D7.3 Policy Brief No. 1

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101136910

POLIRURAL plus

Document information

Key information	WP7
Project reference number	101136910
Project acronym	PoliRuralPlus
Project title	Fostering Sustainable, Balanced, Equitable, Place-based and Inclusive Development of Rural-Urban Communities' Using Specific Spatial Enhanced Attractiveness Mapping ToolBox
Work package (WP) and deliverable number and name	WP7 - D7.3 – Policy Brief No. 1
WP leader and co-leader	CCSS, P4A
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Peer reviewers	Pavel Kordík (CVUT), Karel Charvát (CCSS), David Pešek (CVUT)
P.R. approval date/version	30-06-2025 | Version v.1
Document type	R: document, report
For public dissemination	YES, PUB - Public
Brief abstract	This policy brief presents key findings from the PoliRuralPlus project, which supports sustainable rural–urban development across Europe. It highlights shared challenges and proposes strategic actions, including AI-enabled knowledge systems, FAIR data spaces, and support for circular economies and local food chains. The recommendations aim to guide EU and regional policies in line with the Green Deal and Digital Decade goals.

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Document history

Version	Date	Main measures/changes	Author
01	07/03/2025	Draft for consideration	John O'Flaherty (MAC)
02	01/06/2025	Detailed document structure	Karel Charvát (CCSS)
03	11/06/2025	Pilots - input	All pilot and RAP partners
04	17/06/2025	Formatting, language editing	Markéta Kollerová (P4A), Šárka Horáková (CCSS)
05	19/06/2025	Final adjustments and conclusion	Karel Charvát (CCSS)
06	23/06/2025	Review of D7.3	Pavel Kordík (CVUT), David Pešek (CVUT)
V1	30/06/2025	D7.3, version 1 uploaded to the EU portal/SYGMA	Coordinator

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Abbreviations

Abbreviation	Meaning
AI	Artificial Intelligence
AKIS	Agricultural Knowledge and Innovation System
API	Application Programming Interface
CAP	Common Agricultural Policy
CF	Cohesion Fund
CSA	Community-Supported Agriculture
DAIH	Digital Agriculture Innovation Hub
DG	Directorate-General (European Commission)
DIH	Digital Innovation Hub
DestinE	Destination Earth
DoA	Description of Action
EAFRD	European Agricultural Fund for Rural Development
EC	European Commission
eIDAS	Electronic Identification, Authentication and Trust Services
EOSC	European Open Science Cloud
ERDF	European Regional Development Fund
ERDS	European Rural Data Space
ESA	European Space Agency
ESF+	European Social Fund Plus
EU	European Union
EV	Electric Vehicle
FAIR	Findable, Accessible, Interoperable, Re-usable
GA	Grant Agreement
GHG	Greenhouse Gas
IoT	Internet of Things
KPI	Key Performance Indicator
LAG	Local Action Group
LTVRA	Long-Term Vision for Rural Areas
MAG	Multi-Actor Group
NEB	New European Bauhaus
NUTS	Nomenclature of Territorial Units for Statistics
PPP	Public-Private Partnership
R&D	Research and Development

RAP	Regional Action Plan
RIS3	Research and Innovation Strategy for Smart Specialisation
RRF	Recovery and Resilience Facility
SFSC	Short Food Supply Chain
SME	Small and Medium-Sized Enterprise
WP	Work Package

Executive Summary

This envelope report introduces the first series of PoliRuralPlus Policy Briefs covering nine pilot regions and one European brief (Annexes 1–10). It does not add new technical evidence; rather, it summarises shared challenges, explains the common methodology, and highlights cross-pilot recommendations; namely AI-enabled Agricultural Knowledge & Innovation Systems (AKIS 4.0), FAIR-compliant data spaces, carbon-smart short food-supply chains, and SME-centred innovation missions. The regional briefs are reproduced in English in the annexes. Authorised translations will be published on partner portals and social-media channels to reach policy makers in their native languages.

1 Introduction

PoliRuralPlus aims to foster balanced and inclusive rural–urban development through place-based pilot action, advanced data analytics and multi-actor governance. During Months 0–18 (Jan 2024 – Jun 2025) nine territory-specific Policy Briefs and one European Commission (EC) Brief were produced. This report contextualises those briefs; full texts appear in Annexes 1–10.

2 Methodology

Evidence was harvested from approved deliverables (D1.3, D2.2, D3.1, D4.1, D5.1, D7.2), peer-reviewed internal notes, and feedback from Regional Action Plan (RAP) drafting teams (Mar–May 2025). The workflow comprised deliverable mapping, content extraction, cross-work-package triangulation, KPI synthesis, qualitative coding, RAP feedback, and quality assurance. All datasets comply with FAIR principles. Limitations linked to time-bounded evidence or pilot-maturity variance were mitigated by KPI normalisation, explicit caveats and triangulation.

3 Policy Briefs

- Annex 1 – Advancing the Circular Economy in Ireland (County Monaghan)
- Annex 2 – Strengthening Rural-Urban Linkages in Slovakia
- Annex 3 – Advancing Smart Agri-Food and Agritourism in Central Greece
- Annex 4 – Enhancing Short Food-Supply Chains in Puglia (Apulia), Italy

- Annex 5 – Developing a Rural Event Economy in Mallusjoki, Finland
- Annex 6 – Unlocking Cross-Border Rural Innovation in Central Europe (Czech–Bavarian Border)
- Annex 7 – Revitalising Rural-Urban Synergies and Cultural Heritage in Sierra y Mancha Conquense, Spain
- Annex 8 – Accelerating Data-Driven Monitoring of the Regional Development in Vidzeme, Latvia
- Annex 9 – Empowering Rural Innovation and Youth Through Digital and Entrepreneurial Transformation
- Annex 10 – European – AI-Enabled AKIS, FAIR Data & Carbon-Smart Food Systems

All briefs are presented in English; authorised translations will be disseminated through partner portals and social media to ensure accessibility for regional and national stakeholders.

4 Conclusion

Across nine pilots, four levers emerge: (1) AI-enabled AKIS, (2) a FAIR European Rural Data Space, (3) carbon-smart short food-supply chains, and (4) SME-centred innovation missions. Deploying these levers via Horizon Europe, Digital Europe, DestinE and InvestEU will accelerate progress towards the Green Deal, Digital Decade and Long-Term Rural Vision objectives while empowering small regional enterprises.

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Annex 1 Advancing the Circular Economy in Ireland

Date	11 June 2025
Region of Focus	County Monaghan Pilot
Authors	Gabriel O'Connell (MID), Jeyald Rasaratnam (MID), John O'Flaherty (MAC) & Monaghan RAP partners

Executive Summary

Ireland's National Circular Economy Strategy mandates substantial reductions in organic waste and associated greenhouse-gas emissions by 2030. Findings from the Monaghan Regional Action Plan (RAP) confirm that an integrated policy mix: combining fiscal incentives, a national network of Circular-Economy (CE) Innovation Hubs, and formalised multi-stakeholder governance, can achieve at least 30 % waste-reduction and generate approximately 250 green jobs. Primary constraints include under-developed waste-to-resource infrastructure, limited SME finance, low public awareness, and skills gaps in regenerative agriculture. This brief recommends the rapid deployment of CE Innovation Hubs, supported by a coordinated blend of EU, national, and regional funding streams, to mainstream circular business models across Ireland.

Key Policy Challenges

- Insufficient Waste-to-Resource Infrastructure - National anaerobic-digestion and composting capacity is inadequate to process the agri-food sector's organic residues, particularly in County Monaghan.
- Finance Constraints for Circular SMEs - CE-oriented start-ups face high capital costs and limited risk financing; existing grant schemes are fragmented.
- Skills and Awareness Deficit - Public participation and SME capability in circular practices remain low; shortages exist in digital, environmental-engineering, and regenerative agriculture competencies.
- Policy Fragmentation - Multiple funding streams (LEADER, SEAI, ERDF) operate in silos, delaying adoption and scaling of circular solutions.
- Risk of Missing 2030 Targets - Without coordinated intervention, Ireland may fail to achieve mandated organic-waste and greenhouse-gas reduction targets.

