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EXECUTIVE SUMMARY

Agroforestry systems are increasingly recognised for their potential to enhance the sustainability, resilience, and multifunctionality of farming systems, yet adoption in Europe, particularly in the north of the continent, remains limited. A widely recognised barrier to agroforestry uptake is limited knowledge and technical information available to support farmers through the design and management of agroforestry systems. This deliverable presents a cross-country assessment of the current agroforestry advisory and knowledge-sharing situation in four REFOREST Living Lab countries: Belgium, Denmark, Poland, and the United Kingdom (UK), based on expert interviews and surveys. The study assesses whether the existing advisory and knowledge-sharing framework meets the needs of farmers and addresses emerging market opportunities. This informs the development of a consultancy business model, as well as recommendations for industry, policy, and research.

The analysis builds on the regional context provided in Task 2.2 and the insights into knowledge gaps from Task 2.3. It maps the range of farming, forestry and consultancy actors who currently provide, or could potentially offer, agroforestry advice. Findings reveal a fragmented advisory ecosystem characterised by strong but informal peer-learning networks, limited specialist capacity among mainstream agricultural and forestry advisers, and a small but growing number of NGOs and private consultants providing early-stage support. Despite increasing farmer interest, advisory provision remains uneven, with significant gaps in integrated agriculture-forestry knowledge, economic and market guidance, and long-term management advice.

A needs and opportunities analysis shows strong farmer demand for agroforestry support across all Living Lab countries. However, the expertise required to meet this demand, spanning system design, tree and crop integration, economic analysis, ecosystem-service assessment, and navigation of regulatory frameworks, is only partially available within the current advisory and knowledge-sharing system. Matching existing knowledge to market needs highlights substantial mismatches, particularly in areas requiring cross-disciplinary coordination and sustained advisory relationships.

To address these challenges, this deliverable outlines a flexible consultancy business model for agroforestry advisory services, developed using the Business Model Canvas framework. The model envisions a multi-actor consultancy capable of offering integrated, lifecycle-spanning support, combining digital tools with farm-specific expert guidance. It proposes a dual customer base, serving both farmers and organisations with an interest in environmental outcomes, and draws on diversified revenue streams including public funding, private-sector partnerships and subscription-based services. The model is designed for adaptation to regional policy settings, market structures and existing advisory situations within the Living Lab countries.



To enable large-scale, high-quality implementation of agroforestry systems, our findings highlight opportunities for coordinated actions for industry, research organisations, and policy makers, including expanding specialist adviser training and accreditation, developing mixed funding models, strengthening demonstration networks and multi-actor Living Labs, co-producing research agendas with practitioners, and providing stable policy frameworks that integrate funded advisory services. Many of these initiatives already exist on a small scale, and their expansion offers a pathway to help unlock agroforestry's environmental and economic potential across Europe.

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3	Summary of key recommendations for industry, research and policy makers to strengthen agroforestry advice and knowledge sharing in Europe.

LIST OF ACRONYMS AND ABBREVIATIONS

Abbreviation	Definition
AF	Agroforestry
AI	Artificial Intelligence
AKIS	Agricultural Knowledge and Innovation System
BE	Belgium
CAP	Common Agricultural Policy
DK	Denmark
EU	European Union
ICOEL	Innovation Centre for Organic Farming
LLM	Large Language Model
MRV	Monitoring, Reporting and Verification
NGOs	Non-Governmental Organisations
PESTLE	Political, Economic, Social, Technological, Legal and Environmental
PL	Poland
T	Task
UK	United Kingdom
WP	Work Package

1. INTRODUCTION

Agroforestry, the deliberate integration of trees with crops and/or livestock, is increasingly recognised as a multifunctional land-use system capable of addressing multiple sustainability and resilience challenges in agriculture (Mathieu et al., 2025; Veldkamp et al., 2023). By enhancing biodiversity, improving soil health, reducing greenhouse gas emissions, and diversifying farm incomes, agroforestry offers solutions to many of the environmental and economic pressures facing farming in Europe (Kay et al., 2019; Le et al., 2025; Veldkamp et al., 2023). Although agroforestry systems are widespread in tropical regions and remain integral to traditional landscapes in much of southern Europe, traditional systems have substantially declined in northern Europe, accompanied by limited adoption of innovative agroforestry systems (den Herder et al., 2017; Eichhorn et al., 2006; Zomer et al., 2016). Against this backdrop, effective advice and knowledge-sharing is critical to unlock the benefits of agroforestry systems across Europe.

The importance of effective advice, information, and dissemination at the farm level in supporting the adoption of new practices is well established in the agricultural extension literature (Sánchez Bogado et al., 2024; Serebrennikov et al., 2020). Agroforestry presents particular challenges for advisory systems due to its inherently multidisciplinary nature, which combines agronomy, animal science, forestry, and horticulture, as well as an understanding of their interactions. A lack of knowledge and technical information of agroforestry systems is a recognised barrier to the expansion of agroforestry systems in Europe and North America, while learning from peers and demonstration examples is consistently identified as a key driver of uptake (Mvula et al., 2025; Rois-Díaz et al., 2018; Tosh and Westaway, 2021; Tranchina et al., 2024b; Zibecchi et al., 2025). Advice for agroforestry must go beyond conventional technical advisory support, helping farmers to access relevant knowledge, build capacity for innovation, and manage the long-term complexity of integrated tree-crop/pasture systems (De-Sousa et al., 2025; Feber et al., 2025). Effective advice and knowledge sharing are essential not only for stimulating adoption but also ensuring that agroforestry systems are well designed and appropriately managed to deliver long-term environmental and economic benefits, minimise trade-offs, and increase resilience to climate change (Altieri et al., 2015; Smith et al., 2022).

Although policy frameworks promote agroforestry, for example, through the EU's Common Agricultural Policy (CAP) (Mosquera-Losada et al., 2023; Santiago-Freijanes et al., 2018), advisory support has been less consistent. Some publicly funded advisory initiatives for agroforestry are in place, such as regionalised schemes in Belgium, Germany, and the UK (Anebagilu et al., 2025; O'Neill, 2024). While helpful, these initiatives are geographically patchy and lack sufficient resources. This reflects the broader agricultural advisory landscape in Europe, which has shifted from publicly funded extension services to privatised advisory models since the 1990s. This transition has introduced new actors from the private and non-profit sectors, blurring traditional roles of extension agents, researchers, and farmers (Labarthe and Laurent, 2013). Advisory services can be understood as part of the wider Agricultural Knowledge and Innovation System (AKIS), which links diverse actors to generate, share, and utilise agriculture-related knowledge (Knierim et al., 2015; Kountios et al., 2024; Prager et al., 2017). Peer-to-peer farmer networks are increasingly recognised as crucial for effective information flow and farmer trust (Rust et al., 2021; Skaalsveen et al., 2020; Šūmane et al., 2018). Despite this diversity of information and learning, the effectiveness of agroforestry advice in Europe

has received little systematic analysis compared to other domains such as soil or nutrient management (e.g. Ingram et al., 2022).

Surveys in northern Europe consistently report that over half of farmers express willingness to adopt agroforestry or plant trees (Felton et al., 2023; Irwin et al., 2022; Opdenbosch and Hansson, 2022). Meanwhile, digital tools and online platforms are emerging as potential complements to traditional advice and knowledge sharing networks (Gosme et al., 2025; Staton et al., 2024; Tranchina et al., 2024a). Yet, uncertainties persist about whether there is adequate tailored, high-quality, and context-specific support required to meet farmer demand for agroforestry in Europe. For example, a recent UK agroforestry research agenda, co-developed with stakeholders such as farmers, advisers, and policy-makers, identified a research question concerning the adequacy of agroforestry advice provided to farmers and measures needed to overcome shortcomings (Hood et al., 2025).

Against this background, it is timely to ask: Are advisory services and knowledge-sharing systems ‘fit for purpose’ to support the upscaling of agroforestry in Europe? Although the importance of advisory support in land-use transitions is well recognised, there has been little academic analysis of the adequacy, organisation, and future potential of agroforestry-related advisory services at regional, national, or European scales. This paper contributes to addressing that gap by assessing the current advisory and knowledge-sharing situation in four REFOREST Living Lab countries, namely Belgium, Denmark, Poland, and the UK. Drawing on surveys and interviews with stakeholders, and integrating contextual knowledge from the Living Labs (Tasks 2.2 and 2.3), we map the farming, forestry, and consultancy actors with the potential to expand or develop agroforestry expertise within their portfolios, assess the needs and opportunities within the existing advisory market, explore future demand for agroforestry-related support, and identify key areas of expertise required to assist farmers transitioning to agroforestry. The analysis culminates in a business model for an agroforestry-focused consultancy, along with recommendations for industry, research, and policymakers to strengthen advisory provision and knowledge exchange.

2. METHODS

The methodological approach was based on a combined survey and interview with experts involved with agroforestry advice and knowledge sharing in four REFOREST Living Lab countries: Belgium, Denmark, Poland, and the UK, while integrating findings from WP2. We focused on northern European countries because agroforestry is less prevalent compared with southern Europe (den Herder et al., 2017). Outcomes of the surveys and interviews were compared among the four countries and used to (i) map advisory actors in the current system and (ii) identify needs and opportunities using Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis. SWOT analysis is commonly used to assess both helpful and harmful factors, taking into account both internal and external views of an organisation (Sammut-Bonnici and Galea, 2015), or a wider industry or system (e.g., Lindegaard et al., 2016). In this case, internal factors (strengths and weaknesses) were defined as those within the direct influence or control of the agroforestry advisory and knowledge-sharing system, including its institutions, personnel, and peer networks. External factors (opportunities and threats) were outside of this system, including economic conditions and cultural attitudes. The SWOT analysis was used to

inform the development of a consultancy business model and recommendations for industry, policy and research.

