

MARGISTAR

Follow-Up COST

Connect on Agriculture

MARGISTAR COST Action

Transforming marginalised mountainous areas towards their green, digital, and healthy futures

Theo Lynn
Irene Christoforidi
Andrej Ficko
May 2025



Table of Contents

1.	About MARGISTAR	1
2.	Key Research Gaps & Emerging Topics You See Underfunded or Missing in EU R&I Calls	1
3.	Policy Relevance (how the topic of your action fits with EUu priorities, including sustainability, biodiversity, etc, and therefore needs sufficient policy and funding support)	3
4.	Impact on End Users (Farmers, Industry, Citizens) & How to Engage with Them	5
4.1.	AGRICULTURAL LIVELIHOODS: BUILDING SUSTAINABLE AND RESILIENT AGRICULTURAL FUTURES.....	5
4.2.	CITIZENS: STRENGTHENING TRUST, SOCIAL INCLUSSION, AND DEMOCRATIC PARTICIPATION	8
4.3.	INDUSTRY: UNLOCKING RURAL INNOVATION & ECONOMIC DIVERSIFICATION	8
5.	Conclusion	10

1. About MARGISTAR

MARGISTAR (CA21125) is a European forum for revitalisation of marginalised mountain areas (MARGISTAR). It is a forum for knowledge synthesis, exchange, and co-creation that brings together scientists, stakeholders, and policymakers to collaboratively reflect on the challenges for sustainability in mountainous regions while moving progressively towards real-world solutions. Mountainous areas are characterised by disparity, poorer territorial cohesion, unbalanced use and conservation of ecosystem services, rich and exploited natural resources, and marginalisation. The key challenge for MARGISTAR is to foster the transformation strategies and innovation processes for the revitalisation of these areas and, specifically, to synthesise and co-create alternative and effective pathways to sustainability.

There is an urgent need to correct structural disparities in EU R&I investment, which overwhelmingly favours urban and industrial centres, leaving remote regions with limited access to research funding, digital infrastructure, and economic diversification initiatives. While past EU programmes have acknowledged rural cohesion challenges, there has been insufficient place-based research to support tailored solutions for European regions characterised by their peripheral status, and in particular, highland, Arctic, and island economies. This oversight reinforces resilience traps, where communities remain stuck in unsustainable or low-opportunity pathways despite adaptive efforts. In some cases, resilience erosion is necessary to break these cycles and enable transformative change toward long-term viability. To prevent depopulation, economic stagnation, and biodiversity degradation, FP10 must prioritise territorially focused R&I that fosters positive resilience and innovation-driven growth in these regions. MARGISTAR proposes a dedicated research stream under FP10 that integrates local knowledge with cutting-edge science to develop pathways out of negative resilience and establish sustainable, future-proof economies in marginalised areas.

2. Key Research Gaps & Emerging Topics You See Underfunded or Missing in EU R&I Calls

MARGISTAR's mission is closely aligned with several core EU strategies, including the European Green Deal, the EU Biodiversity Strategy, the Rural Vision for 2040, and the Digital Decade programme and the associated digital transition agenda. However, to ensure these policies are fully realised in marginalised rural territories, greater emphasis must be placed on regional inclusion and tailored funding mechanisms. MARGISTAR's network and engagement toolkit provides a structured and participatory approach to addressing the challenges faced by marginalised rural communities. By enabling communities to articulate their vision for sustainable development, identify barriers, and co-develop pathways to overcome these challenges, this initiative aligns directly with the aforementioned policy frameworks.

One of the most pressing issues in EU rural policy is the implementation gap—where top-down policies, despite being well-intentioned, fail to resonate with or effectively address the place-based needs of rural and peripheral regions. Many communities feel disconnected from decision-making processes, leading to a lack of ownership, disengagement, and even resistance to sustainability and digital transition initiatives. MARGISTAR's bottom-up engagement model directly addresses this gap by ensuring that rural actors are not only consulted but actively shaping research, policy, and innovation.

