Intermediary analysis of drivers and barriers for farmers and advisors

Deliverable 5.1

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Disclaimer

List of Abbreviations

AKIS Agricultural Knowledge and Innovation Systems

CoP Community of Practice

CSA ClimateSmartAdvisors project

CSF Climate-Smart Farming

CSC Climate Smart Coach, in charge of facilitating a Community of Practice of Advisors

FG Focus Group

GA General Assembly

TTT Train-the-Trainer course, training to future CSCs organised in the project

WP Work Package

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1 Abstract

This deliverable presents an intermediary analysis of the main barriers and levers shaping the transition to climate-smart farming (CSF) in Europe, focusing primarily on the role, needs, and experiences of agricultural advisors. Building on insights from 20 focus groups held in 10 countries, complemented by observations from Community of Practice exchanges, Train-the-Trainer courses, General Assembly workshops, and relevant scientific literature, the report identifies the core conditions for effective climate-smart advisory work.

Findings highlight the centrality of trust-based farmer–advisor relationships, a holistic and systemic understanding of the farm, and co-creation of tailored, context-specific CSF measures. Advisors rely on a wide range of climate-smart tools and methods, yet face challenges related to time constraints, tool accessibility, lack of harmonization across tools, and the complexity of communicating climate risks and benefits. They also express strong needs for enhanced technical, economic, and soft-skills training, improved coordination within the AKIS, and better alignment of policies, rewarding systems, and supply-chain incentives.

The analysis also sheds light on farmers' needs and motivations—economic security, practical feasibility, peer-to-peer learning opportunities, and clarity on market and policy expectations—alongside behavioral, structural, and contextual factors that influence their capacity to engage in change. These insights form a basis for strengthening advisory functions, refining project activities, and preparing a more comprehensive analysis that will include farmers' direct perspectives in the next version of this deliverable.

2 Introduction

In the ClimateSmartAdvisors project, advisors are recognised as being in a key position in developing and sharing climate-smart (CS) innovations and good practices between peers and with farmers. Therefore, ClimateSmartAdvisors works on improving the opportunities, knowledge, and skills of agricultural advisors to support farmers in the implementation of climate change mitigation and adaption actions across Europe. The project aims to boost the role of agricultural advisors and advisory service providers (ASP) by strengthening their capacity in providing targeted advice on climate mitigation and adaptation approaches, and by sharing solutions for impactful advisory methods. By boosting the role of the EU agricultural advisory community, we aim to contribute to an acceleration of the adoption of climate-smart farming (CSF) practices by the wider farming community within and across EU Agricultural Knowledge and Innovation Systems (AKISs).

ClimateSmartAdvisors work package (WP) 5 works on building a supportive toolkit for Climate Smart Coaches (CSCs) & Climate Smart Advisors (CSAs) and for the wider advisory community. This should consist of good farm practices, assessment tools, advisory, training, and teaching methods, adapted to CSF and carbon topics and to the diversity of EU situations, embedded in an interactive repository. This deliverable is part of task 5.1 which conducts an **analysis of barriers and levers for farmers and advisors for implementing climate-smart practices**. It creates an important foundation for comprehensive further work, not only within WP5, but also for the project as a whole.

The sources of this report are:

- 10 advisor focus group run in 10 countries during the autumn 2023 (Evrat-Georgel & Bedoin, CSA Focus Group - report from the 10 national reports, 2024)
- CSC's needs, learning questions and sharing of experience as collected and reflected on during various ClimateSmartAdvisors events (Train-The-Trainer, General Assembly meetings…)
- A small literature review

In this first report the analysis is mostly done from an advisors' perspective, since farmers were not actively involved as such in the data collection. However, some of the literature was based on farmers' views. A second version of this deliverable is due at the end of the project, where the farmers' views will be included in more detail.

What are we talking about? A multitude of farming practices under the umbrella of Climate-Smart Farming

Climate-smart agriculture (CSA), as defined by the FAO, is an approach that guides actions to transform agri-food systems toward greener and more climate-resilient practices. CSA contributes to internationally agreed goals such as the SDGs and the Paris Agreement. It aims to address three core objectives: sustainably increasing agricultural productivity and incomes; adapting and building resilience to climate change; and reducing and/or removing greenhouse gas emissions where possible (FAO).

But how do we identify these practices, and what exactly falls under this broad definition? In our literature review, we draw on references from articles and reports that define Climate-Smart Farming (CSF) in different ways depending on context and focus.

For example, in the BEATLES project (https://beatles-project.eu/), CSA is described as a set of practices supporting the agricultural "triple win": productivity, mitigation, and adaptation. These practices include integrated crop management, agroforestry, pest and nutrient management,

reduced tillage, land management, reduced fertilizer use and soil management, as well as smart agricultural technologies such as robotic systems, drones, remote sensing, satellites, and the Internet of Things (Gemtou, et al., 2024). In the same article, the scope of practices considered in their literature review is explicitly defined through the terms: “sustainable agriculture” OR “sustainable farming” OR “organic farming” OR “organic agriculture” OR “climate smart agriculture” OR “climate-smart farming” OR “precision farming” OR “precision agriculture” OR “smart farming technolog*” OR “smart farming” OR “smart agriculture”.

In a Norwegian case study, (Farstad, Melås, & Klerkx, 2022) identify the following as “climate mitigation measures”: cultivation of legumes, use of catch crops, conservation agriculture, improved drainage of cultivated land, precision fertilizer application, settling of manure during spreading, improved quality of self-produced coarse fodder, and the production of renewable energy such as chip heating for buildings and solar panels on barn roofs.

These examples show that CSF can be understood quite differently across contexts, and that the link between farming practices and climate objectives is not always explicitly made. As one participant in TTT2 stated: “Lots of climate-smart activities are happening, but farmers don’t always think of them as climate measures (e.g. better use of nutrients, more focus on soils, focus on livestock efficiency) or just routine adaptation to change.”

CSF practices also vary widely in their time span. They can range from short-term decisions made in response to immediate weather conditions—such as choosing a different crop variety or adjusting the timing of operations—to long-term actions requiring substantial lead time or involving seemingly irreversible changes, such as planting shelterbelts or constructing housing to protect animals.