POLICY RECOMMENDATIONS

- Establish a National Network of Circular-Economy Innovation Hubs, commencing with a flagship hub in Monaghan.
- This mechanism builds on existing ISIF mandates for climate action and aligns with EU Green Deal financing models, offering a replicable vehicle to bridge public-private investment in regional transformation.
- Introduce a refundable 20 % R&D tax credit for certified circular products and services.
- Provide capital grants for on-farm anaerobic digestion, biochar production, and regenerative farming practices.
- Deploy a national waste-mapping portal and open-data platforms to facilitate industrial symbiosis and market access.
- Integrate CE curriculum into secondary and tertiary education and expand SME training via Local Enterprise Offices. Embed participatory budgeting and statutory CE advisory councils into Local Authority governance frameworks.
- Increase LEADER funding to help stimulate rural Circular Economy pilots and initiatives.

Strategic Alignment

Policy framework	How this applies
European Green Deal	Aligns CE Innovation Hubs with EU climate-neutrality objectives.
National Circular Economy Strategy 2022	Explains what the circular economy is, why Ireland needs to achieve a circular economy and provides overarching targets for waste reduction and resource efficiency.
Climate Action Plan 2024	Specifies sectoral measures for greenhouse-gas mitigation through circular practices.
Horizon Europe	Funds demonstration projects and knowledge exchange for circular business models.
EU Cohesion Policy (ERDF & Just Transition)	Offers co-financing for regional CE infrastructure and skills development.

Ireland Strategic Investment Fund	Facilitates green-bond financing for circular infrastructure and SMEs.
Ireland CAP Strategic Plan - Pillar 2, LEADER Programme	The LEADER Programme provides resources for rural communities to support their own development and create capacity at the local level. LEADER themes include economic development, job creation, rural infrastructure, social inclusion, and sustainable development of rural environment and climate change mitigation and adaptation.

Conclusion

Ireland's transition to a circular economy requires more than pilot projects: it demands a systemic, place-based innovation strategy. By integrating finance, foresight, and inclusive governance into a National Network of Circular Economy Innovation Hubs, Ireland can transform organic waste into a driver of rural prosperity and climate resilience, while meeting its EU-aligned 2030 environmental targets.

Acknowledgements

This policy brief was developed by the PoliRuralPlus Ireland team in collaboration with the Department of the Environment, Climate and Communications and regional stakeholders. The PoliRuralPlus project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101136910.

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Annex 2 Strengthening Rural-Urban Linkages in Slovakia

Date	11 June 2025
Region of Focus	National (Slovak Republic)
Authors	Marieta Okenková (SUA), Zuzana Palková (SUA), Monika Slaninová (SRYP), Jakub Dvorský (SRYP)

Executive Summary

The Slovak Regional Action Plan (RAP) version 3.0, covering the entire country, outlines a forward-looking and integrated strategic roadmap to revitalise the country's predominantly rural territory, where 40 % of the population lives, by enhancing rural-urban linkages. Rooted in extensive multi-actor consultations and foresight-based analysis, the main theme of the RAP was formulated: "**From Dialogue to Action: Strengthening Rural-Urban Linkages through Multi-Sector and Multi Actor Cooperation and Innovation**". It pursues a collaborative policy development through three interlocking strategic objectives: (i) *strengthening stakeholders engagement and promoting a shared vision*: enhancing participatory governance, advocating for an inclusive vision for rural areas, and promoting alignment with the EU Rural Pact (ii) *accelerating digital and smart transformation*: advancing a nationwide Smart Villages framework interconnected with Smart Cities supported by a flagship Digital Innovation Hub (DIH) to drive digital inclusion, innovation, and sustainable growth, and (iii) *fostering cross-sectoral strategic cooperation*:

leveraging a modernised and strengthened Agricultural Knowledge and Innovation System (AKIS) to activate underutilised rural assets and create new economic opportunities, especially for green and digital SMEs.

However, effective delivery hinges on addressing key systemic challenges: fragmented governance, financing and skills gaps, and slow green-tech adoption. This brief distils the RAP's evidence base and proposes a policy mix: combining regulatory coordination, blended finance, an upgraded AKIS, and digital capacity-building, that is consistent with the European Green Deal, the EU Long-Term Vision for Rural Areas (2040), the Digital Decade, and Slovakia's Smart Specialisation Strategy.

Key Policy Challenges

- **Demographic Decline and Out-migration:** Ageing populations and youth out-migration undermine labour supply and local demand in rural districts.
- **Governance Fragmentation:** Multiple ministries, funding streams, and advisory bodies operate in silos, delaying coordinated action.
- **Digital and Physical Infrastructure Gaps:** Although broadband coverage exceeds 98 %, rural uptake of IoT-enabled services and reliable public transport remains low.
- **Finance Constraints for Green & Digital SMEs:** Early-stage rural ventures face high collateral requirements and limited risk-capital instruments.
- **Climate and Environmental Vulnerability:** Frequent floods and droughts threaten agri-food output; renewable-energy deployment lags regional peers.

POLICY RECOMMENDATIONS

To realise its ambitions, the Slovak RAP proposes a coherent policy mix, including:

- Establishing a Cross-Sector Rural Development Council and a national Digital Innovation Hub (DIH) to steer and coordinate Smart Village roll-out and deployment.
- Strengthening the AKIS through a formal national platform linking research institutes, advisory services, and farmers.
- Deploying Smart Village Strategy with the aim to provide grants in 75 % of municipalities by 2030, with incentives for IoT-based resource management and renewable micro-grids.
- Introducing a refundable 25 % tax credit for certified agri-tech, bio-economy, and circular-economy investments.
- Launching and rolling out a continuous capacity-building programme using participatory foresight toolkits to strengthen municipal and regional administrations.
- Scaling up the stakeholder portal www.atraktivnyvidiek.sk as an open-data platform for civic engagement, policy consultation and co-creation, and rural market access and integration.
- Embedding climate-adaptation measures (floodplain restoration, drought-resistant crops, nature-based solutions) into all regional development strategies.

Strategic Alignment

Policy framework	Applicability to Slovak RAP
European Green Deal	Advances circular economy, renewable energy, and biodiversity objectives.
Long-Term Vision for EU Rural Areas (2040)	Delivers vibrant, connected rural communities through Smart Village investments.
Cohesion Policy 2021-27	Leverages ERDF, ESF+, and CF resources for integrated rural-urban projects.
Common Agricultural Policy (2023-27)	Channels eco-schemes, LEADER, and AKIS support regenerative and organic farming and advisory services.
Digital Decade Strategy	Closes the rural digital divide and fosters data-driven public services.
Horizon Europe & LIFE	Finances demonstration pilots in agri-tech, AKIS, climate adaptation, and bio-economy.
EU Rural Pact	Provides governance framework for multi-level stakeholder cooperation.

Conclusion

The Slovak RAP 3.0 reflects a systemic, multi-actor strategy that connects foresight-driven policymaking with actionable innovation. With a smart policy mix, robust AKIS, digital tools, and stakeholder mobilisation, Slovakia's rural regions can transform into engines of sustainable growth, helping the country advance toward climate neutrality, regional cohesion, and a resilient digital future.

Acknowledgements

This policy brief was prepared by the PoliRuralPlus Slovakia consortium in collaboration with local, regional and national stakeholders. The PoliRuralPlus project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101136910.

