

CORDIS Results Pack on socio-economic insights into agricultural policies

Supporting EU farming through behavioural and economic analyses

A thematic collection of innovative EU-funded research results

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Contents

3

Modular agri-food trade modelling platform expands depth, breadth and resolution

5

Linking farmers' decision-making to environmental impacts

7

Sustainable agri-food trade requires 'good' governance focused on sustainability impacts

10

Smart farm models in sustainable agriculture

12

Redesigning trade agreements for a sustainable future

Editorial

Across the EU, people are looking to farm policies to help support farmers' incomes, keep rural communities thriving, attract younger generations to farming professions and foster environmentally sustainable agricultural practices.

Decision-makers are increasingly turning to research and innovation (R&I) to guide their agriculture-related policies such as supporting farm income, food security, generation renewal, green transition and revitalising rural areas. One key part of this research involves social sciences and humanities (SSH), which enable policymakers to better understand how people respond to different incentives or changes.

Such an insight is especially valuable when implementing sustainable farming practices or increasing resilience against climate change. Through behavioural and economic analyses, these observations capture the socio-economic dimension of societal challenges. This factor plays a vital role in measuring the success and the effectiveness of a policy.

In addition, SSH researchers develop and maintain appropriate analytical tools, such as economic models, which are used to design these policies and monitor their effects, while incorporating up-to-date data and new socio-economic approaches. One of the main challenges is to continuously improve the available tools and models with the most recent knowledge and methodological developments to ensure they can respond to current priorities.

Under the Horizon 2020 and the Horizon Europe programmes, strategic steps were taken to improve analytical tools and models supporting policies and markets related to agriculture and food as well as international trade within a sustainability framework.

This CORDIS Results Pack focuses on important new evidence and recommendations for improving policies related to agriculture, and the new emerging research.

These R&I activities integrating social sciences and humanities are essential for supporting the development and implementation of agriculture-related policies, as well as the sustainability, competitiveness and resilience of the agri-food sector.

The five projects featured will be used in key ongoing processes and will be involved in achieving sustainable development goals, including contributing to the groundwork for the [common agricultural policy](#). They also contribute to the [EU Green Deal](#) and the [EU Vision for Agriculture and Food](#).

The Pack further illustrates advances in modelling for the Joint Research Centre's integrated Modelling Platform for Agro-economic Commodity and Policy Analysis, or [iMAP](#).

By providing a toolbox of data and models with socio-economic analyses, evidence and recommendations, the Pack highlights the potential of this research area for supporting agricultural policies while helping achieve the EU's ambitions on sustainability, competitiveness and resilience.

Furthermore, data and models are key to improving our knowledge on the performance of the diverse farm business models, agri-food sector and rural areas. By encompassing social, economic and environmental dimensions, from local to global level, they help to identify critical trade-offs and collaborations that are valuable for decision-making.

Modular agri-food trade modelling platform expands depth, breadth and resolution

With improved analysis of critical agri-food trade issues and hidden costs of globalisation, European policy makers will be better positioned to negotiate policies that are good for countries, companies and inhabitants.



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The implications of global trade policies are quite complex. Modern agri-food trade agreements increasingly consider factors such as consumer concerns about food quality and safety, environmental implications and impact on jobs, and poverty and increasing socioeconomic inequalities.

The EU-funded [BATModel](#) project has delivered a holistic modular platform to improve the modelling of agri-food trade policies in the simulations used by the European Commission (EC). The modules incorporate new characteristics of food trade flows and policy tools or improve the handling of existing ones to provide new and more detailed insights into impacts.

Non-tariff measures, geographical indications and more

BATModel set out to better account for certain trade factors, enabling improved analysis and negotiation of agri-food trade policies by the EC and other stakeholders.

For example, BATModel improved handling of protected geographical indications (GIs) that link a product's qualities, characteristics or reputation to a certain geographic region (e.g. Roquefort, Comté or Parmigiano Reggiano). They are essential components of the quality and rural development strategy of the EC. "Empirical analyses showed the [positive impact of GI protection](#) at the regional level for the home countries and at the firm level – GI exporting firms sell more products and have better access to destination markets," says Karine Latouche of [INRAE](#), project coordinator.

