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AGENT-BASED SUPPORT TOOL FOR THE DEVELOPMENT OF AGRICULTURE POLICIES

NEWSLETTER

Issue 4: November 2021

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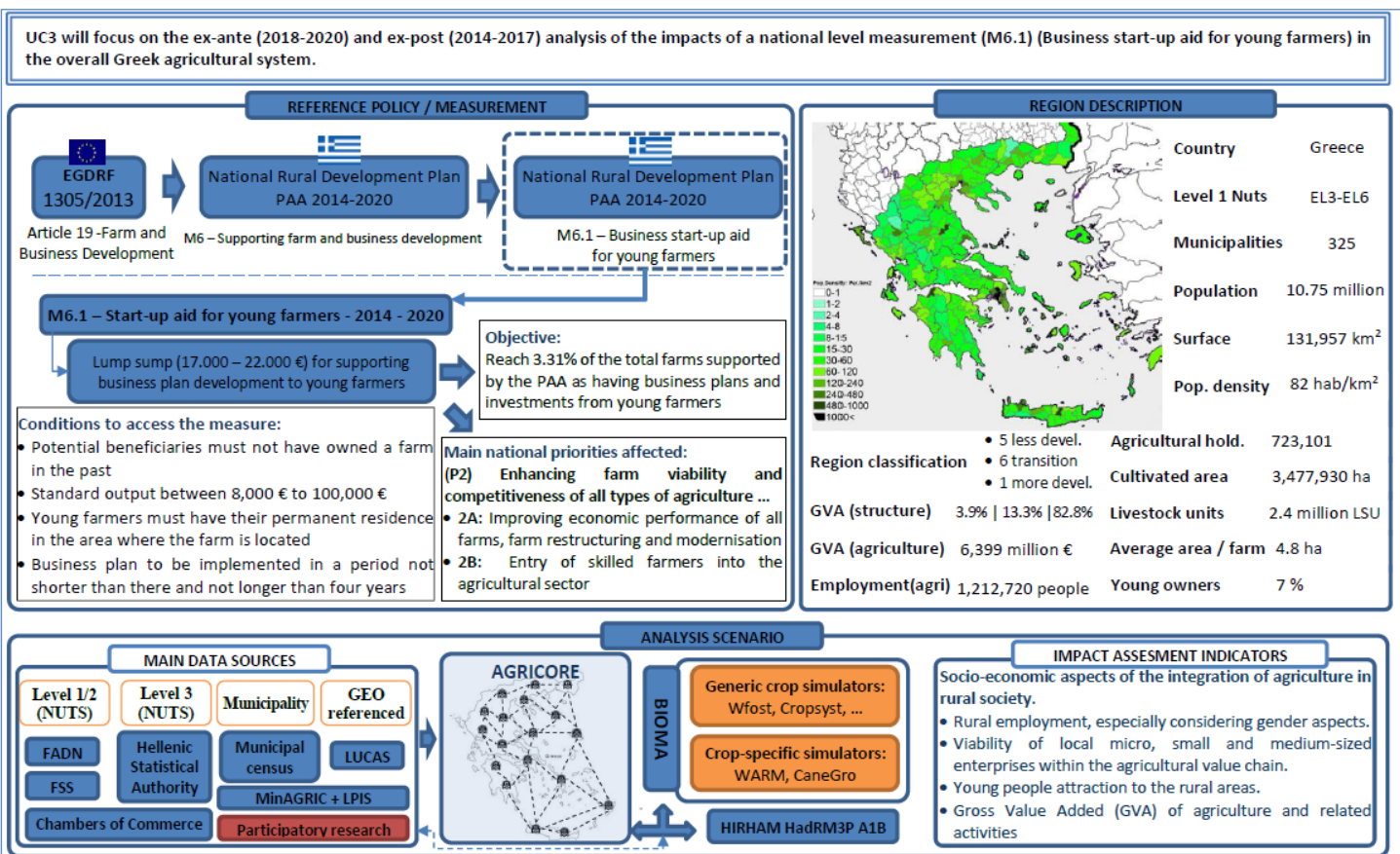# 1. AGRICORE Use Cases- UC3

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The partners will apply the AGRICORE suite to the ex-post (covering the period 2014-2017) and ex-ante (respectively for 2018-2020) policy assessment of three use cases (UC1 - Andalucía, UC2 - Poland, and UC3 - Greece), which have been selected to test the tool at various geographic scales (the Andalucían case study corresponds to the regional level while the Polish and Greek use cases aim at the national level) and for different policy instruments. In particular, the policy instrument in the Andalucían use case relates to environmental impact, while in the Polish use case it relates to the delivery of ecosystem services and, in the Greek one, it relates to the socio-economic aspects of the integration of agriculture in rural society.

