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Synthesis report on gender norms and barriers in (A)KIS

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Preface

This report presents the findings of the research investigating gender norms and barriers inhibiting the initiatives of women innovators and their support in the mainstream and Agricultural Knowledge Innovation System (AKIS) as part of the Grass Ceiling project commissioned by the EU. The research is conducted across the nine participating countries: Croatia, Ireland, Italy, Lithuania, Netherlands, Norway, Scotland, Spain, and Sweden. This study delves into qualitative data gathered through interviews with stakeholders from the AKIS and focus groups with men and women innovators in the agricultural and rural sectors.

The research aims to illuminate the pervasive impact of gender norms on women innovators. Besides, it underlines structural barriers hindering women's access to resources and the necessity to render support systems more inclusive. Despite these challenges, the report underscores the resilience and success of women innovators while advocating for enhanced support systems. Recognising and respecting women's distinct approach to innovation is vital to ensure women's access to the current support system. Appreciating women's innovative ideas and initiatives is pivotal to promoting the transition of agriculture and rural revitalisation.

Ultimately, the research aims to shed light on the existing barriers, advocate for equitable support systems, and recognise the unique contributions of women innovators, thereby fostering a more inclusive and conducive environment for their success within agricultural and rural sectors across Europe.

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Executive summary

This report discusses the research results into gender norms inhibiting women innovators, which has been carried out simultaneously in all nine participating countries of the Grass Ceiling project: Croatia, Ireland, Italy, Lithuania, Netherlands, Norway, Scotland, Spain, and Sweden. It aims to answer the following research questions: 1) Motives and barriers to current innovations led by women and men in the agricultural and rural areas in Europe, 2) the role of relevant agricultural and rural stakeholders, support organisations, and knowledge & innovation ecosystems for enhancing women-led innovations, and 3) the role of digital services in enhancing women-led innovation. Qualitative data has been collected in each country through focus groups held separately with men and women innovators, as well as interviews with stakeholders from the (agricultural) knowledge- and innovation system, more specifically, digital experts. A standardised question format guided the focus groups and interviews.

The main results show that men were typically engaged in new farm technologies or production methods, looking to improve productivity or profit. Women innovators searched for ways to utilise existing resources in new ways or develop new ideas, often related to multifunctional farming. There were a lot of similarities in motives between men and women. However, autonomy was mentioned as a vital motivation primarily by women innovators. It is important to notice that the motivation to innovate was often multifaceted, with multiple motivations interlocking. Women innovators identified the family as a primary support system, whereas men generally referred to like-minded colleagues. Both tended to evaluate the support systems as difficult to access in many areas. Regarding barriers, women often referred to a lack of self-confidence and fear of failure, fuelled by the experience of being dismissed and not taken seriously. Men innovators also experienced a fear of failure and discussed the impact of mental health issues. The imbalance of domestic responsibilities was identified as a significant barrier for women. Both men and women innovators mentioned ill-equipped mentors and innovation support systems as barriers. In addition, many women experienced the (agricultural) knowledge- and innovation system as discriminatory in dismissing women and their ideas.

According to the stakeholders, some countries had initiatives targeting women through training, finance advice, and entrepreneurship programmes, which were considered essential for women. The importance of female role models and women networks in boosting confidence was frequently mentioned. Many respondents stressed that women possessed the necessary capabilities but met structural barriers that made it difficult for women to access the required resources and support. It was generally age and not gender which affected digital literacy. The availability of online training and information, especially since COVID-19, was essential for women, yet limited access to high-speed internet and funding constraints still posed problems.

In Summary, gender norms were omnipresent in the focus groups and the stakeholders' interviews. Women tended to identify them more quickly and explicitly than men. Both women and institutions had often internalised them. Moreover, gender norms were present in the social context of women, influencing the attitudes and behaviour of the people around them. However, it is important to note that women identified their partner, family and friends as their most important support network. Among others, there was a plea for rendering the (agricultural) knowledge- and innovation systems more inclusive. Across countries, there was also ambivalence in reporting on gender specificity while worrying about reproducing gender stereotypes. This research demonstrates that gender norms and stereotypes are still inhibiting the success of women innovators. At the same time, there was plenty of evidence that women were already successful innovators and that their working methods were crucial in the transition of agriculture and the sustainability of rural areas. The need to improve the support for women innovators is evident; simultaneously, it is vital to recognise and respect women’s specific approach to innovation as something to cherish and preserve.

Part I Women & Men Innovators

This part of the report investigates the motives, support and barriers to innovations experienced by women and men innovators engaged in agriculture and rural areas in Europe.

1. Methodology Part I

The first objective of this deliverable is to understand the motives and barriers to current innovations led by women and men in Europe's agricultural and rural areas (research objective 1). In doing so, we sought to answer the following questions: What motivates and drives women and men in agriculture and rural areas to develop new initiatives? What kind of initiatives do they (intend) to develop? What are the expected or experienced barriers to innovation (e.g. gender norms and organisation of care responsibilities)? What type of support do men and women experience or miss that could enable or accelerate their innovation? How do they perceive each other? Do they see differences in what they want, do, experience, and need? Do gender norms and stereotypes play a role, and if so, when, and how?
Focus groups were held in all the countries, using the same questions template, and lasting between one and two hours. Each country had at least two groups for women and one for men. One focus group of women consisted of participants in the Living Labs for all research countries (see Table 1 in the annexe for details). Due to funding constraints and distances in some countries, the methods used to conduct the focus groups were a mixture of real-life and digital meetings (via Teams). Existing networks were utilised to find participants for focus groups. The mix of sectors represented within the focus groups differed across countries; for example, Sweden's men's focus group was predominately farmers, whilst Lithuania's included farmers, a CEO of a plant research company and a rural innovation advisor. All participants in the focus groups were or had been rural innovators themselves. Due to unforeseen circumstances (e.g. illness and time constraints), some focus groups (e.g. the Netherlands) were supplemented by interviews using the same questions.
Universal issues have been recruiting enough participants for the focus groups throughout all the countries. This can be understood in terms of the short-time scale (e.g. Conflicting with harvest) and the language used. For example, the term 'innovator' was complicated to understand (Norway), and in Sweden, the image of an entrepreneur (innovator) is a "high-achieving, slightly half-crazy man" (Sweden). Thus, participants may have interpreted it themselves as having to have invested in something new or be associated with profit or technology (Ireland, Croatia, Italy), which could explain why it was challenging to recruit focus group participants as the terminology used was potentially misleading and not easily translatable within the national languages, skewing expectations from the participants themselves. However, the data collection has been rich and exploratory, with 58 men and 106 women participating in the focus groups. Table 1 in Appendix 1 shows an overview of the demographics of men and women innovators across all countries.

2. Current innovations

The agricultural innovations highlighted in this report showcase a range of endeavours to which men and women typically contributed differently. Across most countries, women innovators concentrated on product innovation and reusing existing resources, reaching beyond primary production when engaged in farming. Men usually looked for new resources, farm production methods, and agricultural process improvements. However, this focus is reversed in Croatia, with men focusing more on resource and production innovation, contrary to the general trend. Norway, notably, showed no discernible gender-based differences in innovation types.

Countries differed slightly in their focus on innovation. Ireland and Norway emphasised local food production, goods, and services promoting the region's traditions. Scotland highlighted women's role in crofting, which traditionally includes textile and food production. In Sweden, sustainability drove women's endeavours, targeting multiple markets with multifunctional farming. In Spain, women engaged in livestock-based sustainable development, advocating for social innovations to boost their visibility and women's networks. In Sweden, Scotland, Croatia and Italy, men and especially women were involved in agricultural innovations related to agrotourism, such as renting out farm buildings as accommodation. In the Netherlands, most women's initiatives were in multifunctional farming, with activities inviting a non-agricultural audience onto the farm. Notably, women seemed to value social connections and the connection to nature. Men in the Netherlands, instead, tended to present mainly technical innovations meant to improve primary farming activities. Many were inspired by agroecological principles when performing their farming activities. Women in Italy specifically highlighted their focus on the principles of agroecology within their activities. Men and women innovators in Croatia, Italy, Norway, Scotland, Sweden, and the Netherlands mentioned how they often included educational elements in their (agrotourism) activities, creating the opportunity to showcase rural activities, goods, and services. Incorporating multifunctional farming and social innovations into their business models, farmers across all countries innovated by offering on-farm services. Examples include milk vending machines in Ireland and the Netherlands, coaching services in Sweden, textile workshops in Croatia, rehab services in Italy, work hubs and cafés in Sweden, and acquisition and training in Ireland and Spain.
Additionally, cultural conservation, relating to preserving traditional production methods and skills, was an essential consideration for both men and women innovators in Croatia, Norway, Scotland, and the Netherlands. Women innovators in Croatia were involved with textile handicraft techniques, whereas some Croatian men innovators emphasised the preservation of indigenous plant breeds. Furthermore, women innovators engaged with valorising waste streams, providing them with a diversification of available resources for innovation. For example, excess wool is processed in Scotland through collaborations with local textile industries. In Ireland, Norway, and the Netherlands, women produced cheese using residual milk products; in Scotland, raw fruit is transformed into jams and preserves.

Many innovation types, especially among men across all countries, concentrate on agricultural production processes, often focusing on sustainable practices. Male innovators in Lithuania focused on robotics, and innovators in Italy have incorporated AI into their farming. Men innovators in Spain experimented with advanced machinery and practices like earthworm farming. Men innovators in the Netherlands experimented with milking robots, agroforestry, and bio-dynamic practices. Women innovators in Ireland, Spain and Italy focused on working with new crops, for example, nutrient-rich crops. Women in Sweden aimed to incorporate advanced technical solutions focusing on sustainability in their farming practices. Climate change adaptation was also vital for innovators in Italy, while innovators in Scotland and Croatia emphasised alternative energy sources.

These innovations demonstrate a broad spectrum of efforts, from niche product creation to sustainable practices and diversification beyond traditional farming. Additionally, they highlight that although men and women often engage in similar innovations, there are also clear distinctions, with men typically more engaged in new farm technologies and production methods and women more oriented towards multifunctionality, combining farming with non-agricultural activities and target groups.

3. Innovation drivers

The motivations for women and men to innovate have been categorised into seven themes, and examples of these are shared below. Generally, it can be argued that the need for autonomy, lifestyle changes, connection with others and sustainability has mainly driven women. Men were more likely to consider

economic growth and technical innovation as important motivations. However, it is essential to note that the motivations overlap in bundles and are not mutually exclusive. For example, changing to sustainable farming practices could be considered an environmental decision and a means to preserve the natural landscape, maintain traditional techniques and simultaneously add economic value to products, thus securing the farm's future and succession. Therefore, the following categories have been built around the identified *main* motivations and drivers to innovate of the participants, but not necessarily their only ones in practice.

Women innovators identified autonomy of self as a motivation across all countries in different forms. *"Ask yourself what is important in your life? What is the meaning of life?"* (Croatia). The desire to gain control over women's time (Sweden) and the family-work-life balance, such as determining their quality of life, is critical (Ireland). Being self-employed has given women the opportunity to work alongside family responsibilities. Women in Scotland and Ireland explained how their businesses remain small to allow them to manage their time. *"I needed a headspace away from my small children; I needed grown-up thinking"* (Ireland). Other women had chosen to leave salaried employment to regain their independence (the Netherlands), determining when and how they work. *"I still work hard, but I do it on my terms"* (Ireland) and *"I have the power to decide to do what I want"* (Italy). Women in the Netherlands and Italy were motivated by the desire to make their contributions as innovators visible to others and the broader society. "*Women need to be next to men, not hidden behind the scenes in the business*" (the Netherlands). Women saw themselves as agents of change from within and used autonomy to express themselves and inspire others. Innovating also created a transformation for personal development and growth. In Lithuania, women were particularly empowered to invest in themselves to gain autonomy. However, both the men and women in Lithuania (and Croatia) were interested in pursuing knowledge. It should be noted that in no country did male innovators talk about autonomy as motivation. However, men in Ireland expressed how their innovations gave them the flexibility to combine different (work) responsibilities. *"Women's motivations cover a broader spectrum of meaningfulness related to one's life and the wider community, whilst men's motivations seem narrower and somewhat instrumental"* (Norway).