BATModel also developed more detailed models to better account for the heterogeneity of non-tariff measures such as quotas, price controls and health and environmental regulations. Zero trade flows, quality differentiation and global value chains were other important areas addressed.



The distribution of these impacts includes well-being implications of trade policies that go beyond standard welfare effects: we focus on the so-called hidden costs of globalisation, such as labour market issues, income and wage effects, and environmental and health effects.

Hidden costs of globalisation

The comprehensive BATModel platform captures more agri-food product details and accounts for different scales including global, EU, and Member States and regions. It provides insight into who will lose and gain not only 'horizontally' (across sectors) but 'vertically' by measuring the vertical distribution of impacts of trade policies along the global value chains.

"The distribution of these impacts includes well-being implications of trade policies that go beyond standard welfare effects: we focus on the so-called hidden costs of globalisation, such as labour market issues, income and wage effects, and environmental and health effects," explains Latouche.

Labour and health impacts of trade policies

For example, using [NUTS](#) level 2 data from 1995-2019, BATModel studied the impact of trade shocks from import competition and export expansion on EU15 agri-food-sector labour market dynamics. Agri-food jobs reacted negatively to import competition and positively to export expansion. Furthermore, about twice as many food jobs were lost due to import competition as were gained due to export expansion. Agriculture jobs were negligibly affected, potentially reflecting data quality challenges associated with, for example, extra-EU workers.

Among health impacts that can be analysed, BATModel found that, in Italy, a 10 % increase in food imports increased obesity by 2.3 %. Further analyses linked this to import of 'unhealthy' foods, mainly alcoholic beverages and processed and salty foods.

BATModel outcomes and [policy briefs](#) are generating tremendous interest among policy makers. In-depth discussions generated enthusiasm at events including the project's three-day summer school at the Joint Research Centre attended by representatives from the EC's Directorate Generals and a policy event in Brussels.

Latouche concludes: "BATModel's innovation-driven collaboration between European teams working on established simulation models and those working econometrically on micro-evidence concerning agent and firm heterogeneity trade models has supported the creation of a new community of trade modellers." This will strengthen Europe's ability to negotiate global agri-food trade policies with outstanding benefits for its countries, businesses and inhabitants.

PROJECT

BATModel - Better Agri-food Trade Modelling for Policy Analysis

COORDINATED BY

National Research Institute for Agriculture, Food and Environment (INRAE) in France

FUNDED UNDER

Horizon 2020 - FOOD

CORDIS FACTSHEET

cordis.europa.eu/project/id/861932

PROJECT WEBSITE

batmodel.eu/



Linking farmers' decision-making to environmental impacts

A new agricultural policy modelling framework that considers farmers' decisions to adopt policies provides deeper insight into the environmental and socio-economic impacts of those policies.

Agricultural policies should enhance the sustainability of agriculture while ensuring farmers' livelihoods. However, the models used to support European Commission (EC) agricultural policy making are lacking resolution. They do not consider how farmers make decisions, how farms differ and what the environmental and socio-economic impacts of those policies at the local level are when implemented.

The EU-funded [BESTMAP](#) project filled this gap. To do so, it was first necessary to overcome the significant hurdle of harmonising heterogeneous agricultural data across EU countries and regions for spatially explicit modelling. The team then combined agent-based models, ecosystem service evaluations and socio-economic analyses to see what works where – and why.

Linking farmers' decisions to environmental impacts

"The BESTMAP project created a modelling framework that helps to predict how agricultural policies – like subsidies for ecofriendly farming – impact biodiversity, ecosystem services and farmers' incomes," explains project coordinator Guy Ziv of the [University of Leeds](#). It complements previous macro models by connecting environmental impacts with farmers' decision to adopt the policies.

For example, suppose a government wants to know if increasing payments for flower strips will

be attractive to farmers and help pollinators. The BESTMAP framework predicts whether different types of farms will participate. It then models and maps the environmental and socio-economic consequences. Policymakers can change various policy parameters to see their effects, helping them to design smarter policies that support both nature and farming livelihoods.