In the previous issue of this newsletter, we had a look at the polish use case, while here we provide you with insights regarding UC3, the use case of Greece.

USE CASE #3: Analysis of the impact achieved by the "M6.1 – Settlement of Young Farmers" measure defined in Greeks' National RDP National RDP

UC3 will focus on the ex-ante (2018-2020) and ex-post (2014-2017) analysis of the impacts of a national level measurement (M6.1) (Business start-up aid for young farmers) in the overall Greek agricultural system.

REFERENCE POLICY / MEASUREMENT

EGDRF 1305/2013

Article 19 -Farm and Business Development

National Rural Development Plan PAA 2014-2020

M6 – Supporting farm and business development

National Rural Development Plan PAA 2014-2020

M6.1 – Business start-up aid for young farmers

M6.1 – Start-up aid for young farmers - 2014 - 2020

Lump sump (17.000 – 22.000 €) for supporting business plan development to young farmers

Objective:
Reach 3.31% of the total farms supported by the PAA as having business plans and investments from young farmers

Conditions to access the measure:
- Potential beneficiaries must not have owned a farm in the past
- Standard output between 8,000 € to 100,000 €
- Young farmers must have their permanent residence in the area where the farm is located
- Business plan to be implemented in a period not shorter than there and not longer than four years

Main national priorities affected:
(P2) Enhancing farm viability and competitiveness of all types of agriculture ...
- 2A: Improving economic performance of all farms, farm restructuring and modernisation
- 2B: Entry of skilled farmers into the agricultural sector

REGION DESCRIPTION

Country	Greece
Level 1 Nuts	EL3-EL6
Municipalities	325
Population	10.75 million
Surface	131,957 km²
Pop. density	82 hab/km²

Region classification
- 5 less devel.
- 6 transition
- 1 more devel.

GVA (structure) 3.9% | 13.3% |82.8%

GVA (agriculture) 6,399 million €

Employment(agri) 1,212,720 people

Agricultural hold.	723,101
Cultivated area	3,477,930 ha
Livestock units	2.4 million LSU
Average area / farm	4.8 ha
Young owners	7 %

ANALYSIS SCENARIO

MAIN DATA SOURCES

Level 1/2 (NUTS)
Level 3 (NUTS)
Municipality
GEO referenced

FADN
Hellenic Statistical Authority
Municipal census
LUCAS

FSS
MinAGRIC + LPIS

Chambers of Commerce
Participatory research

AGRICORE

BIOMA

Generic crop simulators: Wfost, Cropsyst, ...

Crop-specific simulators: WARM, CaneGro

HIRHAM HadRM3P A1B

IMPACT ASSESMENT INDICATORS

Socio-economic aspects of the integration of agriculture in rural society.
- Rural employment, especially considering gender aspects.
- Viability of local micro, small and medium-sized enterprises within the agricultural value chain.
- Young people attraction to the rural areas.
- Gross Value Added (GVA) of agriculture and related activities

1. AGRICORE
Use Cases- UC3

UC3 - Greece – Socio-economic impacts (AUTH)

The Greek use case will analyse the M6.1 "Start-up aid for young farmers" sub-measure which is included in the national programme for the period 2014-2020. This use case will analyse the impact of the M6.1 application in Greece, focusing on the socio-economic aspects. The ex-post analysis will be done for the period 2014-2017, and the ex-ante impact analysis will be done for the period 2018-2020. Greece has one of the lowest shares of young farmers in the total number of farm managers (3,7% aged up to 35 years old). The scarce presence of young farmers is considered one of the main weaknesses in the competitiveness of European agriculture. The lack of young farmers puts the survival of the sector at risk due to an inadequate rate of generational turnover in the sector. New farmers can bring new skills and energy, as well as more professional management, to the farming sector. Young farmers – and new entrants to farming – are needed to take over and modernize rural activities and businesses. The CAP, and specifically Rural Development Policy, can create an enabling environment for the current and the next generations of farmers.

Improvement potential

The expected outcome from the Greek Use Case is of great importance for a large number of stakeholders, and it will have a considerable impact on the overall agricultural sector of the country. On the one hand, policymakers will benefit from the ABM in designing improved policies that will meet the expectations of young farmers, increasing their desire to participate in relevant measures. On the other hand, the farmers will benefit from these new policy design methodology because they will have the opportunity to express their needs and requirements, which will be considered in developing new agricultural policies concerning the young farmers' scheme. Additionally, another remarkable aspect of stakeholder engagement is the facilitation of Participatory Research actions development and provision, mainly through exchange activities, of the knowledge that would hopefully serve as inspiration for the project. Moreover, this knowledge of the stakeholders will be used as key available information through Participatory Research actions and integrated into the policy modelling and evaluation, adding realistic value to AGRICORE framework.

1. "What were your main reasons for getting involved in the project? What excites you the most about this project?"