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Annex 3 Advancing Smart Agri-Food and Agritourism in Central Greece

Date	11 June 2025
Region of Focus	Central Greece Pilot
Authors	Penny Zafiraki (AUA), Katerina Sachsamanoglou (GAIA), Panagiota Louka (NP), Dimitris Kapnias (NP)

Executive Summary

The Central Greece Regional Action Plan (RAP) envisions a digitally empowered, climate-resilient rural-urban ecosystem that leverages precision agriculture, agritourism, and cultural heritage to foster inclusive growth. The Regional Action Plan aims to substantially increase the adoption of smart farming practices, strengthen the economic contribution of agritourism, and achieve near-universal broadband access in rural areas by 2028. Global PoliRuralPlus deliverables underline that rural innovation thrives in place-based, multi-actor environments supported by robust knowledge systems and digital infrastructure. An integrated policy mix combining collaborative hubs, strengthened AKIS, and blended finance can unlock Central Greece's latent assets and align the pilot with EU Green Deal objectives.

Key Policy Challenges

- **Demographic Imbalance and Youth Out-migration:** Ageing population and limited local demand for digital services drive talent drain.
- **Digital and Skills Divide:** Broadband household coverage is only 67 %, and large segments of AKIS lack digital literacy.
- **Fragmented Governance and Innovation Gap:** Siloed funding streams delay coordinated agritech and tourism innovation.
- **Climate and Environmental Stress:** Water scarcity, floods, and biodiversity loss threaten agri-food output and tourism assets.

POLICY RECOMMENDATIONS

- Strengthen regional innovation ecosystems by developing collaborative hubs that integrate digital technologies, stakeholder engagement, and sector integration.
- Strengthen the Agricultural Knowledge and Innovation System (AKIS) by funding five regional knowledge hubs and an annual Smart-Farming & Agritourism Academy.
- Support green and digital rural transformation by facilitating access to innovative financial instruments, including those for smart agriculture, renewable energy, and the circular economy.
- Promote inclusive, smart rural development by offering grants for digital services that improve local infrastructure, environmental sustainability, and innovation in rural tourism.
- Provide targeted financial incentives to encourage private investment in sustainable rural innovation and entrepreneurship.
- Utilize digital tools and repositories of best practices to support the design of policies based on evidence and territorial benchmarking.
- Integrate nature-based climate-adaptation measures (floodplain restoration, fire-resilient landscapes, drought-resistant crops) into all county development plans.

Strategic Alignment

Policy framework	Applicability to Central Greece RAP
European Green Deal	Accelerates decarbonisation, circular bioeconomy, and biodiversity goals.
Long-Term Vision for EU Rural Areas (2040)	Delivers vibrant, connected rural communities via Smart Villages and agritourism.
Common Agricultural Policy 2023-27	Channels eco-schemes, AKIS support, and LEADER funds to smart farming and agritourism.
Digital Decade Strategy	Bridges rural connectivity gaps and enables data-driven public services.
New European Bauhaus	Integrates aesthetics, sustainability, and inclusion in landscape-based tourism assets.
Horizon Europe & LIFE	Finances demonstration pilots, DIH services, and climate-adaptation solutions.

Cohesion Policy & RRF	Provides ERDF and RRF co-financing for green-digital infrastructure and skills.

Conclusion

By coupling place-based digital innovation with agritourism and climate-smart practices, Central Greece can become a benchmark region for sustainable rural-urban integration. Rapid execution of the recommended policy mix will transform demographic and environmental constraints into drivers of resilient growth, fully aligned with EU and national priorities.

Acknowledgements

This policy brief was prepared by the PoliRuralPlus Greece consortium in collaboration with the Region of Central Greece and the Ministry of Rural Development & Food. The work draws on insights from PoliRuralPlus global deliverables. The PoliRuralPlus project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101136910.

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Annex 4 Enhancing Short Food Supply Chains in Puglia (Apulia), Italy

Date	11 June 2025
Region of Focus	Puglia (Apulia) Pilot
Authors	Zusepe Elias Zidda (TINADA) & Apulia RAP partners

Executive Summary

The Apulia Regional Action Plan (RAP) positions Short Food Supply Chains (SFSCs) as a core instrument for strengthening rural–urban linkages, improving farm income, and advancing the objectives of the European Green Deal. The RAP proposes an integrated policy mix: comprising enhancements to the Agricultural Knowledge and Innovation System (AKIS), deployment of a regional digital space for SFSC services, and investment in climate-smart logistics, to achieve three principal outcomes by 2028: i) a 30 % increase in the volume of agri-food products marketed through SFSCs; ii) a 20 % reduction in logistics-related greenhouse-gas emissions; and iii) a 15% increase in job opportunities in the areas of ICT, advisory, food production, and marketing through the SFSC sector.

Key Policy Challenges

- **Fragmented SFSC Infrastructure:** Producer–consumer linkages are weak; physical hubs, cold-chain capacity, and collective branding remain under-developed.

- **Digital Divide and Low Agri-tech Uptake:** Incomplete rural broadband coverage constrains the adoption of IoT, blockchain traceability, and e-commerce platforms.
- **Skills Gap in Sustainable and Digital Practices:** SMEs lack advisory support in precision agriculture, circular bio-economy, and digital marketing.
- **Logistics Bottlenecks and High Transaction Costs:** Dispersed production and inadequate last-mile delivery inflate costs and erode SFSC competitiveness.
- **Environmental Stressors:** Water scarcity, soil degradation, and climate variability threaten agri-food output and supply reliability.
- **Bureaucratic Complexity and Finance Constraints:** Lengthy permitting procedures and limited risk financing impede investment in innovation and infrastructure.

POLICY RECOMMENDATIONS

- Establish an Apulia SFSC Innovation Hub integrating as a one-stop advisory centre specialised in Short Food Supply Chain.
- Upgrade AKIS by funding advisory entities and regional knowledge centres to support certification programmes in digital and sustainable agriculture.
- Increase the annual spending for the development and promotion of SFSC - co-financed by EAFRD, the Recovery and Resilience National Plan, and private capital - to support the development of SFSC models, adoption of climate-smart logistics, on-farm processing, promotion and marketing.
- Include SFSC actions/measures into the Smart Specialisation Strategy 2040, highlighting the relevance of rural-urban synergy.
- Implement targeted capacity-building programmes engaging 500 young farmers and women entrepreneurs in e-commerce and regenerative farming.
- Incentivise precision irrigation and rain-water-harvesting systems to reduce agricultural water use by 20 % by 2028.
- Streamline permitting through a single digital window and publish an annual 'SFSC Regulatory Roadmap' to improve investor certainty.
- Development of a law that includes a regional framework or strategy for sustainable food systems (with clear reference to SFSC), to be adopted and implemented by all major provinces and municipalities.

Strategic Alignment

Policy framework	Relevance to Apulia SFSC RAP
European Green Deal	Supports decarbonisation and circular-economy ambitions via low-carbon logistics and waste valorisation.
Farm-to-Fork Strategy	Advances fair, resilient, and sustainable food systems through localised supply chains.
CAP Strategic Plan 2023-27 (Italy)	Provides eco-schemes, LEADER, and AKIS funding to strengthen producer position in the food chain.
Long-Term Vision for EU Rural Areas (2040)	Enhances rural attractiveness through Smart Villages and local food networks.

Digital Decade 2030	Bridges rural connectivity gaps and enables data-driven SFSC platforms.
Horizon Europe & LIFE	Finances demonstration projects on blockchain traceability, regenerative practices, and climate adaptation.
Smart Specialisation Strategy Puglia 2030	Targets agri-food innovation and zero-kilometre products as regional competitive advantages.

Conclusion

A cohesive policy package: combining an enhanced AKIS with a digital space for SFSC services, climate-smart logistics, and streamlined regulation, can transform Apulia's agri-food sector into a benchmark for sustainable, high-value local food systems. Effective implementation will enhance rural prosperity, reduce environmental impacts, and support Italy's alignment with EU 2030 targets.

Acknowledgements

This policy brief was prepared by the PoliRuralPlus Italy consortium in collaboration with the Apulia Region, and local producer organisations. The work draws on the Apulia RAP and PoliRuralPlus outreach deliverables. The PoliRuralPlus project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101136910.