Farmers are an essential ingredient for success

"BESTMAP studied five European regions (Czechia, Germany, Spain, Serbia and UK) and developed farming system archetypes.

The team quantified agri-environmental measure impacts on biodiversity, water quality, carbon sequestration and farm income, and used agent-based models to show how policy design affects adoption.

Qualitative data from diverse farmers provided crucial behavioural insights. "Our farmer interviews showed that economic constraints and rigid rules often undermine the impact of theoretically beneficial policies. In addition, our models and analyses often confirmed farmers' perceptions, such as the tendency of governments to implement [agri-environment-climate measures](#) (AECMs) on less productive land," notes task leader and consortium coordination team member Michael Beckmann of [Brandenburg University of Technology Cottbus – Senftenberg](#).



The BESTMAP project created a modelling framework that helps to predict how agricultural policies – like subsidies for ecofriendly farming – impact biodiversity, ecosystem services and farmers' incomes.



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Paving the way to a new policy design cycle

The project upscaled results to the EU level, providing a deep understanding of the impact of the EU's common agricultural policy (CAP) on environmental protection and farmer support. It revealed variable CAP effects across regions and farm types. In addition, "BESTMAP identified general shortcomings of the past CAP which limited their adoption and effectiveness. These include high bureaucratic burden, inflexible contracts and lack of spatial targeting in AECMs. These insights are crucial for improving future agricultural policies at EU and national levels," underscores Beckmann.

BESTMAP engaged stakeholders in co-design workshops to create a practical dashboard and policy recommendations. The dashboard allows users to view the outcomes of predefined scenarios in case study regions. Interested parties can use all [datasets](#) associated with the open source framework as well as use, improve and adapt the project's [biophysical and socio-economic models](#), further enhancing their utility.

"The BESTMAP framework does not just analyse policy – it helps redesign it. We propose a new policy cycle that's more adaptive, region-specific and inclusive of farmers' voices. By showing how and where measures work, we provide a blueprint for smarter, fairer, greener agriculture in Europe," concludes Beckmann.

PROJECT

BESTMAP - Behavioural, Ecological and Socio-economic Tools for Modelling Agricultural Policy

COORDINATED BY

University of Leeds in the United Kingdom

FUNDED UNDER

Horizon 2020 - FOOD

CORDIS FACTSHEET

cordis.europa.eu/project/id/817501

PROJECT WEBSITE

bestmap.eu/



Sustainable agri-food trade requires ‘good’ governance focused on sustainability impacts

Integrating multi-level and multi-regional effects of agri-food trade policies confirms that transparent, rules-based governance and stakeholder inclusivity are essential to social and environmental sustainability.



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Trade policy analyses are often based on high-level macro models considering trade flows across countries and impacts on national economic growth. These approaches, however, fail

to adequately capture micro-level effects – specifically the economic, social and environmental impacts on the well-being of individuals such as local farmers.



The EU-funded [MATS](#) project integrated agri-food trade macro models (quantitative methods) with micro perspectives (qualitative ones) via country- and commodity-focused case studies in Africa, Latin America and Europe. MATS also considered the legal and institutional frameworks within local and global agri-food markets. This systems approach enabled a deeper understanding of the conditions that enable or hinder the achievement of sustainable development goals and thus more sustainable agri-food trade.

Social sustainability: from micro-level scenarios to effective macro- level policies

In 15 country-, region- and commodity-focused case studies, MATS explored trade regimes and their social, environmental and economic sustainability impacts and mechanisms at the level of individual farmers and consumers. Case studies were also used as inputs to macro-level trade models. “Our bottom-up analysis enabled customised assessments considering land use changes or ecosystem services relevant as part of sustainability impact measurements. These were connected to macro models that provided insights on implications of potential country-level collaborative effort,” explains project coordinator Bodo Steiner of the [University of Helsinki](#).

For example, quantitative assessments of more sustainable farm production – simultaneously increasing land productivity and reducing emissions – became inputs for formulating macro scenarios. Among these is the formation of ‘climate clubs’ in which African or other carbon-intensive regions make a joint global-level commitment to carbon neutrality that can be more effective than individual country-level commitments.