The EU's Cohesion Policy and Rural Development Agenda prioritise inclusive governance, participatory decision-making, and multi-actor engagement, yet trust erosion remains a major barrier in marginalised rural areas where communities often feel disconnected from national and EU policy processes. Many rural actors view external interventions, including EU-funded projects, with scepticism, particularly in regions experiencing socio-political fragmentation, migration tensions, and economic disparities. MARGISTAR's toolkit provides a structured, replicable model that not only integrates local actors into regional development strategies but also rebuilds trust through co-created solutions, transparent decision-making, and long-term policy responsiveness. By enabling communities to identify barriers, articulate their vision, and track policy follow-through, the toolkit fosters local ownership and accountability, ensuring that EU-funded programmes such as LEADER, Horizon Europe, and Interreg are not only effective but also welcomed. Strengthening trust is crucial to overcoming resistance to sustainability policies, digital transformation, and economic diversification, making MARGISTAR's approach essential to ensuring that EU rural revitalisation efforts are inclusive, resilient, and truly transformative.

As the EU accelerates climate mitigation and adaptation efforts, particularly in sectors such as agriculture, forestry, and land management, rural communities must be central to the design and implementation of these policies. Many climate-related policies face resistance or low uptake due to a lack of locally tailored approaches. MARGISTAR's engagement framework ensures that communities define their own sustainability transition pathways, integrating local knowledge, traditional land-use practices, and technological innovations in a way that is feasible, socially accepted, and economically viable.

Trust is both essential and fragile in marginalised rural communities, where historical exclusion, economic struggles, and demographic shifts have fostered deep-rooted distrust across social and institutional relationships. In many rural areas, tensions arise between long-term residents and incoming populations—whether agricultural labour migrants, displaced persons, or urban-to-rural newcomers—leading to competition over resources, cultural friction, and social fragmentation. Without mechanisms for dialogue and cohesion, such divisions can weaken community resilience and obstruct collective development efforts. At the same time, many rural regions perceive neglect from regional and national governments, citing inconsistent funding, urban-biased policies, and exclusion from major development strategies such as climate action, digital

transformation, and sustainability transitions. This perceived marginalisation fuels disengagement and resistance to policies affecting rural livelihoods. In turn, eroding trust in institutions, governance, and perceived outsiders can drive political shifts towards extremism, as disenfranchised groups seek alternatives in populist or nationalist movements that promise local autonomy and protection of traditional ways of life. Research is urgently needed to examine the dynamics of trust and distrust in rural settings and explore pathways for rebuilding confidence through inclusive governance, transparent communication, and place-based policymaking. Engaging rural communities as active partners in innovation—rather than passive policy recipients—can foster trust. Approaches such as community-led research, citizen science in environmental monitoring, and local innovation hubs for climate-smart agriculture offer promising strategies to bridge trust gaps. Without targeted efforts to repair trust, even well-intended sustainability policies risk failure due to resistance, disengagement, or institutional disconnect, ultimately hindering climate resilience and rural regeneration.

Peripherality further compounds these trust issues, as geographical remoteness often translates into political, economic, and informational isolation. Limited infrastructure, weak connectivity, and lack of direct engagement with decision-makers can reinforce feelings of abandonment, weakening local buy-in for national and EU-level strategies. This is particularly evident in climate change adaptation, smart agriculture, and land-use planning, where rural communities may perceive sustainability measures as top-down impositions that fail to respect local knowledge, economic realities, and land-use traditions. Mistrust in science can also emerge when technological interventions—such as smart agriculture, biodiversity protection, or emissions reduction policies—are introduced without participatory governance or clear benefits for local actors. Rural communities often feel excluded from the knowledge-production process, making them more susceptible to misinformation, climate scepticism, and rejection of innovation.

3. Policy Relevance (how the topic of your action fits with EU priorities, including sustainability, biodiversity, etc, and therefore needs sufficient policy and funding support)

MARGISTAR's mission is closely aligned with several core EU strategies, including the European Green Deal, the EU Biodiversity Strategy, the Rural Vision for 2040, and the Digital Decade programme and the associated digital transition agenda. However, to ensure these policies are fully realised in marginalised rural territories, greater emphasis must be placed on regional inclusion and tailored funding mechanisms. MARGISTAR's network and engagement toolkit provides a structured and participatory approach to addressing the challenges faced by marginalised rural communities. By enabling communities to articulate their vision for sustainable development, identify barriers, and co-develop pathways to overcome these challenges, this initiative aligns directly with the aforementioned policy frameworks.