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Annex 5 Developing a Rural Event Economy in Mallusjoki, Finland

Date	11 June 2025
Region of Focus	Mallusjoki Pilot, Orimattila Municipality, the region of Päijät-Häme
Authors	Tuula Löytty (SML), Heidi Heikkilä (MYA), Katriina Kajala (MYA) & Mallusjoki RAP partners

Executive Summary

The Mallusjoki Regional Action Plan (RAP) outlines a community-led strategy for establishing a Rural Event Industry Economy that strengthens bi-directional rural–urban linkages, sustains cultural heritage, empowers community members and diversifies local income. By 2028 the pilot aims to achieve: (i) twelve annual cultural festivals attracting 10 000 visitors, (ii) a 30 % rise in rural SMEs linked to creative tourism, and (iii) carbon-neutral operation of the main venue through renewable energy and circular waste management. Implementation relies on a multi-actor approach, enhanced Agricultural Knowledge and Innovation System (AKIS) services, Smart Village concepts and digital skills and tools, and blended finance combining LEADER, European Social Funding and Regional Development Fund, Interreg, Horizon Europe, and private capital.

Key Policy Challenges

- **Ageing Population and Volunteer Fatigue:** Human-resource capacity for event organisation is limited and declining.

- **Fragmented Event Infrastructure:** The 100-year-old clubhouse requires renovation; auxiliary facilities are inadequate for year-round use.
- **Digital Divide and Skills Gaps:** Low adoption of AI-enabled marketing and ticketing systems constrains outreach and efficiency.
- **Seasonal Demand and Logistics Constraints:** Visitor flows are concentrated in summer; last-mile transport and accommodation options are scarce.
- **Finance and Regulatory Complexity:** Permitting for venue upgrades and accessing risk finance are time-consuming and costly.
- **Climate and Environmental Risk:** Energy inefficiency and waste generation threaten compliance with Green-Deal targets.

POLICY RECOMMENDATIONS

- Establish the Mallusjoki Rural Event Innovation Hub integrating a digital marketplace, AI-driven ticketing, and one-stop advisory services.
- Upgrade AKIS by funding three regional knowledge hubs and certifying twenty advisers in event logistics, digital marketing, and sustainable tourism by 2027.
- Launch a €40 million Rural Creative Infrastructure Fund: co-financed by LEADER, Interreg, and private capital to renovate the Green Cultural Centre, deploy renewable micro-grids, and expand accommodation.
- Introduce a public support mechanism to incentivise investment in certified low-carbon infrastructure and digital platforms that enable sustainable rural events and local service ecosystems.
- Deploy a Smart Village platform offering broadband hotspots, e-mobility sharing, and real-time visitor analytics to promote urban-rural digital integration.
- Implement an integrated circular event services, circular waste and energy-efficiency scheme to attain zero-waste certification by 2030.
- Create a regional partnership agreement with cities of Orimattila, Lahti and Helsinki to coordinate marketing, transport, and cultural-exchange programming to promote bi-directional urban-rural interaction.

Strategic Alignment

Policy framework	Applicability to Mallusjoki RAP
European Green Deal	Supports decarbonisation and circular-economy goals through zero-waste festivals and renewable energy.
Long-Term Vision for EU Rural Areas (2040)	Advances stronger, connected, resilient, and prosperous rural communities via cultural tourism.
CAP Strategic Plan 2023-27 (Finland)	Channels LEADER and AKIS funds to community-led rural innovation.
Digital Decade 2030	Bridges connectivity gaps and enables Smart Village services.
New European Bauhaus	Guides renovation of the Green Cultural Centre with sustainability and inclusiveness principles.
Horizon Europe & Creative Europe	Finances demonstration pilots and cross-sector cultural collaboration.

Cohesion Policy & Interreg Baltic Sea	Provides co-financing for infrastructure, skills, and transnational cooperation.

Conclusion

A focused investment programme combining an upgraded AKIS, Smart Village technologies, and climate-compliant infrastructure can transform Mallusjoki into a reference model for rural event economies in Northern Europe. Timely implementation will secure cultural vitality, economic diversification, and alignment with EU 2030 and 2040 sustainability objectives.

Acknowledgements

This policy brief was prepared by the PoliRuralPlus Finland consortium taking in account the visions and policies of Mallusjoki Youth Association, the Municipality of Orimattila and the Päijät-Häme Regional Council. The PoliRuralPlus project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101136910.

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Annex 6 Unlocking Cross-Border Rural Innovation in Central Europe

Date	11 June 2025
Region of Focus	Czech - Bavarian border
Authors	Tomáš Mildorf (P4A), Markéta Kollerová (P4A), Otakar Čerba (P4A), Karel Charvát (CCSS), Johanna Trager (DIT), Karin Haslböck (DIT)

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UNLOCKING CROSS-BORDER RURAL INNOVATION IN CENTRAL EUROPE

Executive Summary

The Czech-Bavarian border region offers a unique opportunity to demonstrate how rural, cross-border areas can drive innovation for a green and digital Europe. This policy brief presents actionable recommendations grounded in stakeholder engagement, local capacities, and tested cooperation models.

At the heart of this strategy is the need to **enhance the resilience of local farmers and foresters** (economically, technologically, and environmentally). By supporting climate-smart agriculture, regional innovation ecosystems, and diversified rural economies, the region can adapt to ongoing climate, demographic, and market challenges.

Short supply chains serve as one enabler of this resilience, strengthening the link between producers and consumers while reducing environmental and economic vulnerabilities. Further, the focus is on application-oriented research, which aims to make current trends and priorities in agriculture and forestry available to a broad network of regional partners.

Limited innovation infrastructure in Czech rural areas

- While Bavaria has a decentralised network of Technology Campuses, the Czech side, especially in Klatovy and the Šumava region, lacks comparable support structures.
- The absence of innovation hubs and tailored services for rural sectors hampers the ability of farmers to innovate and adapt.

Fragmented governance and cross-border mismatches

- Differences in administrative models and legal frameworks complicate coordination and funding access across the border.
- Cross-border projects often face delays due to a lack of interoperable planning and implementation tools.

Demographic pressures and labour shortages

- Rural regions suffer from ageing populations and youth outmigration, threatening the continuity of family farms and weakening local innovation capacity.

Slow technological uptake and connectivity gaps

- Digital services and infrastructure remain uneven, particularly in remote villages, limiting access to smart farming tools, advisory services, and modern logistics.

Vulnerability of farmers to climate and market risks

- Farmers face increasingly severe environmental challenges, including floods, droughts and soil degradation.
- Support systems for **climate resilience** (including training, technologies, and infrastructure) remain underdeveloped.

POLICY RECOMMENDATIONS

Establish a cross-border innovation hub in Klatovy

- Inspired by the Bavarian Technology Campus model, this hub will support local farmers, SMEs, and rural innovators through training, demonstration, and networking.
- It should focus on applied digital tools, sustainable agriculture, and support for market access, enhancing long-term rural resilience.

Strengthen local farmer resilience and autonomy

- Provide technical training in precision agriculture, water management, and regenerative practices.
- Encourage diversification strategies, including quality production, processing, and local market development.

- Encourage **short supply chains** and on-farm value-added activities to improve income stability and reduce reliance on long-distance markets.

Support local cooperation and knowledge exchange

- Strengthen multi-actor networks linking farmers, researchers, advisory services, and regional governments.
- Promote cooperative models and community-led initiatives to share resources and expertise.

Simplify access to funding for rural innovators

- Reduce administrative burdens and improve digital tools to support funding applications.
- Equip Local Action Groups (LAGs) to better assist farmers and small enterprises in using EU and national support schemes.
- Equip Local Action Groups (LAGs) to support innovation projects related to **sustainability, climate resilience, and local food systems**.