*We need
science-based
institutionalised
sustainability
impact assessment
and stakeholder
inclusiveness in
global agri-food
trade policy
implementation
as central pillars
of rules-based
governance.*

Inclusivity, transparency and the key role of investment

“The outcomes are all about good governance and agency – making sure that those with less information access and lower market power, especially smallholder farmers, are not left behind in the trade game,” Steiner underscores. This will also require sustainability-supporting investment beyond farm-level production or global transport initiatives. More transparent and equitable investments recognising the varying needs of smallholder farmers and female entrepreneurs for micro-credits in value chains are needed.

Finally, the transparency, reliability and coherence of regulatory and legal instruments and trade-related policies and institutions are key. Problems enforcing rules at every level – from the World Trade Organization to trade agreements lacking intellectual properties integration and farmers’ contracts with traders – lead to uncertainties for value chain actors. This lowers investments, reduces EU market access of African commodities, and negatively impacts smallholder farmers and exports. More frequent and transparent impact assessments of trade policies before and after implementation should be standard procedure at institutions overseeing trade policies at all levels.

Supporting future generations with sustainable agri-food trade

“Our work resonates with the key message of the 2024 Nobel Prize in Economics, namely that inclusive governance is at the core of growth and prosperity. In our agri-food trade context, we need science-based institutionalised sustainability impact assessment and stakeholder inclusiveness in global agri-food trade policy implementation as central pillars of rules-based governance,” summarises Steiner.

To support concrete action, the MATS website has diverse information and [services](#), the latter targeting businesses, policymakers, consultants and trade associations. MATS has also published the [More sustainable agricultural trade through inclusive agency and robust governance – Lessons for policymaking e-book](#). The MATS website will be continuously updated during the coming two years.

“More sustainable agri-food trade can be achieved with a strategic approach ensuring the most vulnerable actors are not left behind and considering the social and environmental sustainability implications of current trade on future generations,” concludes Steiner.

PROJECT

MATS - Making Agricultural Trade Sustainable

COORDINATED BY

University of Helsinki in Finland

FUNDED UNDER

Horizon 2020 - FOOD

CORDIS FACTSHEET

cordis.europa.eu/project/id/101000751

PROJECT WEBSITE

sustainable-agri-trade.eu/



Smart farm models in sustainable agriculture

Modelling farm decisions can help the EU design smarter agricultural policies that align farmer behaviour with climate goals.

The provision of healthy food with minimal impact on the environment requires efficient use of natural resources while adapting to climate change. The [EU's common agricultural policy](#) must evolve to address environmental sustainability and climate action by understanding the patterns guiding farmers' decision-making criteria.

Farm-level modelling

Fully aligned with the farm to fork strategy, the EU-funded [MIND STEP](#) project set out to develop advanced tools to integrate farm-level data into policy analysis. The consortium introduced detailed bio-economic, farm-level mathematical programming and econometric optimisation models. These models leverage individual farm data from the [EU farm accountancy data network](#), assigning cost components to specific agricultural activities. By combining this data with biophysical information, the project has enhanced the spatial allocation of representative farms and developed yield response curves for grassland using remote sensing and statistical data.



Our models now better reflect the diversity in farmers' behaviours and responses to policy measures, providing more accurate predictions of policy impacts at the farm level.

To capture the socio-psychological aspects influencing farmers' decisions, MIND STEP conducted surveys incorporating behavioural factors such as risk preferences. An innovative risk module was implemented in the [FarmDyn model](#), allowing integrated assessments of farm management measures under uncertainty.

"Our models now better reflect the diversity in farmers' behaviours and responses to policy measures, providing more accurate predictions of policy impacts at the farm level," states project leader John Helming.

Comprehensive policy analysis

Given the complexity of agricultural systems, MIND STEP combined bio-economic farm models with agent-based models, agricultural sector models and economy-wide models. This integration allows for a bottom-up approach, starting from individual farm decisions and scaling up to regional and national analyses.

"By linking detailed farm data with broader economic models, we can assess how policy changes affect not just individual farms but the entire agricultural sector and economy," explained Helming.