Given the wide expertise of AUTH team on agro-food policy impact analysis and agro-food data analysis, AGRICORE offers a unique opportunity to capitalize this expertise benefit on policy making at national and EU levels. To the best of our knowledge, the policy impact assessment field lacks relevant impact tools, thus the most exciting part of the project for us, is the challenge to see the tools we are developing to be transformed to purposive instruments for social, environmental, and economic sustainability in agriculture and rural areas.

2. "What could be the benefits/take-home messages for all stakeholders involved in such an initiative?"

There is no doubt that integration between different types of stakeholders should occur to shape research agendas, produce knowledge, and incorporate such knowledge into social and scientific practice. To this context, we believe that a mutual benefit partnership will be developed for all involved agents in this project. For example, the whole consortium will benefit from stakeholders' views and insights on the maximization and utilization of the impact of the AGRICORE project on agricultural policy and in turn all the stakeholders that will be engaged will benefit respectively by research outcomes that will be arise from the project. In addition, stakeholders will have on demand advanced knowledge for policy impact analysis.

3. "What aspects of the project are you mostly looking forward to seeing come to fruition?"

Agricore suite will be a fundamental tool for the predictable impacts of different policy alternatives, and therefore more effective rural and agro-food policies will be designed. Having in mind the afore-mentioned fact, AUTH team is really looking forward to seeing the contribution of the suite, through practical applications and demonstrations. We are convinced that future CAP will benefit from the project's results, incorporating stronger knowledge and innovation systems to boost the development of agricultural sector.

One of the goals of the AGRICORE project is to develop the Agricultural Research Data Index Tool (ARDIT) to facilitate the task of identifying relevant and useful data for performing agricultural policy analysis. Thus, ARDIT aims to serve as a central entry point for locating useful datasets for agricultural research. The ARDIT will provide easy access to interested researchers and policymakers to its database. The platform will assist each user in the task of identifying proper data sources that could be used to perform different types of analyses in the domain of agriculture. ARDIT will initially be populated with various datasets including the European Union (EU) statistics datasets (e.g., FADN), geo-referenced datasets (e.g., LUCAS), national and regional information sources (e.g., the Italian or Spanish FADN) and previous research results (e.g., previous EU funded projects such as FADNTool or SUPREMA).

ARDIT provides a publicly accessible index of data sources available for policy assessment. It makes use of the characterisation methodology and the ontology defined in the project. Based on the DCAT-AP standard, a specification of W3C's Data Catalogue Vocabulary (DCAT) used by the European Union, a set of common attributes and properties in data sources were defined, in order to homogenise them. This standard has been modified for AGRICORE, adding new attributes to the data sources to meet the needs of the project. ARDIT is a browser-based web application, built using Java programming language for the server-side code and the creation of a REST API, and Angular framework for the development of the website itself, using TypeScript, HTML and CSS.
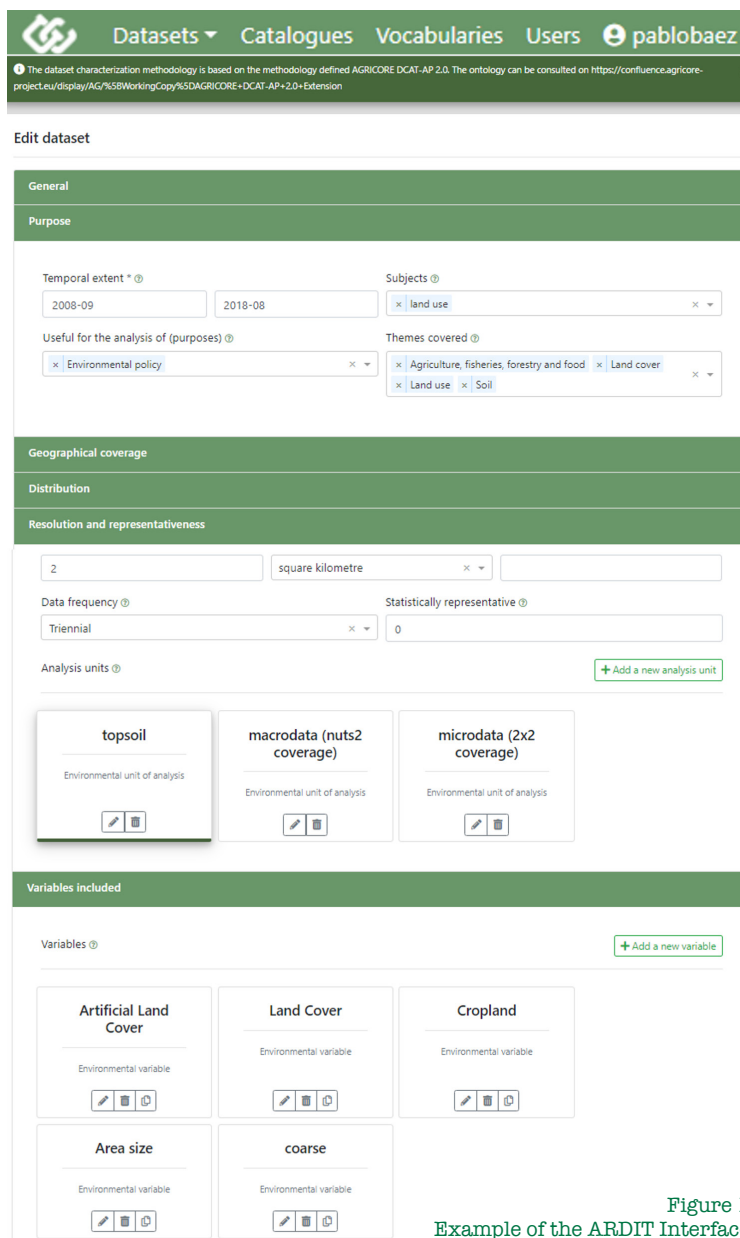