Invest in digital infrastructure and AI capacity in rural areas

- Expand broadband connectivity and smart services in underserved locations.
- Support data-driven services tailored to farming, tourism, and nature-based business models.
- Encourage digital solutions in logistics and local food distribution to support **short and transparent value chains**.

Embed rural resilience in EU and territorial policies

- Use the Czech-Bavarian region as a pilot area for EU Green Deal implementation, New European Bauhaus initiatives, and Just Transition goals.
- Ensure that **climate resilience, circular economy, and farmer empowerment** are fully integrated into Cohesion Policy and smart specialisation strategies.

Strategic Alignment

Policy framework	**How this applies**
EU Green Deal	Supports climate-smart farming and landscape resilience in rural areas
Horizon Europe	Enables pilot-led innovation in agriculture and sustainable rural development
Interreg Bavaria–Czechia	Supports cross-border rural transformation and institutional learning
Digital Europe Programme	Funds digital infrastructure and smart solutions for farming and public services
New European Bauhaus (NEB)	Links aesthetics, inclusion, and sustainability in rural spaces

Czech Regional Development Strategy 2021+	Promotes rural attractiveness and innovation ecosystems
Bavarian Higher Education Innovation Act (BayHIG)	Facilitates decentralised, mission-driven innovation

Conclusion

Rural innovation in cross-border settings requires more than isolated pilot projects: it needs systemic support, committed partnerships, and place-based action. The Czech-Bavarian border region can become a model of such transformation.

By **supporting local farmers** as agents of innovation and stewards of the landscape, while reinforcing their **climate resilience** and market autonomy, the region can build a robust, inclusive, and sustainable rural future.

The time to act is now. Strengthen local capacities, align cross-border governance, and deliver innovation where it matters most: on the farm, in the village, and across the landscape.

Acknowledgements

This policy brief was developed as part of the PoliRuralPlus project. The authors would like to thank all partners and stakeholders involved in the Czech-Bavarian pilot for their active participation, insights, and commitment to cross-border cooperation and rural innovation. The PoliRuralPlus project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101136910.

Disclaimer

Annex 7 Revitalising Rural–Urban Synergies and Cultural Heritage in Sierra y Mancha Conquense, Spain

Date	11 June 2025
Region of Focus	Sierra y Mancha Conquense
Authors	Miguel Ángel Navarro (SINNO), Alejo Martín Arias Filippo (SINNO), M. Julián Orden del Pozo (ADESIMAN) & ADESIMAN RAP partners

Executive Summary

The territorial strategy for Sierra y Mancha Conquense integrates rural–urban synergies, digital transformation, renewable energy communities, and circular economy solutions to address depopulation and valorise the region's cultural and environmental heritage. By 2028 the RAP targets a 30 % growth in cultural-heritage tourism receipts, stabilisation of population decline to < −0.5 % per annum, deployment of three smart-territory digital solutions, establishment of at least ten municipal energy-community projects, and implementation of sixteen community composters. The policy mix, anchored in participatory governance and strengthened Agricultural Knowledge and Innovation System (AKIS) services, aligns with the European Green Deal, the Long-Term Vision for Rural Areas (LTVRA 2040), and the New European Bauhaus (NEB).

Key Policy Challenges

- **Depopulation, Ageing, and Gender Imbalance:** Accelerated out-migration, demographic ageing, and a masculinised population undermine labour supply and social cohesion.
- **Fragmented Infrastructure and Digital Divide:** Sparse broadband coverage and limited smart-service uptake obstruct rural-urban connectivity and innovation diffusion.
- **Under-utilised Cultural-Heritage Assets:** Flagship sites such as Segóbriga and Valeria lack coordinated branding, digital integration, and year-round visitor services.
- **Limited Economic Diversification and Skills Gaps:** Over-dependence on primary sectors plus shortages in digital, circular-economy, and tourism-management skills.
- **Climate Vulnerability and Environmental Stress:** Water scarcity, soil degradation, and insufficient waste-management infrastructure threaten sustainability targets.
- **Governance and Finance Constraints:** Multi-level policy fragmentation and limited access to blended finance slow implementation of innovative rural-urban projects.

POLICY RECOMMENDATIONS

- Establish the **Sierra y Mancha Conquense Rural-Urban Synergy & Cultural-Heritage Innovation Hub**, integrating a regional digital marketplace, immersive tourism apps, and collaborative workspaces.
- Deploy the **ADESIMAN Smart Territory** programme: at least three AI-enabled digital solutions (apps, sensors, platforms) and a **Smart Cultural & Entrepreneurship Network** connecting four digitised archeological & cultural sites by 2027.
- Launch an **€80 million Cultural Bio-Circular Fund**: co-financed via CAP-LEADER, PEPAC, ERDF, and private capital, to support community energy projects, circular-economy SMEs, and heritage-driven entrepreneurship.
- Implement sixteen community composters across five municipalities and conduct a circular-economy diagnostic with three pilot actions by 2026.
- Introduce a **refundable 25 % tax credit** for certified low-carbon agritourism, renewable-energy infrastructure, and digital-platform investments.
- Roll out a **Rural Service-Hub Network** providing co-working, tele-medicine, and e-mobility services in all towns > 500 inhabitants by 2028.
- Deliver an **extended training plan**: five certified courses, ≥ 100 participants, and fifteen capacity-building sessions focused on digital marketing, sustainable tourism, and circular bio-economy.
- Create a single digital permitting window and publish an annual **SFSC & Heritage Regulatory Roadmap** to increase investor certainty and reduce approval times by 30 %.

Strategic Alignment

Policy framework	Relevance to RAP
European Green Deal	Advances climate-neutrality via community energy, circular-waste, and low-carbon tourism.
Long-Term Vision for EU Rural Areas 2040	Fosters **strong, connected, resilient, prosperous** rural communities through digital, cultural, and energy initiatives.

CAP Strategic Plan 2023-27 (Spain)	Mobilises LEADER, AKIS, and eco-schemes funding for diversification and generational renewal.
New European Bauhaus	Combines heritage renovation with sustainable, inclusive design for cultural venues and service hubs.
Digital Decade 2030	Bridges rural connectivity gaps and enables data-driven public services and marketplaces.
EU Missions (Climate Adaptation & Soil Deal)	Implements renewable-energy communities and soil-restoration corridors, enhancing resilience.
Smart Specialisation Strategy Castilla-La Mancha 2030	Prioritises agri-food innovation, circular bio-economy, and cultural tourism as regional growth pillars.

Conclusion

A coherent package (centred on cultural-heritage valorisation, digital innovation, renewable-energy communities, and circular-economy practices) can transform the Sierra y Mancha Conquense into a model of sustainable rural-urban integration. Swift execution of the recommended measures will enhance demographic resilience, stimulate green employment, and position the territory to meet EU 2030 climate and digital targets while preserving its unique cultural landscape.

Acknowledgements

This policy brief was prepared by the PoliRuralPlus Spain consortium in collaboration with ADESIMAN, the Government of Castilla-La Mancha, municipal authorities, and local stakeholders. Insights from global PoliRuralPlus deliverables and Stakeholder Multi-Actor Approach reports were incorporated. The PoliRuralPlus project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101136910.

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Annex 8 Accelerating Data-Driven Monitoring of the Regional Development in Vidzeme, Latvia

Date	11 June 2025
Region of Focus	Vidzeme planning region (Latvia)
Authors	Santa Vitola (VPR), Laura Kindzule (VPR), Krišjānis Veitners (VPR)

Executive Summary

The Vidzeme Regional Action Plan (RAP) 1.0 emphasises the transition to a data-driven development model backed by a unified monitoring architecture. A robust Monitoring Framework based on collaborative efforts and data-driven insights will contribute to RAP's vision by continuously tracking the effectiveness of Vidzeme region's strategies. This allows for adaptive planning and fosters trust through measurable progress. By 2028 RAP targets (i) establish Integrated multi-level data governance, creating a harmonized monitoring framework that aligns development indicators, data sources, and monitoring methodologies across VPR departments, municipalities, and national institutions; (ii) deploy AI-driven regional monitoring platform, developing and launching a user-centered, geospatial monitoring tool that transforms regional development assessment from retrospective reporting to predictive analysis; (iii) build regional data analytics capacity, establishing VPR as a center of excellence for regional

development monitoring by training municipal staff in data literacy, and developing competencies in artificial intelligence and geospatial data use across partner organizations.