Agricultural policy recommendations

MIND STEP's research has led to several important insights that could shape future agricultural policy design. One key recommendation is to incorporate farm-level decision-making models and farmer-specific variables such as age, income and education level into the modelling used by the EU. This helps identify policy measures that are effective on paper and that farmers are more likely to adopt in practice.

Another important finding is that due to the inherent heterogeneity (or differences) among farms, particularly in terms of risk attitudes, efficiency levels, and marginal abatement costs, uniform command-and-control policies aimed at reducing emissions may not be cost-effective. Instead, market-based policies must be tailored to reflect this diversity to achieve better environmental and economic outcomes.

The project also found that a gradual introduction of emissions taxes would be the most effective way to reduce mineral nitrogen use and greenhouse gas emissions. This gives farmers time to adjust, plan investments and adopt mitigation

strategies. Furthermore, reinvesting the revenues from these taxes into mitigation technologies has the potential to reduce emissions across the sector.

“Collectively, our recommendations emphasise the importance of integrating individual farm data and models into the design of effective and targeted agricultural policies,” highlights Helming.

Building on the success of MIND STEP, the development of bio-economic farm-level models will continue in other EU Horizon projects, such as AgEnRes, BrightSpace, LAMASUS and ACT4CAP27. A significant next step involves further developing a farm model framework using FarmDyn as the core.

PROJECT

MIND STEP - Modelling Individual Decisions to Support The European Policies related to agriculture

COORDINATED BY

Wageningen University and Research
in the Netherlands

FUNDED UNDER

Horizon 2020 - FOOD

CORDIS FACTSHEET

cordis.europa.eu/project/id/817566

PROJECT WEBSITE

mind-step.eu/



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Redesigning trade agreements for a sustainable future

Can trade drive sustainable development? European researchers believe that it is possible through revamped agreements that support local farmers and meet global sustainability goals.

Trade has long been associated with economic growth and poverty reduction, creating jobs and facilitating innovation. At the same time, it has far-reaching social and environmental implications, both positive and negative, which are often overlooked.

Trade and sustainability

The EU-funded [TRADE4SD](#) project set out to explore how trade agreements can be revisited to better support the [United Nations sustainable development goals](#) (SDGs), especially in the context of agrifood systems. To achieve this, the consortium mapped the links between trade and specific SDGs.

“We found that while trade has the potential to reduce poverty and improve food security, it can also generate serious environmental consequences such as deforestation and greenhouse gas emissions,” explains project coordinator Attila Jambor.

However, trade-related discussions have primarily economic dimensions often at the expense of social and environmental concerns. TRADE4SD highlights the importance of addressing such concerns and harnessing the full potential of trade towards sustainable development.

Lessons from the field

Partners conducted in-depth case studies in Ghana (cocoa), Vietnam (coffee) and Tunisia (olive oil), examining how EU trade agreements influence sustainability. The studies revealed

considerable differences in how sustainability provisions are included and implemented in EU trade agreements.

For instance, Vietnam’s trade agreement with the EU features a specific trade and sustainable development (TSD) chapter designed specifically for environmental and labour standards. However, its practical impact on the sustainability of the coffee sector remains limited due to inadequate stakeholder engagement and capacity constraints. Conversely, in Ghana where the economic partnership agreement with the EU lacks a specific TSD chapter, stakeholders still recognised sustainability as vital for long-term competitiveness in EU markets. Meanwhile, Tunisia’s ongoing negotiations include progressive environmental provisions, especially in water resource management and sustainable agriculture, but these negotiations are still ongoing.

“Collectively, our case studies showed that inclusive stakeholder involvement and capacity-building are essential: without them, sustainability provisions remain words on paper,” highlights Jambor.



Collectively, our case studies showed that inclusive stakeholder involvement and capacity-building are essential: without them, sustainability provisions remain words on paper.

From research to recommendations

TRADE4SD has developed a set of evidence-based recommendations to enhance the contribution of trade agreements to sustainable development. The project highlights that international trade agreements must support smallholder farmers and provide

improved access to markets, targeted training and technical assistance. Engaging local stakeholders in trade negotiations is paramount to ensuring that policies are realistic, equitable and serve local needs.