Enthusiasm for innovating itself and the products and services resulting from this is another theme that has emerged as a driver for women and men innovators. Men from the Netherlands and Ireland were motivated by a genuine interest in preserving traditional techniques, as were the women in Lithuania, Croatia and Scotland. Women in Scotland and men in the Netherlands were also driven by their wish to be creative and to develop new ideas. Women in Italy were passionate about caring for animals and self-growth, and women in Ireland were motivated by producing health and lifestyle products. Many women innovators referred to intangible benefits linked to participating in something they considered meaningful and felt individually connected to (Croatia). A natural curiosity or inquisitiveness was identified as motivation amongst innovators themselves, as both men and women seemed to enjoy the challenge of finding solutions to issues facing them. *"We wanted to be creative, to create something that would stand the test of time, that people would remember*" (Ireland). This outlet for creativity was significant for Croatian, Italian, and Lithuanian men. Likewise, women in Sweden attributed their creative personalities as a reason to innovate, saying they are naturally curious to find different ways of doing things. The passion for creativity was also inspired by cross-cultural experiences, either from learning about innovations in other countries (e.g. women in Ireland installed a milk tap after learning about it from the UK) or urban-to-rural knowledge migration within the same country (e.g. urban to rural migration in Scotland to learn about sustainable living and small-scale production systems).

Planning for the future was a significant motivation, particularly for men. Ensuring succession was an emotive subject for many, especially concerning the need to secure an economically sustainable business by men in the Netherlands and women in Lithuania. During the Celtic Tiger in Ireland, farmers were told they were not needed for food production, so other forms of income were necessary to retain the family farms. Innovators in all countries (except Italy and Lithuania) were motivated by rural revitalisation and the

need to keep the area 'alive', to *"leave your mark"* (Norway). Women in Spain looked into preventing the depopulation of the rural regions through social innovations (training, information). Men in Croatia took joy in participating in community activities and strengthening communities. Similarly, the desire to protect cultural conservation for the future, such as intergenerational traditions, was identified as a motivator for women in Scotland, Lithuania, Croatia and men in the Netherlands and Ireland. In Italy, women, in particular, were concerned with youth education and protecting the legacy for the next generation. "*…Innovation is a point of dialogue with future generations"* (Italy), whereas men in Italy saw helping youth as a source of opportunity, not a motivation for innovation. Thinking about the bigger picture, women in Ireland were motivated by strengthening the local circular economy, making it more secure against external factors. They wished to implement this locally and plan to replicate their concept in other rural areas throughout Ireland to benefit local communities in the future.

Sustainability is a broad category and refers to both the preservation of landscape (the Netherlands men and women and Scotland women), ecological protection (Croatia women) and being proud of sustainable practices (Italy). Croatian women prioritised protecting the environment, promoting healthy diets and cultural heritage, using natural resources (wood, wool, fruit) and producing local and traditional foods. Women in Spain were motivated by enhancing sustainability in their innovation and considered this a priority; they showed a greater sensitivity to adopting sustainable practices than men in Spain. Women in Ireland also put sustainability (organic, natural) at the heart of their innovations, believing it is not only environmentally better but also that these methods produce better-quality products, of which they can be proud. Scotland's men and women were also motivated by regional pride in their local products. Sustainability can also be considered culturally relevant in revitalising traditional practices such as crofting (Scotland) and indigenous breeding (Croatia), thus ensuring that these methods remain active and present as a means to managing the land sustainably.

Searching for contact and **connection** was a reoccurring personal motivation in almost all participating countries, especially among women. Reaching out beyond the (farm) gate, becoming integrated into the local community, and finding others with a similar outlook were all examples of this theme. *"Meeting people, getting external relationships, which has been a strong driving force for me"* (Norway). In Italy and Croatia, there is a drive to help and inspire others. In contrast, innovators in Ireland and the Netherlands (and Croatia) were motivated by finding their 'tribe' of like-minded people. *"You get to get up every day and work with people you want to work with, which is great*" (Ireland). This social motivation was vital for overcoming the isolation that can be felt when running your project, especially in rural areas. *"Farming is a lonely occupation"* (men in Ireland). "*We need to support one another*" (women in the Netherlands).In Lithuania and Italy, connecting to nature and the land was elevated to a spiritual experience. Role models played an essential role in terms of relating to one another. Many women innovators were inspired by other innovative farmers (e.g., Spain, Croatia, and the Netherlands), who showed them what was possible and motivated them to try. Such inspiration helped women in the Netherlands see their innovation process as key to developing as persons, too, considering themselves as part of the innovation process. "*Women have ambitions. We must believe in ourselves*" (the Netherlands). Interestingly, the men in Spain saw themselves as role models.

Profit is a motivator identified by more men than women in this project. *"No matter what you produce, first you have to be conscious about making money out of it; if not, there is no use"* (Norway). The economic benefit of innovation was the primary driver for men in the Netherlands, Norway, Ireland, Sweden, Scotland and Spain. In contrast, profit was a means to take care of family needs for men and women in Croatia and Italy, thus both a financial and social drive. *"Happy wife, happy life. That's my motivation. Without love, there is nothing"* (Croatia). Women in Scotland looked to add value to their products and thus create profit from what is often considered waste (excess wool and fruit). Profit as a motivator also encompassed the search to secure businesses for the future, making them economically sustainable to pass on to the next generation (Ireland, Sweden). The farm is a *"resource to generate money, and your task as a farmer is to*

realise the potential of that resource" (Ireland). Women in Lithuania identified profit as a significant aspect of their motivation more than any other women involved in this research.

Taking advantage of opportunities motivated men and women across all countries. Men in Spain saw the opportunity to help youth and to adapt to markets. Meanwhile, the external factors of rules and regulations in Sweden and Norway allowed men to innovate. *"My property would look completely different today had it not been for the EU and their support"* (Sweden). Likewise, the results from Lithuania showed that EU Common Agricultural Policy-supported measures are an explicit motive for women to innovate, just as men in Ireland found strict policy regulations to be a motivation to innovate in dairy farming. The opportunity for potential growth and to take a position in a family business were motivations identified in the Netherlands. Similarly, women in Ireland identified a gap in the market for locally produced high-quality products (e.g. Beetroot juice) that were hard to source: *"I decided to make my own*" (Ireland). In Italy, for some men and women, 'chance' and opportunities determined their innovation pathway. In Spain, women were motivated to improve farm conditions, whereas in Croatia, the focus was on self-development. Covid-19 seems to have also created a chance to innovate, as indicated by women in the Netherlands. Still, it was not considered a primary motivation in general across all the countries involved.

4. Support systems for innovation

4.1. Main support systems

Women innovators across all countries relied on family, including partners, as their primary source of support. For help with childcare, household responsibilities, financial aid, and psychological support, women often turned to their families – usually female members – as their initial point of contact. Women in Ireland exclaimed: "*My sister is my children's other mother*" (Ireland), suggesting a significant dependency upon her family for help with childcare. In Croatia, having a supportive partner is even seen as a prerequisite by women, and a non-supportive partner is a significant barrier. A citation by an Italian woman illustrates the importance of a supportive family: "*I, like all women, think that we need people by our side who let us be ourselves. We must be free to express who we are. Otherwise, we are fine even alone*" (Italy). EU support measures mainly supported women in Lithuania. Meetings and workshops with other women were considered crucial by women in Spain, especially for empowering women. Women in Sweden identified that they needed networks with entrepreneurs in the same field rather than networks of women per se (Sweden). Women in Ireland benefited from a significant informal support system, extending beyond family to contacts on training courses. In Scotland, the local community was considered the informal support network as crofting, partly because crofting itself relies on helping one another. Women in the Netherlands also attributed importance to coaching and training sessions and role models, who can be seen as indirect support.

The primary support sources for male innovators varied across the countries and did not necessarily include their families. Men innovators seemed to rely more on like-minded colleagues and other innovators. For example, men in Lithuania felt most supported by work experiences abroad and learning from other successful innovations. Additionally, men in the Netherlands and Spain valued their connections with other like-minded actors within and outside the agricultural sector. Furthermore, men in Italy found support from a variety of sources, including mentors and partners, but not necessarily their families. Men in Norway did explicitly mention they appreciated the support they received from their partners and families whereas men innovators in Ireland acknowledged that their wives support their projects. Moreover, their wives' off-farm salaries and skills often enabled their innovations to succeed.

4.2. Professional networking support system

Across case study countries, the significance of networks for women innovators emerges as a common theme. In Ireland, women innovators indicated a significant reliance on informal support networks. There are funding cooperatives for women, where innovators financially invest in the startup plans of other women. This collaboration reflects the supportive attitude they hold for one another. Women in the Netherlands mentioned sharing knowledge with others was an essential source of support. Both men and women in the Netherlands seemed to rely more on personal connections, their networks of colleagues and other entrepreneurs, rather than mainstream channels. Irish women mentioned difficulties with finding more formal support, which was similar for women in Scotland, who even reported 'feeling alone' in terms of support as it was difficult to know where to turn. Women in Lithuania seemingly had established more advanced informal support networks through online communities or groups (e.g. Facebook), in which they found support through sharing experiences and knowledge. In Sweden, women mentioned a need for more contact with colleagues who share similar interests or experiences. Similarly, very few women in Italy felt supported by their colleagues. Additionally, some Lithuanian subsectors are traditionally dominated by men, but despite this, many regional leaders in Lithuania are women, occupying leading positions within agricultural associations.
Women in Ireland knew of professional support in government-funded initiatives to aid initial start-up funds and a well-developed mentoring system led by experienced female entrepreneurs. These groups have proved essential to those involved in the research. Interestingly, the real benefit was the WhatsApp group of 'like-minded' women formed after the meetings rather than the meeting itself. This was similar to Scotland, where the networking and support system created by attendees of particular training events were considered more valuable through knowledge and opportunity sharing than the training itself. Established mentoring systems can strengthen the confidence of women innovators and enable them to overcome specific barriers (Scotland). Also, in the Netherlands, colleagues and current networks men and women were already joining seemed to represent a first source of support. Meanwhile, innovators in Spain had seen strong backing from professional associations and cooperatives for women and men.

Lithuanian women mentioned how housekeeping services and help from friends and neighbouring farmers enabled them to spend more leisure time with their families. Working from home seemed to allow families with more flexible access to each other for men and women across all the countries.
Additionally, it was a problem that the funding the Norwegian and Irish government offers for testing and launching innovations is not tailored to small scale innovations; as most women engage in such small-scale innovations, they are indirectly excluded from government funding. Despite this, Irish women innovators shared success stories of developing their products, attributing it to this funding's ease of application and availability. Besides, men and women in Norway were content with the support from the Agricultural Knowledge and Innovation System (AKIS), particularly a recent national and regional governance drive to enable innovation, which increased the availability and accessibility of professional advice and resources.
Furthermore, women in the Netherlands attributed great importance to the supporting role personal coaching can play, significantly helping open conversations with their partners that were otherwise difficult to start. This process was highly recommended by those who had completed it. Women in Lithuania are often legal farm managers and landowners, allowing them to decide on investments. On the other hand, women in the Netherlands are often legal (co-) agricultural business owners but not legal landowners, resulting in legal and juridical difficulties.

The context of crofting in Scotland presents a deeply rooted, tradition-centred and highly informal support system, considered crucial by women innovators. Crofting, a community-based skill, relies on an informal exchange system between individuals sharing goods, skills, and trades. The significance of the informal support system stems from the absence of a formal alternative, as crofting is historically located in isolated areas. Knowledge and skills are passed down through generations via mentoring systems. Besides knowledge transfer, this network fostered moral support and mutual empowerment, nurturing trust and

community relationships that generated broader opportunities. While formal organisations also play a role in crofting, it is often structured in writing generic business plans, accessing grant funding and initial start-up subsidies. However, many crofters are not driven by a desire to expand, limiting the long-term effectiveness of these techniques. There are courses laid on by organisations that are considered initially helpful, not only teaching skills but also introducing women innovators to a network of others to share knowledge after the training has been completed.

