



**Before we knew it, one year has already  
passed!**

**Do you want to learn about our long-term plans?  
Read our Grant Proposal in RIO!**

# BESTMAP: behavioural, Ecological and Socio-economic Tools for Modelling Agricultural Policy

▼ [Guy Ziv](#), [Michael Beckmann](#), [James Bullock](#), [Anna Cord](#), [Ruth Delzeit](#), [Cristina Domingo](#), [Gunnar Dreßler](#), [Nina Hagemann](#), [Joan Masó](#), [Birgit Müller](#), [Markus Neteler](#), [Anna Sapundzhieva](#), [Pavel Stoev](#), [Jon Stenning](#), [Milica Trajković](#), [Tomáš Václavík](#)

## Abstract ▲

Half of the European Union (EU) land and the livelihood of 10 million farmers is threatened by unsustainable land-use intensification, land abandonment and climate change. Policy instruments, including the EU Common Agricultural Policy (CAP) have so far failed to stop this environmental degradation. BESTMAP will: 1) Develop a behavioural theoretical modelling framework to take into account complexity of farmers' decision-making; 2) Develop, adapt and customize a suite of opensource, flexible, interoperable and customisable computer models linked to existing data e.g. LPIS/IACS and remote sensing e.g. Sentinel-2; 3) Link economic, individual-farm agent-based, biophysical ecosystem services and biodiversity and geostatistical socio-economic models; 4) Produce a simple-to-use dashboard to compare scenarios of Agri-Environmental Schemes adoption; 5) Improve the effectiveness of future EU rural policies' design, monitoring and implementation.

BESTMAP's grant proposal is now part of the RIO Journal. The document provides extensive information about the project's specific objectives, overall aims, concept, and methodology. It also highlights the specific approaches to achieve the expected impacts of BESTMAP on the agricultural sector, stakeholders, EU government policymakers, farmers and many others.

## Large-scale interview campaign

In the Spring of 2020, BESTMAP conducted an extensive interview campaign among farmers in the project's five case study areas in the UK, Germany, Spain, Czech Republic and Serbia. The local case study teams selected a representative sample of farmers, ranging from individual hobby farmers to large agro-businesses, in different environmental conditions. About 25 semi-structured face-to-face or telephone interviews were conducted in each case study, collecting information on general characteristics of the farms, farmers' attitudes towards farming, and especially their motivations to apply for agri-environmental schemes.

The outcomes of the interviews will be used to inform agent-based models (ABMs) about relevant elements to be integrated into the model structure and to better understand what farm characteristics are important in defining Farming System Archetypes used as units of analysis in subsequent biophysical modeling. Coupled with biophysical models, the ABMs will ultimately support the design of better agri-environmental schemes, accounting for their ecological effects as well as the behavioral factors that affect their adoption.

Analysis of the interviews is currently underway.

## **Modelling in COVID times**

Despite the COVID-19 pandemic, BESTMAP keeps on taking action towards the project's ultimate goal - to develop a new modelling framework and transform future EU rural policies' design and monitoring.

About 20 members of BESTMAP's team met online from 27 to 29 April 2020 for a virtual workshop, in order to develop the BESTMAP modelling directives together. BESTMAP will build on open-source modelling platforms to predict policy change impacts on biodiversity, delivery of ecosystem services, as well as socio-economic metrics (e.g. jobs). Farming System Archetypes will serve as archetypal units of farming systems suitable for employment in the modelling framework. The goal of the modelling directives is to ensure that results are comparable among case studies and that all models adapted and developed will be able to work towards the common goal of improving existing tools used in policy impact assessment.

The modelling teams are nearly assembled and the project has recently welcomed several new faces in biophysical and agent-based modelling. The biophysical modelling has commenced and agent-based modelling will start in October.

On the biophysical side, Arjan Gosal has joined us at Leeds and is working on water quality, sediment retention and cultural/aesthetic aspects.

Stephanie Roilo has joined us at Technische Universitat Dresden and is working on pollination, biocontrol, biodiversity & habitats.

And our existing team members Anne Paulus at UFZ, Predrag Lugonja at Biosense Serbia and Fanny Langerwisch are working on food & fodder and carbon sequestration respectively.

## **Brussels stakeholder interviews**

During April and May, the RISE Foundation carried out a series of interviews with key European level stakeholders. These have included environmental NGOs, representatives of industry, farming sectors, and farmers. The aim of these interviews is to contribute to the codesign of the BESTMAP work and to feed into the development of policy scenarios. The interviews were semi-structured in design and posed questions on the future challenges and opportunities of European agriculture, and the policy design needed to support the shift in agriculture to face these challenges and respond to the multi land use objectives of today.