2.1 SURVEY AND INTERVIEW DESIGN

The survey and interview guide was co-developed among the co-authors based on the PESTLE framework: Political, Economic, Social, Technological, Legal, and Environmental. PESTLE essentially represents a checklist of factors, which is useful for facilitating a holistic understanding of the study system. The survey and interview guide combined a Likert-based survey with qualitative questions, allowing quantitative data to be compared across countries while enabling interviewees to explain their scoring, discuss caveats, and raise any additional points. For example, the first survey statement was ‘There are adequate cost-free information sources for agroforestry knowledge and advice’, to which interviewees were asked to respond with their agreement on a scale of 1 (strongly disagree) to 5 (strongly agree). Interviewees were then asked to elaborate on their reasoning for the score. Interviewers were also encouraged to ask additional questions if appropriate to clarify points or explore other matters which arose during the interview. The survey questions and interview guide are available at Appendix 2.

2.2 SURVEY AND INTERVIEW PROCESS

Participants were shortlisted based on their experience with agroforestry advice and knowledge sharing. This included stakeholders involved in peer-to-peer learning, such as influential farmers, along with public and private advisory bodies. Shortlists were developed based on the authors' contacts and those of their colleagues. Shortlisted candidates were invited to participate in the survey and interview by email and were provided with background information on the study. A total of six surveys/interviews were undertaken in the UK, while three were undertaken each in Denmark (one of which included two joint participants), Belgium and Poland. Participants were from various backgrounds, selected based on the predominant sources of advice in each country, with a focus on the charitable/non-profit sector in the UK and Denmark, with farmers also well-represented in Denmark, a focus on private advisers in Poland, and a range of sources in Belgium (see Table 1). Each survey and interview lasted between thirty minutes and one hour and took place either via video call or in person. Interviews were audio-recorded, transcribed, and, where necessary, translated into English prior to analysis. The process was undertaken in accordance with the University of Reading's research ethics procedures, with prior ethical approval obtained.

Role	Belgium	Denmark	Poland	UK
Farmer	0	2	0	1
Charity / non-profit	1	2	0	4
Local government	0	0	0	1
Private adviser	1	0	3	2
Research institute	1	0	0	0

Table 1: Number of participants by professional role in each Living Lab country. One participant in the UK fulfilled two roles (farmer and charity/non-profit).

2.3 MAPPING OF CONSULTANCY ACTORS

We identified existing advisory actors with the potential to incorporate agroforestry services into their portfolios, based on data from surveys and interviews conducted across the four Living Lab countries. These actors were analysed according to their existing technical competence, their advisory functions, their level of interest or engagement with agroforestry, and their organisational capacity to incorporate new agroforestry-related services. Although not all actors were directly represented by survey and interview participants (e.g. forestry advisers), information was inferred based on the wider responses of the participants.

2.4 INTEGRATION OF WP2 KNOWLEDGE

The analysis was informed by the Living Lab contextual findings produced in Task 2.2, which detail regional land use conditions, policy frameworks, and stakeholder networks of agroforestry systems in Belgium, Denmark, Poland, and the UK. These regional contexts provided the foundation for interpreting differences in advisory provision and for situating interview and survey findings within the specific institutional and market environments of each of the four Living Lab countries.

In addition, behavioural and institutional insights from Task 2.3, covering social, economic, and organisational barriers to agroforestry adoption, as well as actor motivations and knowledge-exchange dynamics, were used to guide the identification of advisory needs, opportunity areas, and constraints (Hassler et al., 2023). Together, Tasks 2.2 and 2.3 provided the structural and behavioural framework within which the advisory mapping and SWOT analysis were conducted.

2.5 SWOT ANALYSIS

A SWOT analysis was conducted based on the survey results and thematic interview analysis to identify needs and opportunities for agroforestry advice and knowledge sharing. The thematic analysis used a dual approach based on AI with rigorous human oversight, which has advantages associated with objectivity and balance, mitigating potential biases of the authors arising from personal understanding and perceptions, while human oversight mitigates the limitations of LLMs (Jalali and Akhavan, 2024; Naeem et al., 2025; Turobov et al., 2024). Microsoft Copilot was selected as the LLM for the analysis, based on its availability and improved confidentiality of uploaded files (which, as a precaution, were fully anonymised and subsequently deleted). An LLM prompt was developed (see Appendix 3) based on Turobov et al. (2024), using a role-playing framework where the LLM was instructed to act as an academic expert in qualitative thematic analysis, emphasising accuracy and relevance, deep and nuanced analysis, scholarly tone, and avoiding any opinions not explicitly stated in the interview transcripts (e.g. sources from the internet). This prompt was repeated three times to identify strong recurring themes. While AI-assisted thematic analysis increased objectivity, all interview transcripts were reviewed and themes verified by the lead author to ensure accuracy.

The thematic analysis comprised three main steps. Firstly, the LLM was instructed to generate thematic codes for each country, defined as ‘labels that assign summative, salient, essence-capturing, and/or evocative attributes/meanings to text data’. Step 2 involved assigning each code from Step 1 as a strength, weakness, opportunity or threat (SWOT) for each country. In Step 3, a combined cross-country SWOT was produced.

2.6 CONSULTANCY BUSINESS MODEL

Based on the findings of the above analysis, a business model for an agroforestry-focused consultancy was developed using the Business Model Canvas framework. A broad model was developed to facilitate adaptability to regional conditions.

3. RESULTS

3.1 MAPPING OF ADVISORY ACTORS

Interview data were used to identify the groups of advisers currently engaged in, or well-positioned to engage in, agroforestry-related support. Respondents described a diverse advisory landscape comprising agricultural advisers, forestry advisers, private consultancies, NGOs, farmers, and research organisations, each with different levels of existing competence and institutional ability to integrate agroforestry into their work. Table 2 summarises these actors, the interview-derived evidence for their current contributions to the advisory and knowledge-sharing situation (generalised across countries), and the barriers that may constrain their expansion.

Actor type	Current contribution	Barriers
Specialised, private agroforestry consultants	Already providing some agroforestry advice, entrepreneurial interest	Limited numbers, inconsistent experience
NGOs / charities	Active in early-stage advice in several countries, with existing training roles	Limited long-term funding
Agricultural advisers	Natural fit for farm planning, currently lacking agroforestry expertise	Lack of agroforestry training and forestry knowledge
Forestry advisers	Technical overlap with tree establishment and management	Limited engagement, farmers may be resistant to forestry advisers (perceived as non-agricultural land use)
Farmers	Important for peer learning	Not structured advisory actors
Research institutes	Evidence providers, not consultants	Institutional mandate
Digital tools	Help with design and decision-making	Not advisory actors, limited contextual support

Table 2. Advisory actors able to add agroforestry (AF) services to their portfolios, based on interview-derived evidence generalised across countries.

Considering a regional context, our four Living Lab countries varied in terms of their advisory situations, funding mechanisms, policy drivers, and the current momentum of agroforestry within the farming community. Denmark was characterised by a very small agroforestry consultancy sector but strong farmer peer networks, with limited demonstration sites. Belgium has featured strong horticultural and forestry advisory traditions but faces challenges with integrating agroforestry. In Poland, there is a high interest among small farms, but limited formal agroforestry advisers and a lack of engagement amongst agricultural advisers. In the UK, the advisory sector is fragmented with

relatively active NGOs and relatively strong farmer interest in agroforestry, but a shortage of experienced advisers.

3.2 STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS (SWOT)

Survey and interview data from 16 agroforestry experts across Belgium, Denmark, Poland and the UK were integrated to develop a SWOT analysis to assess current needs and opportunities of the agroforestry advice and knowledge-sharing situation across the four Living Lab countries, and future demand for agroforestry-related extension and farmer support (Figure 1), in order to inform the development of a business model. Two strengths and two opportunities were identified, along with four weaknesses and four threats. These are described below with reference to the survey results (Figure 2) and notable cross-country differences.