This report aims to analyse the levers and barriers for the transition to CSF. However, it is important to remember that some of these levers and barriers are specific to certain farming practices or contexts, making it difficult to generalise. For example, the challenges and drivers associated with precision farming—often requiring significant investment in machinery—may differ considerably from those linked to converting to organic agriculture. Wherever possible, we will specify in this report the “type of change in farming practices” considered when information is available.

3 Methodology

This report is built on the results of 10 focus groups with advisors in different European countries (Croatia, Denmark, Estonia, France, Germany, Greece, Ireland, Italy, Spain, UK).

The objective of the focus groups was to collect a variety of experiences from advisors about their practice in the field of advising on climate-smart farming and identify some of their needs.

The analysis and discussion are enriched with insights collected during the project such as discussions and workshops conducted during General Assembly Meetings and Train-the-Trainer courses as well as other project activities and other relevant studies.

3.1 Focus groups: organisation, recruitment and analysis

3.1.1 General approach

The focus group guidelines and content were prepared by Idele during the autumn 2023 as part of task 5.1.

The objective of the focus groups was to collect a variety of experiences from advisors about their practice in the field of advising on climate-smart farming and identify some of their needs.

A focus group is a research technique used to collect data through group interaction. The objectives are to:

- Study and understand the attitudes and points of view of actors using open ended questions and encouraging them to interact.
- Identify the shared meanings and disagreements and the diversity of points of view, not necessarily to reach consensus.

The method used group facilitation techniques following a topic guide with main questions to cover and suggested prompts. Techniques included active listening, clarification questions, and follow-up questions.

Focus groups were held in 10 countries: 5 from the core group of WP5 (France, Ireland, Germany, Greece and Denmark) and 5 in countries, where the National Coordinators volunteered for being part of the process (UK, Croatia, Spain, Italy, Estonia). The facilitators, National Coordinators and task leaders in the project, were introduced to the focus group facilitation guide and trained to use it. They had the possibility to adapt it to their own context (according to the length and the modality of the meeting (in-person or online)). It included the following phases:

- Welcome and introduction.
- Exploratory phase to gather representations of “Climate-Smart Farming” and how consulting is carried out in the field based on the advisors’ own experience.
- Advisory CSF tools and methods known and used by the participants, with their advantages, failures, and conditions for their on-farm utilisation.
- Advisory approaches around the tools to gather what works well or not/is relevant to impact farmers behaviour and their capacity to change their attitudes.
- Conclusions and needs for the future to improve advisory services.

After their focus group, the facilitators were invited to write a “hot-off-the-press” report and thereafter a more complete report.

The individual national reports were then combined for a cross-analysis. The first results were shared and discussed with all the focus group facilitators. The cross-country level report was reviewed and completed by the focus group facilitators. The full report is available as Milestone 39: Collecting data on barriers and levers for farmers and advisors - Y1.

3.1.2 Advisors recruited for the focus groups and their context

The focus group was led by two or three persons, who have the role of National Coordinator in their country or region for the CSA project or task or WP leader.

The participants were recruited with the objective to have around 10 participants. The participants recruited were hands-on advisors who work with farmers on climate change adaptation and/or mitigation, possessing from a little to a lot of experience.

Country	Online	Date (2023)	Number of advisors	Type advisory service	Specific agricultural sectors	Specific focus of advisors
Croatia	In person	Nov. 27th	10	Public	Arable, horticulture, livestock, bee keeping, economics	Technical and economical
Denmark	Online	Nov. 29th	9	Private	Arable, cattle, pig, vegetables… mostly organic sector.	Technical, economical and specialists in climate
Estonia	In person	Dec. 15th	12	Public and private	Mainly arable but also beef and mixed farms	Mainly agronomic, climate and soil
France	Online	Nov. 6th	12	Public and private	Arable, viticulture, dairy, beef and agroforestry	Technical, economical and specialists in carbon and climate
Germany (Bavaria)	Online	Nov. 15th	9	Public and "self-help"	Arable, beef, dairy, horticulture	Technical, economical, renewable energy, water and climate specialists
Greece	Online	Nov. 30th	5	Private	Arable, olive orchards, organic horticulture	Agronomic, economic, business and sustainability
Ireland	Online	Nov. 22nd	8	Teagasc	Mainly livestock (dairy, beef, sheep) but also arable	Climate, business and technology
Italy	Online	Nov. 23rd	8	Private	Viticulture, arable, orchards, horticulture, livestock	Technical, management, economic and environmental sustainability
Spain	Online	Nov. 20th	8	Public and private	Greenhouses, arable, viticulture, dairy and beef	Technical and environmental
UK	In person	Dec. 5th	14	?	Most advisors working with all types of production	Many with focus about soil and sustainability

Table 1 Main characteristics of each Focus Group and its participants

As can be seen in Table 1 above, in each country in general, advisors had a varied background in terms of production sectors which were often quite aligned with the main production types in each country.

In many countries, the advisors present were working with climate and carbon issues but advisors in Croatia, Italy and Spain were less familiar with it.

3.2 Insights collected during project events and from other projects and studies

The discussion presented here is based on insights collected during project events, complemented by findings from articles produced in related projects and scientific literature.