## **DG AGRI/CLIMA/ENV/SANTE and JRC meeting**



A workshop entitled “Improving the environmental and social capacity of EC impact assessment tools” was held on 14 and 15 July 2020 and attracted 37 external attendees, mainly from DG AGRI and JRC. Plenary sessions and three thematic breakout discussion groups were organised.

During the session about agricultural policy impact modelling, participants discussed who in the commission needs tools, the need for models in the policy cycle, regulation, inter-institutional agreements and the need for an impact assessment on

amendments to proposed policies during the co-decision process with the Council and the European Parliament. Changes on how impact assessment is conducted in the modelling were also debated.

Another group discussed the Post-2020 CAP and sustainable development goals (SDGs) indicators. The group looked at which social or environmental indicators are currently missing. An essential topic for debate was which indicators are important for modelling tools already in use, together with the role of models in transferring from results indicators to impact indicators.

Finally, the third group discussed Macroeconomic and ecosystem services model linkages. The importance of farmer decision-making was highlighted and the limitations of current tools in capturing this, especially with regard to complex behaviour were recognised.

## BESTMAP is going international



**PARTNERS**

- UK: University of Leeds (UKNEEDS), Centre for Energy and Safety (CES), Cambridge Econometrics Limited (CE)
- Germany: Leibniz Centre for Environmental Research - LEZ E.ON, Institut für Weltwirtschaft (IWW), Hansische Gesellschaft (HGC), NDL (NLD)
- Czech Republic: Ústřední úřad zemědělsko-přírodovědných vědeckých zpravodajství (ÚZP)
- Spain: Centro de Investigación Ecológica y Aplicaciones Biomédicas (CITA), Departamento de Agricultura, Ganadería, Pesca y Alimentación (DAGP)
- Belgium: The Rural Investment Support for Europe Foundation (RISE)
- Serbia: Research and Development Institute for Information Technologies in Biosciences (RIIB)
- Poland: Pafos Publishers (PNSOP)

**KEYWORDS**

Behavioural change theory, Ecosystem services, Agricultural economics, Rural policy impact assessment, Agent based modelling, Geographic modelling, Farming Systems Archetypes

**CONSORTIUM**

12 partners from 7 European countries

**DURATION**

September 2019 - August 2023

**PROJECT COORDINATOR**

Dr. Gaj Toš  
School of Geography  
University of Leeds, UK  
g.to@leeds.ac.uk  
+44 (0)113 543 7504

**WEBSITE**

bestmap.eu

**TWITTER** **FACEBOOK**

@bestmapEU @bestmap\_EU

**BEHAVIOURAL, ECOLOGICAL AND SOCIO-ECONOMIC TOOLS FOR MODELLING AGRICULTURAL POLICY**

**BACKGROUND**

The European Common Agricultural Policy (CAP) supports the livelihood of 11 million farmers while maintaining environmental standards and good agricultural practices over half of the European Union (EU) land. However, pressures including land-use intensification, abandonment and climate change remain a challenge to the current CAP and its implementation.

**CASE STUDIES**

The project will:

- demonstrate novel modelling framework in five case study areas across EU
- develop protocols, guidelines and a roadmap to extend the new framework
- spread the concept to an EU-level analysis

**BESTMAP WILL**

- Understand and model the ways farmers make decisions on land use
- Link land-use intensity to public goods and ecosystem services, including production of crops, regulation of water quality, mitigation of greenhouse gas emissions, and prevention of soil and biodiversity loss
- Use computer models, survey data and satellite imagery to see how policies can make farming and the environment better
- Produce a handy online tool to compare policy options for future Common Agricultural Policy reforms
- Improve the effectiveness of future EU rural policies to better address farmer needs, benefit the environment and mitigate climate change

Read about our project objectives in English, Catalan, Czech, German and Serbian!

You can download the brochure in any of the five languages [here](#).

## Coming up next

- **BESTMAP General Assembly 21-23 September 2020**: BESTMAP meets online for the project's annual gathering. Stay tuned for information on the decisions made!
- An online survey among farmers - expected in early 2021

Follow BESTMAP for up-to-date activities and highlights!



### **The AGRIMODELS cluster is online!**

**We are part of the AGRIMODEL Cluster between #BESTMAP, #AGRICORE and #MINDSTEP.**

**We have joined efforts for the common goal - to enhance agricultural models and practices! Find out more about us [here](#).**