5. Barriers to innovation

5.1. Personal barriers

Self-confidence

Many women across the country face a lack of confidence. For example, women in Scotland questioned their ability and did not trust their decisions. Additionally, Croatian women identified a lack of courage, low self-esteem, and uncertainty as the most significant barriers. Although two Croatian men indicated that the support from their wives had been crucial for them to engage in innovations, it is evident that in Croatia, women were struggling with self-confidence and self-respect. In contrast, men did not communicate any self-doubt. Women in the Netherlands experienced a reluctance or fear to take leadership positions and are afraid of feedback from those around them. Similarly, fear of failure was a barrier explicitly mentioned by women in Spain. The deficiency in self-confidence was voiced in various ways by women in Italy, such as having a lack of self-esteem, feeling inferior, feeling insufficient, being overly self-critical, or having performance anxiety. These negative feelings were often partially attributed to not feeling recognised by the men around them in both personal and professional contexts. Women in Scotland highlighted similar sentiments, indicating that women were often undermined and dismissed, especially in traditional rural areas. In some cases, successful innovation was considered as luck instead of seen as an achievement by the women. These narratives contributed to the prevailing issue of low self-confidence among women innovators.

In the Irish context, women considered themselves naive in their business dealings, often blurring lines between personal and professional domains, leaving them vulnerable to exploitation. They expressed a need for a more assertive approach in business and establishing clear boundaries within their families, mainly while working from home. The discussion emphasised the need to avoid burnout and to create room for creativity by maintaining a distinct separation between work and personal life.

In Lithuania, men brought up more personal barriers than women, including a preference for dedicating time to hobbies and family, a low willingness to invest in innovations, and a fear of facing losses. Interestingly, men in Ireland also identified confidence as a barrier and openly discussed mental health challenges. These men placed pressure to not fail as a farmer, working extended hours, isolation, and uncertainty as serious issues facing the agricultural sector. Similarly, men in the Netherlands and Norway experienced a lack of personal support that focuses on mental health, mentioning experiencing sadness and not feeling at ease with their profession anymore. These men said such issues are usually not openly discussed, potentially devastatingly impacting families and businesses.

Family systems

Although women in the Netherlands mentioned family as an essential source of support, the family also represents a significant barrier. Women indicated they are still too much seen for their role as wives rather than partners in the business, which implies not being included in family discussions if married. Another issue mentioned in the focus group in the Netherlands was the role of fathers-in-law still being too involved in the business, acting as if it was still his ownership. In Norway, intergenerational differences in attitudes to inheritance often result in family disputes. This can be illustrated by women's grandparents declaring that they had “destroyed” the pattern of men running it. *“I’m the one who put an end to men running this*

farm" (Norway). In Scotland, land is often passed through the male line, likely cementing the idea that women cannot run a farm. Women are marginally more likely to own crofts than farms, although men tend to inherit crofts. The very small, generally non-market orientated crofts are relatively cheap, and women can buy their way in more easily than to a a farm. Yet, crofts maintain a single-holder policy, currently under review, as it excludes partners from decision-making.

Balancing gendered responsibilities

Across all countries, the division of household and childcare responsibilities is heavily influenced by stereotypical gender roles, in which taking care of children and the family is typically seen as a woman's responsibility. Men in the Netherlands even stated that women usually account for at least 80% of childcare. Men in Croatia indicated that caring for family and children was typically a woman's job. As one might expect, in many cases, this resulted in women struggling to combine work responsibilities with family responsibilities. For example, women in the Netherlands experienced challenges with time management and setting the right priorities. Croatian women indicated they needed support in balancing private life as taking care of family and household and developing innovative initiatives was difficult, mainly when the children were young. In both Spain and Lithuania, the leading personal barriers women faced when implementing innovation on their farms are a lack of time, either due to excessive work on the farm itself or family responsibilities. Women in Italy mentioned difficulties with managing family and work, sometimes exacerbated by the pervasiveness of modern working environments: "*Work comes home with me very often*" (Italy). This was often connected to an inverted support system, in which women are responsible for providing support without receiving it in return.

In Ireland and the Netherlands, men agreed that working on a family farm allowed them to be more involved with their children, yet their partners had the primary role in childcare. For Croatian men, taking up family responsibilities is self-evidently a task for women. According to the Lithuanian context, men are considered responsible for 'technical issues', and women for 'everything else'.

Childcare responsibilities seemed more equally divided in Norway, yet they still presented difficulties. Several women participants from Norway shared that they had opted to scale down their business during the *"most hectic"* childhood years, intending to expand it later, indicating childcare often occurs at the cost of business development (Norway). Moreover, Norway presented a generational difference in the division of childcare. Older participants said that women should bear the brunt of childcare during pregnancy and the first years after childbirth. However, male innovators viewed this as old-fashioned, indicating they share half of the childcare duties since their partners work full-time. Additionally, women in Scotland shared that the current division in household labour and childcare restricted their available time for their business, indicating a systemic gender role division wherein even if the roles are divided equally, women still prioritise household responsibilities over their business.

Besides, maternity leave for women innovators in agriculture varies across countries and is often a considerable barrier for women. For example, women in Italy mentioned child care management as the area where support is missing the most since maternity leave is absent, as well as facilities that provide care for children in the early morning and during weekends. Similarly, women in Ireland explained how inadequate statuary provisions around maternity leave created challenges for self-employed women. Interestingly, the men's focus group in Scotland identified the impact of childcare responsibilities on women innovators and the impact of menopause.

Unsurprisingly, women typically associated their work-private life balance with a work-family one. While women in the Netherlands did not seem to distinguish between work-personal and work-family balance and experienced challenges overall, men indicated that childcare always happens at the cost of the business. In Sweden, there are public day care centres for children and parents can take 18 months paid parental leave and have the right to paid leave when children are sick. This certainly supported women when developing their innovative initiatives during periods of parental leave. Nevertheless also in Sweden women explained their attraction to entrepreneurship by the flexibility it offered, enabling them to balance their professional commitments and childcare responsibilities better. Some Italian women expressed their

need for more support from families and partners in keeping the extended family connected. In Spain, men and women agreed that it is necessary to reconcile personal, family, and professional lives to promote innovative projects. Both men and women believe it is essential to have time for the family and to be able to develop their innovation simultaneously.

The role of partners

In Croatia, women indicated that it was an enormous barrier when partners were not supportive; here, they explicitly referred to belittling and depreciation often rooted in traditional gender norms and women's responsibility for family and household. On the contrary, in Ireland, women felt supported by their partners and reported positive contributions in childcare: "*Our husbands shouldn't be our helpers. They are our co-parents*" (Ireland). Yet, across various countries, women innovators often described their husbands as supportive, although their actual support might be ambiguous. On the one hand, female innovators' partners in Lithuania were initially considered critical and doubtful but ultimately very supportive. On the other hand, the same women indicated a lack of support from family and husbands. Sweden reported similar contradicting narratives. Likewise, women in Ireland and Scotland told their husbands to support their innovation journeys, yet their husbands were frequently absent due to work commitments for extended periods.

Lithuanian women also highlighted that many men in Lithuania engage in off-farm work, enabling them to develop innovative ideas. Interestingly, in the Netherlands, women are more frequently involved in off-farm work than men. Dutch women perceived this as a hindrance as it limits their availability on the farm, often excluding them from decision-making processes. What is more worrisome is that women in the Netherlands indicated being dependent on their husbands for finance-related needs for developing their ideas. "*Need approval from husband for finances related to shared ownership*" (the Netherlands). Farm responsibilities in Lithuania are formally equally shared, but this is not always adhered to in practice. Men and women make financial decisions, while women often manage the farm's finances, similar to the Netherlands. The Scottish Living Lab has a predominance of women running crofts and this came through in the Scottish interviews and focus groups. As a result, several male innovators described themselves as 'house husbands', even though their innovations had proven financially necessary to ensure the continuation of the croft.

5.2. Professional barriers

Women in Sweden, Norway, Spain and Scotland mentioned a lack of support from public administration bodies for business development. For example, women in Spain missed advice from union trades regarding issues such as maternity leave, training, and other social services. Both men and women in Spain did not consider local action groups, the public sector, and input suppliers to be supportive. Moreover, men in Spain pointed out that there is no actual R&D&I policy in the agricultural sector that facilitates innovation through public support and guidance. Additionally, Lithuanian men mentioned that targeted support measures for farm innovation were currently not intended for the digitisation of farms, which was often an essential element in their innovations. Moreover, they would like more streamlined support for innovation. Lithuanian women mentioned a need for capacity-building and experiential learning initiatives. Men in the Netherlands were largely critical of the mainstream organisations within the agricultural world, which they believed were too conservative and traditional in their approach to farming. Both men and women in Italy (men more than women) also felt arrogance and lack of professionalism from men when engaging with AKIS stakeholders. Innovators in Ireland mentioned the frequent occurrence of ill-equipped mentors, resulting in insufficient support.

Knowledge, training, and education

Views on barriers related to knowledge varied across the countries. Italian women missed a system that supports self-determination. Although both men and women deemed relevant training and education as essential sources of support, they indicated this was insufficient. Specifically, entrepreneurship training was

completely lacking (e.g. no information desk, no courses, and no information sharing). Men in Sweden also discussed a need for education and knowledge more broadly. Women in the Netherlands indicated that targeted training and coaching were missing for the agricultural sector as other companies in other sectors receive. Additionally, women in the Netherlands struggled to put ideas into practice due to a lack of (access to) technical knowledge. Both men and women in Italy experienced issues related to a lack of specialisation and the need for increased skill sets. The lack of consumer knowledge and the speed of technological change were reported as barriers for men. Older men in Ireland identified a lack of formal business education as a barrier to innovation. They believed they did not possess (access to) the relevant skills which would have benefited their businesses.

Agricultural Knowledge and Innovation System

A significant observation spanning multiple countries is agricultural advisors' perception of women innovators, which was experienced by many as gender discrimination. Numerous examples appeared throughout the research. When asked about the gender-related obstacles women have faced, initially, women in Spain (and the Netherlands) did not recognise having experienced any discrimination. However, as the discussion progressed, most mentioned situations where different people, such as suppliers, customers, or other farmers, refused to talk to them and asked for a male figure within the farm (their fathers or husbands). Additionally, women in Lithuania mentioned farm inspectors taking them less seriously than their husbands. They did not feel acknowledged by the professional stakeholders and the mainstream support system, which was still plagued with gender norms. Moreover, a citation from a female innovator from Sweden illustrates advisors' perception of female innovators: *"[Women innovators are seen as] women and not as the farmer, nor credible bank customer"* (Sweden). Furthermore, women in Norway used the term 'mansplaining' to describe advisors' behaviour. Similarly, women in the Netherlands explained how many advisors explicitly preferred to discuss matters with their husbands. As a result, many women innovators in the Netherlands did not feel recognised or taken seriously by their advisors. Often, this created negative consequences for their formal business ownership and access to wealth. Also, the women in Croatia referred to the advisory service as an essential barrier; there was a chronic lack of time and personnel and a lack of interest and readiness to attend to women's questions for information or support. Women in Croatia experienced this as gender discrimination. In contrast, men experienced a preference for advisory services to serve the giant farms and a general disinterest in the Croatian government to engage in agriculture. Women in Italy did not feel respected by most men around them. This lack of trust contributed to a lack of self-confidence. Still, it also impacted their lives tangibly on a daily basis, especially in the agricultural sector ("*These are the stereotypes: in a farming environment, it's a struggle. All the modernisations were a battle; I had to fight with those around me, even with my father, and always consider everyone…the total trust […] is missing. This is a big limitation*", Italy). Women felt invisible, and often, the intersectionality of gender and youth played against them: they will always be seen as "*little girls*" (Italy). Women in Norway, however, could not pinpoint gender-based disparities in their treatment by relevant stakeholders. Yet, they did acknowledge their background in food production, a traditionally well-established female profession.

Both women and men in Italy, Spain, and the Netherlands highlighted excessive bureaucracy. The presence of incoherent rules and regulations for innovations and the overload of regulations inhibited creativity. Men innovators in the Netherlands expressly indicated the barriers within dates, laws, and regulations were infuriating and time-wasting. Innovations move much faster than regulations can accommodate, bringing limitations on which innovations emerge.

Barriers faced by both men and women in Scotland range from increased housing prices to over-stretched resources (access to land and finance) and infrastructure (no childcare and lack of accessible local abattoirs). This can make innovation challenging if it is seen to change the equilibrium. "*Thoughtless innovation can be very dangerous*" (Scotland), such as not respecting the traditional values of crofting or introducing unwelcome businesses (e.g. Holiday accommodation), which can face community resistance (Scotland).