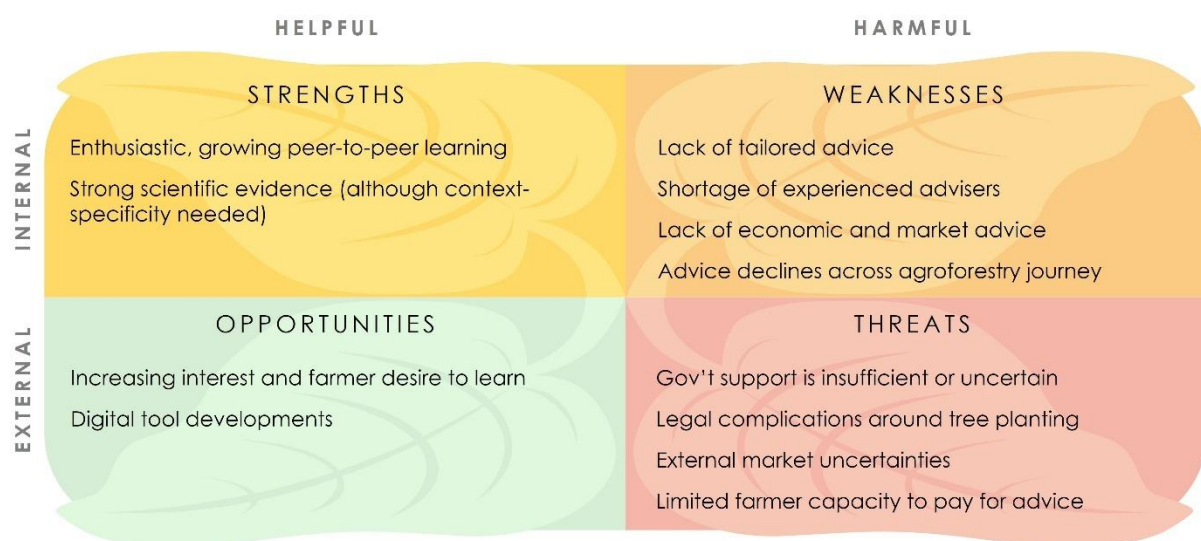


Figure 1: Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis of the current agroforestry advice and knowledge sharing situation across Belgium, Denmark, Poland, and the UK.

3.3 STRENGTHS: PEER LEARNING AND SCIENTIFIC EVIDENCE

Peer-to-peer learning, such as demonstration farms, emerged as a consistent strength across countries. According to our survey, only four of 16 stakeholders disagreed with the statement that peer-to-peer knowledge exchange is adequate and effective (Figure 2F). Interview responses further revealed that active, informal networks among agroforestry farmers helped with sharing experiences of implementing agroforestry. Participants frequently described a strong sense of openness and collaboration within these communities:

“Everyone just pours out the information that they've got... It does feel like everybody wants to try and get it better.” (UK, farmer and charity adviser)

“We [pioneering agroforestry farmers] met... every year and we shared our experiences.” (DK, farmer)

“People who are interested in this know each other and are very willing to talk to each other. This exchange of information is quite intense.” (PL, private adviser)

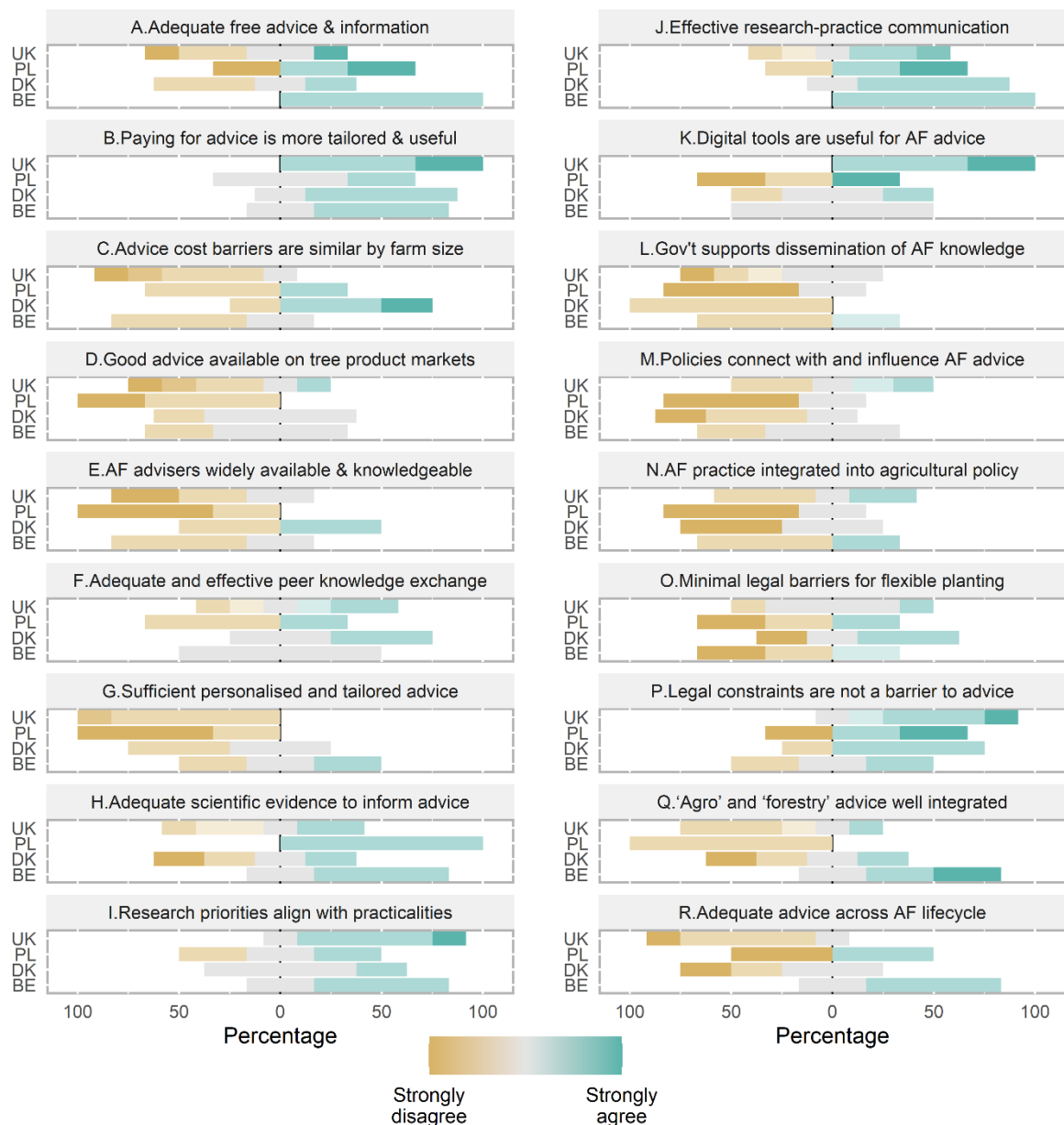


Figure 2: Outcome of survey results where participants were asked to state their level of agreement with each statement according to the Likert scale, in the UK, Poland (PL), Denmark (DK), and Belgium (BE). Statements are abbreviated; see Appendix 2 for full statements.

However, several respondents highlighted limitations in the scale and accessibility of peer knowledge exchange, particularly in terms of the availability and geographic spread of demonstration farms. This was seen to restrict the extent and consistency of knowledge exchange in practice:

"There's good stuff out there, but whether it's adequate, I would say it's probably patchy." (UK, charity and private adviser)

"There are sufficient knowledge exchange opportunities... However, there could certainly be more demonstration farms, which would be highly valuable." (BE, private adviser)

In addition to peer learning, the availability of scientific evidence was widely viewed as a strength, particularly in Belgium and Poland. In these countries, all but one respondent agreed that adequate evidence already exists to inform the design and management of agroforestry systems (Figure 2H). Perceptions were more mixed in the UK and Denmark, where the need for more context-specific data was emphasised. Participants generally held positive views on the priorities of scientific research (Figure 2I) and its dissemination (Figure 2J). Positive responses emphasised how global evidence provides a credible foundation for national-level innovation:

“Currently, knowledge is sufficient to develop advice. However, there are still difficulties in determining factors like planting distances...” (BE, non-profit organisation)

“We always refer to international studies... The UK’s a really good reference for us because we are on the same climate... [but] we’re definitely missing these measurements, results in a Danish context.” (DK, non-profit organisation)

Despite this, many interviewees stressed the need for locally relevant, applied research that reflects specific climatic, economic, and agronomic contexts. A common view was that generic evidence, while helpful, often fell short of meeting farmers' practical needs:

“...some of that evidence is not UK evidence and may not be quite as relevant for that... because we’re talking about different plants with different root systems.” (UK, charity adviser)

“...much more such research can be found somewhere abroad.” (PL, private adviser)

Overall, while agroforestry knowledge exchange is supported by strong farmer networks and a robust global evidence base, its effectiveness is currently limited by uneven regional coverage.

3.4 WEAKNESSES: TAILORED ADVICE, ADVISER AVAILABILITY, MARKETS, AND CONTINUITY

Four interrelated weaknesses were identified across the four countries (Figure 1). Most notable was the limited availability of tailored, farm-specific agroforestry advice. Survey data clearly reflected this, with only one of the 16 respondents agreeing that sufficient personalised and tailored advice exists, while 12 disagreed or strongly disagreed (Figure 2G). In the interviews, farmers and advisers described having to piece together information themselves, often with little contextual guidance.

