

[Home](#) → [Research projects](#) → TRANSATION

RESEARCH PROJECT

TRANSATION

In progress 01/01/2026 → Unknown

TowaRds Agroecological farmiNg Systems for innovATIOn and sustainability



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Menu ≡



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Summary

Climate variability poses a significant threat to Europe's agricultural productivity and food security, with regions such as the Mediterranean facing water stress, erratic rainfall, and soil degradation exacerbated by rising temperatures and sea levels. To address these challenges, TRANSATION implements integrated multi-cropping systems, rigorously tested in Living Labs where farmers, researchers, policymakers, and value chain actors collaborate to co-design and evaluate agroecological innovations.

A Life Cycle Assessment (LCA) is employed to pinpoint hotspots along the grain value chain and identify major shortages. Based on these LCA findings, the project prioritizes innovative practices designed to transform the system. The project then employs a multi-faceted approach: field trials in Living Labs introduce stress-resistant, high-protein grain varieties to enhance yields and build climate resilience. Efficient soil-water management practices, such as deficit irrigation paired with stress-tolerant crops, are implemented and monitored using drone technology. In parallel, agricultural residues are valorized through pyrolysis to produce biochar and natural biopesticides, which are applied alongside biological control methods and agroecological practices like crop rotation, cover cropping, and organic amendments, reducing chemical inputs and enhancing ecosystem resilience.

Capacity building is also a key component, with field schools, study visits, and training sessions designed to enhance stakeholder skills and facilitate knowledge transfer. Additionally, AI-driven consumer analyses provide insights into market acceptance, supporting the development of innovative business models and robust value chain integration.

By enhancing productivity, reducing environmental impacts, and diversifying incomes, TRANSATION offers a comprehensive, resilient solution for transforming Mediterranean agricultural systems into sustainable, climate-resilient agroecosystems. Through the integration of advanced technologies, stakeholder collaboration, and robust capacity building, the project not only creates new opportunities for crop production but also effectively addresses the challenges of agrotechnological and labour barriers.

Expected results of TRANSATION

- i) A strong R&I partnership promoting sustainability and food security in Mediterranean agriculture through knowledge exchange and innovation. ii) Insights into climate change impacts, enabling evidence-based adaptation to enhance food system resilience.
- iii) Enhanced capacity for farmers and stakeholders through Living Labs, supporting co-creation and coordination in agroecological value chains. iv) Improved soil and water management, boosting productivity through efficient resource use and climate-resilient practices.
- v) Increased farm incomes and revitalized rural economies with diversified, climate-smart agriculture that improves nutrition and food security. vi) Effective dissemination of knowledge and best practices, ensuring scalable adoption of agroecological innovations.

Long-term impact

TRANSATION aims to create a scalable, replicable agroecological model, promoting long-term resilience and sustainability across agricultural value chains. By influencing policy and driving systemic transformation, the project supports a future-proof, climate-resilient agri-food sector.

Summary



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