Financial support

Participants from various countries highlighted multiple shortcomings in financial support, primarily limited access to funding. In the case of Sweden and Norway, funding criteria tended to exclude small-scale innovations, which women often lead. As a result, activities pursued by women were usually not eligible for EU funding. For example, working with horses is considered a luxury rather than an agricultural business, so it is excluded from funding opportunities. Additionally, Lithuanian women mentioned a lack of support from financial institutions through their negative attitude towards farmers. Women in Spain even said the high costs that innovation processes entail is the primary factor that hindered them due to the increased implementation and operating costs of necessary high-tech installations and machinery. Women in Croatia and Italy also mentioned a lack of financial support regarding availability and accessibility. Similarly, in Ireland, innovators that provide products such as training packages were not accepted within the strict parameters of funding guidelines, as these are seen as services. There was no flexibility in the rules to accommodate alternative business structures.

The lack of support from funding institutions was a significant barrier in Ireland. Women innovators were highlighted to have experienced reimbursement difficulties due to cross-country VAT requirements. Somewhat shockingly, in Ireland, there seemed to be examples of professionals advising women to add a man onto their enterprise team to increase their chances of success. Moreover, both men and women in Ireland and Norway mentioned that over-complicated funding applications were frustrating and time-consuming. This resulted in innovators failing to apply or alter project requirements by the time the grant process was completed, referring to innovators feeling constrained within an innovation that no longer aligned with their needs due to the funding conditions.

Women in the Netherlands felt that skewed and gendered payment blocked their development opportunities. Men in the Netherlands encountered barriers due to limited access to funding. Regarding financial support, the current economic situation seems particularly problematic for women in the Netherlands, who indicated price fluctuations as a barrier, together with the regulations related to land ownership. However, a significant concern in the Netherlands persisted - the expectation for men to sustain the business after a partnership ends, typically involving a woman who made investments. Consequently, the woman is deprived of the rightful benefits of her innovative contributions.

Interestingly, seeing recent government investments focussed on women-led innovations in Norway, some men reported feeling excluded from funding as women were given priority, presenting a context in contrast to the other countries. A male innovator in Norway described being banned from participating in a board due to positive discrimination in favour of women. Many women in Norway had positive experiences accessing financial resources. One example illustrates how having the wife's name represented on a funding application left her husband feeling excluded. *"It is much easier for a young woman to get something back than for middle-aged men*" (Norway). On the other hand, men in Norway believed that scaling up was more challenging for women as the financial resources and different critical support positions were still predominantly managed by middle-aged men.

Access to resources

Access to resources presented an essential barrier for men and women across all countries in various ways. For example, men innovators in Ireland were concerned with the practical challenges of running a rural business, including poor digital infrastructure and retaining staff. They encountered significant challenges competing against larger established regional companies, requiring substantial effort to change consumer behaviour. Additionally, some women in Spain mentioned being affected by a lack of telecommunications infrastructure in rural areas. Furthermore, access to land in Scotland is a perceived barrier for both men and women, along with the threat of financial loss and fear of failure. The recent cutback in small abattoirs had a significant financial impact on some innovators, who now have to travel longer distances and pay higher costs to use suitable abattoirs. This has made producing small-scale, sustainable, animal-welfare-conscious food extra challenging.

Women in the Netherlands mentioned limited access to knowledge as inhibiting their innovation possibilities and access to relevant stakeholder and support organisations and the support they can offer. Additionally, a lack of access to knowledge and networks was mentioned as a barrier specifically by early-stage innovators in Ireland, who may have not yet established the necessary network for knowledge sharing, as one participant said: "*I found it difficult to find my tribe*." (Focus group, Ireland). Women in Croatia, in particular, mentioned lacking access to course information. More specifically, a lack of access to relevant networking events can also be a geographical barrier when focusing on populated urban areas. In contrast, women in Norway experienced no obstacles in accessing networks, even though men dominated some. Men in Norway did not consider the male dominance in networks as excluding women.

Sector-specific barriers

Some barriers identified by men and women in both Sweden and the Netherlands regarding agriculture can be considered sector-specific. For example, women and men innovators in the Netherlands said the uncertainty currently experienced in the sector is a vast barrier to innovation. Mainly, women reported how the media portrays the agricultural sector negatively. Moreover, women highlighted the prevailing perception of the sector as predominantly masculine. In certain instances where mutual support among women is lacking, this contributed to a sense of exclusion within the entire sector. Likewise, innovators in Sweden mentioned the need for positive representations of farmers and farming and the acknowledgement of agriculture as a sector worthy of engagement with, as well as women. For example, one woman recalled the derogatory views on agriculture she met at school. Moreover, farm owners were always men in Sweden since they usually had formal farm ownership, similar to the Netherlands.

Direct social environment

Various examples across the countries show how the direct social environment of particularly women innovators can present significant barriers to innovation. Women in Spain perceived a lack of trust or envy towards women as a barrier. As a result, when a woman started an activity within the agricultural sector, many people did not value or trust their abilities. This negative social perception did not change until they demonstrated their capability to manage the farm successfully. Women had to prove that they could do things well to be positively valued, while men did not need to prove anything; their worth was presumed from the beginning simply because they were men. Resistance towards women's innovations also came from outside the sector, especially from other women. Croatian women also referred to the poor connectedness among women and the lack of women's association in agriculture. Additionally, men and women in Lithuania described how older farming generations negatively viewed women innovators. More specifically, one woman innovator in Norway experienced a delay in her innovation plans since xenophobia from the local community inhibited her from employing migrants on her farm. Furthermore, Croatian women referred to traditional gender norms, adhered to by their partner but also the community, as well as jealousy by neighbours and the community. Both men and women innovators in the Netherlands mentioned other people resisting their ideas as barriers to innovation, whether colleagues who view the innovations as threats or neighbours who are afraid. Men seemingly perceived more resistance from 'others' within the agricultural sector than women. According to the women, particularly neighbours, they were often more conservative and viewed innovation as distracting a farm from its main essence. Men in the Netherlands confirmed this, indicating mainstream farm colleagues seem not supportive of their innovation potential, and they consequently feel treated as outsiders to the sector. On some occasions, they even received personal threats to their innovation.

6. Perceptions of innovators

6.1. Definitions of an innovator

All countries reported an initial problem with innovators identifying themselves as such. This was related to the misconception that innovation must involve technology and new ideas. As Sweden wrote, the EU agricultural policy and the Rural Development Programme 2014-22 had spotlighted innovation, including product development, services, and new working methods. However, EU criteria remained narrow. *"It has to be about introducing new technology, not previously used in the Swedish context or that has not been available on the Swedish market longer than two years and is not used by more than five per cent of similar farming operations."* (Sweden). Similarly, in Lithuania, both men and women innovators described innovations as the use of new technologies in agricultural activities and the development of new products. In contrast, men and women in Croatia considered an innovator to be someone who develops something new to overcome a problem. Interestingly, women in Croatia considered themselves more agile and creative than men yet are often not recognised and respected.

Many Italian women and men had a broad understanding of innovation and considered themselves innovators because they developed something new from scratch or revalued and used something from the past. Italian women, in particular, identified the characteristics of innovators as the desire for personal growth, creativity for self-development and self-expression. In Norway, women focused on the ability to make something that people like and that the market wants, emphasising keeping it interesting for the innovator. Men in Spain also doubted the innovative nature of their enterprises, although they acknowledged that innovation is essential for improving their companies. Men in Norway agreed that innovations are needed to make a profit; otherwise, it is just a 'hobby'.

As mentioned above, the women in Spain claimed not to consider themselves innovators, as their agricultural enterprises were generally family-based and traditional, lacking high-tech processes. However, the women began recognising specific characteristics that made their enterprises innovative. This process of self-reflection was reflected among the women in the Netherlands. Characteristics of an innovator as identified by women in Spain included the use of technician machinery, their methods of managing their operations, their membership in associations and work networks, continuing with traditional family farming but adapting it to the new market requirements, or simply the fact that a woman is the owner of the enterprise in such a male-dominated sector.

6.2. Perceiving each other

How men perceive women

According to Lithuanian men, women innovators were creative and implemented ideas meticulously and diligently. Similarly, men in Ireland saw women innovators as *"more calculated, cleverer"* regarding business decisions (Ireland): they begin small and take fewer risks, with their innovations often arising from an existing asset. They also argued that women who had grown up in a farming family "*have resilience and an appreciation of what it takes to make an enterprise and business work"* (Ireland). Women were seen as less focused on profit and more strategic and detailed in their planning (Scotland), thinking about long-term gains and stability.

Men in Lithuania mentioned the common assumption that women know less about technological farming techniques than men. Therefore, farming was described as a 'male area'. This lack of recognition was echoed by men in Spain who considered that women's work in agriculture and livestock farming was not sufficiently recognised, and that they could manage a farm just as well as men, needing the same support as men, and that women have a significant role to play in the future of the sector. A similar perspective was shared by men in Italy who perceived women as the future with their ideas, their attention to detail, *"greater stubbornness",* and their endurance in both professional and personal spheres (Italy).

Women innovators in the Netherlands were perceived by men as open, approachable, very creative, and attentive towards others, with a great potential for connecting while caring for others, the environment, and nature, offering a different perspective to the business. Women were expected to have better social skills and be more inclusive and community-driven, *"promoting working together"* to secure more resources (Scotland). They are believed to have a higher risk aversion *"they MUST feel confident that they will succeed"* and to undersell themselves (Norway). This all corresponds to the barriers women identified with and is echoed by men in Croatia, who indicated that women often lack self-confidence even when having good ideas; in their view, this is the only barrier women face.

How women perceive men

Women innovators perceived men innovators as *"impulsive"* (Ireland) and *"fearless and more ambitious"* (Norway) with the drive to take more risks and take on big projects. This confidence and idea of moving on quickly from failed innovations perhaps reflected the women's view of themselves. *"Men are more at the moment"* appeared more confident and often were believed to have financial gain as a motivator (Scotland). They were seen as undistracted by household duties because the women cared for everything else (Ireland). This information was unavailable for Croatia, Italy, Lithuania, Spain, and the Netherlands.

6.3. Gender norms & stereotypes

Men in the Netherlands acknowledged that women's role in childcare might prevent them from innovation, which is structured in society through certain expectations towards their role. Traditional norms influenced the potential for women innovators in Italy, too. They encountered more barriers and stereotypes, particularly related to the reconciliation work and family, as this is primarily their responsibility, and maternity leave and childcare facilities are lacking (Italy). Interestingly, in Spain, women innovators felt that most of the burden of housework and care work fell on them; they did not see significant obstacles in their current work performance or did not attach great importance to it.

A distinct lack of role models in the media has reinforced the stereotypes. In Italy, there were only a few role models of women in the corporate world. In Croatia, the media presented (rural) innovators as predominantly male. This lack of public awareness of women innovators reinforced the cultural stereotypes and added to the barriers they face. "*If you, as a woman, have a good idea, it is better to let a man market it. Because that works better, and that has nothing to do with him being able to do it better. But that has to do with the fact that I think society in the Netherlands still has some difficulty with it."* (Netherlands) Thus reinforcing the hidden role of women innovators.

Focus group participants in Ireland and Sweden argued that personality may significantly impact innovation more than gender. The differences between the approaches to innovation are arguably levelled out when a man and woman are innovating together in a partnership. *"The genders' competence and qualities are seen as complimentary to each other*" (Norway); thus, the correct balance of stereotypes could enable innovation rather than hinder it.

6.4. Known Women Innovators

Men in Spain were aware of women involved in agriculture and livestock farming and noted that there were increasingly more cases. They were familiar with these women's work, although some mentioned that the female group's lower physical strength might limit their abilities in the sector. They also pointed out that more women are working in companies that supply agricultural inputs or as agricultural advisors in cooperatives and producer associations. The increase of women working in the primary sector was less pronounced than in the agri-food processing or agricultural services sector. In the Netherlands, the men participating in the focus group could only identify three women innovators between them which they all found surprising. They also recognised a distinct lack of role models and visibility of women innovators within the rural sector.

7. Conclusion Part I

Across most countries, the innovation types are similar. Men are typically engaged in new farm technologies or production methods, looking to improve productivity or profit. Women innovators seek ways to utilise existing resources or begin new ideas, often related to multifunctional farming. Reoccurring themes identified in the type of innovation include sustainability, education, cultural conservation and agrotourism. Throughout the focus groups, it is clear that pride in rural goods and services prevails as innovators explored different ways to maintain and develop the rural sector.