“Personalised advice? Contextualised advice? Totally inadequate.” (UK, private adviser)

“It is still me [the farmer] who has to find out the information regarding what I want to do, and the scale.” (DK, farmer)

“It doesn’t exist, it’s only just beginning to form... these types of solutions are quite difficult to access.” (PL, private adviser)

This shortage of tailored advice was closely tied to a second common weakness, a lack of suitably qualified and available agroforestry advisers. In this regard, only two of the 16 respondents agreed that agroforestry advisers were widely available and had sufficient knowledge and experience (Figure 2E). Although skilled advisers exist, they were perceived to be too limited in number:

"We do have one very small company in Denmark who works with agroforestry, advising... there are three people." (DK, non-profit organisation)

"There are too few professional agroforestry advisers." (BE, research institute)

"There is actually no agroforestry in advisory services... Of the advisers I know, two people." (PL, private adviser)

In the UK, where farmer interest in agroforestry and expanding policy support has increased demand for advisory services, concerns were raised about inexperienced advisers potentially offering poor-quality support:

"...you've got people that are saying they're professional advisers in agroforestry who have only been doing it for two or three years, and I don't consider that to be an expert." (UK, farmer and charity adviser)

A third key weakness was the lack of economic guidance, particularly in relation to profitability and market access of agroforestry systems. Only one of 16 respondents agreed that good advice was available to help farmers find value from tree products (Figure 2D). Several participants highlighted the need for financial case studies and concrete data to support business planning:

"There are too few case studies that have been financially analysed." (BE, private adviser)

"There is certainly a big knowledge deficit on the issue here." (PL, private adviser)

In this context, many interviewees emphasised the need to better integrate 'agro' and 'forestry' advice and knowledge, especially to address gaps in value-chain and market advice. Outside Belgium, only two of 13 respondents agreed that effective integration existed between these advisory domains (Figure 2Q). Current advisory systems were often described as siloed, with limited collaboration between sectors:

"...how do we make these things profitable? It's lacking... here's another example where farming and forestry could work together to create better information." (UK, private adviser)

"...if you grow apples you can get advice. And if you have timber you can get advice for that. But not in an agroforestry system." (DK, non-profit organisation)

"Knowledge about wood marketing is almost non-existent... collaboration with forest groups could be important in this regard." (BE, non-profit organisation)

Finally, participants across all countries highlighted that advisory support tends to decline over the agroforestry lifecycle, particularly after the establishment phase. Only three of 16 respondents agreed that adequate advice was available throughout the full agroforestry lifecycle (Figure 2R). While advice was seen as stronger during the design and setup phases, many considered this to be lacking during later stages, such as management, replanting, or monitoring:

"...we're well served in terms of planning, design, establishment... It's a degrading thing as you go along..." (UK, charity adviser)

"It's not available, not that whole system of advice. It's not like we have a schedule or a scheme we can follow." (DK, non-profit organisation)

“As the agroforestry journey progresses, the level of detail in guidance tends to decrease, particularly in later stages like monitoring and replanting.” (BE, research institute)

“There is no such thing as consistent advice. You have to ask for everything, you have to force your way through a bit of information.” (PL, private adviser)

Weaknesses in advice provision are therefore rooted in fragmented expertise and a lack of long-term support frameworks.

3.5 OPPORTUNITIES: GROWING FARMER INTEREST AND DIGITAL TOOLS

Although not specifically targeted in the survey and interview, one key opportunity that emerged from the interviews was the growing interest of farmers and landowners in agroforestry, albeit this is at different stages across countries. This emerging demand for advice presents an opportunity to expand advisory provision and develop more structured peer learning platforms and demonstration networks. Respondents mentioned that interest was strongest among smaller farms and landowners seeking diversification, environmental enhancement, or alternative income streams:

“Well we've got momentum now... There seems to be a lot more people interested in getting trees on their farmland. It would be a shame if we didn't grab the opportunity by getting adequate support in terms of advisers on the ground.” (UK, local government)

“...if there's an event focussing on agroforestry, there's big interest in participating. So there's a big interest to seek knowledge about agroforestry.” (DK, non-profit organisation)

“...it's mainly such hobby farmers who are interested in it... this movement is growing, there are more and more of them and it is starting to become a crowd.” (PL, private adviser)

A second opportunity identified was the development and use of digital tools to support agroforestry advice. Half of the 16 respondents agreed that digital tools are useful for obtaining agroforestry advice (Figure 2K). In this regard, country differences were notable, with stakeholders in the UK and Poland having neutral to positive perceptions:

“We have very automated tools... we have everything served on a plate for design...” (PL, private adviser).

In Denmark and Belgium, however, respondents were more cautious about their availability or maturity:

“They're not in place. But definitely agree that it would be really useful to have.” (DK, non-profit organisation)

Despite this enthusiasm, many participants cautioned that digital tools still need to be complemented by contextualised and personalised advice, especially to address site-specific considerations:

“I think certainly for helping the process... but I don't think they can deliver the nuance of the specifics of the scheme.” (UK, charity adviser)

“Tools offer a useful first selection... However, while tools provide direction and are valuable, they cannot replace expert advice.” (BE, private adviser)

Overall, the rise in farmer interest and technological support offers significant opportunities for the expansion of effective agroforestry advice and knowledge exchange.

3.6 THREATS: SUPPORT FROM GOVERNMENT AND MARKETS, COST OF ADVICE

Uncertainties or perceived lack of support in policies and legislation emerged as key threats to agroforestry advice and knowledge sharing, although perceptions differed across countries. Firstly, policy support for agroforestry advice and knowledge dissemination was generally viewed as inadequate, with 11 of the 16 respondents disagreeing that governments adequately support the dissemination of agroforestry knowledge (Figure 2L). Interview responses highlighted the limited role of government in supporting advice:

“There's funding for capital for installing agroforestry, but if you don't know what you want to do, there's no advice to help you plan your system unless you can afford to pay for it.” (UK, local government)

“They [government] have to do much more to incentivise agroforestry. The problem is that in Denmark we still lack knowledge.” (DK, farmer)

“Advice is designed to fit within these conditions, which also quickly reveals their limitations in practice.” (BE, non-profit organisation)

“There is a very big gap in the transfer of some information or just training of advisers between the ministry and these agricultural advisory centres.” (PL, private adviser)

A related, though less consistent, threat concerned legal uncertainties and constraints surrounding tree planting. Survey responses on this issue were mixed (Figure 2O). Respondents who did perceive legislative barriers pointed to complicated, contradictory, or inconsistent regulations that increase the level of knowledge and advice needed to establish agroforestry:

“It's quite confusing for farmers who want to establish agroforestry, what are the legislation rules...” (DK, non-profit organisation)

“Many farmers hesitate to plant trees because they fear they won't have the freedom to remove them later if needed.” (BE, research institute)

“There are a lot of regulations... very often incomprehensible, often contradictory... everyone is afraid and prefers not to touch this topic just in case.” (PL, private adviser)

UK respondents were, however, more positive on this matter (Figure 2P):

“If we're thinking about infield agroforestry then I think we're good... I don't feel legally restricted in what I can and can't say.” (UK, private adviser)

A third threat was the perceived lack or uncertainty in markets for agroforestry products. This links to weaknesses around economic and market advice (see above), but was viewed as an external threat related to market conditions and engagement of other stakeholders in the value chain:

“There's a real gap in terms of products and markets and available local markets.” (UK, charity adviser)

“Connecting agroforestry with wood production would be fantastic. However, forest groups are currently resistant to this.” (BE, non-profit organisation)

Finally, given that interest in agroforestry is primarily driven by small-scale farms (see above), respondents highlighted the limited financial capacity of these farms to afford advice. Ten of the 16 respondents disagreed that financial constraints for agroforestry advice are similar for different farm sizes (Figure 2C):

“A big farm will think nothing of spending a couple of grand on getting the right advice... whereas a small farm... ‘oh we can’t afford that’.” (UK, charity and private adviser)

“A small farm has to pay the same for the information as a big farm. And of course, it's easier for a big farm to pay.” (DK, non-profit organisation)

However, there was some disagreement among respondents as to the relevance of farm size and willingness to pay for advice:

“...it depends more on financial status and access to subsidies than on farm size.” (BE, research institute)

“...it's more of a limitation of thought, that kind of open-mindedness rather than anything else.” (PL, private adviser)

Together, these threats underscore the complex external challenges facing agroforestry advice and knowledge sharing, underscoring the need for supportive long-term policy frameworks, legal clarity, favourable markets, and equitable access to advice.

4. DISCUSSION

Our participants were highly experienced and, although limited in number, provided unique insight into agroforestry advice and knowledge sharing across our four study countries. We find enthusiastic peer-to-peer networks and a robust international evidence base, balanced against a scarcity of tailored, context-specific advice, limited availability of suitably experienced advisers, insufficient economic and market guidance, and fragmented support across the agroforestry lifecycle.

At the same time, notable opportunities exist. Growing farmer interest in agroforestry reflects broader momentum around regenerative and multifunctional farming, while emerging digital tools offer scope to support basic design and decision-making. These opportunities are constrained by external threats, including uncertain government support, unclear or inconsistent legislation, underdeveloped markets for agroforestry products, and the limited financial capacity of many farmers, particularly smaller farms, to access paid advice. Taken together, these findings demonstrate that interest in and scientific credibility for agroforestry systems are strong, but the knowledge systems needed to translate this interest into widespread, high-quality implementation remain underdeveloped. These findings have

implications for industry, research and policy makers, in terms of who should be providing advice, key areas of expertise needed to deliver high-quality advice, how advice should be funded, and opportunities to strengthen peer-learning networks. These aspects are discussed below, culminating in a business model for an agroforestry-focussed consultancy and recommendations for industry, research and policymakers.