Figure 1
Example of the ARDIT Interface

"ARDIT will initially be populated with various datasets including the European Union (EU) statistics datasets (e.g., FADN), geo-referenced datasets (e.g., LUCAS), national and regional information sources (e. g., the Italian or Spanish FADN) and previous research results (e.g., previous EU funded projects such as FADNTool or SUPREMA)."

The AGRICORE project participated at the 179th EAAE Seminar which took place at the Mediterranean Agronomic Institute of Chania in Crete, Greece.

The subject of this seminar was "Food Policy Modelling as an effective and Expeditious Response to today´s Urgent Issues". Policy makers, international organizations and governmental or non-state institutions, on a European but also on a global level, need to come up with targeted and efficient policies, in order to tackle a multitude of issues that affect severely all aspects of the economy and agriculture, including the food sector. Issues such as climate change, food waste and sustainability are key and urgent subjects of debate between policymakers and experts, for a future European agricultural policies. Developments on the world political stage like international trade negotiations, the economic landscape in post-Brexit Europe and global-regional political initiations are integrated into the political agenda worldwide. New tools are required in policy design and evaluation, targeting direct and acute novel policies, integrating aspects such as digitization of value chains, innovative technologies, as well as the post-pandemic particularities of economic modelling.

Given the above, the 179th EAAE Seminar brought together scholars and researchers in the area in order to exchange ideas, practices and research initiatives, covering all relevant current modelling developments for policy making decisions support in the agricultural and the agri-food industry.

The seminar was a great opportunity for the AGRICORE project to disseminate its objectives, concepts, and methodological considerations, participating actively by presenting some research insights regarding the following topics:

► Assessing the role of Measure 6.1 start-up aid for young farmers in export orientation: Evidence from Greek agricultural sector (Staboulis Christos – Natos Dimitrios – Tsakiridou Efthimia – Gkatsikos Alexandros -Mattas Konstadinos)

► Is CAP's Young Farmers Scheme an effective policy tool for regional growth? (Gkatsikos Alexandros - Natos Dimitrios - Staboulis Christos - Mattas Konstadinos - Psaltopoulos Demetrios – Polymeros Apostolos)

► Young farmers scheme in Greece: Geographic inequality and policy (Natos Dimitrios - Mattas Konstadinos - Tsakiridou Efthimia - Tsagris Michail - Markopoulos Theodoros)

4. AGRICORE at the 179ᵗʰ EAAE Seminar

▶ A Synthesis on Agent-Based Impact Assessment Models from the Perspective of the EU Rural Development Policy (RDP) Measures (Koç Ahmet Ali - Çağatay Selim - Veneziani Mario - Báez-González Pablo - Leyva-Guerrero Carlos - Uysal Peyman - Filippini Rosalia)

Additionally, during the poster sessions of the seminar, AXIA Innovation in collaboration with EXELISIS presented the official AGRICORE poster "Agent-based support tool for the development of agriculture policies".