The motivation to innovate can be broadly summarised into seven categories: self-autonomy (exclusively for women); enthusiasm for innovating; planning for the future (cultural conservation and rural revitalisation); sustainability; the need for connection (including role models); profit; and taking advantage of opportunities. However, these categories are interchangeable and mutually inclusive, meaning that whilst one category may be the primary motivation (e.g. Profit), the others explored are just as important, such as the need to find a work-life balance or to connect with others who share similar experiences. Thus, the motivation to innovate is often multifaceted.

Women innovators identified the family as a primary support system throughout the research, with some explicitly singling out networks (female and entrepreneurial) as necessary. Men innovators did not necessarily include their families as their primary support system but were more likely to name colleagues. Findings from the research suggest that the professional support system was underdeveloped and difficult to access in many areas. Women innovators across all countries reported relying on informal networks for knowledge sharing, encouragement, and connections. Established mentoring systems, or coaching, seemed particularly beneficial for building self-confidence and empowerment. The need for role models was also a recurring theme as the media continued reinforcing stereotypes, further highlighting the hidden role of women innovators.

Self-confidence is one of the leading personal barriers innovators faces. Women are concerned about being dismissed and belittled. They have low self-esteem and fear failure. Men innovators also experienced a fear of failure and discussed the impact of mental health issues. Family members may offer informal support, but they can also hinder, especially if women are seen as the ‘wife’ and not the business partner; intergenerational differences in attitudes to inheritance play an important role, too. Gendered responsibilities continue to be significant barriers for (women) innovators. The division of household tasks and childcare responsibilities is unanimously unbalanced across the countries. Even where the work is more evenly spread (e.g. Norway) and Sweden, women often prioritised family and household responsibilities over their business. Alongside generational differences in childcare, a significant inverted support system minimises women innovators' time available for their projects. The role of partners adheres to this stereotyping, with many women focus groups being ambiguous about the role of their partners and leading to contradictive narratives such as their partners being supportive but working away frequently. The role of a partnership is more nuanced when it comes to finances, and it seems that even when it is legally required for equal sharing (still not in all countries), this is not necessarily adhered to in practice.

Regarding professional barriers, men mentioned a lack of funding for their innovations and felt excluded from opportunities. Women missed advice, information, and knowledge on where to access this. Both men and women innovators mentioned ill-equipped mentors and the lack of professionalism from the (A)KIS stakeholders as barriers. In general, both men and women innovators missed targeted training and education. There were numerous examples of gender disparity within the knowledge and innovation support network. Women innovators were not taken seriously or dismissed by advisors, and governments were reluctant to engage with the agricultural sector. There is a lack of trust and often excessive bureaucracy which was considered time-wasting as innovation moves faster than the regulations that can constrain it. This lack of flexibility to accommodate new business structures and the complicated funding applications were also recognised as a barrier to financial support. Innovators shared how funding initiatives excluded small-scale innovations or had negative attitudes towards farmers. A further barrier

both men and women identified was the lack of access to resources. From poor (physical and digital) infrastructure to the lack of land or available training, especially for early-stage innovations. Aside from the sector-specific barriers, the final obstacle identified by both men and women innovators was the direct social environment within which innovators faced judgment and perceived obstacles from people within their personal or professional context, with social and generational change taking time.

Men innovators perceived women innovators as being creative, cautious, thorough, and strategic. They are considered more sociable, open, and caring for people, the environment and nature. Yet, men also identified that women lack self-confidence. Women innovators perceived men innovators as risky and confident with the ability to move on quickly from failure.

Part II Stakeholders

This part of the report explores the role of relevant agricultural and rural stakeholders, support organisations, and mainstream knowledge & innovation ecosystem in enhancing women-led innovations.

8. Methodology Part II

This part of the report aims to understand the role of relevant agricultural and rural stakeholders, support organisations, and mainstream knowledge & innovation ecosystem for enhancing women-led innovations: motivations, experiences (research objective 2).
The following research questions steered the collection and analysis of relevant information: What are the experiences of relevant agricultural/rural stakeholders and representatives of the mainstream knowledge & innovation ecosystem with women innovators? How do these actors define innovation? What sort of support do they currently provide to women innovators? What are their experiences with women innovators? Which idea/image/expectation do they have of women innovators, their strengths and weaknesses, and their needs? What do these stakeholders think needs to change for women to get more room/support for their innovative ideas and initiatives?
All consortium partners interviewed various stakeholders relevant to women's role as innovators to understand if and how they interacted with women innovators. We asked them which support they offered women and which support was, in their view, required but lacking. We also invited them to share their perceptions of differences between men and women innovators and the role gender norms may play in that regard. Interviews with stakeholders were used to answer the research question. The interview format and the questions used were the same throughout all the countries involved, with the template being adjusted for local cases. Follow-up questions were encouraged. Four countries conducted these interviews exclusively online (Ireland, Italy, Scotland, Spain), whilst others used a combination of online and in-person. The interviews were approximately 1 hour long, including asking the participants for consent. All interviews were transcribed in their national language, and the findings were summarised in English to enable the report.
Stakeholders were considered men and women currently or previously involved with innovators, providing professional support, knowledge, and advice within the agricultural/rural sector. The scope of contacts ranged from mentoring and direct business coaches to policy advisors, educators, funding providers and NGOs. The type of support offered by stakeholders that were selected covered all parts of an innovator's journey, from conceptualisation to the expansion of a business model. However, more stakeholders were involved in the beginning of the process than in the last stages. Some stakeholders were chosen within a specific region (e.g. Sweden) to identify potential stakeholders to engage with during the Living Labs.
Interviewees were predominantly based on “availability and willingness” (Norway). Contacts were also gathered via personal connections, research on appropriate agencies, Living Lab participants and stakeholders were asked to suggest others they considered interested to be interviewed. There was a relatively tight time schedule, which included the summer holidays. This proved challenging for many, although every country completed enough interviews, between 6 to 14 in total. Across all countries, there was difficulty in recruiting people to be interviewed. Contact was usually established via email with information about the project, and follow-up emails were often needed, although many still went unanswered. While there was support for the project and themes around the research, stakeholders sometimes questioned if their input was relevant and were hesitant to address the problem directly (e.g., in the Netherlands). Similarly, there was a reluctance to suggest that stakeholders' agencies allowed gender to impact their activities (e.g. Scotland). In the Netherlands, finding an available representative of the Youth was difficult. It seems it is a challenging time (politically) for young farmer groups, meaning participating in research was not a priority. However, there could also be insufficient representatives for this group. Table

2 in II shows an overview of the demographics of interviewed stakeholders across all countries. In the following, we present the findings gathered from the nine countries, pointing out similarities and where interesting differences occur. It is crucial to remember here that we refer to the experiences and perceptions of stakeholders with women – and not the experiences of the women and men innovators themselves.

9. Experiences of stakeholders

9.1. Support offered and lacking

In some cases, the stakeholders offered advice and training programmes targeting women, such as confidence building, developing entrepreneurial skills or financial advice, or network expansion (e.g. Netherlands, Ireland, Spain, Croatia). Ireland and Spain were exciting in this regard. Spain offered technical and financial support to women when developing and launching their projects while guiding them in accessing European funding. Ireland provided a trajectory for female innovators that supports early start-ups (ACRONS: Accelerating the Creation of Rural Nascent Start-ups).[1] In addition, particular financial assistance was offered to Irish women when inheriting a farm or entering a partnership through the TAMS scheme (Targeted Agricultural Modernisation Scheme). In Scotland, a small grant (£200) was easily accessible for female innovators, which had an impact as it was seen as recognition of their ideas. Stakeholders from several countries mentioned the importance of women's networks, which allowed them to share knowledge and information, for instance, about funding, and to gain moral support, recognition, and validation (e.g. Ireland, Croatia, Netherlands).

There were concerns about providing support specifically for women as it "*may single out women as less capable of pursuing businesses or developing new ideas*" (Sweden) and reproduce prejudices. Sweden offered financial support and advice to innovators in the early phases of their business development without distinguishing between men and women. Also, in Lithuania, aid was granted to men and women alike. At the same time, stakeholders across different countries (including Sweden) underlined the importance of promoting female role models and boosting women's self-confidence. This was done through specific prizes for women innovators or media representation of farmers as women (Sweden[2], Spain). Norwegian stakeholders explained that they had heavily invested in promoting female entrepreneurs in recent years but had finished doing so to underline their equivalence. Also, Italy closed the specific observatory they used to have for female entrepreneurs.

More generally, we saw ambivalence among stakeholders throughout the nine countries about the specific needs (some) women may have and the underestimation of women's capability and their equivalence to male innovators. Several stakeholders, for instance, stressed that both men and women were passionate about their businesses and innovative ideas, possessing the necessary entrepreneurial skills, but individuals may need some support (Sweden, Italy).

Even though women are targeted with specific programmes in some participating countries, several stakeholders across countries identified a need for improvement and expansion. More and better training and advice, more opportunities for networking and funding, and more investments in promoting role models and reaching out to women.

Regarding better training and advice, stakeholders refer, on the one hand, to more personalised support and mentoring for innovators (women and men). On the other hand, regional competence centres were referred to by Norway and Ireland as key ways to offer advice, education and knowledge sharing close to where the women live, which could also ease the reconciliation of family and work. Moreover, the following should be dealt with more intensively in the training: finance and marketing and other essential business

[1] the programme is rather small though with only 50 places per cycle and about 150 applications.

[2] Prizes *Young Leading Women of the Year* (est. 10 years ago) and *Young Owner Women of the Year* (new) in Sweden elevate the female entrepreneurs, attract sponsorship, give publicity and raise awareness of the talent in the region.

skills, including stepwise business innovation. This would also strengthen women's self-confidence, as women validate themselves by gaining these skills. "*I finally feel like I'm a proper businesswoman. I've got a plan*" (Scotland). In addition, stakeholders underlined the need to improve financial support, mentoring and training by offering access with less bureaucratic burdens and without the commitment of upscaling business (Scotland, Italy, Spain, Norway).

One of the problems stakeholders identified regards the effort taken to reach women innovators as many of the hitherto common ways fail, indicating that there still are women-specific barriers to training and support programmes, even in countries that subscribe to gender equality, such as Sweden. The timing of workshops often played a role, certainly when organised in the evenings. But it may also require reaching out more to multifunctional farms and women's aspirations instead of focusing on agriculture per se (Sweden, Scotland). Besides, it was considered pertinent to remember that the company's legal name may not lead to the person, often a woman, leading the innovative project. It also meant more proactive contact and sharing of information about which support to find (Spain).

Women were also seen to have difficulties accessing land related to male-biased inheritance laws (Croatia). Gender norms also come into play here, as elaborated more in detail in the next paragraph. Croatian stakeholders referred to women's responsibility for family care. *"Women are torn between two roles – family and career. (…) We are still a traditional patriarchal society, especially in rural areas – women are not expected to start and run their businesses; their role is to take care of the household and children, and their work is for survival and to supplement the family budget." (Croatia).* This limited women even if they had the ability, patience and persistence to develop new ideas. Dutch stakeholders referred to women's need for open communication with(in) the family, among others, about financial arrangements. However, given the inhibiting force of household responsibilities, we can identify discussing the division of labour within the family as another relevant topic. A greater co-responsibility in domestic and care tasks would give women more freedom to develop and realise their innovative ideas.

Missing role models was a recurring theme across all countries. Stakeholders identified a need for 'real' women innovators to be promoted, not just the few regularly shared in the media or guests at events but those inspiring communities at the ground level. Women needed to be seen doing the day-to-day work, challenging gender norms, and normalising their position in the workplace.

Women were also believed to need the space to talk to one another and meet in person. A need for women networks was mentioned repeatedly across case-study countries. "*There is a need for areas for collaboration, more professional and social exchange and development*" (Norway). In-person contact, peer-to-peer learning, and knowledge exchange were essential to promote collaboration and inspiration from one another. Local groups and networks could provide this and give sector and geographically specific advice. These regional networks could also be essential for sharing information quickly and widely. In Ireland, there was a need for women-only discussion groups so that "*they can tailor speakers and workshops for their specific needs*". Again, we see the ambivalence mentioned earlier, with stakeholders arguing that women-only networks reinforce isolation. On the other hand, stakeholders indicated that women do not feel welcome in mixed courses, especially in training traditionally related to men's activities (tractor driving, sheep-shearing) and can be self-conscious about attending courses out of fear of lacking physical strength or being side-lined. This was causing a barrier to training and knowledge sharing, something that women-only courses may overcome. The question of gender segregated or gender integrated training for women in agriculture has been the subject of lengthy debates. At present, both are needed; women-only and mixed courses and networks with different purposes.

