Agroecological Practices for Sustainable Transformations of the Agri-Food System in the Region of Western Greece

On February 21, 2025, a workshop was held in Patras under the auspices of the FABLE Consortium and the MAIA HEU Project, to explore tools and roadmaps for achieving more sustainable food systems, with a focus on agroecological practices in the Region of Western Greece (RWG). The event addressed the challenges faced by Western Greece's agriculture, including climate change, soil deterioration, and economic constraints, and how agroecological practices, guided by FABLE Calculator insights, can enhance resilience, productivity, and livelihoods in the region.

MAIA Ambassador Dr Vasiliki Lazarakou highlighted the importance of integrated innovative financial solutions to support sustainable transformation, especially in the agricultural sector. She underscored the role of the dedicated MAIA tools and services, such as the **MAIA Community, MAIA Cluster, MAIA Connectivity Hub, SummarAIse, and MAIA Discovery Services** in connecting stakeholders across the quadruple helix on issues related to green agricultural transformations and in raising awareness through cutting-edge MAIA digital services.

Deputy Regional Governor mr. Andreas Filias underscored the multifaceted importance of the agricultural sector for the Region of Western Greece and defined the regional priorities in promoting the digital and sustainable transformation. He pinpointed to the string research potential in the region and the support from diverse EU funded projects, simultaneously stressing the need to connect research outputs to tangible actions in the field.

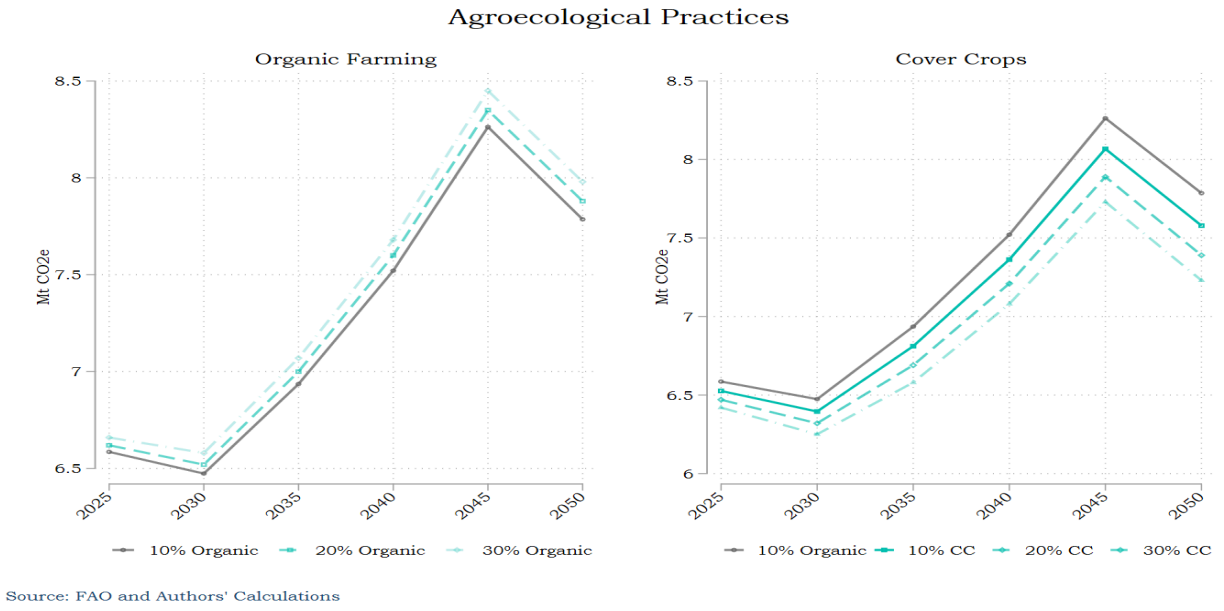
Dr. Kostas Dellis and Chris Deranian (ATHENA RC) presented insights from the FABLE Calculator, highlighting its use as a potent accounting tool to project sustainable pathways, including agri-food indicators. Greek agriculture has been decarbonizing, however not as fast as the other sector which has resulted in a growing share of GHG Emissions after 2000. The adoption of agroecological practices such as organic farming and cover crops has been moderate, far from the 25% target of the European Green Deal. Using 10% coverage in Organic farming as our data-driven baseline we use the FABLE calculator to show that doubling this share would drive up GHG emissions, reflecting lower farm yields which drive up the use of land for agricultural production. Only N2O emissions show a 1-2% decrease by 2040 due to the reduction in the use of synthetic fertilizers.

By contrast, increasing the use of cover crops to 20% of total agricultural land is associated with a 4% drop in GHG emissions by 2040, driven by:

i. Curtailed CH4 emissions (3-8% compared to the baseline scenario), reflect enhanced soil aeration
ii. Limited N2O emissions (2-5% compared to the baseline scenario) due to less use of nitrogen fertilizers and
iii. Increased CO2 absorption emissions (4-10% compared to the baseline scenario) from LULUCF stemming from improved soil health.