The seminar constituted a nice occasion for the dissemination of our research activities after the COVID-19 pandemic and we are looking forward to more meetings and events in the future!
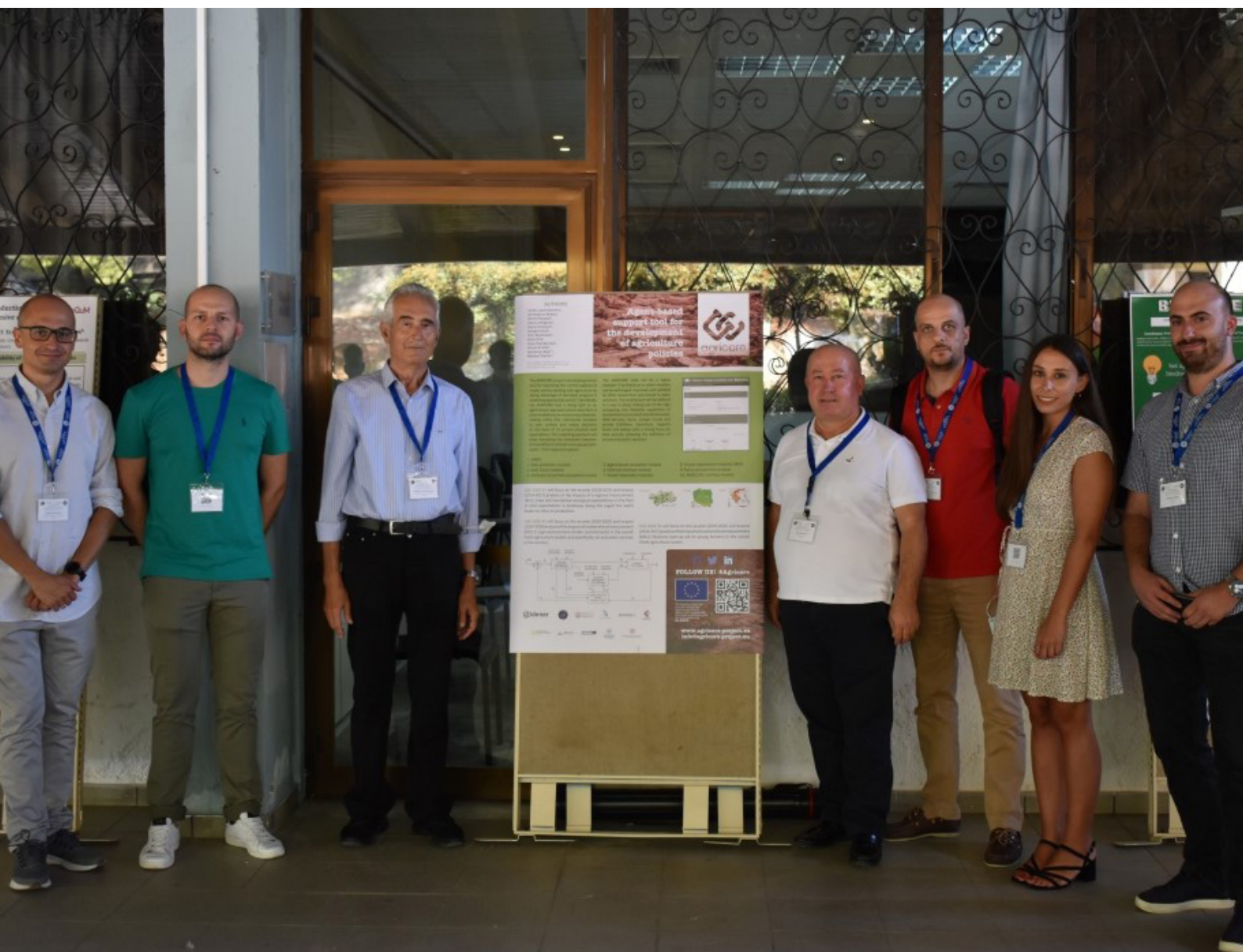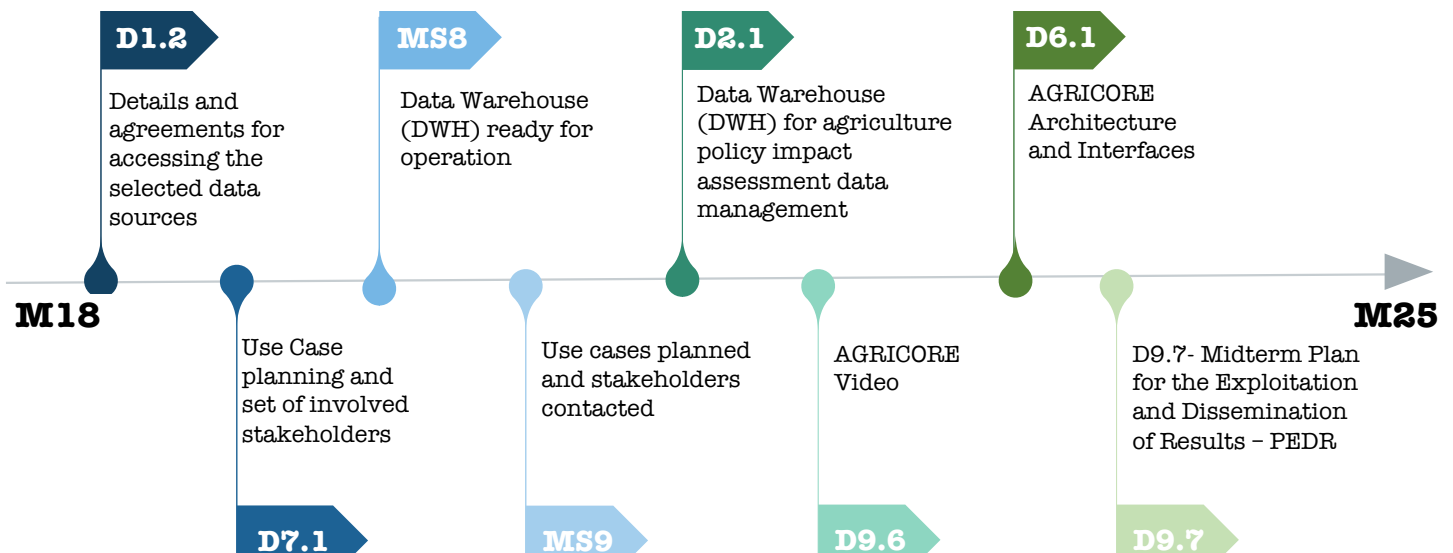
5. Progress