TRADE4SD also calls for a fundamental redesign of how sustainability is incorporated into trade agreements through sustainability chapters that clearly link trade practices with the SDGs. Importantly, rigorous sustainability assessments

of agreements must be made prior to implementation to achieve genuine sustainability outcomes.

According to Jambor: "Trade policies should no longer be isolated but integrated into the broader EU sustainability framework through enhanced cooperation and coordination across different institutions and policy domains."



Looking ahead

The next phase of TRADE4SD involves the dissemination of its findings to decision-makers at national, EU and global levels. In addition to influencing future trade negotiations, the team plans to support local stakeholders.

“We want our research to lead to real-world change; that means embedding sustainability into every stage of the trade policy process and fostering collaboration across sectors,” concludes Jambor.

PROJECT

TRADE4SD - Fostering the positive linkages between trade and sustainable development

COORDINATED BY

Corvinus University of Budapest in Hungary

FUNDED UNDER

Horizon 2020 - FOOD

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cordis.europa.eu/project/id/101000551

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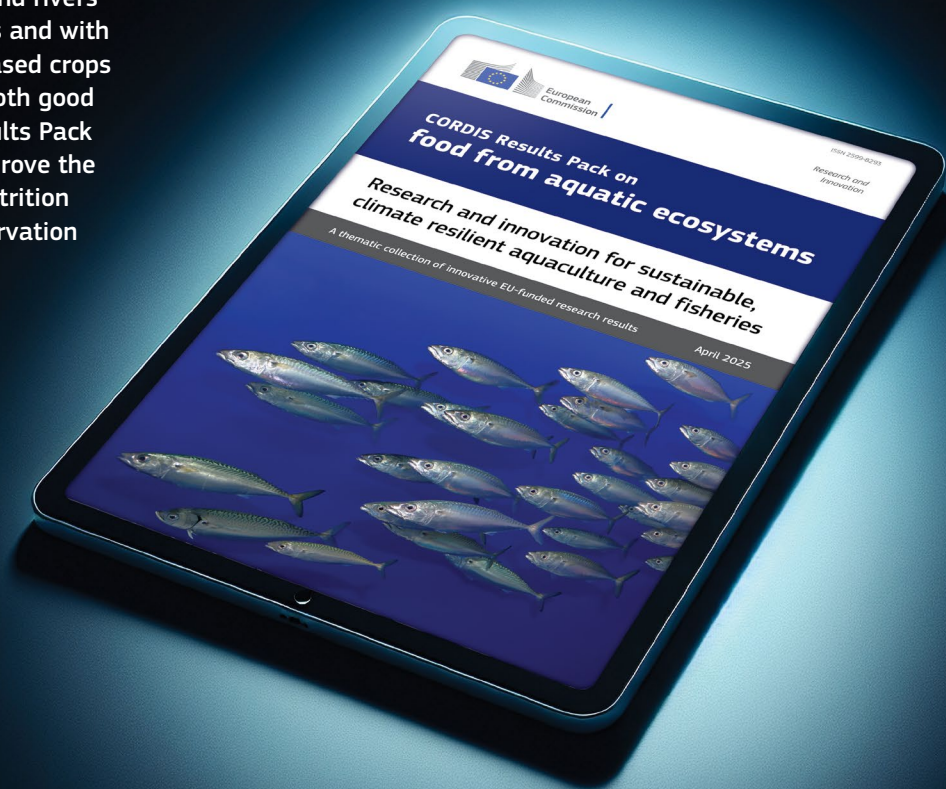
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RESULTS PACK ON FOOD FROM AQUATIC ECOSYSTEMS

Aquatic foods comprise animals and plants grown in or harvested from the ocean, lakes and rivers or sustainably farmed. Highly nutritious and with a smaller carbon footprint than land-based crops and livestock, these food sources are both good for us and our planet. This CORDIS Results Pack highlights 10 EU-funded projects that prove the need for improving aquatic food and nutrition security while contributing to the preservation of aquatic ecosystem integrity.



Check out the Pack here:
cordis.europa.eu/article/id/457663