One of the most pressing issues in EU rural policy is the implementation gap – where top-down policies, despite being well-intentioned, fail to resonate with or effectively address the place-based needs of rural and peripheral regions. Many communities feel disconnected from decision-making processes, leading to a lack of ownership, disengagement, and even resistance to sustainability and digital transition initiatives. MARGISTAR’s bottom-up engagement model directly addresses this gap by ensuring that rural actors are not only consulted but actively shaping research, policy, and innovation.

The EU’s Cohesion Policy and Rural Development Agenda prioritise inclusive governance, participatory decision-making, and multi-actor engagement, yet trust erosion remains a major barrier in marginalised rural areas where communities often feel disconnected from national and EU policy processes. Many rural actors view external interventions, including EU-funded projects, with scepticism, particularly in regions experiencing socio-political fragmentation, migration tensions, and economic disparities. MARGISTAR’s toolkit provides a structured, replicable model that not only integrates local actors into regional development strategies but also rebuilds trust through co-created solutions, transparent decision-making, and long-term policy responsiveness. By enabling communities to identify barriers, articulate their vision, and track policy follow-through, the toolkit fosters local ownership and accountability, ensuring that EU-funded programmes such as LEADER, Horizon Europe, and Interreg are not only effective but also welcomed. Strengthening trust is crucial to overcoming resistance to sustainability policies, digital transformation, and economic diversification, making MARGISTAR’s approach essential to ensuring that EU rural revitalisation efforts are inclusive, resilient, and truly transformative.

As the EU accelerates climate mitigation and adaptation efforts, particularly in sectors such as agriculture, forestry, and land management, rural communities must be central to the design and implementation of these policies. Many climate-related policies face resistance or low uptake due to a lack of locally tailored approaches. MARGISTAR’s engagement framework ensures that communities define their own sustainability transition pathways, integrating local knowledge, traditional land-use practices, and technological innovations in a way that is feasible, socially accepted, and economically viable.

The EU Digital Agenda and Smart Village initiative aim to bridge the digital divide between urban and rural areas. However, many rural actors, particularly in marginalised mountainous areas, struggle with technological access, digital literacy, and a lack of locally relevant applications. EU digital policy is often based on data that is not representative of these areas. For example, DESI and Eurostat draw their digital business data from businesses with over 10 employees whereas remote rural areas particularly in mountainous, arctic and island communities are characterised by micro-SMEs with less than 10 employees. MARGISTAR’s toolkit includes new holistic ways of measuring the digital divide and supports community-driven digital innovation by helping rural stakeholders identify the most appropriate digital tools for their needs, whether in

precision agriculture, remote energy management, or e-governance. This ensures that rural digital strategies are demand-driven rather than imposed from above.

Depopulation is one of the most pressing challenges facing marginalised mountainous regions, with youth outmigration, ageing populations, and economic stagnation leading to severe social and economic consequences. While some technological innovations can help slow or even reverse rural depopulation, long-term success depends on integrating non-technological strategies, such as improving governance, enhancing rural services, and fostering inclusive local economies. The EU must prioritise dedicated R&I investment in both high-tech and community-driven solutions to ensure that depopulated mountain regions become attractive, resilient, and economically viable places to live and work.

4. Impact on End Users (Farmers, Industry, Citizens) & How to Engage with Them

MARGISTAR, its engagement strategies, and its FAIRWAY platform provides a bridge between scientific research, policy development, and local implementation, ensuring that research translates into real-world benefits for rural towns, farmers, foresters, fishers, rural SMEs, and local policymakers. Its impact is multifaceted, addressing environmental sustainability, economic resilience, and social cohesion.