Identifying barriers and needs for farmers and advisors—formulating these as learning questions and sharing experiences to address them—is an integral part of the CSA project's DNA. Several project events and activities were organised with this purpose, and for this report we have drawn on the following sources:

- **Training Needs Analysis (WP2)** carried out before the Train-the-Trainer (TTT) courses. Forty advisors responded to a survey about their training needs in autumn 2023, and another 39 advisors participated in autumn 2025. The first survey results were analysed in Milestone 12, and the second set of results was presented during TTT2
- **Workshops during TTT1 and TTT2**, where advisors shared both the challenges they face and possible solutions or sources of inspiration. For this report, we particularly rely on the workshop sessions focused on change management, the Farms' and Advisory Journey (methodology described in section 5.3), and the workshop on adaptation and mitigation measures
- **A large online survey** collecting barriers and levers for advisors across all project partner countries (Suomela, et al., 2023)
- **Reflections within each Community of Practice (CoP),** where advisors examined their needs and motivations for their two-year peer exchanges and formulated a Learning Question accordingly. The WP4 team provided the Dynamic Learning Agenda as a framework for organising these questions. Workshops at the GA meetings in May and November 2025 were used to discuss and share experiences related to possible answers. Notes from these workshops informed this report.
- **National AKIS meetings and meetings with coaches**, where several identified challenges were discussed, and additional insights were gathered and incorporated

We refer to these sources in this report when they offer complementary insights to those gathered in the focus groups or when they provide additional depth or new perspectives. We did not systematically include all findings from all project activities addressing challenges, needs, and opportunities for improving CS advice when those insights had already been covered in the focus group results.

Insights from the literature were collected purposefully and do not cover the full spectrum of studies on barriers and levers for CS advice or the adoption of CS farming practices. We began with publications from the BEATLES project (https://beatles-project.eu), where partners spent four years investigating behavioural insights into the various "lock-ins" and drivers influencing behavioural change toward Climate-Smart Agriculture, including individual, systemic, and policy factors. Additional articles were identified through references in BEATLES publications or recommendations from colleagues. As with the workshops, this is not a systematic or exhaustive review; instead, we

selected sources that offer complementary insights and deepen the understanding gained from the focus groups.

4 Challenges and strengths for climate-smart transitions: results from the focus groups

This section focuses on the most relevant aspects of the strengths and challenges advisors face when supporting farmers in their transition to climate-friendly practices, based on the results of focus groups conducted with advisors in the CSA project. Many of these challenges apply to any type of change on a farm—which is logical—but they become even more significant in the context of climate advising due to the many uncertainties still surrounding the topic. These include scepticism about climate change, the complexity and sometimes contradictory nature of its impacts, and the difficulty of estimating the return on investment for climate-smart practices.

The order in which these challenges are presented does not necessarily reflect their relative importance. Their significance varies depending on the specific context: the country (geopolitical situation, soil and climate conditions, organisation of advisory services), the farm (production system, structure, and environment), and the particular innovation or climate-smart practice being implemented.

4.1 The most important aspects of advising farmers in the context of climate-smart farming

For developing this part, we follow the highlighted aspects for advice on climate-smart farming strategies described in Figure 1. This section highlights the key points raised during the focus groups.

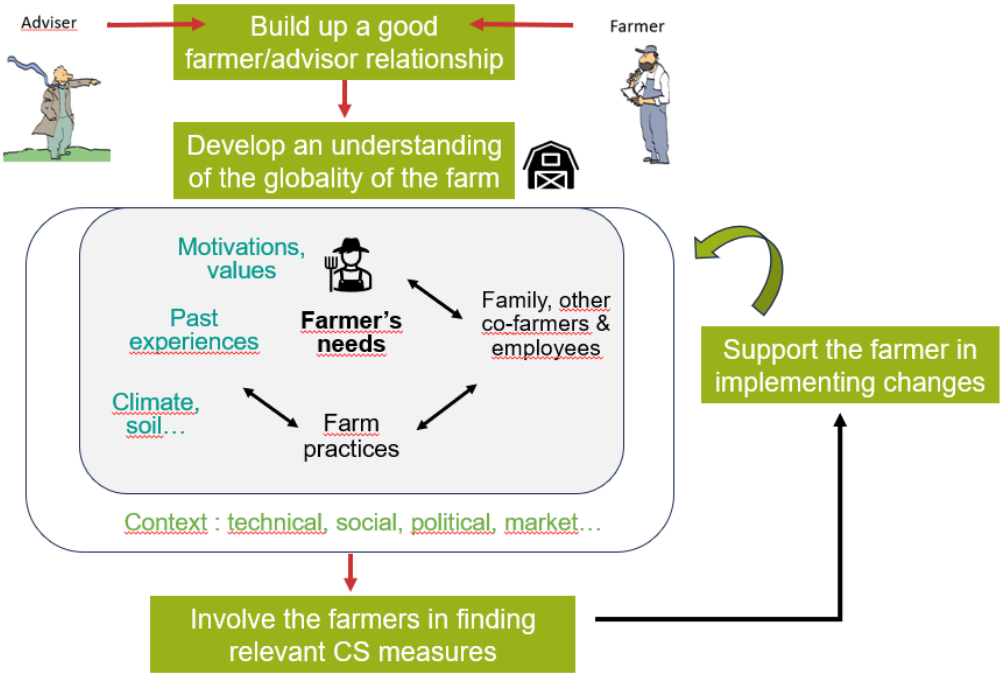

Figure 1 Important aspects when advising for Climate-Smart Farming (Evrat-Georgel and Bedoin, 2024)

4.1.1 Building trust in farmer-advisor relationship

Trust between farmers and advisors is the foundation of effective support. It requires **time**, **interpersonal skills**, and a **long-term commitment**.

The **credibility** of the advisor with experience in consulting, sufficient dedication of time and continuity was pointed out as an important factor in the German group, where the problem of the constantly changing advisory staff was highlighted. This need for continuity was also reported in the Greek focus group, where it was stated that in addition to one-to-one advising, the advisor should also have a role in continuous dissemination and training.

Establishing a trustful relationship is difficult for new/young advisors with still little experience and references, as expressed in the French group. A quality relationship is not always easy to establish for the advisor, as stated in the Estonian group, since farmers tend to "test" advisors' "knowledge" by withholding or giving false information, to see if the advisor notices it.

4.1.2 Relying on a farmers' demands and strong interactions

In general, it is easier to work together if **the farmer has a concern** (German group) or **a demand** (Irish group) and if the farmer has an **education** that allows them to understand the processes well (Germany, Italy). For example, in Denmark, advisors have noticed a great interest of farmers in the subject of soil health and carbon storage, which makes it easier to work on this subject.

