 and is open for the participation of all farmers, food producers and audiences interested in SFSCs and local production. Any stakeholder wishing to take part can keep up to date on the latest information by following SMARTCHAIN activities on social media or signing up to the project's newsletter.



PROJECT SUMMARY

The SMARTCHAIN project aims to support collaborative SFSCs through specific recommendations and actions, increasing the competitiveness and sustainability of the European agri-food system. The project started in September 2018 and ends in August 2021.

PROJECT LEAD PROFILE

The Hohenheim Research Center for Bioeconomy aims to strengthen the University's scientific potential in the field of bioeconomy with special emphasis on the food chain. It brings together the numerous scientific activities from agricultural sciences, biology, food sciences, to socio-economic sciences to establish new interdisciplinary research projects. The center is especially strong in European research and cooperation activities.

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