4.1. Agricultural Livelihoods: Building Sustainable and Resilient Agricultural Futures

Marginalised rural regions sustain a diverse range of primary industries, including farming, small-scale fisheries, forestry, and other agro-ecological livelihoods, which are critical for food security, biodiversity conservation, and economic resilience. However, these sectors face severe structural challenges, including climate change, market volatility, regulatory burdens, and limited access to technology and infrastructure. EU R&I funding has historically prioritised large-scale industrial models, leaving smallholder farmers, fishers, and foresters with inadequate support for innovation, digital transformation, and sustainable adaptation strategies. Without tailored, place-based research investment, these industries risk stagnation, resource depletion, and economic marginalisation, undermining the EU's goals for rural resilience, biodiversity protection, and climate-smart growth.

The research gaps identified—including resilience erosion, AI-driven solutions, and economic diversification beyond tourism—directly impact the livelihoods of farmers, fishermen, and foresters by shaping their access to markets, their ability to adapt to climate change, and their participation in the green and digital transitions. Ensuring greater EU investment in non-R&D innovation for micro-SMEs, precision agriculture, AI-assisted fisheries management, and sustainable forest monitoring, amongst others, will be key to supporting long-term economic and environmental sustainability.

These stakeholders face a number of challenges in the context of research gaps identified above, including

- **Limited Access to and Competence with AI, Digital Tools, and Smart Technologies** – farmers struggle with digital tools more generally but are particularly slow to adopt and use digital innovations such as sophisticated AI-driven pest and disease monitoring, precision irrigation, and digital marketplaces, which are often designed for large-scale industrial agriculture rather than smallholder systems. Fishermen are at arms-length or lack cost-effective AI-assisted monitoring systems for sustainable stock management, bycatch reduction, and marine conservation compliance. Citizens and foresters require AI-powered satellite tracking for early detection of forest diseases, fire risk, and invasive species, which remain underfunded in EU digital policy frameworks.
- **Economic Fragility and Market Barriers** - Micro-scale and cooperative-based producers face significant challenges in accessing sustainable finance, fair-trade markets, and value-added processing opportunities. Supply chain and logistics barriers prevent many rural primary producers from competing with urban-based industrial agribusinesses and multinational food systems. Forestry economies lack investment in sustainable timber processing, while fisheries struggle with seasonal instability, market access for eco-certified products, and in some cases fishing moratoria.
- **Regulatory Complexity and Trust Gaps** - Farmers often view sustainability policies as imposing financial and administrative burdens without providing sufficient support for implementation. Small-scale fishers face complex, industrially-biased regulatory or national frameworks that do not align with their traditional, community-based fishing practices. Foresters experience conflicting policy priorities between conservation mandates and economic viability, which erodes trust in government-led land-use planning.
- **Climate Vulnerability and Environmental Pressures** - Extreme weather, biodiversity loss, and invasive species threaten farm productivity, fishery stocks, and forest ecosystems, requiring urgent investment in adaptive and nature-based solutions. The EU's climate action frameworks often fail to integrate local ecological knowledge and community-based conservation strategies, which are essential for ecosystem restoration and resilience-building. Additionally, applied and multidisciplinary research on neglected and underutilised plants presents a promising avenue for diversifying agricultural systems and enhancing climate resilience. These crops, often well-adapted to marginal environments, can serve as sustainable alternatives to mainstream monocultures, providing new opportunities for economic diversification, food security, and ecosystem restoration in rural regions.

To ensure farmers, fishermen, and foresters can fully participate in the EU's climate and digital transitions, FP10 must prioritise translational research and integrate targeted engagement strategies that empower rural producers as co-creators of innovation and sustainability solutions (rather than users or implementors of externally developed innovations), some of which may involve non-R&D innovation:

- **Co-Designed Knowledge Systems** - Farmers, foresters, and fishers must be actively involved in research and policy development, ensuring that scientific and technological innovations align with their local realities. MARGISTAR's engagement toolkit provides a structured, replicable model for supporting stakeholder-led innovation hubs, participatory R&I projects, and farmer-fisher-forester learning networks.
- **Digital Inclusion and Locally Adapted AI Solutions** - AI and smart technologies must be tailored to small-scale and mixed-use rural landscapes, ensuring that participatory science, precision agriculture, fisheries management, and forest monitoring tools are scalable, cost-effective, and accessible. Funding must prioritise micro-SMEs and cooperatives, supporting digital literacy training, data sovereignty initiatives, and rural AI innovation labs.
- **Citizen Science and Participatory Research in Sustainability Transitions** - Farmer-led biodiversity and soil health monitoring, community-based fisheries stock assessments, and local forestry climate impact tracking can generate place-based, real-time environmental data to inform EU climate adaptation policies. Incentivising participatory conservation and monitoring programmes can enhance local ownership and trust in sustainability initiatives.
- **Trust-Building in Sustainability Governance** - Rural stakeholders often distrust EU climate and sustainability policies, viewing them as bureaucratic burdens rather than collaborative opportunities. Transparent policy co-creation mechanisms, such as rural policy labs and producer-led governance councils, are essential for restoring trust, securing policy uptake, and reducing resistance to digital and green transitions.
- **Rural-Specific Market and Supply Chain Innovations** - Fair-trade and value-added product development initiatives must be prioritised to strengthen the economic viability of rural primary industries. Policy incentives for sustainable agroforestry, bio-based materials, and climate-friendly fisheries practices will be key to ensuring rural economies remain competitive in emerging green markets.

4.2. Citizens: Strengthening Trust, Social Inclusion, and Democratic Participation

Citizens in marginalised rural areas often experience economic insecurity, social fragmentation, and political alienation. Demographic decline, youth outmigration, and tensions between long-term residents and migrant populations further weaken social cohesion. Additionally, peripherality creates informational isolation, contributing to mistrust in government and science, climate scepticism, and resistance to digital transformation.

The research gaps around trust erosion, participatory governance, and misinformation resilience directly affect citizens' engagement with EU policies. If rural populations feel excluded from digital and sustainability transitions, policies will face low uptake, disengagement, and, in some cases, political backlash.

Engagement strategies may include:

- Place-based participatory governance: Establishing citizen-led policy labs where communities can engage in decision-making ensures that EU policies are grounded in local realities. Furthermore, there is a need for research on the practice and efficacy of place-based procurement policies that benefit local suppliers and services in marginalised areas.
- Trust repair through inclusive innovation: Many rural citizens distrust scientific and technological interventions, particularly in climate action, smart agriculture, and digital governance. Research must explore mechanisms for rebuilding trust through transparent communication, community knowledge-sharing, and participatory science initiatives.
- Digital inclusion to combat peripherality: Geographic isolation contributes to misinformation vulnerabilities and digital exclusion. FP10 must fund rural-specific digital literacy programmes, including AI-assisted citizen engagement tools, rural data sovereignty initiatives, and accessible e-governance platforms.
- Strengthening rural resilience through social cohesion: Strategies to address migration tensions and economic inequalities—such as multicultural community forums, rural social enterprises, and cooperative economic models—must be embedded in EU R&I frameworks.

4.3. Industry: Unlocking Rural Innovation & Economic Diversification

Industry in marginalised rural areas is predominantly composed of sole traders, micro-SMEs, and traditional primary sectors such as forestry, fisheries, and small-scale mining. These industries face significant barriers to digital transformation, sustainability

adaptation, and value chain integration. The EU's current R&I focus on high-tech urban clusters has resulted in limited investment in rural industrial innovation, restricting the potential for rural-based bioeconomies, sustainable forestry, and resource-efficient production models.

The identified research gaps—including AI in forestry and fisheries, renewable resource management, and sustainable low-impact mining—are crucial for rural industries seeking to transition towards more resilient and competitive business models. Without dedicated funding, industries in these regions risk falling behind in the green and digital transition, further exacerbating economic marginalisation.