If the actions are perceived as an obligation, farmers react with resistance (Germany). That's why for a successful advice, **farmers' needs** should be put at the centre as discussed in the German, Spanish and Greek groups. The idea is not to convince farmers to adopt given practices, but rather to bring out their desire, and to value their knowledge. In the UK, the advisors shared some methods which can help this approach, like "*active listening*" and "*appreciative enquiry*" as facilitating methods.

It was stated in the Irish group that **coordination with other advisors** from the technical services and connecting to supporting events and discussion groups **in which the farmers also participate**, was a key aspect. This is not easy and can require more resources (time, money, and knowledge), as stated in the German and Greek group, or networks to rely on (e.g. in Italy where advisors said that some of their colleagues are there for "innovation").

Indeed, access to advisory services varies across Europe depending on costs and institutional structures. Also, in some countries, there can be a reluctance to pay for advisory services (Estonia) or farmers seek advisory assistance as a last resort, often too late (Greece). That's why the creation of **networks of actors** (farmers, advisors, agronomists, suppliers...) is essential, as it could promote awareness, trust, and trigger a desire to change. Identifying **influential actors at the local level** can facilitate the dissemination of innovations and strengthen cooperation between stakeholders.

Agricultural cultural capital, local knowledge, and peer learning are essential: **successes observed on one farm can spread quickly** and create a multiplier effect.

4.1.3 Understanding the farm as a whole

The **globality and specificity of the farm** must be clear for the advisor to suggest relevant measures (as discussed in the British, French, Estonian and Irish groups). This can be quite broad, encompassing tenure, succession planning, current system, labour issues.

This **holistic view of the farm** must involve the point of view of family members around the farmer(s) and other farm workers, and often requires a multidisciplinary approach (i.e.; technical, economical, systemic, labour…), which can be difficult in practice (France, Denmark). To assist this process, the Greek group suggested that it is important to keep historical data from previous advisory sessions. In the UK group, the use of benchmarking of farms was discussed in order to facilitate the holistic view on the farm and its specificity.

The broader context is also important to take into account:

- **Market behaviour and requirements** have been named as a difficulty in several countries:
  - Farmers receive low remuneration, and market prices are very volatile making it difficult to invest for the future (Italy).
  - Lack of appreciation of the farmers' efforts in the food supply and value chain (Spain).
  - An “avalanche” of market requirements - producers are exhausted (Spain).
  - Leguminous crops for human consumption: large interest but small market (Denmark).

- The **political context** can be difficult to navigate – there is in several countries a lack of visibility on important decisions like future taxes, subsidies, and environmental regulation (named in the British and Danish groups).

- **Societal discourse and expectations** can lead to very different outcomes: in Estonia and Ireland, farmers are sometimes portrayed as scapegoats, which can create biases when addressing climate-related topics. In contrast, in Denmark, the attention that banks and financial institutions give to these issues encourages farmers to conduct climate assessments/diagnostics**.**

Adopting a **holistic view of the farm** and integrating this holistic approach into the local context is essential for **proposing climate-smart measures tailored** to the farmer's objectives, motivations, and constraints, in order to remain relevant and realistic. As previously expressed, it requires **multidisciplinary skills, a strong relationship with the farmer, and wide and diversified peer networks to rely on.**

4.1.4 Developing climate-smart measures together with the farmer

With this whole understanding of the farm, the farmer, and its context, the advisor should be better able to recommend relevant climate-smart measures to the farmer, and **to develop jointly with them the best strategies to adopt** regarding economic feasibility, impact on productivity and profitability, and environmental benefits.

Indeed, for these measures to be considered as relevant, they need to **have an immediately recognizable added value** (monetary benefit, saving working time, efficient use of resources…) as discussed in the German, Spanish, Danish, French, Irish and Greek groups.

It is more difficult for advisors to advocate for measures:

- Which have a **long term perspective** (Denmark, Germany, France).
- Where the **benefit is not as clear and more abstract**, for example, soil fertility (Spain, Germany).
- With a very **negative impact** for the farmer from an **economic** point of view, such as measures that would decrease productivity of the farm (Spain) or not allowing farming on peat soils (Denmark).

In contrast, it is easier to discuss about:

- **Adaptation measures** – compared to mitigation measures - because they have a clearer benefit for the individual farm (Italy).
- Measures for which there are clear and good **test results,** which increase their **credibility**
- Measures successfully **tried and implemented on farms,** especially those that are similar and with which **farmers can identify**, and **can visit** (demonstration farms) (Germany, Italy, Croatia, Ireland, Greece).

Explaining the relevance of the climate-smart measures can be difficult because:

- For advisors, it is difficult to know or **accurately predict future climate conditions and their impacts**, making it challenging to determine which measures should be recommended (Greek group).
- Explaining the **science behind climate change** is complex (Ireland), and it is even more challenging to address farmers' climate-change scepticism and/or denial.
- From an economic perspective, uncertainty remains because **no single solution fits every farm**—each one is a "special case"—and the future cannot be fully predicted. As a result, farmers are unsure whether their "investment" will be secure (Greek group)

Especially when recommended practices involve significant investments (such as for example precision agriculture or advanced irrigation systems) advisors need to demonstrate long-term economic benefits, provide information on available subsidies, and **highlight immediate and tangible benefits** (economic gains, reduced labour, or improved resource efficiency).

4.1.5 Supporting change and the implementation of measures

Most groups focused their discussions on their activities up to the stage of recommending relevant measures to farmers. However, some also talked about supporting farmers through the process of "change." Even when climate-smart measures have been identified, **implementing change is difficult** and takes time; it is often easier to fall back into familiar habits (as discussed in the Spanish, Italian, Estonian, Croatian, and Irish groups). Notable barriers for change that were mentioned include:

- Older farmers (close or over 60 years old) are often less prompt to change: they do as they use to and will let the next generation decide the changes they might implement after taking over. Often these older farmers have a relative lower education level. They understand their farm through their experience and less through „scientific/educational" knowledge. They might therefore have a poor understanding of innovative practices (Italy).
- Land tenure: The absence of long-term security and certainty on their land, for example can have a negative impact on adoption. This is in particular an obstacle for the adoption of soil organic matter conservation measures or agroforestry which require a long-term investment on the land and its value (UK).