Key Policy Challenges - Data Management Challenges

- **Data fragmentation** across various state and municipal institutions hinders effective development monitoring.
- The **RAIM (Regional Development Indicators Module) incompletely integrates data**, leading to an incomplete picture of regional development.
- **Limited availability of statistical data** necessary for regional planning at the parish and county level.
- **Lack of municipal capacity** in utilizing digital tools limits accurate and timely decision-making.

Lack of Institutional Cooperation

- **Lack of coordination** among state, regional, and municipal levels complicates the implementation of a unified development policy.
- **Fragmentation of strategic documents** creates differing interpretations of development, impeding effective policy planning.
- **Weak collaboration** among academia, businesses, and public administration limits the spread of innovation and regional economic development.
- **Insufficient alignment** between education and the labor market contributes to skills mismatch and limits economic growth in regions.

Technical and Methodological Limitations

- **Outdated data processing technologies** and manual input methods increase the risk of errors and slow down decision-making.
- **Different data management platforms** hinder automated data exchange between institutions.
- **Inconsistency in indicators and methodologies** impedes the comparison of development trends and the evaluation of policy effectiveness.
- **Insufficient standardization of regional development indicators** complicates long-term policy planning.

Financial and Resource Deficiencies

- **Limited municipal capacity to finance digital infrastructure development** creates uneven monitoring capabilities.
- **Shortage of qualified data analysts** affects the quality of regional development data analysis and policy planning.
- **Prevalence of the shadow economy** results in incomplete official economic data and distorts policy effectiveness.

Normative and Political Instability

- **Frequent legislative changes** hinder establishing long-term monitoring systems and continuity in development strategies.

- **Insufficient data sharing** between institutions increases administrative burden and information duplication.

Lack of Public Engagement

- **Low trust in institutions** limits citizen participation in data provision and regional policy-making.
- **Lack of municipal capacity** in development monitoring processes creates dependence on central government data.
- **Insufficient feedback to residents** reduces public motivation to participate in regional development processes actively.

POLICY RECOMMENDATIONS

- Standardize regional development monitoring infrastructure by implementing unified data collection protocols, mandatory annual reporting cycles, and formal data-sharing agreements across all municipalities and institutions.
- Launch VPR PATHWATCH as a centralized, AI-driven monitoring system with geospatial capabilities and mobile accessibility for real-time territorial analysis.
- Build regional data capacity by creating permanent specialist positions, improving data literacy capacity for municipal staff, and developing AI competencies across partner organizations.
- Strengthen participatory governance by facilitating citizen engagement through mobile app adoption to enable accountability and community-driven development planning.
- Scale excellence and build networks by positioning VPR as the national model for development monitoring and foster Baltic regional development monitoring networks for knowledge exchange.

Strategic Alignment

Policy framework	Applicability to Vidzeme RAP
Regional Policy Guidelines 2021-2027 of the Cabinet of Ministers of the Republic of Latvia	Aligns with priorities on competitiveness, balanced development, and efficient management.
Sustainable Development Strategy 2030 of the Vidzeme Planning Region	Outlines the region's strategic goals, priorities, long-term development directions and the need to monitor them
Vidzeme Planning Region Development Programme 2022-2027	Defines the region's medium-term development priorities, achievable goals and actions aimed at the implementation of the strategic objectives set out in the VPR Sustainable Development Strategy 2030.
Smart Specialisation Strategy (RIS3) for the Vidzeme Planning Region	Targets seven high-value clusters for innovation and export growth.
CAP Strategic Plan 2023-2027 (Latvia)	Channels LEADER, AKIS, and eco-schemes to smart specialisation sectors.

European Green Deal	Supports decarbonisation and circular-economy aims via climate-smart forestry and renewable energy.
Digital Decade 2030	Closes rural connectivity gaps and enables real-time regional dashboards.
EU Cohesion Policy 2021-2027	Provides ERDF, ESF+, and CF co-financing for digital and green infrastructure.
Horizon Europe & Digital Europe	Finances AI pilots, DIH services, and cross-regional knowledge exchange.

Conclusion

Although the specific conclusions discussed in this policy brief are based on research carried out specifically on economic development monitoring, they contain a number of transferable lessons for the overall improvement of the regional development monitoring framework that the Vidzeme Planning Region is working on.

By merging real-time data governance with smart-specialisation investment, Vidzeme can pivot from demographic vulnerability to innovation-driven resilience. Implementing the recommended measures will transform fragmented data assets into strategic intelligence, catalyse high-value clusters, and align the region with European-scale strategies, including EU 2030 digital and climate objectives.

Acknowledgements

This policy brief was prepared by the PoliRuralPlus partner in Latvia - Vidzeme Planning Region, and stakeholders engaged through the Economic Development Quality Monitoring System for the Vidzeme Region outreach study by Ltd. InnoMatrix. The work draws on the Vidzeme RAP draft and accompanying detailed study and user-needs reports. The PoliRuralPlus project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101136910.

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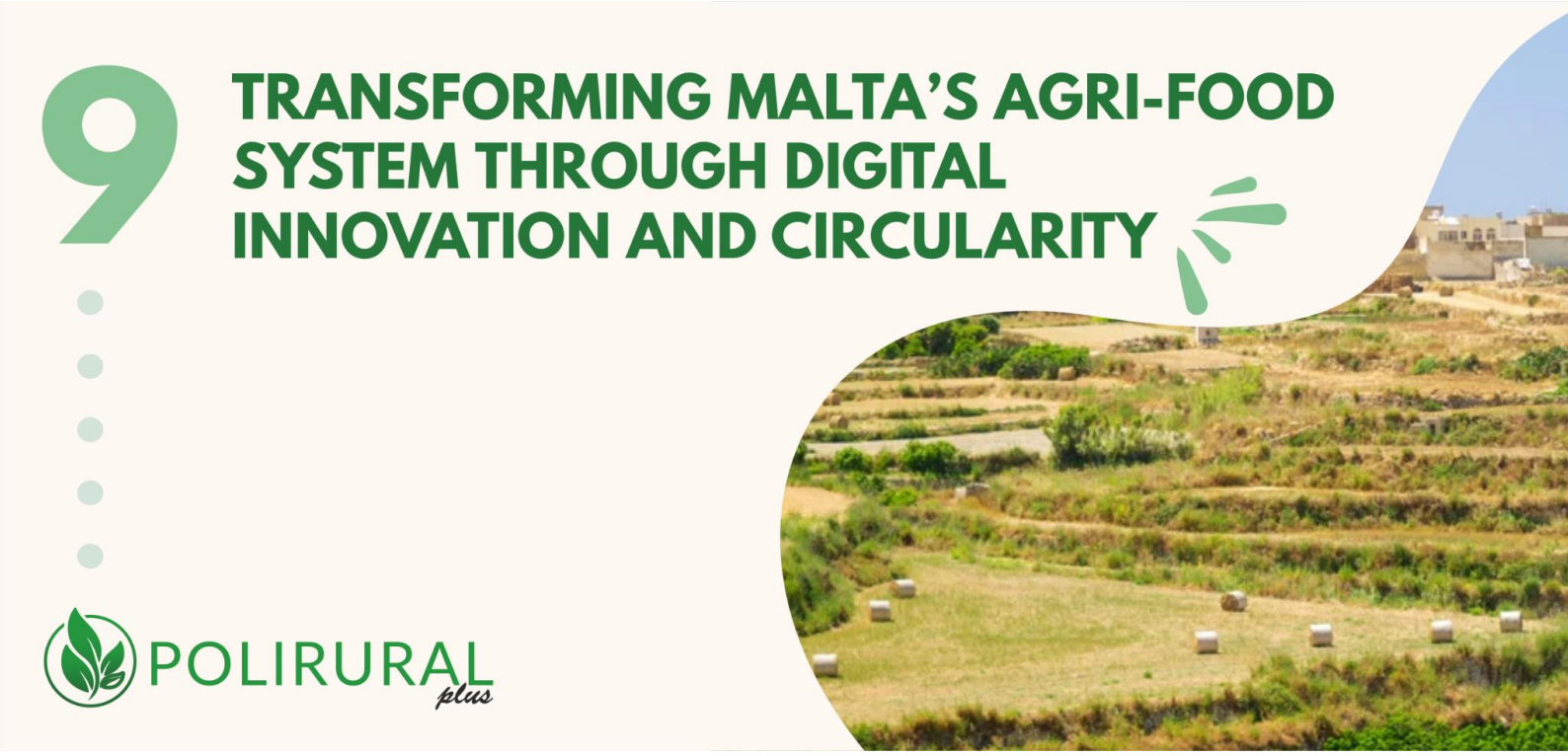
Annex 9 Transforming Malta's Agri-Food System through Digital Innovation and Circularity