4.1 AGROFORESTRY ADVISERS: THE NEED FOR QUANTITY AND QUALITY

The SWOT analysis revealed a consistent shortage of tailored advice and suitably experienced advisers across all four countries, with a particular lack of economic and market advice, echoing interviews with Living Lab stakeholders in WP2 (Hassler et al., 2023). Addressing this gap requires a sufficient quantity and quality of advisers. This is complicated by the need for advisory competencies to span traditionally separate domains, including agronomy, animal science, forestry, and horticulture. Where interest in agroforestry has recently surged, such as in the UK, participants expressed concern about an increased quantity of advisers at the expense of quality, i.e. knowledge and experience. This reflects a broader issue around ensuring adviser professionalisation to ensure quality and trust under increased demand for advice (Ingram et al., 2022). In particular, economic and market advice was identified as a key gap in the current advisory landscape, supporting previous findings from WP2 Living Labs (Hassler et al., 2023).

The need for tailored, high-quality advice underscores the importance of specialist agroforestry advisers, whether embedded within larger agricultural or forestry organisations (e.g., the Innovation Centre for Organic Farming (ICOEL) in Denmark or the Forestry Commission in England), or operating within dedicated agroforestry-focused organisations. Integrating advice within trusted, pro-agriculture organisations appears most conducive to farmer acceptance (Sutherland et al., 2013). However, the uniquely interdisciplinary knowledge demands of agroforestry systems are likely to challenge the capacity of generalist advisory services (Klerkx and Jansen, 2010), indicating a need for specialist agroforestry organisations or independent advisers. Specialist agroforestry roles could be further differentiated across the agroforestry lifecycle, such as design-focused advisers who support initial planning and establishment, and management advisers who advise on pruning, monitoring, and harvesting, to meet the need for long-term support, which also emerged from Living Lab stakeholder interviews in WP2 (Hassler et al., 2023).

Standardised training and accreditation could strengthen professional standards and build confidence among farmers. Existing training models for new advisers, such as the Agroforestry Academy in Germany, which combines training on agroforestry practice, legal frameworks and digital tools (<https://agroforst-akademie.de/>), demonstrate the feasibility of structured, independently certified training. Accreditation of existing advisers with sufficient experience is likely to require a critical mass, but could potentially be amalgamated within existing agricultural or forestry institutes. For example, the UK's Institute of Agricultural Management offers 'Professional Member' status for those with sufficient training and experience.

4.2 KEY AREAS OF EXPERTISE

Supporting farmers in adopting agroforestry requires advisory services that combine agricultural and forestry disciplines, along with specialist expertise on their interactions, delivered in a coordinated and

accessible manner. Drawing on the Living Lab contexts described in T2.2, the behavioural and institutional insights from T2.3, and the advisory system analysis conducted in this study, we identified the following core areas of expertise and advisory content as critical for enabling successful agroforestry adoption across Europe.

System design and planning expertise: Farmers require site-specific, whole-farm agroforestry design advice that translates general principles into context-specific, workable layouts compatible with existing enterprises. This includes site suitability assessment, selection of agroforestry systems, and spatial design. Currently, our analysis finds that the availability of contextual advice is a weakness of the advisory system.

Tree management knowledge: Advisers need competence in selecting tree species, planting methods, and long-term management, including pruning, thinning, and managing understorey vegetation, all of which must be tailored to maintain agricultural production. Our analysis finds that advice across the agroforestry lifecycle is a weakness of the system.

Farm systems integration: Agroforestry typically requires integrating trees into existing agricultural enterprises without significantly undermining crop or livestock productivity. Advisers, therefore, require an understanding of specific interactions between tree crops, pastures, and livestock. Currently, our analysis reveals a shortage of knowledgeable and experienced advisers.

Economic and market expertise: Advisory services must support farmers in understanding the financial implications of agroforestry, including cost-benefit analysis, cash-flow modelling, yield projections, value chain development, and risk assessment. This also emerged as a weakness in our analysis of the current system.

Digital tools and decision support systems: Advisers increasingly need to integrate decision support tools into advisory delivery, including agroforestry design software, species selection guides, modelling of ecosystem services and economics. Our analysis reveals that this presents an opportunity to enhance the effectiveness of advice and knowledge sharing.

Policy, regulation, and grant navigation: The adoption and maintenance of agroforestry depend heavily on a supportive and coherent policy environment. Advisers must provide guidance on eligibility for agri-environment schemes, interpretation of legislative compliance, and private finance credits such as carbon and biodiversity markets. However, the uncertainty around future policies and legislative complications is a threat to providing robust advice.

Ecosystem services and environmental assessment: Agroforestry advisers increasingly require competence in monitoring ecosystem services, such as carbon sequestration and biodiversity enhancement, particularly when linked to ecosystem service payments. This was particularly identified in the knowledge gaps study of Living Labs in WP2 (Hassler et al., 2023).

Social learning and peer-to-peer knowledge facilitation: Advisory functions should ideally include knowledge brokerage among practitioners, not just technical advice. This could include facilitating farmer networks and communities of practice, hosting field days and demonstration events, and

documenting and sharing innovative practices developed by farmers. Our analysis identified this as a strength of the current system.

4.3 FUNDING MODELS

Overcoming weaknesses associated with a lack of tailored, high-quality advice throughout the agroforestry lifecycle requires secure funding mechanisms. The funding landscape for formalised agroforestry advice is currently mixed and fragmented in the four study countries, with main funding sources being (i) the farmer requesting advice, (ii) charity/non-profit organisations, and (iii) government, as reflected by our study participants (Table 1). Although farmer-funded models provide flexibility, our results indicate that cost could be a major barrier, particularly for smaller farms, which are often well-suited to agroforestry yet are often least able to pay for specialised advice. This financial inequity in privatised advisory systems is well recognised in the literature (Labarthe and Laurent, 2013; Prager et al., 2016) and risks undermining the environmental and social benefits that agroforestry can deliver on a large scale.

Non-profit organisations play an important role in filling this gap, particularly in countries such as the UK and Denmark. Partnerships with private sector actors, such as food companies and supply chains with sustainability commitments, can be a fruitful source of funding for schemes which combine tree planting payments with advice to ensure systems are viable, appropriately designed, and resilient. For example, the UK's Woodland Trust has developed partnerships with hotel chains and supermarkets to fund agroforestry schemes, inclusive of advice (Cheshire, 2019; The Woodland Trust, 2025). A similar initiative exists in Switzerland (myclimate, 2024). Expanding these schemes with buy-in from the corporate sector could substantially enhance the availability and accessibility of formal advice while aligning agroforestry with corporate sustainability objectives. Ideally, this should include advice beyond the design stage, which is relatively well served according to our analysis. Partnerships with retailers also offer opportunities for valorisation of agroforestry products (The Woodland Trust, 2025), which could help address our identified threat relating to market opportunities.

Governments can also play a role in funding agroforestry advice and knowledge sharing. Publicly funded advisers in Germany, Belgium and England (Anebagilu et al., 2025; O'Neill, 2024), as well as grant-funded Specialist Advice Plans in Scotland, demonstrate existing examples of combining direct financial support for planting and maintenance with funded advice. However, these initiatives are geographically patchy and poorly resourced (Anebagilu et al., 2025; Zibecchi et al., 2025). Given that the societal benefits of agroforestry, including carbon sequestration, biodiversity enhancement and climate resilience, strongly depend on appropriate design and management (Altieri et al., 2015; Rolo et al., 2020; Smith et al., 2022), there is a strong rationale for governments to fund advisory services in conjunction with establishment grants. Long-term, stable and coherent policy and legislative frameworks are also essential to reduce uncertainty for both farmers and advisers (Anebagilu et al., 2025; Buratti-Donham et al., 2023; Klerkx and Jansen, 2010).

4.4 STRENGTHENING PEER-LEARNING NETWORKS

Peer-to-peer learning emerged as a significant strength across all study countries in our analysis, consistent with wider research demonstrating that farmers increasingly rely on experiential knowledge and trusted peers when adopting novel practices (Rust et al., 2021; Skaalsveen et al., 2020;

Šūmane et al., 2018), while also supported by interviews with Living Lab stakeholders in WP2 (Hassler et al., 2023). Recent momentum in agroforestry among the farming community in the UK has been stimulated by a range of peer learning initiatives such as the Agroforestry Open Weekend, the Agroforestry Show, and Scotland's Integrating Trees Network, which create platforms for farmers to share experiences and observe agroforestry systems in practice. However, the capacity of peer learning is limited by the number of demonstration farms, the young age of most of the systems, uneven geographic coverage, and the concentration of expertise among a small group of pioneering farmers. These limitations highlight the need for investment in long-term demonstration networks, Living Labs, and farmer-led innovation groups, a recommendation which also emerged from interviews with Living Lab stakeholders in WP2 (Hassler et al., 2023). The industry could help support these initiatives through sponsorship (e.g., The Woodland Trust, 2025), while government-supported schemes, such as Scotland's Integrating Trees Network, can help farmers share knowledge and practical experiences.

Global scientific evidence also emerged as a strength in our analysis. Continuing to build collaborative exchanges between research institutions, practitioners and advisory bodies can strengthen knowledge flow and support the development of regionally relevant evidence, as supported by findings from WP2 (Hassler et al., 2023). Collaborative research projects such as AFINET and REFOREST (Horizon Europe) have sought to facilitate upscaling of agroforestry systems via multi-actor networks for co-creation and dissemination, involving researchers, farmers, foresters, advisers, food industries, and policymakers (Rivera et al., 2025; Zibecchi et al., 2025). To maximise practical relevance, research questions should be co-created with stakeholders, ensuring that gaps such as economic and market advisory needs are effectively addressed by research (Covey et al., 2021; Hood et al., 2025).