In this process, the UK group emphasized the importance of **monitoring and following up on the changes, and reflecting on emerging questions, challenges, successes, and next steps**. Support does not end with recommendations—monitoring and evaluating changes are essential for adjusting actions and planning for the future.

As previously noted, the advisor does not act alone and is not the only person supporting the farmer. It is therefore important that other actors within the national/local AKIS are aligned with

what both the advisor and the farmer are trying to achieve. This means that the advisor may also **need to influence actors beyond the farmer** (Ireland)

4.2 The use of climate-smart farming tools and methods

Effective agricultural advice that accelerates the transition to sustainable farming systems is grounded in trust, an understanding of farmers' needs, strong peer interactions, a systemic view of the farm, the adaptation of measures to economic and cultural realities, and continuous support throughout the change process.

To reinforce these pillars, the use of climate-smart farming tools and methods—whether digital or not—is a key lever for climate-smart advisory services, regardless of the stage at which a farmer is being supported (raising awareness, facilitating decision-making, or following up on the implementation of climate-smart measures).

But what do we mean by climate-smart tools and methods? As discussed in the focus group, we consider climate-smart tools and methods to include all instruments and approaches advisors use to deliver effective guidance that accelerates the transition to sustainable agricultural systems. This goes well beyond carbon calculators. As participants highlighted, there is a wide and diverse range of climate-smart tools and methods, and experiences and needs differ significantly depending on the country, context, and local practices.

4.2.1 Differences in access to and experience with tools

In most of the focus groups (France, Ireland, Denmark, Spain, Germany, Italy, UK), all participants know and use tools and methods for climate-smart advice on their field of activities. They are very diverse and can be grouped according to their objectives and usage (Table 2):

- Climatic issues
- Management farm issues
- Economic/carbon issues
- Tools and data issues
- Advisory approaches

This table is not exhaustive, as we recognise that many additional tools and advisory approaches are used in practice but were not spontaneously mentioned by participants (for example, self-diagnostics were cited only by the Spanish group, and no tools related to reward mechanisms were mentioned, even though such tools do exist).

Tools	FR	IRL	DK	HR	ES	DE	IT	EE	EL	UK
Tools for **analysing past and forecasting future weather** and agroclimatic conditions	X						X	X	X	
Self-diagnostic tools for: carbon, decision support or management					X					
Decision support tool: Strategic and business management tools, simulation of levers, risk management tool	X	X	X			X	X		X	X

Tools	FR	IRL	DK	HR	ES	DE	IT	EE	EL	UK
Tools for good management and diagnostic of hedges, soil, forage accounting, nutrient management, pasture, farm management accounting, environmental monitoring, slurry management, holistic assessment …	X	X	X	X	X	X		X	X	X
Tools to **help implementation**: water sensors on the field, digital tools for tractor, mapping technology, field trials on own farm, pest warning station							X	X		X
Tools for carbon auditing	X	X	X		X	X		X	X	X
Diagnostic of vulnerability of the farm towards CC	X									
Records of farm data					X		X			X
Reference sheets with description of climate-smart solutions	X				X					
Facilitating group of farmers about Climate Change	X									
Dissemination of information: factsheets, webinars, leaflets, WhatsApp group, videos, field trials…			X				X			

Table 2 Tools and methods to provide effective agricultural advice to accelerate the transition to sustainable agricultural systems cited in the focus group (Evrat-Georgel and Bedoin, 2024)

When discussing climate-smart tools and methods, most participants immediately thought of carbon calculators, as these tools enable farmers to obtain carbon certification. In practice, however, carbon certification is not widespread. In some countries, farmers show limited interest in carrying out carbon diagnostics, and food companies remain reluctant to request them (e.g. Bavaria). In several countries, no tools exist at all for calculating the carbon footprint or assessing farmers' relationship to climate change (Croatia, Estonia, and Greece).

The tools that are most widely known and commonly used tend to be those addressing specific topics—such as economic analyses, nutrient balancing, soil assessments, or biodiversity diagnostics—and are typically developed within national contexts. While most focus-group participants had significant experience with these different tools, several disparities emerged:

- The absence of carbon assessment tools, combined with limited training and practical experience with digital tools, restricts their use in advisory work (e.g. Croatia and Estonia).
- Countries with more experience (e.g. France, Italy) now require more specialised tools or improvements to existing ones that currently fail to cover all agricultural sectors (e.g. agroforestry, market gardening).

Regarding access to available tools, all countries face similar challenges when adopting climate-smart tools and methods: language barriers, licensing costs, technical complexity, and insufficient adaptation to local contexts. Locally tailored tools that reflect specific farming systems are essential—otherwise, their results are not perceived as credible.

4.2.2 Levers to encourage farmers and advisors to use climate-smart tools and methods

The usefulness of climate-smart tools and methods were discussed in detail within the focus group (Annex 6.1), both for farmers and advisors. The main levers to encourage both of them to use climate-smart tools and methods were grouped as previously, according to tools 'objectives and usage: Climatic issues; Management farm issues; Economic/carbon issues; Tools and data issues; and Advisory approaches (Table 3 for farmers; Table 4 for advisors).

According to the advisors participating in the focus groups, levers **for farmers** vary between countries:

- The main lever across countries is **financial gain.** This can be realised in the different ways: selling carbon credits or obtaining certification with associated market advantages (France, Spain, Estonia), or get a better interest rate from banks (Denmark, Estonia).
- The other most cited levers for a tool to be used are if it allows the farmer to **compare their own farm results with other farm's** results (France, Denmark, Italy, Estonia), and/or **improve farm efficiency** (Ireland, Estonia).
- A number of other levers were mentioned, especially for climate-smart tools and methods that:
  - help farmers in their **decision-making** (Spain, Italy, Estonia)
  - **predict local agro-climatic conditions** (France, Italy)
  - are **accessible**: easy to use, easy to understand, inexpensive (Germany, Italy)
  - are **reliable**: confidence in the method and data security (Germany)

Improving the sustainability of their farm in the face of climate change as a motivation for using a tool was only mentioned spontaneously in 2 focus groups (ES, IT).