In addition to traditional inheritance laws and customs and retirement provisions blocking access to land and funding, stakeholders identified other structural barriers. Women were weakly represented in decision-making bodies, such as cooperatives and associations, which also hampered access to information. Poor infrastructure (transport, ferry, and road conditions) and remote geographical locations made access challenging for men and women innovators. This included training, markets, abattoirs and so forth. Poor infrastructure also made areas less attractive to newcomers who were looking for services, including schools. More specifically, for women in rural Scotland, there were staff shortages in the

hospitality/tourism sector due to Brexit, which has reduced opening hours and services available for visitors, hurting the sustainability of the local economy. Poor infrastructure in the sense of inadequate broadband in rural areas was a critical point in Ireland and Croatia, with some areas still being 'blackspots' in connectivity. Furthermore, agricultural education was still quite traditional (e.g. in the Netherlands and Ireland), with a strong emphasis on technical innovation, which was also present in training and subsidy schemes. A stakeholder in Ireland believed there needed to be a radical change not just in education but also that funding bodies and investors needed to "*change their culture and prism through which they look at potential growth*" (Ireland).
Stakeholders in Italy, Croatia and Ireland underlined the need for digital connectivity to support women and men innovators. This will be discussed in more detail in Section III.

9.2. Differences between men and women

Stakeholders across national and professional backgrounds identified differences between women and men innovators. They perceived differences in identity, motivations and ambitions, and innovation behaviour. Often, these differences were referred to when explaining different support needs, as discussed above. How the perception of disagreements reflects gender norms will be discussed in section 2.5. Here, we focus on what was considered characteristic of male and female innovators. It regards generalisations, which may partly reflect a difference between generations, to (soon) be overcome by public investments in gender equality. Again, we encountered the hesitations to identify women as different from men and 'the other', fuelled by the reluctance to reproduce gender-specific prejudices.
Many stakeholders referred to women as particularly passionate when developing novel initiatives. This was related to women's wish to establish their equivalent position in agriculture, which was still a predominant domain of men. Another important motive and ambition was to promote the transition of agriculture into a more multifunctional, sustainable, and societally accepted sector. Women were seen as less motivated by increasing profits, although adding to farm income and realising a business was certainly not irrelevant to women. The long-term sustainability of the family business was, for instance, an essential motive for women. Many stakeholders, however, underlined that many women innovators wanted to make a difference to the community, not just their career or farm's profit. Individual gains, financial independence and saving time for themselves and their family drove women to innovate. More generally, stakeholders referred to women as showing a broader understanding of innovation than men, who were seen as mainly driven by economic motives and technological ambitions.

Innovation behaviour
Women innovators were often characterised by following a careful, step-by-step approach to innovation, especially in the early phases of innovation, which some also referred to as risk-avoiding (Lithuania). However, the latter was contrasted with descriptions as persistent, committed, and courageous because she had to fight gender stereotypes. A Spanish stakeholder, for instance, explained that many women felt that they had more to prove and were under constant scrutiny and evaluation, especially in agriculture. Partly, it is also a matter of framing and interpretation. Women's approach may be described as hesitant, ready to question and listen to others. Or as patient, attentive to nuances, sensitive to family issues and the broader context, and prepared to communicate and collaborate. Maybe the greater creativity, flexibility and sensitivity referred to is linked to a more 'careful' approach. They were seen to follow a holistic approach to business planning with more attention to details and how everything interlinks. "*This can slow them down because they feel they must have control over everything. [...] It can be a curse and a blessing*" (Norway).

Women's differences compared to men were sometimes evaluated positively and perceived as an advantage and, at other moments, as unfavourable and a barrier. Stakeholders had the experience that women were more open to learning and input from others. Men were more "*solo players*" (Norway), more competitive and secretive with their plans and failures. But women's careful approach had pitfalls, such as women's tendency to self-doubt and underestimate themselves. Conversely, men in Norway were often

seen as over-confident and unprepared to admit a potential lack of knowledge and skills.
Overall, we may conclude from the above that men are perceived as more comfortable identifying as innovators than women. This was believed to be reflected in different innovation behaviours, too. Many stakeholders explained that women tend to start small and build up their businesses slowly and step by step. They were also seen to engage in different projects than men, often around tourism, food production, and cultural and creative industries, following up on their interests and knowledge. In contrast, men were seen to be more interested in production technology, realising more efficient and profitable farm production.

9.3. Gender norms & stereotypes

Many perceived differences between men and women innovators reflect gender-specific expectations and norms. Sometimes, they were referred to explicitly, but more often, they were hidden in what is identified as usual without further questioning.
Gender norms were reflected in ***barriers*** women experienced regarding prejudices or gender-specific responsibilities. Women's traditional assignment to care for family and children was often referred to among the latter. Women's motivation to start a new business could often be linked to managing work and taking primary responsibility for their children and home (Sweden). The cost of childcare motivated women to start a business that they could fit around this responsibility (Ireland).
Women were also seen as creative multitaskers, given their traditional need to ***combine family and work***. They were perceived as more caring for the community and having better people skills than men. As explained above, that may sound like praise and is often evaluated positively. At the same time, it often defined the sector or type of innovations women engage in and their economic size. Here, we see how gender norms may indirectly limit women's access to support, given how ***female entrepreneurship*** is perceived and assessed. Women were often seen as innovating in sectors that may have less growth potential than those that men dominate. They were perceived as less interested in technology and more in small-scale business development at the start of their journey. That automatically limited how much they could utilise the instruments available as they stayed within these sectors. "*Investors are more sceptical of a female entrepreneur*" (Norway). They are also believed to present themselves as less ambitious than male entrepreneurs. At the same time, stakeholders considered women to be more realistic, more self-aware, and more open about their limitations. Yet, male innovators were seen as more successful in attracting assistance with their self-confidence and larger ambitions. One Norwegian stakeholder who had been an innovator herself explained that you needed to portray your confidence. According to her, women needed to "*make a statement*" about why what they were selling was good, not a suggestion. Women must "*play the boy's game*". She suggested that female innovators must educate themselves about '*domination techniques'* and how to take control of situations for their benefit. (Norway).
Another frequently mentioned gender norm is the persistent belief that the ***masculinity of the agricultural sector*** is unsuitable for female innovators—this limited women's access to land and resources and their chances to receive a bank loan. Women in Ireland were reluctant to use the term 'farmer' as they associated it with a traditional image of a male farmer working outside, and the women did not identify with it despite often doing the same work. *"I felt like I wasn't farming enough to call myself a farmer"* (Ireland). This quote demonstrates how gender norms may inhibit women in terms of their self-respect and recognition by others. In all case studies countries, stakeholders reported that women were not taken seriously and got little recognition in the agricultural sector. Even though stakeholders referred to women as having good ideas and being knowledgeable economically and technically, their suggestions were not respected, which made them reluctant to present their ideas. The male image of the agricultural sector was also reflected in the ***male image of innovation*** related to technology, high-risk investments and driven by economic profitability.

9.4. Interacting with women innovators

Interviews with stakeholders revealed that many stakeholders met women differently than men. In

Norway, one female stakeholder reported repeatedly seeing female innovators approaching a bank with multifunctional ideas connected to existing farms. Though presenting valid, innovative ideas, women did not get the same treatment as men when seeking funding or advice (Norway). This was confirmed by one male stakeholder in Norway who explained that when approached for possible financial support, men were *"more quarrelsome when they don't get what they want […] women are humbler*" (Norway).
Most farm bank accounts were only in the names of men in Ireland, despite recent lobbying by farm women's groups to change this. The male-only registered name also extended to farm loans in the same country, where men made 80-90% of applications despite women traditionally being responsible for accounting (Ireland). Another example of differences in how stakeholders interact with women innovators (compared with men) was provided by the case of the Irish Blue Cards, namely cattle passports. These are commonly registered to one name only, typically that of the farmer that owns the livestock and the farm, thus typically the man. Women's work is, therefore, completely overlooked regardless of their contribution to the livestock and was considered invisible by different services (such as vets) who use the registered name as the contact person*. "It's just annoying because they said, oh yeah, it's his name on the account, so we just phoned him, you know. So, it's just one thing that makes women invisible," recalled a* stakeholder whose client had complained to him (Ireland).
The female stakeholders interviewed in Croatia focused on engaging with women; some work exclusively with men and are eager to work with young women. Male stakeholders did not see institutional barriers for women (e.g. men and women can apply for EU funds equally).

9.5. Inclusivity of the (Agricultural) Knowledge and Innovation Support System

Overall, the inclusivity of the (A)KIS system was perceived and recognised by many countries as being relevant in enhancing women-led innovations. However, there were differences. Some countries' mainstream knowledge and innovation ecosystems were **not oriented to gender specifics or the inclusivity of women** (e.g. in Lithuania) or, in the case of the Netherlands, seemed to be for individual businesses to decide upon.
Some stakeholders reported that gender inclusivity was not their main concern as they wanted to serve the different needs of the individuals; therefore, even when the AKIS *was* gender inclusive, there could still be barriers due to conflicts between individual personalities and aims. For example, the lack of support on the first point of contact (for instance, at municipalities) could determine if the innovation project proceeds further. Facing professional criticism was not exclusive to women, but it seems to have had a more significant impact on their confidence. This was particularly frustrating when the professionals in these roles did not have experience with innovation themselves, so they may not have understood the sacrifices the innovator had overcome to reach this point. First-line support should be about enabling and enhancing, so it is more related to supporting the non-gendered needs of individuals. On the other hand, a stakeholder argued that by focusing on inclusivity, one may no longer be interested in parts of the community*. "Who are we excluding by trying to be inclusive?"* (Scotland).
According to several stakeholders, issues regarding the inclusivity of the AKIS are addressed in some countries. Ireland presented numerous instances where this seems to be the case. Agricultural courses in Ireland remained male-dominated, which has caused frustration for female students and gives misleading numbers about women involved in AKIS, as there are still too few women attending agricultural colleges. In Ireland, there was an emphasis on fairness and inclusivity, making it challenging to focus advice and services specifically for women, except for a few examples of women-only support groups. Stakeholders considered this focus on inclusivity an institutional constraint as it was clear that women would benefit from specific assistance and space to ask questions they may otherwise be embarrassed to, such as *"How do I reverse a trailer"* (Ireland).
Interviews in Croatia showed that stakeholders, especially female stakeholders, understood the barriers. Male stakeholders emphasised equality and equity in applying for various EU funding programmes. Still, they recognised obstacles and highlighted women's networking as the most important support. Stakeholders agreed that women should be positively discriminated against when bidding for EU funds by receiving more points or a higher share of co-funding. Stakeholders in Norway also indicated that women

relied on their networks for support. These networks could be used to build their confidence. *"This is crucial so that good ideas do not disappear or are discarded before they have even been communicated externally."* (Norway).

Furthermore, stakeholders highlighted that language matters when it comes to inclusivity. Women must be seen in the media and acknowledged further as taking on traditional male roles. Women as farmers should be normalised with lessened dominance of male pronouns (Ireland).

Without gender targets, women will continue to be excluded. 'Fair' and unbiased opportunities may not be as inclusive as perceived, with requirements to meet indirectly excluding women. Legislation can play a role here, such as proposing a 50/50 representation on boards (Ireland). Furthermore, older women in Ireland were noted as particularly vulnerable as they were unaware of their rights and had not been registered as farm workers. Engagement with this group is critical to empower them and make them aware of how to secure their (financial) situation.

10. How stakeholders see women innovators

During the interviews, stakeholders reflected mainly on the characteristics of the women innovators they encountered. Stakeholders described women innovators as more emotional, impulsive, detail-oriented, cooperative, more receptive to new information, risk-averse, and less focused on a specific goal than male innovators (Lithuania). Women were seen as less confident than men and experienced imposter syndrome, preventing them from speaking up in situations such as during courses (e.g. *"I didn't want to blow my trumpet"*, Ireland). Despite many women being responsible for farm accounts, they were less comfortable or willing to engage in areas of finance (Ireland). Where the primary motive for men to innovate was financial, women innovators were perceived to be driven by personal development and improving the social ecosystem (Lithuania). Stakeholders in the Netherlands highlighted that men predominantly tended to engage with financial institutions. Women paid attention to the details and checked that everything worked, doing more research, taking less risk, and needing reassurance that they were good enough (Scotland, Ireland, Sweden). However, there was a window of opportunity when it came to innovation before someone else developed the idea, and this 'over' cautious approach could be detrimental to the plan if it took too long to be realised, as discussed in Sweden. Women appeared to have an extensive network but did not support one another. One stakeholder reported how women *"talk down to one another"* rather than being positive. Men seemed to have a smaller network but supported one another. However, women's predisposition to collaborate was regarded as a strength. Innovation does not have to be a solo venture; it can be done as a team member. Furthermore, flexibility and autonomy within work were vital to innovative women to accommodate domestic responsibilities and *"participate in the community*" (Scotland).