AGRICORE is progressing steadily!

Our partners from the University of Parma submitted the deliverable D1.2 -Details and agreements for accessing the selected data sources, with the aim to provide general insights to researchers wishing to gain access to selected non-publicly available datasets on the administrative and bureaucratic processes they need to undertake to complete the necessary requests for access. The Data Warehouse (DWH) for agriculture policy impact assessment data management was described in the respective deliverable (D2.1) by Ayesa presenting the role and functioning of the DWH within the AGRICORE architecture as a fundamental component for the storage, processing, and exchange of data as well as the connection between ARDIT and the data warehouse, as they provide storage of potentially useful data sources for the project. Furthermore, the advances regarding the AGRICORE suite architecture and its interfaces achieved have been reported by IDENER (D6.1) describing how the whole suite is built and how each of its elements communicate with the others, this is, the protocols and communication schemes used. CAAND finalized the planning for the execution of the three use cases considered in the AGRICORE project and the list of relevant stakeholders involved in each use case (D7.1) as the first step to successfully execute the uses cases and Participatory Research (PR) and to test and validate the resulting AGRICORE tool in each scenario contemplated in this project. On the other hand, AXIA updated the initial plan for exploitation and dissemination of results (D9.7) by delving into more details regarding the exploitation process of the AGRICORE suite and revising the preliminary dissemination and communication strategy. Finally, the AGRICORE video (D9.6) was officially released on YouTube as a presentational tool which will be utilized for the effective communication of AGRICORE´s concept and objectives towards the relevant stakeholders.

D1.2
Details and agreements for accessing the selected data sources

MS8
Data Warehouse (DWH) ready for operation

D2.1
Data Warehouse (DWH) for agriculture policy impact assessment data management

D6.1
AGRICORE Architecture and Interfaces

M18

M25

D7.1
Use Case planning and set of involved stakeholders

MS9
Use cases planned and stakeholders contacted

D9.6
AGRICORE Video

D9.7
D9.7- Midterm Plan for the Exploitation and Dissemination of Results – PEDR

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Our partners from Cooperativas Agro-alimentarias de Andalucía published two Spanish articles at the Tierra Cooperativa magazine! Find them under:

https://agricore-project.eu

AVANCES EN AGRICORE

LA FEDERACIÓN ELABORA UNA INVESTIGACIÓN SOBRE EL IMPACTO DE LAS POLÍTICAS EUROPEAS EN EL OLIVAR ECOLÓGICO

Cooperativas Agro-alimentarias de Andalucía está inmersa en la investigación participativa del proyecto Agricore, enmarcado en el programa europeo Horizonte 2020, que pretende modelar la evaluación y desarrollo de las políticas relacionadas con la agricultura a partir de los últimos avances de modelaje y TIC.

Como miembro del proyecto, la federación está haciendo un estudio exhaustivo del sector del olivar ecológico a través de parámetros sociales, culturales, económicos-financieros y ambientales. En él también destaca cuáles son los cambios que ha podido provocar la normativa europea del Programa de Desarrollo Rural (PDR) 2014-2020, determinado por las medidas de la Política Agraria Común (PAC), y cómo se ha visto afectado el sector bajo esta normativa. Con la información extraída en los tres casos de uso, la herramienta tendrá datos de simulación con los que se podrá trabajar.

OBJETIVOS

En el último decenio, la PAC se ha centrado en el fortalecimiento del apoyo al desarrollo rural en toda la Unión Europea, la mejora de la integración de los requisitos ambientales y el aumento de la orientación del mercado para la agricultura. Los modelos agrícolas aplicados actualmente (por ejemplo, AGLINK-COSIMO, CAPRI, AGMEMOD, AROPA, MAGNET) se desarrollaron inicialmente para diseñar los primeros

instrumentos de las políticas agrarias europeas.