Important for farmers to use a tool	FR	IRL	DK	HR	ES	DE	IT	EE	EL	UK
Predict agroclimatic conditions in the local area	X						X			
Face climate change with cheap practices/tools							X			
Tool based on individual farm results		X								
Assess farm sustainability								X		
Tool which helps **improve productivity/efficiency**		X						X		
Be **more efficient in input use** following the environmental path					X			X		
Tool which gives data to make management decisions								X		
Compare its results with other farms	X		X				X	X		
Sell carbon credit or get certification	X				X			X		
ESG reporting to the bank (get a better interest rate) or food company			X					X		
Reward mechanism or payment of additional subsidies				X						
Punishment system				X						
Easy to use and to understand		X				X				
Tool tested/developed by an authorized body						X				
Have farmer's data secured						X				

Table 3 Main levers cited in the focus group to encourage farmers to use climate-smart tools and methods (Evrat-Georgel and Bedoin, 2024)

The main levers **for advisors** expressed by all the groups are similar compared to those of farmers. Advisors' motivation to use a climate-smart tool and method is improved if:

- Tool **results are visual and easy to explain** (France, Ireland, Denmark, Germany, UK).

- It **helps the advisor to understand** the problem as a whole and **explain it to the farmer** so that they can be guided according to their needs (France, Hungary, Spain, Italy, Estonia, UK).
- It allows **simulations** to be carried out (France, Denmark, Italy), with accountancy **cost/benefit analysis** (Spain) or **agroclimatic predictions** (Germany).
- It helps to identify/**describe actions, levers and their impacts** (France, Denmark) and in **decision-making** (Spain, Estonia).
- It is **accurate**, with reliable and precise data entered in the tool (Ireland, Croatia).
- it is **easy to use and available in the local language** (Greece).

Overall, these discussions underlined the importance that the tool should provide a **win-win advice**, in *"the interests of both the climate and the farmers' goals"* (UK). To ensure this "win-win slot", advisors expressed a general need to strengthen their knowledge, digital and methodological skills, as well as their ability to engage farmers with varying attitudes, including the ones who are reluctant to change.

Important for advisors to use a tool	FR	IRL	DK	HR	ES	DE	IT	EE	EL	UK
Predict agroclimatic conditions in the local area						X				
Be able to make a simulation with the tool	**X**		**X**				**X**			
Identify/describe the potential problem areas								X		
Identify/describe actions or levers and their impact	**X**		**X**							
Tool which give/analyse data to make management decisions								X		
Tool which help improve work efficiency/time planning								X		
Obtain tailored advice for farmers							X			
Generate data for better decision-making					X					
Do an accountancy cost/benefits analysis					X					
Allow to full-fil regulatory requirements for CAP subsidies					X					
Win-win tool according to the farmers' goal and interests										X
Tool which is available in national language									X	
Cheap and easy tool										X
Be reliable/accurate: solid/precise data entered into the tool		**X**		**X**						X
Have visuals results easy to understand/explain	**X**	**X**	**X**			**X**				
Facilitate exchange in a group	X									
Have a **good knowledge to explain properly/simply**				**X**				**X**		
Have **more info/facilitate dissemination** and transfer process					**X**		**X**			
Provide an opportunity to be pro-active								X		

Table 4 Main levers cited in the focus group to encourage advisors to use climate-smart tools and methods (Evrat-Georgel and Bedoin, 2024)

4.2.3 Contributions of tools for advising and engaging farmers

Bringing about changes in farming practices in favour of climate action requires multiple steps, which were discussed during the focus groups under two main phases:
Bringing about a change of practices in favour of the climate requires many steps, which have been discussed during the Focus Group regarding 2 main phases:

- Raising farmers' awareness.
- Leading to farmers' action.

For each of these phases, the focus groups explored how to engage farmers, the difficulties encountered, and potential solutions (Annex 6.2). These discussions highlighted the key role that climate-smart tools, methods, and advisory approaches can play in this transition.

Climate-smart tools and methods can significantly support change—provided they are used appropriately, taking into account the farmer's context and the specific support objectives. They can contribute to:

- **Awareness and engagement**: by helping farmers understand their climate impact (often the primary aim of carbon assessment tools) and by offering concrete examples of possible actions.
- **Time efficiency and credibility**: by providing technical and economic evidence to justify recommended measures.
- **Informed decision-making**: through data that allow farmers to visualise economic and environmental impacts, compare their performance with others or over time, and anticipate potential benefits.

However, using climate-smart tools and methods also brings some challenges to consider:

- **Accessibility and usability**: is the tool known by the advisor? How should advisors choose among the many existing climate-smart tools and methods? Do they know how to use the tool and communicate results to farmers? Is the tool available in a suitable language, at an acceptable cost, and adapted to the local context? Are its requirements manageable (time, ease of use, training, data needs)? Does the tool align with the advisor's objectives and the farmer's needs?

For example, advisors participating in the first TTT clearly illustrated the challenge of choosing appropriate climate-smart tools: most had never used a tool to monitor GHG emissions or assess climate vulnerability at farm level, making it impossible for them to consider using one effectively. Even among those with experience, 14 different applications were mentioned, underscoring the complexity of navigating Europe's wide range of tools.

- **Capacity to clarify or predict technical and economic issues**: A major difficulty reported across most focus groups was demonstrating the economic and technical relevance of climate-smart measures. To encourage adoption:
  - **benefits must be tangible** (reduced input, time saving, improved profitability...).
  - **impacts must be benchmarked**, and linked to **real data from the farm**, even if individual results cannot be guaranteed.
  - **non-economic gains** (resilience, reputation, satisfaction, workload...), rarely discussed, should be recognised as **valuable**.

Across all focus groups, advisors emphasised the **importance of the emotional dimension of communication with farmers**. Active listening and empathy are essential: understanding farmers' needs and expectations, showing genuine interest, and building trust are critical for climate-smart tools to influence behavior. Trust remains the foundation of change, and spending time with farmers is indispensable: *"It takes 20 years to build the trust of the farmers, but it can be destroyed in 1 day"* (Belgian CSC).