Date	11 June 2025
Region of Focus	Malta & Gozo
Authors	Maria Elena Muscat (Acrosslimits), PoliRuralPlus Malta team, Acrosslimits - Malta Partners



Executive Summary

Malta's Regional Action Plan (RAP) outlines a stakeholder needs focused strategy to enhance the resilience, digital readiness, and sustainability of the agri-food ecosystem in Malta and Gozo. Rather than proposing large-scale structural reforms, the RAP focuses on enabling actions (digital skills training, awareness raising, and informal collaboration) that support smallholder farmers, youth, and agri-entrepreneurs in adapting to climate and market challenges.

By 2028, the RAP aspires to contribute to:

- Increasing visibility and market access for locally and sustainably produced food;
- Enhancing digital and entrepreneurial capacity among rural actors;

- Fostering community-based innovation and youth engagement in agri-food value chains.

Grounded in stakeholder outreach, scenario analysis, and participatory feedback, the RAP recommends a suite of enabling measures: informal digital awareness events, basic digital and entrepreneurial skills training, knowledge-sharing via local champions, and the promotion of circular and climate-smart practices. These actions are designed to align with broader EU priorities: including the European Green Deal, Farm to Fork Strategy, and Malta's Digital Strategy 2030.

Key Policy Challenges – Malta & Gozo Agricultural Sector

- **Digital and Skills Divide**
  Low awareness and limited uptake of digital tools (IoT, CRM, AI, e-commerce) due to digital illiteracy and minimal access to training, especially among older and small-scale farmers.
- **Ageing Agricultural Workforce**
  Only 23.7% of agricultural workers are under 45. The sector is heavily reliant on ageing farmers, posing a succession and innovation risk.
- **Youth Disengagement and Brain Drain**
  Young people view agriculture as outdated and economically unviable, resulting in migration toward urban areas or other EU countries. The sector lacks appealing career pathways and agriculture digital entrepreneurship support. Young farmers face discouragement from entering the sector, citing financial instability, outdated perceptions of farming, and a lack of support structures. Education, mentorship, and digital entrepreneurship programs are essential to reversing this trend.
- **Low Adoption of Sustainable Practices**
  Awareness and integration of climate-smart, circular, and sustainable agriculture are minimal. Water scarcity and environmental stressors further pressure production capacity.
- **Marketing and Value Chain Challenges**
  Smallholders face limited branding capacity, weak value chains, and low integration with agri-tourism or digital commerce platforms.
- **Limited Access to Capital and Innovation Support**
  Farmers struggle with bureaucratic funding mechanisms, lack of tailored grants for digitisation, and limited public-private innovation partnerships.
- **Weak Institutional Coordination**
  Fragmented responsibilities across ministries and agencies (agriculture, digitalisation, environment) result in misaligned policies and under-leveraged support structures.
- **Land Scarcity and Fragmentation**
  With average farms under 1-hectare, arable land is scarce due to high population density and urban encroachment. Tenure insecurity discourages long-term investment and modernization.
- **Food Import Dependency and Fragile Food Security**
  Overreliance on imported produce (especially fresh food) exposes the country to external market shocks, increasing food insecurity risks.
- **Underutilised Stakeholder Potential**
  Any stakeholders (e.g., youth organisations, digital innovation hubs, social enterprises) find it hard to fully engage or and collaborate with others or get structurally involved in regional governance.

Young farmers face discouragement from entering the sector, citing financial instability, outdated perceptions of farming, and a lack of support structures. Education, mentorship, and digital entrepreneurship programs are essential to reversing this trend.

POLICY RECOMMENDATIONS

- **Promote Exposure to Smart and Digital Tools in Agriculture**
  Support informal, hands-on demonstration events and awareness sessions in Malta and Gozo that showcase practical applications of digital technologies (e.g., IoT, traceability, e-commerce) for smallholders and rural entrepreneurs.
- **Facilitate Rural Digital Skills Training**
  Coordinate low-barrier training sessions targeting farmers, youth, and rural SMEs to improve basic digital literacy, online marketing, and use of decision-support tools, in collaboration with existing local actors and training providers.
- **Encourage Participation in EU-Funded Opportunities**
  Guide rural stakeholders to existing national and EU funding schemes (e.g., Digitalise Your SME, CAP eco-schemes, Business Enhance) and raise awareness of accessible support for digital and circular economy initiatives.
- **Showcase Circular and Sustainable Practices**
  Share examples of small-scale regenerative practices such as hydroponics, composting, and smart water use through brief, peer-led learning activities. Emphasise knowledge exchange over formal adoption.
- **Support Youth Engagement through Innovation Events**
  Amplify youth-targeted initiatives such as the MAYA ideathon through the Mobilise call by connecting them to agriculture, creative industries, and digital innovation themes, helping to spark curiosity and informal project incubation.
- **Foster Informal Multi-Stakeholder Dialogue**
  Encourage roundtable-style discussions with local actors to surface barriers and opportunities in digital and sustainable rural development. Provide space for open exchange rather than formal planning.
- **Highlight Local Champions and Peer Learning**
  Identify and gently support community actors already experimenting with digital or sustainable practices. Use storytelling and peer recognition to inspire interest among their networks.
- **Disseminate Tools and Insights from EU Projects**
  Share user-friendly summaries and entry points to EU digital tools (e.g., MAATool, smart specialisation platforms), helping rural actors become aware of and engage with broader innovation ecosystems.

Strategic Alignment

Policy framework	Relevance to Malta RAP
European Green Deal & Farm-to-Fork	Supports decarbonisation, circularity, and sustainable consumption through local food systems.
CAP Strategic Plan 2023-27 (Malta)	Mobilises EAFRD, LEADER, and AKIS measures for modernisation and generational renewal.

Digital Malta Strategy 2030	Bridges digital divides and accelerates IoT and data-driven agriculture.
Long-Term Vision for EU Rural Areas 2040	Delivers vibrant, connected island communities via Smart Villages and circular economy.
New European Bauhaus	Integrates sustainability, aesthetics, and inclusion in food hubs and agri-tourism venues.
Horizon Europe & Digital Europe	Funds AI pilots, DIH services, and cross-regional knowledge exchange.
Smart Specialisation Strategy Malta 2021-27	Targets agri-tech, blue and circular bio-economy as competitive niches.

Conclusion

A coherent enabling approach, focused on digital skills development, circular economy awareness, and stakeholder dialogue, can help strengthen Malta's agri-food ecosystem as a more resilient, connected, and future-ready sector. While the scale of intervention remains modest, timely actions to build local capacity and improve access to digital tools can contribute to greater food security, youth engagement, and alignment with EU 2030 digital and climate goals.