Sin embargo, esos modelos no son capaces de representar muchos de los nuevos instrumentos recogidos en la PAC, ni de captar la heterogeneidad de las explotaciones agrícolas o abordar una escala geográfica más fina que la regional. En respuesta a estas necesidades, la modelización basada en agentes ha aparecido en los últimos años como una poderosa técnica.

Y con ese objetivo se creó hace más de un año el consorcio Agricore que, dirigido por Idener, reúne a nueve entidades de seis nacionalidades distintas para elaborar un novedoso instrumento de modelización de las políticas relativas a la agricultura aprovechando los últimos indicios de progreso en los enfoques de modelaje y las TIC.

HERRAMIENTA

La herramienta en cuestión se construirá como un enfoque basado en agentes en el que cada explotación agrícola se modelará como una entidad autónoma de toma de decisiones, basadas en su situación actual y sus expectativas. Este enfoque permitirá simular la interacción entre las explotaciones agrícolas y su contexto (que tendrá en cuenta el medio ambiente, la integración rural, los servicios de los ecosistemas, el uso de la tierra y los mercados) a diversas escalas geográficas, desde la regional hasta la mundial.

Agricore aplicará los avances en materia de grandes datos, algoritmos de inteligencia artificial, solucionadores matemáticos y servicios de computación en la nube para optimizar la fase extremadamente larga de parametrización y calibración que requieren los actuales instrumentos basados en agentes.

Además, esta fórmula permite imitar mejor la modelización del comportamiento y las interacciones de los agricultores, evaluar de manera creíble los efectos locales de los acontecimientos mundiales y las políticas de la Unión Europea y, en general, mejorar el diseño de impacto, las evaluaciones de impacto y la vigilancia.

'IN SITU'

Cooperativas Agro-alimentarias de Andalucía tiene un papel fundamental en este proyecto, ya que ofrece al consorcio la oportunidad de estudiar "in situ" la herramienta de modelaje. Cabe recordar que Agricore tiene la finalidad de estudiar la herramienta en tres países diferentes, realizando tres casos de uso en España, Grecia y Polonia. La federación es responsable del caso de uso en España, que concretamente se lleva a cabo en Andalucía y específicamente en el sector ecológico del olivar.

Como parte de su trabajo, y tras realizar la investigación participativa, Cooperativas Agro-alimentarias de Andalucía será responsable de ejecutar en las correspondientes parcelas diana, los ensayos de campo necesarios para la implementación de la herramienta diseñada por Agricore. Esta ejecución tendrá lugar en los meses comprendidos entre el segundo semestre de 2021, todo 2022 y el primer semestre de 2023, hasta su finalización.

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AGENT-BASED SUPPORT TOOL FOR THE DEVELOPMENT OF AGRICULTURE POLICIES

DOS AÑOS DE AGRICORE

EL PROYECTO DESARROLLA UNA HERRAMIENTA QUE PERMITIRÁ EVALUAR CÓMO INCIDE LA APLICACIÓN DE POLÍTICAS AGRARIAS EN EL ENTORNO

El proyecto Agricore llega a su ecuador. Tras dos años de trabajo, el consorcio ha hecho balance del desarrollo de sus investigaciones en las diferentes áreas en las que opera. La iniciativa forma parte del programa europeo Horizonte 2020. Su objetivo no es otro que desarrollar una herramienta (también llamada Agricore) que permitirá mejorar la capacidad de modelar y evaluar las políticas agrarias aprovechando los últimos avances de modelaje y TIC.

Así, se podrá simular, por ejemplo, cómo repercutirá la concesión de ayudas a jóvenes para que se incorporen en la agricultura en el desarrollo de su entorno rural, o de qué modo mejorará el medioambiente la aplicación de pagos por compromisos ambientales a los agricultores de la zona, incluso la forma en la que incidirán las ayudas ecológicas en su propia explotación. Se trata de contar con una herramienta certera, adaptable y apoyada en una gran base de datos multidisciplinar gracias a la que se podrán analizar desde diferentes puntos de vista qué consecuencias tendrán las diferentes políticas agrarias que se apliquen. Entre otras, se tendrá en cuenta su sostenibilidad ambiental, el desarrollo rural o la presencia en los mercados donde se pongan en marcha. Todo esto desde un nivel regional hasta una escala más global. Para lograrlo, el proyecto usa avances en big data, inteligencia artificial, solucionadores matemáticos y servicios de computación en la nube, entre otros.