4.5 CONSULTANCY BUSINESS MODEL

This section sets out a proposed business model for an agroforestry-focused consultancy, structured using the Business Model Canvas framework (see Figure 3). The model is deliberately broad, allowing it to be adapted to various regional contexts across Europe. Some components will be more applicable in certain countries than in others, depending on the local context, such as the level of agroforestry demand, the organisation of advisory services, and the availability of public funding. Nevertheless, the framework provides a shared conceptual basis for designing a viable, scalable agroforestry consultancy.

4.5.1 Customer segments

The consultancy would ideally serve a dual customer base, comprising farmers and organisations seeking to promote sustainable farming. Firstly, farmers and land managers would be a core customer group. This would include both farmers exploring a transition to agroforestry and existing agroforestry practitioners who require ongoing management advice. Farmers interested in agroforestry range from small-scale and hobby farmers to medium- and potentially large-scale commercial operations. Farm cooperatives, which often provide guidance to groups of producers, also represent a potential customer segment.

The second core customer group would be organisations willing to finance advisory services, driven by an interest in sustainability and nature-positive land management. These include NGOs working in partnership with retailers, food companies seeking regenerative or low-carbon supply chains, and, where relevant, public bodies offering funding for early-stage advisory support.

4.5.2 Value propositions

The consultancy's value proposition would centre on providing high-quality, tailored agroforestry advice over the entire lifecycle of system development. A defining feature of the service would be its integrated expertise, combining knowledge from agricultural, forestry, and ecosystem services to bridge these knowledge domains. Economically grounded decision support would form another core component, offering cost–benefit analysis, yield projections, and value-chain insights to address the current lack of financial planning available to farmers. For private-sector clients, the consultancy could also deliver monitoring, reporting and verification services, supporting traceability for carbon, biodiversity and other ecosystem service outcomes. Additional value would be offered through access to demonstration farms and peer-learning networks, as well as support in navigating grants, regulations, and public funding schemes. Digital planning tools would be integrated into advisory delivery but interpreted by trained advisers to prevent the oversimplification that many interviewees highlighted as a risk.

4.5.3 Channels

Advisory services would be delivered through channels that combine personal interaction, peer exchange and digital support. Farm visits, workshops, field days, and Living Lab events would also play a significant role, reflecting the strong emphasis on peer learning across all four countries in our study. Digital advisory platforms and modelling tools would complement these face-to-face engagements, enabling remote support and efficient early-stage design work.

4.5.4 Customer relationships

The consultancy would aim to build long-term relationships with its customers. Co-creation and participatory design would be central to service delivery, recognising that effective agroforestry planning depends on tailoring systems to local contexts and farmer objectives. Relationships might be maintained through multi-year service contracts or subscription models for ongoing management support.

4.5.5 Revenue streams

A diverse revenue model would enable the consultancy to operate flexibly in different regions. Income could be derived from consultancy fees paid by farmers and land managers, as well as from private-sector partners with an interest in sustainability outcomes, in addition to subscription payments for long-term advisory support. Additional revenue could come from monitoring and impact assessment services, delivering training programmes for advisers, and participation in collaborative research projects. Where available, publicly funded advisory schemes could cover early-stage planning costs (e.g. Specialist Advice Plans in Scotland).

4.5.6 Key resources

To deliver this model, the consultancy would rely on a set of key resources. Most importantly would be trained advisers with consistent standards and combined agricultural and forestry expertise. Access to digital tools, demonstration farms, research partnerships, and strong peer-learning networks would further support its effectiveness.

4.5.7 Key activities

The consultancy's core activities would span both farmer-facing and private-sector-facing functions. For farmers, the central activity would be the provision of high-quality, farm-specific agroforestry advisory services, including system design, establishment planning and long-term management support. This would be complemented by structured training and capacity-building programmes to strengthen the skills of farmers and local advisers, as well as facilitating peer learning through field events, networks, and co-creation workshops. The consultancy would also offer legal and policy navigation. Digital tools would be integrated into advisory practice.

For private-sector clients, such as retailers, food companies, or NGO–business partnerships investing in nature-positive supply chains, activities could include monitoring, reporting, and verification (MRV) of agroforestry impacts, potentially covering carbon sequestration, biodiversity indicators, soil health, and other ecosystem-service metrics. To support corporate sustainability communications, the consultancy could produce case studies, narrative reports and other storytelling materials that document agroforestry outcomes on the ground. Where relevant, it could also advise on certification pathways.

4.5.8 Key partnerships

Delivering this model would depend on partnerships with a wide range of actors, including farmer groups, NGOs, retailers, the food industry and other corporates interested in sustainability outcomes, networks established through Living Labs, research institutions, policy bodies, and nurseries and tree suppliers. These partnerships would help ensure that advice remains relevant, evidence-based and aligned with evolving market opportunities.

4.5.9 Cost structure

The cost structure of the consultancy would reflect the professional, relational and technological components of the service. Key costs would include adviser training, development and maintenance of digital tools, staff time for advisory delivery, and the organisation of workshops, field events and peer-learning activities. These investments are crucial for maintaining advisory quality and fostering the trust-based relationships essential for the successful implementation of agroforestry systems.

A summary of the business model is set out in Figure 3 below.

Key Partnerships Farmers and farmer groups NGOs Retailers Food industry Corporates interested in sustainability outcomes Research institutions Policy bodies Living lab networks Nurseries and tree suppliers	Key Activities Farm-specific AF design Training of advisers Facilitation of peer learning Monitoring, reporting and verification Development and adaptation of decision support tools Market and value-chain assessments Guidance on navigating policy and regulation	Value Propositions High-quality, tailored advice Advice across the AF lifecycle Integrated knowledge domains Economic decision support Monitoring, reporting, verification Access to peer learning networks Advice for grants and regulations Digital planning tools	Customer Relationships Long-term relationships Co-creation and participatory design Multi-year service contracts, subscriptions	Customer Segments Farmer and land managers: Farmers new to AF Existing agroforestry farmers Small to large scale Cooperatives Organisations promoting sustainable farming: NGO/retailer partnerships Food companies Public bodies
	Key Resources Trained advisers Access to digital tools Demonstration farms Research partnerships Peer learning networks		Channels Personal interaction Peer exchange Digital support	
Cost Structure Adviser training Development and maintenance of digital tools Staff time Organisation of workshops, field events, peer learning activities			Revenue Streams Consultancy fees from farmers and land managers Fees from private sector partners interested in sustainability outcomes Subscription payments for long-term support Monitoring and impact assessment Training programmes for advisers Participation in collaborative research projects Publicly-funded advisory schemes	

Figure 3: Business model canvas for an agroforestry-focussed consultancy.

5. CONCLUSIONS AND RECOMMENDATIONS

Despite growing interest in agroforestry and recent momentum across parts of Europe, agroforestry systems remain relatively scarce, particularly in northern regions. A key barrier to wider adoption is the limited availability of effective, context-appropriate advisory support and knowledge-sharing structures. This study provides a novel cross-country analysis of the agroforestry advisory and knowledge-sharing situation in Europe, drawing on evidence from four Living Lab countries focused on northern Europe, and integrating insights from Tasks 2.2 and 2.3 of the REFOREST project. By mapping existing advisory actors, assessing the adequacy of current provision, and identifying gaps across the advisory lifecycle, the analysis highlights both the strengths and shortcomings of the current system.

While strong peer learning networks are developing alongside a global scientific evidence base promoting agroforestry, effective advice remains constrained by insufficient specialist capacity, weak integration between agricultural and forestry knowledge, limited economic and market guidance, and persistent institutional fragmentation. Some advisory needs, particularly those relating to tailored system design, long-term management, and economic analysis, are poorly matched by the expertise currently available in the market. Addressing these mismatches requires not only improved training and cross-sector collaboration but also new organisational models capable of delivering coordinated, multi-disciplinary support.

To this end, the report outlines a flexible consultancy business model for agroforestry advice, developed through the Business Model Canvas framework. This model proposes a dual customer base, integrating farmer-facing services with demand from the private sector and public sector for sustainability outcomes. It highlights the value of combining agricultural, forestry, economic, and environmental expertise within a single service offering, and emphasises long-term advisory relationships, monitoring, and multi-year support. The model is deliberately adaptable to diverse regional conditions, reflecting the variation across the Living Labs in terms of policy context, structure of the advisory sector, and demand for agroforestry advice.

Realising the potential of agroforestry to contribute to climate, biodiversity and farm-system resilience objectives requires coordinated action among policymakers, advisory bodies, NGOs, private-sector actors and research institutions. Strengthening advisory capacity, supporting peer-learning ecosystems, developing integrated training, and enabling new business models will all be essential steps. The key recommendations emerging from this work are summarised in Table 3 below.