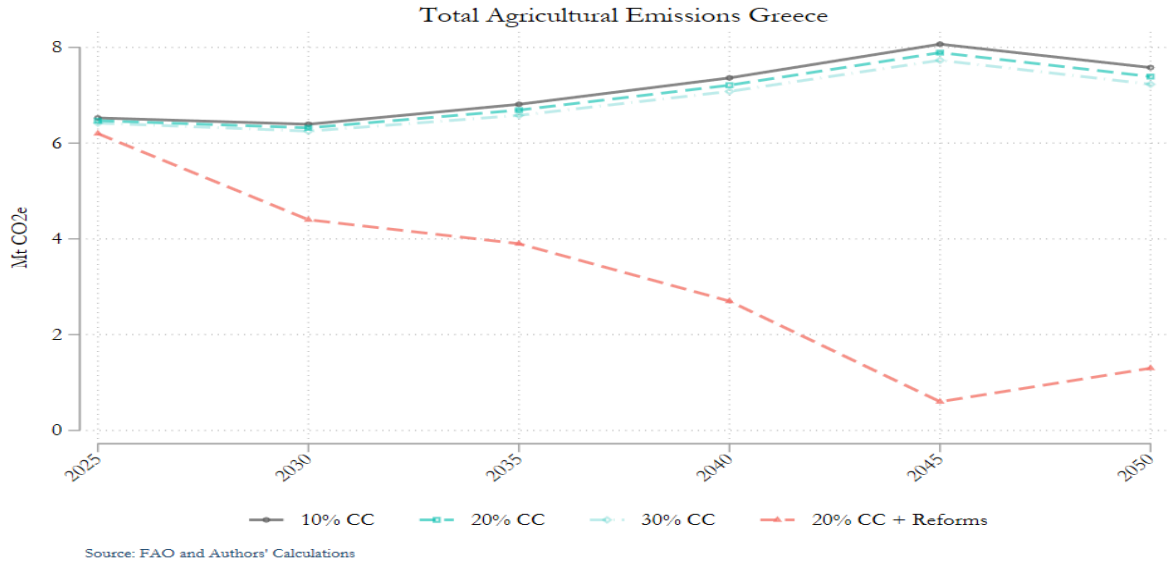
Most importantly, integrating enhanced agroecological practices in the National; Commitments Pathway for Greece leads to emissions levels very close to net zero by 2045 (Figure 2). The latter can act as an incentive for action on behalf of the farmers, conditional on bold reforms to enhance crop and livestock productivity and strengthen the regulatory framework.

Figure 1: Agroecological Practices and GHG Emissions in Greece



Source: FAO and Authors' Calculations

Figure 2: GHG Emissions from Agriculture – Agroecological Practices and National Commitments



During the Panel Discussion that followed **Dr. Spyros Papaspyrou** (Head of the Directorate of Agricultural Economy, Region of Western Greece) noted that Eco-schemes have low adoption rates and need alignment with farmers' profit-maximizing incentives, possibly through increased productivity, innovation, and improved farm management. There is a severe lack of data in the field for agroecological practices. A crucial point is that there is not an explicit focal point for farmers and stakeholders in the agricultural sector to receive and share information on practices and challenges.

Dr. Konstantinos Milios (Head of the Directorate of Veterinary Services, Region of Western Greece) raised concerns on the impacts of sustainable practices on the EU livestock sector with the concomitant reduction in livestock farming. This may face a backlash due to the adverse impact on agricultural income and the surge in the cost of food products, which are transmitted to the consumers. **Dr. Pantelis Barouchas** (Associate Professor, Department of Agriculture, University of Patras & Director of Soil Laboratory of RWG) provided vital information on current projects in the RWG which integrate digital solutions in agricultural practices.

During the in-person **Workshop** that followed, moderated by dr. Kostas Dellis and Ms Hezal Dilan Sari (ATHENA RC), stakeholders identified key economic, technological, regulatory and behavioral barriers for the adoption and harnessing of agroecological practices in the region and Greece in total. The most prominent include the disconnection of the agricultural sector with research output, the high initial costs of adopting cutting edge technologies, the low level of awareness of farmers and the complexity associated with implementing the eco-schemes. The group also highlighted the untapped potential of Public-Private partnerships for investing in sustainable and digital solutions in the agricultural sector, as well as the elevated role of the ministry of Agricultural Development in streamlining the procedures.

The ATHENA team highlighted the potential of the **MAIA Connectivity Hub** in bridging the information gap by providing a **real-time digital space** for knowledge dissemination, policy

updates, and investment opportunities. In addition, participants were introduced to **MAIA's AI-powered SummarAIse tool,** which helps **simplify regulations, scientific findings, and policy guidelines** into easy-to-understand insights for farmers and policymakers, making sustainability practices more accessible. This can significantly reduce the degree of complexity related to the EU green policies and initiatives. Having explored the modelling capabilities of the FABLE Calculator, the group of stakeholders had a chance to discuss the complementary role to be played by the **MAIA Discovery Services** in providing **structured, analyzed data** for decision-making.

Overall, the participants underlined the need for consolidated results based on scientific evidence to build the economic and social case for sustainable transformation in the agricultural sector. Insights from the FABLE Calculator for Greece steer the discussion towards agroecological practices being embedded in a broader reform agenda aligned with the country's National Commitments in a way that significantly contributes to the decarbonization of the agricultural sector without hampering regional and national competitiveness.