These findings revealed a wide range of **advisors' needs to strengthen future climate-smart advisory work**. They were grouped according to skills or resources needed (Table 5):

- Knowledge research and education

- Advisory approaches
- Advisors' coordination and communication
- Climate-smart tools and methods
- Public policies and territory organisation

What do focus group participants need/lack to improve their climate-smart advice?	FR	IRL	DK	HR	ES	DE	IT	EE	EL	UK
Knowledge research and education										
More education/knowledge on CSF practices: e.g. training farmers/advisors' programs, a shared/common approach roadmap/decision tree				X			X	X		X
Be updated on new research on field (including experience of neighbour countries)			X				X	X		X
Collect and make available in a synthetic way all the existing information. Have a better overview of CSF practices, ideally directed at different farm types (e.g. establish a centralized repository with tool comparison framework)	X		X		X			X	X	X
Conduct more research in that area, including tools development				X						
Advisory approaches										
Develop advisors' social skills for an effective communication with farmers									X	X
Management/coordination techniques helping participants see the associated benefits					X					X
Identify the "small steps" that help farmers start acting	X						X			
Adaptability and cross sectorial view: interdisciplinary approach	X		X		X			X		
Time for following up with farmers to ensure commitment to the agreed action plan	X	X				X				
Advisors' coordination and communication										
Coordination with other colleagues from their own and other structures	X	X	X							X
Coordinate monthly meeting of advisors with a common theme (similar to CoP)		X							X	
Create a common communication channel for advisors									X	X
Need to build local networks		X					X	X		X
Climate-smart tools and methods										
Have only one or few and authorized version(s) of the tool for calculation in			X			X		X		
Less expensive tools							X			
Public policies and territory organisation										
Secure more money for reward system				X						
Financial support for farmers through funding or market						X		X		
More clear credit carbon legislation							X			
Time for the territories and food chain to evolve too (farmers can't change alone)	X				X					

Table 5 Main advisors' needs cited in the focus group for the future to improve their Climate-smart advice (Evrat-Georgel and Bedoin, 2024)

4.3 Advisors' needs

4.3.1 Need for more time

Time available for advisory work emerged as a recurring and unanimous need across all focus groups, and at every stage of climate-smart transition support: building trust, providing training, developing tools and skills, coordinating actors, disseminating practices through demonstrations, monitoring the implementation of measures, and ensuring long-term changes in farming practices.

Time is a critical resource, especially for establishing and maintaining a strong relationship between farmers and advisors. Similar patterns appear across countries: trust cannot be built quickly—it requires repeated, sustained interactions. The advisor's credibility also develops over time, and their long-term presence alongside the farmer is essential to maintain commitment, particularly through follow-up actions and evaluation of implemented measures.

However, the reasons for the lack of time vary. In some regions (e.g. Greece, Spain), advisor shortages limit the time that can be devoted to farmers. In others, organizational constraints within advisory services reduce the availability of advisors. High demand from farmers—linked to territorial characteristics such as fragmented farm structures or an ageing population of farm managers—also contributes to time pressure (e.g. Italy, Spain, Germany). In countries where climate advisory services are more "mature" (such as France, Ireland, and Germany), limited time is most often associated with the challenge of monitoring action plans and tracking progress with farmers.

Solutions tailored to national and regional contexts are needed to free up advisory time and ensure continuity of support. These may include new subsidies for advisory services, sharing and pooling advisors' expertise, and increasing synergies between different advisory organisations.

4.3.2 Need for skills development

The continuous development of technical, methodological, and interpersonal skills is essential for proposing relevant climate-smart farming measures.

First, the **advisor's credibility** (which is a key condition for building trust) depends on their professional experience, technical expertise, ability to offer appropriate and realistic advice, and practical knowledge of agricultural practices. In some cases, farmers themselves can even test the advisor's knowledge by deliberately providing incomplete or incorrect information.

Regarding strengthening climate-smart farming knowledge, advisors primarily need to have a better overview of climate-smart practices relevant for a specific region/local farming context, in combination with a **hands-on description of relevant climate practices** (on mitigation and adaptation strategies) for farmers, in all production sectors (e.g. Croatia), or even more focused on organic production (e.g. Denmark).

So, expressed knowledge needs can vary regarding countries:

- Additional **training** on climate-smart practices, education programs for advisors and farmers, common roadmaps and decision trees (e.g. Italy, Greece, Croatia, Hungary).
- **Updates on research and innovative practices**, including the experience of neighbouring countries (e.g. Denmark, Germany, Italy, Greece).
- **Synthesis and accessibility of available information**, with a centralized vision adapted to different types of farms (e.g. France, Denmark, Spain, Greece, UK).
- **Development of climate-smart research and tools** (e.g. Croatia).

This need to strengthen knowledge is even more urgent because some climate-smart measures (adaptation vs. mitigation) can have **contradictory impacts and influence the entire farming system**. Their effects vary in both intensity and visibility (strong vs. weak; short- vs. long-term), and their technical and financial feasibility also differs significantly in practice (easy vs. difficult to implement; low- vs. high-cost). As a result, advisors often feel uncertain and **cannot confidently position themselves as "experts"** or guarantee farmers that their recommendations are the best choice, which limits the scope of their advice. This reinforces the need for interdisciplinary skills and a holistic, system-wide perspective:

- Cross-sectoral approach, integrating agronomy, economics, climatology, and social aspects (e.g. France, Denmark, Spain, Germany).
- Adaptability and ability to contextualize recommendations according to local specificities.

In addition, as it is recognised that **financial approaches and incentives** help promote farmer's engagement, advisors need **support and clarity** on those approaches to secure and support farmers' choices:

- What are the existing subsidies or financial aid to support investment in climate-smart practices (e.g. Germany, Italy)?
- How can they be applied within a given context?
- What is the legislation around carbon markets and what are the expected future evolutions?
- Which administrative pathway should the farmer follow and how to support him on that?