In general, stakeholders in Norway indicated that the women innovators they interacted with seemed more open to "*take courses, collaborate, listen and share*" (Norway) than men, who were seemingly more focused on product and profitability and showed more self-confidence when proposing their innovative ideas to them. While women generally appeared to rely on their network for reassurance and support and favoured meetings in person, men usually began their projects alone. They had a smaller, more exclusive network to utilise when needed. In general, women were more socially adept and established contact easier.

According to the stakeholders interviewed, women were driven and passionate about their innovation but might not have the business skills needed to support and sustain it. The women were experts in their area of knowledge, but not necessarily when dealing with areas outside it, which could determine the success of their business. There seemed to be a universal barrier to self-promotion, which can be entangled with self-confidence and the lack of desire for exponential growth. However, this was sometimes considered

regional: in the case of Scotland, newcomers were described as more skilled and open to self-promotion. Although different stakeholders agreed that women are equal to men, they still noted that women were not vocal enough and were afraid to assert their opinions. In some cases, stakeholders also described how women attended various trade shows while men did other work in the background. In addition, women always participated in more significant numbers in workshops on product processing or rural tourism, which led to innovation. Women were also perceived as more accessible to advice services because they were generally more receptive. Yet, they faced more difficulty because they were underrepresented in the sector's administrative and management bodies, had less access to land, and got less recognition in agriculture. Furthermore, they received prejudices against them. This made them more fearful, although women were also seen as more apt to prepare a new project as they thought about the concept and planned longer than men.

According to the stakeholders interviewed, the type of businesses that innovative women were involved in intended to be related to sustainability, nature or community enhancement, and promote local goods and services. A stakeholder in Scotland observed that women aimed for "*a more meaningful existence: to live with nature and be environmentally friendly*" (Scotland). Building on their creativity and commitment to innovation, many women operated in the cultural and creative industry, caring for others as the motivation and driver for many of the innovations they proposed in agriculture.

11. Conclusion part II

Support for women innovators across the nine countries varied, with initiatives targeting women through training, finance advice, and entrepreneurship programmes. Stakeholders stressed the significance of women's networks for knowledge exchange and support, recognising the need for female role models to boost confidence. Yet, ambiguity remained regarding women's capabilities compared to men. Inheritance laws, family division of labour, and the absence of role models were identified as barriers, compounded by women's underrepresentation in decision-making bodies, limited support programmes, and inadequate infrastructure.

According to stakeholders, women's innovation drivers focused on community impact and family sustainability, valuing learning and community enrichment. Stakeholders noted their cautious, step-by-step approach as both risk-averse and persistent. Gender norms significantly influenced differences between male and female innovators, leading to prejudices and favouring sectors with smaller-scale businesses. Masculine perceptions of innovation restricted women's access to resources.

Stakeholders highlighted disparities in treatment between men and women seeking funding or advice, with women being more collaborative and reliant on networks. AKIS showed varying inclusivity levels for women-led innovations, while some prioritised individual needs over gender specifics. Proposed solutions included legislation for board representation and empowering vulnerable older women in the farming sector.

Perceptions of women innovators included their detail-oriented nature, risk-averse behaviour, and focus on social improvement. Despite being seen as equal, women faced underrepresentation and challenges in self-promotion. They engaged in sustainability-related businesses, community enhancement, and local goods.

Part III Digital experts

This part of the report explores the role of digital services in enhancing women-led innovation in agriculture and rural areas.

12. Methodology Part III

This part's objective is to explain the role of digital services in enhancing women-led innovation in agriculture and rural areas (research objective 3). The following questions have guided the research: What role do digital experts see or expect digital services to play in enabling women innovators in agriculture and rural areas? What are the digital services mostly asked for and provided? What are their experiences working (digitally) with women innovators and addressing their need for advice and skills training? Did the experience of COVID-19 play a role in the use of digital tools?

Many countries struggled to identify digital experts. Therefore, the stakeholders interviewed for part II were also asked about their experiences with digital technologies and their relation to women-led innovation in agricultural and rural sectors. Every digital expert across all countries has been interviewed according to the provided interview format. The interview format for stakeholders, referred to in the methodology section of part II, included guiding questions on the role of digitalisation for women-led innovation. Interviewing stakeholders specialised in digitalisation was intended to understand better the opportunities digitalisation may hold for women. Table 3 in Appendix 3 provides an overview of the demographics of digital experts across all countries. In the following, we present the findings gathered from the nine countries, pointing out where they correspond and where interesting differences lie.

13. Experiences of women innovators

13.1. Relevance of digital support

According to digital experts and other stakeholders, men and women innovators generally use digital support tools. They did not identify gender as a barrier. In the eyes of many, age played a more important role in digital gaps across generations. Many stakeholders indicated that men found digitalisation more challenging than women as women often dealt with digital tools as part of farm administration or to keep connected with family and friends. Several stakeholders, however, reported the lack of high-speed internet connections, inhibiting the use of digital tools (Croatia, Ireland, Scotland).

Scottish stakeholders indicated that their digital events attracted a *"fair mix"* of men and women without a gender bias evident to the stakeholders. A variety of training was available covering leadership skills to cyber security. One stakeholder in Scotland did not believe there was a demand for women-only events and had no requests for such training. However, all the training provided was threatened due to funding restrictions, potentially the most significant barrier to digital proficiency.

Also, in Lithuania, the digital experts observed no difference between genders. Technological solutions were designed to be accessible to all, regardless of gender. Nonetheless, Lithuanian women viewed digitalisation as an opportunity to combine childcare and paid work through the possibility of remote working. According to the digital experts in Croatia, there was no substantial difference in the relevance of digital support for women and men. They believed there was a general lack of digital support in rural areas, while rural women were more digitally literate and took more e-courses than men. Next, rural women were very familiar with online social networks as it allowed them to stay in touch with friends and family. In this way, they used digital tools, even though they may not identify them as such.

In Spain, women were more motivated to learn, innovate and digitise than men; women were more organised in handling digital information because they were traditionally responsible for paperwork and

administration; they also underlined that the digital gap is mainly a question of age, not gender. In Ireland, women often had better digital skills due to off-farm employment.
In Ireland, access to digital services was considered very important by the interviewed digital experts. One of the interviewed digital experts worked mainly on women's use of digital tools, which was hampered due to bad broadband internet connections in rural areas. Moreover, a lot of information was not accessible through mobile phones. At the same time, there are many attractive digital training options (finances, leadership), most of which target both men and women, yet they do not accommodate women's schedules and responsibilities. There are courses targeting women specifically. However, they focus on basic digital skills. Additionally, in agricultural technology, digitalisation offered exciting opportunities for women, for example, by solving the problem of physical labour through automation and safeguarding safety. Further, online marketplaces were said to be attractive for entrepreneurs.
In the Netherlands, the digital expert indicated that there is still gendered access to digital technologies overall. Digital literacy in the Netherlands is considered high, yet women seemingly struggle to access these technologies. Since women are assumed to undertake administrative tasks, this is the field where they are likely to require digital practices. Furthermore, the digital expert asserted that learning about farming does not necessarily lend itself to digital tools. Additionally, the expert indicated that the affordability of digital services does not seem to be an issue in the Netherlands. Yet, a problem exists regarding whether innovators invest in themselves. The gendered aspect of digital services did become apparent when looking at digital innovations such as milking robots, which are becoming increasingly common but are still targeted towards male labour.

13.2. Experience COVID-19

It is clear that COVID-19 prompted the development of digital services. Digital tools enabled people to meet without travel limitations. Some stakeholders reported that they continue to do some events and meetings online so people from all over the region can attend without travelling (Sweden), which is both time and cost-effective. At the same time, some people nowadays preferred to meet in person rather than digitally. More generally, COVID-19 was not considered a barrier in Norway. It seems to have created more opportunities for innovators, enabling people to work more from home and save on travel time. The experience of COVID-19 has also drawn attention to the need to be prepared. For example, businesses with an existing online presence flourished during the pandemic as internet purchases increased. Many embraced the online approach in Scotland and continued to utilise the available resources, preferring to return to in-person training as this requires travel and a more significant time commitment. Innovators were still interested in the *"revolutionary"* grants handed out during the pandemic to enable digital technology, but the lack of available funds inhibits this (Scotland). Also, in Croatia, COVID-19 pushed the development of e-commerce and e-marketing and encouraged farmers to become active and visible on social networks to market their products. In Ireland, people were forced into digital technologies, which enabled learning but reinforced existing inequalities and caused a lot of stress. What helped was the development of digital hubs for remote working across the country. The shift to online meetings increased female participation in the Irish Farmers Association.

13.3. Digitalisation needs of women

As demonstrated above, women are perceived as knowledgeable enough to handle digital tools. Digital services were also considered important to provide women with easy and low-cost access to information, training and education, as well as funding. Still, there may be structural barriers. As mentioned above, providing high-speed internet in rural areas is a first precondition. In Scotland, connectivity was reported as a *"postcode lottery",* for instance, having significant implications if running an online business or following digital training, so much so that some areas offered alternative in-person venues for submitting grant applications to try and remove this barrier. Also, in Croatia, connectivity was a problem in some rural areas and a lack of digitalisation in public administration. Women used digital tools when the necessary infrastructure is available.

The accessibility of the tools itself played an important role, too; digital systems can be overcomplicated. Supplying funding for digital tools remains important as part of innovative business activities. Innovation Norway, for instance, provided funding for designing logos and websites until recently. Since this funding has ceased, there has been a significant drop in requests for these services and a general confusion about what an innovator may need when they come to the agencies. Maintenance of their digital profile is not considered a priority if there are economic constraints. The digital experts highlighted the need for courses on "*buyer competence related to graphical services*" (Norway).

An increasingly important issue concerned cybersecurity and learning more about using AI to your advantage. More attention is needed to educate innovators on keeping up to date with the rapidly developing digital marketing world and how to be ambitious using technology (Scotland). Irish stakeholders also stressed the latter. They perceived men as more ambitious in using digital technologies. Partly, that is related to male bias in advertisements and gendered stereotypes in AI, as reported by Irish and Italian stakeholders. In Italy, women were seen as more hesitant to express themselves in digital space; training costs played a role, but also the lack of relevant content for women concerning the use and digital adoption of technologies.

Overall, digital tools are considered to offer good opportunities for women once the structural infrastructure is provided. Training may help women better use digitalisation as part of their business, but stakeholders generally considered women to be sufficiently digitally literate. Several stakeholders mentioned that digital media could be used more effectively to reverse the gendered image of agriculture and innovation. In the Netherlands, digital experts even considered social media to have a more prominent role in supporting women than the formal services provided by AKIS, among others, by connecting them.

14. Conclusion part III

Digital support for women innovators in rural areas varies across countries. Age, not gender, notably affects the digital divide. Stakeholders recognised women's adeptness due to farm responsibilities but acknowledged that they face challenges like limited access to high-speed internet connections in rural areas and funding constraints. COVID-19 spurred digital progress but highlighted existing disparities. There is a consensus on the importance of digital tools, but poor connectivity persists, demanding better access. Simplifying tools, funding, and cybersecurity education are crucial. Men's perceived digital ambition may stem from gendered AI influences. Realising the digital potential for women hinges on infrastructure, training, and media to challenge stereotypes, ensuring equitable innovation opportunities.

Part IV Discussion and Conclusion

In this paragraph, we first discuss the three research objectives addressed in this report, summarising the findings presented in more detail above. We then draw some conclusions regarding the role gender norms and stereotypes play in women's engagement in innovations and the lesson we should learn regarding women innovators' support.

15. Summary of findings

What motivates women and men in agriculture and rural areas to develop new initiatives?