Engagement strategies may include:

- **Scaling rural micro-SMEs through digital inclusion:** Current EU digital policy does not reflect the structure of rural economies, as data sources such as DESI focus only on businesses with over 10 employees. FP10 must develop digital funding streams that specifically support micro-enterprises, including sole traders and cooperatives.
- **AI and automation for primary industries:** Investment in translational cost-effective AI applications for regulatory/reporting compliance, precision forestry, predictive fisheries management, and bio-based rural industries can help bridge the productivity gap between rural and urban industrial sectors.
- **Sustainable resource management for economic resilience:** Forestry, fisheries, and small-scale mining must be integrated into circular economy strategies, ensuring value-added processing, reduced environmental impact, and value chain and market diversification.
- **Place-based economic diversification** – to attract and retain populations, remote rural communities including mountain economies must offer diverse employment opportunities beyond agriculture and tourism. Research is needed on successful strategies for encouraging small-scale rural entrepreneurship through cooperatives, social enterprises, and circular economy models, supporting rural creative industries (e.g., crafts, cultural tourism, eco-tourism, heritage restoration) to attract young professionals and artists, repopulating abandoned villages through social housing schemes, land grants, and financial incentives for new settlers, and attracting inward investment whether from foreign-owned entities or satellite offices of domestic entities.
- **Addressing Social and Demographic Barriers** - Strengthening multi-generational communities by supporting child-friendly policies (rural schools, childcare subsidies, cultural programmes). Integrating migrants and newcomers into depopulated areas through multi-stakeholder dialogue, housing incentives, and skills-matching programmes. Reviving traditional knowledge systems (e.g.,

pasture management, local crafts) alongside modern innovations to promote cultural heritage and identity-based rural regeneration.

- Policy and Governance Reforms - weak governance structures and urban-centric decision-making have contributed to depopulation. Trust-building and local autonomy are crucial for slowing migration. Decentralising regional decision-making and strengthening mountain governance bodies to ensure rural voices influence EU and national policies. Developing fiscal incentives (e.g., tax breaks, subsidies) for young families, start-ups, and return migrants willing to invest in mountain economies. Cross-border rural integration policies that allow depopulated regions to pool resources across national borders, improving labour mobility and economic cooperation.
- Trust-building in industry sustainability transitions: Many rural businesses perceive green policies as regulatory burdens rather than opportunities. A participatory approach to sustainability governance is critical for securing business buy-in and ensuring just transitions.

5. Conclusion

FP10 must embed rural, highland, Arctic, and island innovation into EU research priorities by integrating:

- Dedicated research funding for place-based territorial adaptation, economic diversification, and climate resilience in marginalised rural regions.
- Participatory governance frameworks, ensuring that rural communities shape digital and sustainability policies.
- Translational Smart digital and AI-driven rural transformation, tailored to smallholder agriculture, fisheries, and forestry.
- Targeted interventions to address depopulation, strengthening economic attractiveness, digital inclusion, and rural entrepreneurship through technological and non-technological means.
- Establish a dedicated EU-wide Rural & Mountain Research Observatory within the European Research Area (ERA) to ensure that rural expertise informs policy decisions and supports cross-regional research partnerships between rural innovation centres, fostering knowledge exchange between mountainous, Arctic, and island regions.
- Develop a European Network of Rural Living Labs, where communities test and refine policy innovations in real-world settings before full-scale implementation.

- Fund research on trust-building and social cohesion in marginalised rural areas that supports rural innovation, exploring how participatory governance, citizen science, and multi-actor engagement models can repair trust erosion between rural communities, policymakers, and scientific institutions, ensuring greater acceptance and uptake of EU sustainability and digital transition policies. This may include a periodic international trust barometer survey and an associated panel for more nuanced and psychologically valid monitoring of trust, enabling comparative inter-regional, longitudinal analysis of trust issues across urban, rural, and sparsely populated areas within the EU.

This report is based upon work from COST Action MARGISTAR, CA21125, supported by COST (European Cooperation in Science and Technology).

COST (European Cooperation in Science and Technology) is a funding agency for research and innovation networks. Actions help connect research initiatives across Europe and enable scientists to grow their ideas by sharing them with their peers. This boosts their research, career and innovation.



**Funded by
the European Union**