Acknowledgements

This policy brief was prepared by AcrossLimits as the coordinating partner for Pilot 9 under the PoliRuralPlus project, taking into consideration the contributions and input from other stakeholders involved along the way. This is based on the Malta Regional Action Plan (Version 1, 20 June 2025), while it also draws on the AgriFusion stakeholder outreach report. The PoliRuralPlus project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101136910.

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Annex 10 AI-Enabled AKIS, FAIR Data and Carbon-Smart Food Systems for Resilient Rural–Urban Europe

Date	11 June 2025
Target audience	European Commission (DG AGRI, DG REGIO, DG CONNECT, DG RTD, DG CLIMA, DG SANTE)
Origin	PoliRuralPlus Consortium (Analysis of Nine Pilot Regions & Cross-WP Findings)

Executive Summary: From Vision to Execution

PoliRuralPlus pilot actions conducted across **nine** European regions, from **County Monaghan (Ireland), Slovakia, Central Greece, Puglia (Italy), Mallusjoki (Finland), the Czech–Bavarian border region, Sierra y Mancha Conquense (Spain), Vidzeme (Latvia),** and **Malta**, affirm the strategic value of AI-enhanced Agricultural Knowledge and Innovation Systems (AKIS 4.0), FAIR-by-design rural data spaces, and localised, carbon-smart food corridors.

These regional initiatives confirm that digital tools can substantially support rural transformation in line with the European Green Deal, Digital Decade, and Long-Term Vision for Rural Areas. While digital tools played a central role in these pilots, they were deployed in support of broader transformations: such as landscape restoration, community-led food systems, eco-tourism models, and youth engagement strategies that reflect each region's socio-ecological context. However, execution has also revealed a shared operational bottleneck: the intensive

human effort required to curate, structure, and translate local data into formats that large language models (LLMs) and digital tools like **JackDaw** and the **PoliRuralPlus GPT Advisor** can meaningfully process.

AI systems, though technically advanced, remain highly dependent on the quality and structure of the data they ingest. Across all pilots, the manual nature of collecting, annotating, and contextualising rural knowledge proved a major barrier in terms of labour, time, and institutional capacity. This "hidden infrastructure" of human effort remains under-recognised in most digital policy frameworks, yet it is foundational for enabling trustworthy, inclusive, and actionable AI services in rural contexts.

Execution Challenges Observed Across Pilots

- **Labour-Intensive AI Training**: Feeding rural, multilingual, and domain-specific data into PoliRuralPlus AI systems required months of manual work: annotation, formatting, and validation. These essential efforts are rarely funded or resourced at scale. This labour is often layered atop existing responsibilities in rural innovation hubs, advisory services, or cultural associations, underscoring the need to integrate digital efforts into holistic rural development frameworks.
- **Uneven Data Literacy and Digital Capacity**: Despite the availability of digital platforms, many rural actors faced challenges in contributing due to insufficient digital skills and support structures. Moreover, digital exclusion frequently overlaps with demographic and geographic challenges (such as population ageing, weak mobility systems, and poor access to education and healthcare), highlighting the necessity of addressing ICT capacity within a wider rural inclusion agenda.
- **Complex Data Governance**: Achieving FAIR compliance across nine pilots required navigating fragmented legal frameworks, inconsistent data formats, and language-specific metadata protocols. Beyond digital governance, many regions lacked frameworks to align local food policy, landscape management, or tourism strategy with data ecosystems, pointing to a structural gap between data tools and multi-sectoral planning.
- **AI–Policy Disconnect**: While EU strategies promote AI readiness, regional stakeholders lacked access to harmonised standards for integrating LLMs into public knowledge infrastructures. This gap was especially evident in regions where AI was expected to contribute to rural depopulation strategies, sustainable land use planning, or LEADER action plans, yet lacked a recognised role within those instruments.
- **Stakeholder Fatigue**: Repeated engagement requests through dashboards, foresight platforms, and co-creation tools led to consultation fatigue in several areas, diminishing long-term participation. Consultation overload often coincided with other participatory demands (linked to Natura 2000, CAP reform, or climate adaptation planning) making it essential to streamline AI-related engagement into existing rural co-governance routines.
- **Disparate Language Ecosystems**: Tools such as JackDaw required custom linguistic tuning for diverse EU languages and dialects, necessitating expert human input for reliable translation and terminology alignment. This challenge affected not only AI systems but also policy documentation, training materials, and foresight narratives, which often lacked formal translations into local idioms or minority languages critical for cultural engagement.
- **Sectoral Limitation of Tools**: While agriculture was a focal domain, several pilots underscored the need to extend digital support to other rural services such as mobility, healthcare, education, and housing. AI applications must increasingly address rural mobility services, remote healthcare, cultural heritage management, and educational access: key domains identified across pilots where digitalisation remains underdeveloped.

POLIRURAL plus

STRATEGIC RECOMMENDATIONS FOR THE COMMISION

1. **Fund the Human Layer of AI**
   Recognise and resource the expert labour required to make rural data usable for AI: especially tasks like ontology alignment, contextual tagging, and metadata validation. Include a “Data Curation Line” in EU AI project budgets.
2. **AI Readiness Scores for Rural Regions**
   Establish a standard metric framework to assess regional preparedness for AI integration: capturing both digital infrastructure and human/system capacity.
3. **AI-Ready FAIR Templates**
   Provide EU-wide, domain-specific data standards and open APIs to facilitate rapid FAIR data adoption in agriculture, ecosystem services, tourism, and public administration. Templates should reflect not only sector-specific technical parameters but also thematic domains identified in regional plans, such as local food governance, energy cooperatives, and cultural programming, ensuring that digital resources align with real-world rural priorities.
4. **Multilingual AI Sandbox Funding**
   Fund fine-tuning of LLMs and digital advisors in under-resourced European languages (e.g., Maltese, Latvian, regional dialects), ensuring inclusiveness and accessibility across member states.
5. **Digital Steward Training Programme**
   Support a new category of digital professionals embedded in rural institutions: able to mediate between technical developers and local users, and foster sustainable system use.
6. **Integration of Co-Creation Platforms like MAATool**
   Ensure tools such as the Multi-Actor Approach Tool (MAATool) are embedded into AI data pipelines, so stakeholder inputs translate directly into usable system knowledge.
7. **Strengthen AKIS Integration in Digital Ecosystems**
   Facilitate stronger alignment between AI tools and Agricultural Knowledge and Innovation Systems (AKIS), involving certified advisers and knowledge hubs. AKIS entities are also well-placed to connect AI initiatives to broader missions including biodiversity conservation, vocational education, and community resilience, thereby reinforcing the multifunctional role of rural knowledge system, and vocational centres as core contributors and beneficiaries.
8. **Anchor AI in Local Innovation Infrastructures**
   Support co-location of digital services with territorial structures such as living labs, LEADER groups, or rural demonstration sites to enhance ownership, localisation, and practical deployment.
9. **Support Smart Specialisation Alignment**
   Promote digital solutions that are tailored to regional smart specialisation priorities and local ecological, demographic, and economic conditions.
10. **Use AI for Real-Time Policy Feedback**
    Deploy AI-supported dashboards to generate continuous, fine-grained policy feedback at the regional level, improving implementation responsiveness and stakeholder accountability.

Conclusion

The digital transformation of rural Europe is not a purely technical project: it is a governance and capacity-building endeavour. The PoliRuralPlus experience across nine regions confirms that AI can amplify local knowledge, facilitate real-time policy support, and accelerate sustainability transitions: but only when properly rooted in territorial reality. The success of this transformation will depend not only on algorithms, but on the people, institutions, and frameworks that teach those systems what matters in place-based development. The future of rural Europe will be shaped by how well digital tools support, *not replace*, local development processes rooted in identity, landscape, cooperation, and knowledge stewardship. AI must be positioned as an amplifier of these values, not an external substitute.

Acknowledgement

The PoliRuralPlus project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101136910.