Agricore cumplió el pasado mes de septiembre veinticuatro meses. Para analizar los logros conseguidos y los retos que quedan por hacer, los días 12 y 13 de octubre se celebró una asamblea general en Grecia, en la Universidad de Tesalónica. En el evento, con formato híbrido (presencial y virtual) participaron los miembros del consorcio: Cooperativas

Agro-alimentarias de Andalucía, IDENER, Fundación Ayesa, Axia Innovation UG, la Universidad de Parma y Starm SRL de Italia, la Universidad Tecnológica Nagural de Bydgoszcz y el Instituto de Agrofísica de la Academia de las Ciencias, ambas de Polonia. La Asamblea General estuvo protagonizada por la presencia in situ de uno de los integrantes en el comité de expertos externos del proyecto, Apostolos Plymeros Guy Ziv.

La Consejería de Agricultura, Ganadería, Pesca y Desarrollo Sostenible de la Junta de Andalucía también está muy presente en la iniciativa, incluyendo la participación del jefe de servicio de Sistemas Ecológicos de Producción, Jon Jáuregui, en dicho comité de expertos. Esta administración camina de la mano de Cooperativas Agro-alimentarias de Andalucía en el proyecto, ya que ha puesto a su disposición gran cantidad de información útil para desarrollarlo. Otros programas similares también han estado presentes en la asamblea, como BESTMAP, el 'sister project' o proyecto hermano muy relacionado con el desarrollo de Agricore.

CASOS DE USO

La labor de Cooperativas Agro-alimentarias de Andalucía en el proyecto se desarrolla a través de diferentes líneas. La federación, junto a IDENER, lidera la demostración de los 'Casos de Uso'. Son el 'Caso de Uso Andaluz', que evalúa el impacto medioambiental en el sector oleícola a través de la Medida 11 del Plan de Desarrollo Rural (ayudas a la agricultura ecológica de novo y mantenimiento); el 'Caso de Uso Polaco', que evalúa el impacto de los servicios de los ecosistemas en la agricultura polaca a través de la Medida 10 del PDR (pagos por compromisos medioambientales y climáticos) y el 'Caso de Uso Griego', que evalúa el impacto socioeconómico en la agricultura griega a través de la Medida 6 del Plan de Desarrollo Rural, correspondiente a las ayudas para la incorporación de jóvenes agricultores.

Para llevar a cabo el 'Caso de Uso Andaluz', la federación realiza una investigación participativa basada en el análisis de datos sobre el sector del olivar ecológico desde 2014 hasta la actualidad.
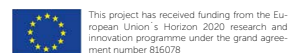
Asistentes presenciales a la Asamblea General

tierracooperativa

7. AGRIMODELS Cluster

Read the news from our sister projects BESTMAP and MINDSTEP forming the AGRIMODELS Cluster!

OTHER CLUSTERING PROJECTS

BESTMAP

MIND STEP

"During the course of the past few months BESTMAP has been actively taking part in various EU conferences, amongst which were the Landscape 2021 Conference – Diversity for Sustainable and Resilient Agriculture in September 2021, with the session entitled "From empirical findings to a formalized model: An agent-based approach to represent farmer decision-making on agri-environmental schemes", and the Early Career Biogeographers Conference in October 2021, with the session entitled "Measuring the effectiveness of Agri-Environmental Schemes and Ecological Focus Areas for farmland bird conservation across scales". In addition to this, BESTMAP will be attending the EU Conference on modelling for policy support, which will take place between 22-26 November 2021. Moreover, the project published it's first scientific paper entitled "How to make socio-environmental modelling more useful to support policy and management?"

For more information about the BESTMAP activities click here!

Within the last months MIND STEP´s main activities include the organization of and the participation to several internal and external events. During September, the project held successfully its EC review meeting and was present at the 179th EAAE Seminar organized at MAICH in Crete, Greece. Furthermore, MIND STEP hosted an internal WP4 meeting in Halle where the involved partners spent one week in order to discuss the exact interface that connects the surrogate model and AgriPolis. Focus was given on how to integrate the two models despite their differences and thus make a substantial contribution to the MIND STEP toolbox. Finally, the MIND STEP partners are working on exploitation activities and therefore an internal Exploitation workshop led by Geonardo Environmental Technologies for MIND STEP work package leaders took place on 15 October 2021.

For more information about the MIND STEP activities click here!

8. Who we are

The AGRICORE project builds on the strong knowhow and expertise of its partners in the addressed scientific and industrial areas. The consortium is comprised of 11 European partners from 6 countries. AGRICORE is a well-balanced project between industry and academia ensuring and speeding up the successful implementation of all the actions towards its fruitful results.

www.agricore-project.eu

4 Universities
(AUTH, UNIPR, AKD, UTP)
4 SMEs
(AXIA, EXE, STAM, IDE)
1 Research and Technology Organisation
(IAPAS)
1 Large Company
(AYESA)
1 regional farmer association
(CAAND)

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