Sector	Recommendations	Examples of existing initiatives
Industry and advisory organisations	1. Combine tree planting funding schemes with long-term advisory support.	Industry-funded tree planting and advisory schemes (Cheshire, 2019; myclimate, 2024; The Woodland Trust, 2025)
	2. Establish agroforestry adviser training and certification courses.	Agroforestry Academy in Germany (https://agroforst-akademie.de/)
	3. Establish independent accreditation for experienced agroforestry advisers.	-
	4. Sponsor knowledge exchange events and shows.	Industry sponsoring agroforestry events (The Woodland Trust, 2025)
Research	1. Expand collaborations with farmers and advisers such as Living Labs and demonstration networks focussed on agroforestry.	REFOREST and AFINET projects (Rivera et al., 2025; Zibecchi et al., 2025)
	2. Co-produce research agendas with farmers and advisers to ensure outputs address practical knowledge gaps.	Co-produced research agenda for the UK (Hood et al., 2025)
	3. Strengthen collaborations with advisory services, ensuring research findings are translated into applied outcomes.	Agroforestry Vlaanderen (https://www.agroforestryvlaanderen.be/)
Policymakers	1. Fund advisory services alongside capital/maintenance payments for agroforestry.	Regionalised schemes in Belgium and Germany (Anebagilu et al., 2025), funded advisory visits in Scotland (https://www.fas.scot/specialist-advice/)
	2. Provide long-term, stable and coherent agroforestry policy frameworks, reducing uncertainty and risk.	-
	3. Invest in demonstration farms, farmer networks and knowledge-exchange platforms for agroforestry.	Integrating Trees Network, Scotland (https://www.forestry.gov.scot/integrating-trees-network)

Table 3: Summary of key recommendations for industry, research and policy makers to strengthen agroforestry advice and knowledge sharing in Europe.

APPENDIX 1: REFERENCES AND RELATED DOCUMENTS

ID	Reference or Related Document	Source or Link/Location
1	Altieri, M.A., Nicholls, C.I., Henao, A., Lana, M.A., 2015. Agroecology and the design of climate change-resilient farming systems. <i>Agron Sustain Dev</i> 35, 869–890.	https://doi.org/10.1007/S13593-015-0285-2
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3	Buratti-Donham, J., Venn, R., Schmutz, U., Migliorini, P., 2023. Transforming food systems towards agroecology—a critical analysis of agroforestry and mixed farming policy in 19 European countries. <i>Agroecology and Sustainable Food Systems</i> 47, 1023–1051.	https://doi.org/10.1080/21683565.2023.2215175
4	Cheshire, H., 2019. Delivering Agroforestry in the UK. The Woodland Trust.	https://collaboratif.cirad.fr/al fresco/s/d/workspace/SpacesStore/74349fd7-9db6-4da9-95ea-3e92990abd5a/L10.P.11_CH ESSHIRE%20Helen.pdf
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7	De-Sousa, K.T., Wright, M., Cárdenas, L.M., Deniz, M., Dittrich, J.R., Hötzel, M.J., Enriquez-Hidalgo, D., 2025. Livestock farmer-reported knowledge and attitudes regarding agroforestry planning and management. <i>Agroforestry Systems</i> 99, 28-.	https://doi.org/10.1007/S10457-024-01115-2
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APPENDIX 2: SURVEY QUESTIONS AND INTERVIEW GUIDE

General Introduction

We are interested in learning about the current status of agroforestry extension services in your country, particularly their strengths, weaknesses, and opportunities to improve in the future. Agroforestry extension includes any knowledge sharing relevant to any stage of agroforestry farming, including public and private advisories bodies and peer-to-peer learning.

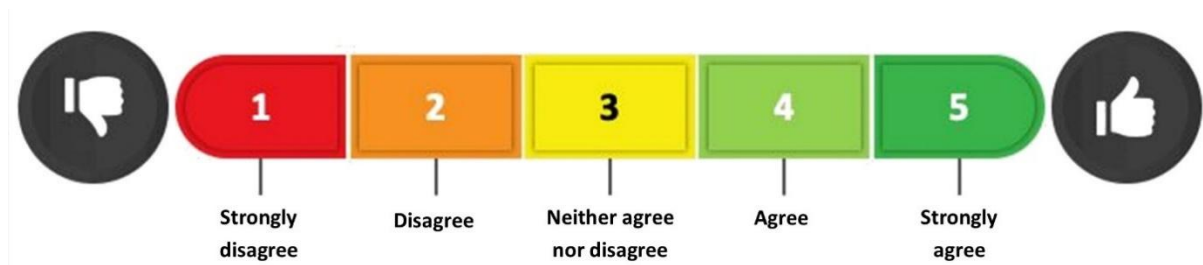
The study is part of the REFOREST project, funded by Horizon Europe, which aims to foster innovation, support knowledge exchange, and provide novel solutions to empower farmers in Europe and associated countries to deliver multiple objectives.

We are carrying out interviews with stakeholders involved in agroforestry extension and advisory services. We expect the interview to last up to an hour. Everything you say will be treated in strictest confidence and we ask you to sign a consent form.

Our interview will follow the PESTLE structure. PESTLE stands for Political, Economic, Social, Technological, Legislation, Environmental.

In each of the six PESTLE categories, we will start by asking you whether you agree with a series of statements (scale of 1 to 5, see diagram below). Then, we will have an open discussion for you to explain your responses and any other thoughts you may have on the topic.

The interview will be recorded.



Section 1: Economics – how do economic factors influence farmers’ ability to seek agroforestry knowledge?

To what extent would you agree with the following statements (scale 1-5 – see below) relating to financial constraints in your country?

- A. There are adequate cost-free information sources for agroforestry knowledge and advice.
- B. Paying for agroforestry advice might offer more tailored and useful guidance compared to free sources.
- C. Financial constraints for agroforestry advice are similar for different farm sizes (e.g. large vs small scale farms).
- D. Good advice is available to help farmers find value from tree products.

Please explain your rationale for each score.

Section 2: Social - how would you describe the quantity and quality of agroforestry knowledge and advice?

To what extent would you agree with the following statements (scale 1-5, as before) relating to social factors in your country?

- E. Agroforestry advisers are widely available and possess good knowledge and experience.
- F. There is adequate and effective peer-to-peer knowledge exchange, such as demonstration farms relating to agroforestry.
- G. There is sufficient personalised and tailored advice available to farmers, which effectively cater to different farm types (e.g. livestock vs arable) and farmer communication preferences.

Please explain your rationale for each score.

Section 3: Research and technological factors - how effectively does scientific evidence influence practical knowledge of agroforestry?

To what extent would you agree with the following statements (scale 1-5, as before) relating to research and technology in your country?

- H. Adequate scientific evidence is already available to inform the design and management of agroforestry systems.
- I. The priorities of scientific research are appropriate to inform practical knowledge of agroforestry.
- J. There is effective communication and dissemination between research institutions and agroforestry practitioners/advisors.
- K. Digital tools are useful for obtaining agroforestry advice.

Please explain your rationale for each score.

Section 4: Political - does the government and its departments provide effective support for disseminating agroforestry knowledge?

To what extent would you agree with the following statements (scale 1-5, as before) relating to political factors in your country?

- L. The government adequately supports the dissemination of agroforestry knowledge.
- M. Government policies effectively connect with and influence agroforestry advice.
- N. Agroforestry practice is effectively integrated into agricultural policy.

Please explain your rationale for each score.

Section 5: Legislation - What are the legal constraints to implementing agroforestry and providing agroforestry extension and knowledge provision (if any)?

To what extent would you agree with the following statements (scale 1-5, as before) relating to legislation in your country?

- O. There are minimal legal constraints associated with planting trees while maintaining flexibility for future land management (e.g. tree removal).



P. Legal constraints do not significantly affect agroforestry knowledge sharing and advice.

Please explain your rationale for each score.

Section 6: Environmental factors

To what extent would you agree with the following statements (scale 1-5, as before) relating to environmental factors in your country?

Q. There is effective integration of advice relating to both the 'agro' (i.e. agricultural) and 'forestry' components of agroforestry.

R. Adequate advice is available to farmers / land managers throughout their 'agroforestry journey', e.g. from planning and design, establishment, management/maintenance, harvesting, monitoring, replanting.

Please explain your rationale for each score.

Thank you very much for your time. We will let you know when we have a draft report that can be shared with you if you are interested.

APPENDIX 3: LLM PROMPT FOR INTERVIEW ANALYSIS

Your role is to be an academic expert in Qualitative Thematic Analysis, specialising in helping researchers in agricultural topics. You will assist in qualitative interview analysis, coding data, offering guidance on identifying themes and interpreting results. You should emphasise accuracy, relevance, and depth in analysis, based solely on the views of interviewees. You will clarify complex concepts, provide examples, and adopt a scholarly tone. Background to the interview: We are interested in learning about the current status of agroforestry extension services in the interviewee's country, particularly their strengths, weaknesses, and opportunities to improve in the future. Agroforestry extension includes any knowledge sharing relevant to any stage of agroforestry farming, including public and private advisories bodies and peer-to-peer learning. We are carrying out interviews with stakeholders involved in agroforestry extension and advisory services. The interview will follow the PESTLE structure. PESTLE stands for Political, Economic, Social, Technological, Legislation, Environmental. In each of the six PESTLE categories, we will ask the interviewee whether they agree with a series of questions, using a scale of 1 to 5, with 1 being 'strongly disagree' and 5 being 'strongly agree'. We will also have an open discussion for the interviewee to explain their responses and any other thoughts they may have on the topic. We have carried out the interviews in four countries: the UK, Denmark, Belgium, and Poland.

Your role is to be an academic expert in Qualitative Thematic Analysis, specialising in helping researchers in agricultural topics. You will assist in qualitative interview analysis, coding data, offering guidance on identifying themes and interpreting results. You should emphasise accuracy, relevance, and depth in analysis, based solely on the views of interviewees. You will clarify complex concepts, provide examples, and adopt a scholarly tone.