The focus groups with men and women innovators demonstrated the similarity of innovations across countries. Men were typically engaged in new farm technologies or production methods, looking to improve productivity or profit. Women innovators searched for ways to utilise existing resources in a new way or develop new ideas, often related to multifunctional farming.

There was also a similarity in motives. Both women and men mentioned enthusiasm for innovating, sustaining agricultural and rural revitalisation as a motive, planning for the future of the business, and taking advantage of entrepreneurial opportunities. For both, the need for social connections was critical as well. However, for women, autonomy was a vital motivation, referring to their professional identity, creativity, and self-reliance regarding income and position within the family farm; besides, the opportunity to combine family and work was driving many women. Interestingly, men never referred to autonomy as a motivation and instead often to profit, a motive only few women mention. It is crucial to notice that the incentive to innovate is often multifaceted, with multiple motivations interlocking.

Women innovators identified the family as a primary support system, whereas men generally referred to like-minded colleagues. Both tended to evaluate the professional support systems as difficult to access in many areas. When it comes to barriers, women often referred to a lack of self-confidence and fear to fail, fuelled by the experience of being dismissed and not taken seriously. Men innovators also experienced a fear of failure and discussed the impact of mental health issues. The imbalance of domestic responsibilities continues to be a significant barrier for women innovators.

Moreover, both men and women innovators mentioned ill-equipped mentors and the lack of professional support as barriers. At the same time, there were numerous examples of women experiencing the knowledge- and innovation support systems as not inclusive and discriminatory in dismissing women and their ideas. Also, the small-scale nature of their innovations often inhibited access to funding and support. A further barrier was the lack of access to resources. For women in particular, this regarded access to land. Poor (physical and digital) infrastructure was blocking access to knowledge, information training, and markets for both.

What are the experiences of relevant agricultural/rural stakeholders and representatives of the mainstream knowledge & innovation ecosystem with women innovators?

The interviews with stakeholders showed that support for female innovators varied across countries. Some countries have initiatives targeting women through training, finance advice, and entrepreneurship programmes, which were considered important for women's chances to build support networks. The importance of female role models in boosting confidence was mentioned often, too. Stakeholders noted their cautious, step-by-step approach as both risk-averse and persistent. Many respondents stressed that women possessed the necessary capabilities but met structural barriers that made it difficult for women to access the required resources and support. Specifically, stakeholders referred to inheritance laws inhibiting access to land, domestic responsibilities limiting time, and women's underrepresentation in decision-making bodies hindering the development of funding and support programmes for women innovators. Currently, stakeholders experienced that gender norms lead to prejudices and disparities in treatment between men and women seeking funding or advice.

What role do digital experts see or expect digital services to play in enabling women innovators in agriculture and rural areas?

The interviews with women, stakeholders and digital experts revealed that digital support for women innovators in rural areas varies across countries. This was mainly related to infrastructural problems such as a lack of high-speed internet connections. It was generally age and not gender which affected digital literacy. The availability of online training and information, especially since COVID-19, is essential for women, yet limited access to the internet and funding constraints may still pose problems. Across countries, stakeholders referred to the need to simplify tools, funding, and cybersecurity education. They also underlined that online media could be used more effectively to counteract gender stereotypes and promote women innovators as role models.

16. Reflection on the presence of gender norms

Gender norms were omnipresent in the focus groups and the stakeholders' interviews. Women tended to identify them more quickly and explicitly than men, often based on personal experience as innovators or advisors in the AKIS.

All national reports identified gender norms inhibiting women innovators. They were often internalised, reducing women's belief in themselves and confidence to present themselves and their innovative ideas to the outside world. Gender norms also blocked their access to material resources, such as land and finances, funding and support for training and education. Here, we see that gender norms are institutionalised in policies, laws and regulations, and knowledge and innovation infrastructures; they are also internalised by individual funders, advisors, and policymakers who either neglect women innovators as an important group or actively dismiss them and their ideas as irrelevant. Moreover, the small size of women's new businesses was identified as an important restriction regarding funding and respect. Gender norms are also present in the social context of women, influencing the attitudes and behaviour of partners, family, and friends, as well as neighbours, all of whom often dismiss women. At the same time, it is crucial to indicate that women identified their partner, family, and friends as their most important support network. Given their location in rural areas, many women innovators faced challenges related to the remoteness of the location and deteriorating infrastructure, including high-speed broadband connections and childcare institutions.

The national reports also included valuable suggestions on what should be done to enable women innovators. Among others, there is a plea for rendering knowledge and innovation support more inclusive: engaging more female consultants in first-line services and improving the competencies of advisors. Another frequently made recommendation is to increase the visibility of female innovators to attract support and inspire others to start businesses. These role models must be the more 'normal' or everyday innovators rather than those excelling in their area. It is also stressed that we must be careful not to limit the imagery used (such as care-related activities), reinforcing stereotypes. At the same time, focus could be given to redistributing care work from women to men and improving access to parental leave and local childcare options. A systematic change in funding systems is important to make funding more accessible, particularly for small-scale businesses not necessarily driven by the desire to upscale and increase profits. Less bureaucracy was often mentioned as well. Next to funding, training, and networking are listed as essential to improve for women and men.

Finally, many of our respondents underline the need for a cultural transformation in agriculture, diminishing its male-dominated nature and amplifying the visibility and contributions of women within the sector. This could be achieved by offering accessible skill-focused training, providing confidence-boosting coaching, and increasing subsidies. Additionally, gender equality could be ensured through regulatory measures, such as implementing women quotas and mandating joint registration of business partnerships in official documentation, including grant or subsidy applications. Promote diverse female role models and leadership

in agriculture, ensure policies reflect female farmers' perspectives, diversify media representation beyond the 'usual suspects', and foster inclusive farmer networking events for increased female participation. Encourage equal parental care, promote female business succession, and offer emotional support within agricultural family businesses. Revamp agricultural education to represent women's roles better, diversify teacher demographics, and prioritise smaller, sustainable projects in funding. Foster creativity in agriculture agreements, fund small projects for long-term sustainability and broaden subsidy focus to encompass social and local innovations, not just technical ones.

17. Final concluding remarks

"Does Grass Ceiling offer a chance to change the narrative? That is, from one that shows women as an excluded constituency requiring support to one that reveals and proposes to enable the particular outlook and strengths they already contribute (e.g. predisposition to collaborate in environmentally aware networks), especially given that these characteristics are likely to become increasingly crucial." (Scotland)
This quote from the Scottish report underlines the importance of addressing ambiguity and ambivalence in identifying gender differences in how women and men innovate. Ambiguity in the sense that gender inequality was considered as something from the past, particularly in the Nordic countries, rendering gender-specific support outdated; they thought women and men both needed support as individuals even though the women in the focus groups reported on gender-specific barriers. Across countries, there was also ambivalence in reporting on gender specificity while worrying about reproducing gender stereotypes. The latter is a concern shared by the researchers. This research demonstrates that gender norms and stereotypes are still inhibiting the success of women innovators. At the same time, there is plenty of evidence that women are already successful innovators and that their 'otherness' in ideas and ways of working is a crucial and valuable resource in the transition of agriculture and the vitalisation of rural areas. This report underlines the evident need to improve the support for women innovators; at the same time, it is important to recognise and respect women's specific approach to innovation as something to cherish and preserve. We should not teach women to behave like men – on the contrary, men have much to learn from women as innovators, funders, trainers, advisors, and policymakers.

Appendices

Appendix 1. Complementary Table Methodology Part I

Table 1. Overview demographics focus group participants

Country	Gender participants	# FG	# Participants per FG	Sectors covered
Norway	Women	2	8, 3	Vocational and higher education.
	Men	2	2, 4	Lower and higher education.
Sweden	Women	2	5, 5	Rural business owners and NGOs engaged in rural development.
	Men	1	4	Farmers and engaged in rural development.
Scotland	Women	2	4, 6	Crofting, rural business owners, graphic designers, and food products.
	Men	2	2, 2	Crofting, R&D, multifunctional farming, failed business.
Ireland	Women	2	6, 5	Food products, marketing, IT, and rural business owners.
	Men	2	3, 6	Media, tourism, event management, horticulture, food products, mental health, and property investment.
Croatia	Women	1	8	Agriculture, education, law, and textile. Tertiary & secondary education.
	Men	3	7, 5, 5	Farmers, mainly tertiary education.
Netherlands	Women	3	14, 16, 8	Dairy- and camel farmers, partners of farmers, and women involved in rural innovation projects. Active in policy work, advocacy, and campaigning.
	Men	1	8	Organic arable and dairy farmers and (retired) academics involved in rural communities.
Lithuania	Women	2	5, 5	The majority are highly educated. Farmers, off-farm work, involved in rural communities, farm shop manager.
	Men	2	5, 5	Advisor rural innovations, farmers, CEO plant research company, agricultural machinery.
Italy	Women	2	8, 5	All are highly educated. Diverse agricultural business owners. Involved in environmental education, university lecturing, volunteer work, medicinal plants, policy work, advocacy, social and cultural cooperatives, rehabilitation community, (eco) tourism, and the healthcare sector.
	Men	2	4, 4	The majority are highly educated. Diverse agricultural business owners, including regenerative farming and medicinal plants. Involved in a cultural association, IT sector, consultancy, (eco) tourism, and

				revitalisation of rural heritage.
Spain	Women	1	8	Dryland crops, irrigated crops, and livestock farmers. Involved in beekeeping, vineyards, wine cellar, free-range chicken eggs, semi-extensive sheep farming, pig farming, and extensive beef cattle (transhumance).
	Men	1	5	Dryland crops, irrigated crops, and livestock farmers. Involved in semi-extensive sheep farming and extensive beef cattle.

Appendix 2. Complementary Table Methodology Part II

Table 2. Overview demographics stakeholders

Country	# Stakeholders	Interviewing method	Sectors covered
Norway	10	Online or telephone	Innovation companies, state administrators, regional councils, universities, regional banks, regional development, agricultural schools, and regional non-profit companies.
Sweden	8	Online, one face-to-face	Business and innovation (2), support and advisory with a focus on farm and rural business (2), agri and rural development (3), and developing food chain (1).
Scotland	11	Online	NGOs (4), government departments, agencies, public bodies (4), membership organisations (2), private sector, and legal (1).
Croatia	12	Ten online, two face-to-face	Advisors and consultants, public institutions (advisor to the minister of agriculture, organisation for environmental protection in rural areas, agency for rural development of Zadar County, public institution for the development of Međimurje county, Croatian Chamber of forest engineers and wood technology), association of exemplary Croatian rural women, academics, real economy and journalists.
Ireland	10	Online	Financial advisors (bank, grant), trainers (3), community organisations, lobbyists (2), farm advisors, and legal advisors.
Italy	6	Online	Agricultural science & technology training, knowledge & innovation community and research, women innovator network.
Spain	13	Online	Agri-food coop, technicians, national & regional development admin, innovation & equality admin, and media.
Lithuania	12	Six online, six face-to-face	All are part of AKIS and support agricultural/rural innovators - policy makers, trainers, tech developers, consulters, funding providers, and local action groups.
Netherlands	14	Seven online, seven face-to-face	Government officials, financial institutions, agricultural coaches, trainers, rural community facilitators, agricultural consultants & advisors, and agricultural notary clerks.

Appendix 3. Complementary Table Methodology Part III

Table 3. Overview demographics digital experts

Country	# Digital experts	Interviewing method	Sectors covered
Norway	2	Online	Small and medium business support.
Scotland	1	Online	Training provided to medium- and large-scale entrepreneurs to access mentoring and education and work for the non-departmental public body of the Scottish Government.
Croatia	2	Online	An employee in the agricultural portal Agroklub; expert advisor in the Ministry of Agriculture (team member in DESIRA).
Ireland	2	Online	Digital policy expert; Digital inclusion advocate.
Spain	2	Online	Digitalisation in agriculture technician and researcher.
Lithuania	2	Face to face	Director of the digital service provider, innovation manager agri-food technology.
Netherlands	1[3]	Online	Scientist specialised in digital transformation in agrifood systems.
Sweden	N/A[4]	N/A	N/A
Italy	N/A[4]	N/A	N/A

[3] The Netherlands compensated their small number of interviewed digital experts (1) by covering questions related to the effect of digitalisation on women innovators in their stakeholder interviews.
[4] Sweden and Italy did not conduct interviews with digital experts specifically, but covered questions related to the effect of digitalisation on women innovators in their stakeholder interviews.