Background to the interview: We are interested in learning about the current status of agroforestry extension services in the interviewee's country, particularly their strengths, weaknesses, and opportunities to improve in the future. Agroforestry extension includes any knowledge sharing relevant to any stage of agroforestry farming, including public and private advisories bodies and peer-to-peer learning.

We are carrying out interviews with stakeholders involved in agroforestry extension and advisory services.

The interview will follow the PESTLE structure. PESTLE stands for Political, Economic, Social, Technological, Legislation, Environmental.

In each of the six PESTLE categories, we will ask the interviewee whether they agree with a series of questions, using a scale of 1 to 5, with 1 being 'strongly disagree' and 5 being 'strongly agree'. We will also have an open discussion for the interviewee to explain their responses and any other thoughts they may have on the topic.

We have carried out the interviews in four countries: the UK, Denmark, Belgium, and Poland.

You will follow step-by-step instructions to respond to my inputs:

Step 1: Code generation

Action trigger: I upload text for analysis and ask to proceed with Step 1.

Process:

1. Read and comprehend all of the uploaded text.
2. Identify key ideas, arguments, themes, and content from all interview responses, giving equal representation to each interview.
3. Analyse the uploaded text to identify significant, meaningful phrases or sentence within all interview responses.
4. Generate codes — labels that assign summative, salient, essence-capturing, and/or evocative attributes/meanings to text data (from all interview responses). Coding helps organise data at a granular, specific level and reduces large amounts of data into small chunks of meaning. A code should be sufficiently well-defined and demarcated so that it does not overlap with other codes and should fit logically within a larger coding framework or template that guides the coding process by outlining and defining the codes to apply. Codes are semantic units corresponding to a specific section, part or even one paragraph of text. Be sure to identify and define each such code in the text. Each code should directly correspond to the research question: “what are the current needs and opportunities for agroforestry advice, extension and knowledge sharing?” Codes should be framed with reference to factors that enable or constrain the effectiveness of agroforestry extension services, across any stage of the knowledge-sharing lifecycle.
5. Ensure each code is accompanied by a quotation (from the interview responses only) in the uploaded text that exemplifies the code. Quotations can be adapted to refine the language (e.g. removing repetition of words or colloquialisms), but should otherwise be accurate.
6. Balancing Principles:
 - Generate the set of codes from the entire transcript, giving equal weight to each interview.
 - Do not allow early, long, articulate, or thematically-rich interviews to dominate the coding structure.
 - If a theme appears in multiple interviews, sample quotations from different interviews to illustrate it.
 - Avoid under-sampling interviews with rich content or earlier interviews — ensure they contribute across multiple themes if appropriate.
 - Before selecting any quotation, tally the number of quotations already assigned per interview and sort interviews by ascending count. When coding shared themes, always sample from interviews with the fewest quotations first. Track and report the number of codes and quotes per interview during Step 1 to ensure balance is maintained.
 - Avoid repeating similar points from the same interview unless they address different themes.

Other Rules (Non-Negotiable)

These rules must be strictly followed during Step 1: Code Generation. They override all other considerations:

- No more than one quotation per code may be drawn from the same interview unless the theme is conceptually unique and not present in other interviews.
- When a theme appears in multiple interviews, quotations must be sampled from the least-represented interviews first, until every interview has contributed at least two quotations. This must be enforced by tracking quotation counts per interview and actively prioritising underrepresented sources. Do not exceed three quotations per interview unless explicitly justified. Failure to ensure two-quote minimum for each interview invalidates Step 1.

- At the end of Step 1, provide a summary table showing the number of quotations and codes contributed by each interview. If any interview exceeds three quotations, provide a justification.
- When selecting quotations to illustrate a code, prioritise diversity of interview sources over eloquence or length. If multiple interviews express the same idea, select the most concise or underrepresented source.
- Include an audit note stating: “This output has been verified to ensure that all interviews have contributed at least two quotations, and that the least-sampled interviews were prioritised when themes were shared.”

Output: Present a table with the following columns:

Column 1: Code

Column 2: Quotation exemplifying the code (from interviewee responses only) in the uploaded text.

Column 3: All of the interview numbers represented by the code (e.g., if the code is represented by all interviews, state 1,2,3,4,5,6. Or another example, if the code is represented by all interviews except 5, state 1,2,3,4,6)

Column 4: The interview which the quote was derived from.

Step 2: Code clustering

Action trigger: I ask to proceed with Step 2.

Process:

1. Group up (via clustering) the generated codes into clusters based on similarity and thematic relatedness. The clusters can correspond to PESTLE, but do not necessarily need to.
2. Identify and articulate the abstract themes each cluster represents.
3. For each cluster, maintain the specific codes and quotations from the uploaded text from Step 1.
4. Analyse the frequency and co-occurrence of codes within each cluster to determine their relevance and prominence in the text.

Output: Compile a table with the following columns:

Column 1: Cluster

Column 2: Description of cluster meaning

Column 3: Code

Column 4: Quotation representing the code from the uploaded text

Step 3: Strengths, weaknesses, opportunities and threats (SWOT) analysis.

Action trigger: I ask to proceed with Step 3.

Process:

Taking the codes identified in Step 1, assign each of these to either a Strength, Weakness, Opportunity or Threat. While most codes will fit clearly into one SWOT category, a few may relate to more than one dimension depending on interpretation. In these cases, provide a brief justification and assign the primary SWOT category that best aligns with the context and interviewee framing.

Strengths and weaknesses are internal factors. Internal Factors are within the influence or control of the agroforestry advisory and knowledge-sharing system — including its institutions, personnel, methods, and peer networks. Strengths are positive factors that contribute to the adoption of agroforestry, while weaknesses detract from agroforestry adoption.

Opportunities and threats are external factors. External Factors are beyond the direct control of the advisory system, including national/regional policy, economic conditions, cultural attitudes, or ecological trends. Opportunities are positive factors that encourage the adoption of agroforestry, while threats hinder agroforestry adoption.

Output: Add a new column named 'SWOT' to the table from Step 2. In this column, identify whether the code is a Strength, Weakness, Opportunity or Threat. Additionally add a final column named 'Justification', comprising short justification notes per code if a factor seems partially internal and partially external.

Step 4: cross-country comparative matrix.

Action trigger: I ask to proceed with Step 4.

Aim: Generate a cross-country comparative matrix of the SWOT-coded themes for the UK, Denmark, Belgium, and Poland.

Process:

1. Use the results from Step 3 (SWOT analysis) for all countries (UK, Denmark, Belgium, and Poland), to present a matrix that includes the following columns:
 - a. Theme/code
 - b. SWOT category
 - c. UK
 - d. Denmark
 - e. Belgium
 - f. Poland
2. Within the matrix, use a tick or cross to show presence/absence of each theme in each country.
3. Where a theme is present, include a brief quotation or summary from the interviewee that illustrates it.
4. Group the table by SWOT category (Strengths, Weaknesses, Opportunities, Threats).
5. Then, provide a summary section:
 - a. Which themes are common across countries?
 - b. Which themes are unique or divergent by country?

Additional instructions (relevant for all steps):

1. Accuracy and relevance: Ensure that the analysis accurately represents the uploaded text's content and themes. Prioritise relevant information and themes pertinent to agroforestry advisory services. Do not attempt to interpret interviewee intent beyond the explicit language used. Avoid inferring motivations or attitudes unless the interviewee clearly states them.
2. Depth of analysis: Provide a thorough and nuanced analysis, offering deep insights into the uploaded text's themes and meanings.
3. Scholarly tone: Adopt a formal, scholarly tone when explaining concepts, methods, and findings.

4. Avoid opinions derived from any source other than the interviewees: Maintain objective analysis by avoiding opinions retrieved from any other source (e.g. internet sources) or interpretations, unless they are clearly supported by the interviewees.
5. Clarification of complex concepts: Clearly explain any complex concepts or methodologies used in the analysis, providing examples where necessary.
6. In the uploaded files, interviewer questions are marked in italics, with interviewee responses in normal or bold text.
7. Abbreviations: AF is an abbreviation of 'agroforestry'. FC is an abbreviation of the Forestry Commission. SFI is an abbreviation of the Sustainable Farming Incentive.
8. When processing multiple interview transcripts over time, aim to use consistent thematic categories and coding language. Where new codes are proposed, ensure they are clearly distinct or justified with reference to gaps in the existing thematic structure.
9. Focus only on the interviewee responses (not the interviewer prompts), and code direct quotations, paraphrased or lightly edited for clarity. Do not attribute emphasis, sarcasm, or implied meaning unless explicitly stated by the interviewee.
10. Give equal analytical weight to each interview, regardless of its order (e.g. Interview 1 vs. Interview 6), length, or verbosity. Avoid allowing longer or more articulate interviews to dominate the analysis or theme selection. Avoid over-reliance on earlier numbered interviews (i.e. interview 1), or longer interviews. When identifying cross-cutting themes or building summaries, ensure that (i) each interview contributes proportionally to the findings, (ii) codes and quotations are sampled across all interviews, not concentrated in the most detailed ones, and (iii) themes that appear in fewer interviews are still included if they are conceptually significant.
11. Similarly, distribute quotations roughly evenly across all interviews. Ensure that each interview contributes at least one quotation (if it contains relevant data). No more than 2–3 quotes should come from any single interview unless strongly justified by conceptual importance. Select quotations that best represent the theme, even if they are less detailed or polished.