Another essential area of competence that must be significantly strengthened concerns **soft skills**, such as interpersonal abilities, facilitation, and communication skills. These skills are crucial for **building trust and for understanding the farmer's situation, aspirations, and needs**. Such a relationship of dialogue and emotional awareness becomes even more important in climate advising. Advisors must be prepared to recognise and validate new emotions, raise awareness (for example, about "slippery references"), and identify or help remove psychological barriers (such as the feeling of having to "choose between the plague and cholera," which can lead to inaction).

Soft skills that need to be strengthened include:

- Development of social skills to improve dialogue with farmers and between farmers (e.g. Greece, UK).
- Management and coordination techniques to demonstrate the benefits of actions (e.g. Spain, UK).
- Identification and support of "small acceptable steps" to initiate action among farmers (e.g. France, Germany).

On the other hand, there is a **need around climate-smart tools and methods**, both in terms of training and in terms of access to and availability of tools. Whether to raise awareness among farmers, facilitate decision-making, or monitor the implementation of measures, climate-smart tools need to be further developed, depending on the country:

- For **carbon & climate assessment tools**, some countries are calling for **more research into the development of their own national tool** (Croatia, Estonia), while others would like to see more clarity among the many tools available, even requesting to have **fewer and recognized tools**, especially for countries where several tools and approaches exist which are not homogeneous in their calculation methods (e.g. UK).

- For **climate-smart tools and methods** in general, gaps are observed for some agricultural sectors (e.g. agroforestry, market gardening) and for specific objectives, the major difficulty being to prove the economic and technical advantages of a measure.

Regarding climate-smart tools, advisors need to be better educated about the **different calculation methods behind the results** (e.g. Denmark) to gain trust in the tools, and about digital tools in general to develop their confidence and motivate their use in advisory processes (e.g. Croatia, Estonia).

Beyond training, **access to climate-smart tools and methods** must be improved (licensing costs, availability in the national language, assistance in choosing the right tool adapted to the farmer's needs and local context), hence the importance of making them available through knowledge repositories such as the FarmingForClimate platform.

4.3.3 Need for collaboration with other system actors

The **presence or absence of certain regional infrastructure in the region** (e.g. experimental demonstration farms, suppliers of drought-resistant seeds, adapted supply chains, or distribution networks...) acts either as a lever or barrier to the adoption of certain climate-smart practices. Advisors may or may not be able to rely on local structures that are suitable for supporting or demonstrating the implementation of climate-smart practices.

Change does not depend only on advisors, but on the **structuring of the entire sector at the regional and national levels**, so that the transition is possible and sustainable. However, advisors are often not at the heart of this change and/or do not know how to act on this scale. For that, i**nvolvement of public policy and territorial organization is essential**. It should be recognized that changes in food sectors and territories are necessary for climate-smart measures to be effective (e.g. France, Croatia). This also includes financial support through dedicated rewarding systems (e.g., Croatia) or by facilitating access to carbon credits and subsidies (e.g., Germany, Italy).

One of the main challenges is to **engage coordination and exchange between advisors at regional/national AKIS level**, so that interdisciplinarity and experience sharing become the dominant model, and lead to a better understanding of the farm as a whole. It could include coordination with local and national colleagues (e.g. France, Ireland, Denmark, UK), regular thematic meetings (similar to communities of practice) (e.g. Ireland, UK), creation of common communication channels (e.g. Estonia, Greece) or development of local networks of farmers and advisory actors (e.g. Ireland, Germany, Estonia, UK, Italy).

Interdisciplinary exchange and building local networks (between advisors from each field of expertise, or between advisors and other actors such as veterinarians, cooperative representatives, or other local actors with an influence on the farm) appears as a strong need to strengthen the concept of holistic climate advice. Also, **coordination with other colleagues at local/micro level** from their own and other organisations appears crucial to “sing from the same hymn sheet”, meaning that the same message is being generated and spread by all (e.g. France, Ireland, Denmark, Spain).

To meet these needs of structural changes in the **organization of advisory services for synergies**, it is important to involve public policy and local actors. According to the focus group participants, the role of these actors should be to **secure money**, to be able to **reward farmers** who actively and successfully implement climate-smart practices (Croatia, Germany), but also to help **coordinate the various actors**, in particular by dedicating time to it. It requires political, institutional and financial support. Limited resources is often cited as a major cross-cutting obstacle.

4.3.4 Needs for effective advisory services

Beyond this socio-technical approach, support for climate-smart transition relies on the **effectiveness of advisory services,** which depend on:

- **Organizational stability**: farmers find it difficult to trust people when their contacts change regularly and/or when the advisor seems to have limited technical background. Advisor's credibility is weakened by a lack of **continuity in the relationship** with farmers (e.g. Germany) and/or new and young advisors (e.g. France), due to frequent turnover among advisors. It is therefore important to limit this turnover and reward the advisors who are experienced and recognized in their region.
- **Facilitating peer exchanges:** while collaboration between advisors and other actors is important (as explained earlier), peer exchanges **with and between farmers** are equally important. Indeed, peer-to-peer learning is a very strong lever to motivate farmers' change, so advisors need to be able to develop and mobilize their network for knowledge sharing and collective learning. To ensure this commitment, advisors need time to follow up with farmers and training on communication practices, especially to promote successes observed on pilot farms and demonstration of economic and technical benefits (e.g. Germany, Italy, Greece, UK).
- The **ability to demonstrate tangible benefits**: this could be done using climate-smart tools, which require having proven tools available and accessible, which is not often the case. This strengthens the need for access to authorized and standardized tools for calculation and analysis (e.g. Denmark, Germany, Italy) and for less expensive versions of tools to facilitate their use (e.g. Italy).

4.3.5 Needs for promoting active farmer engagement

Promoting active farmer engagement is not easy and requires a strong farmer/advisor relationship, which can be facilitated by different conditions, as discussed before. **Time, skills** and **continuous dedication** are the main pillars to build this trusted relationship. However, trust is also influenced by farmers' perceptions of advisory services, and in some countries farmers' trust in advisory services is low, for example if they are linked to the government. Moreover, farmers may be reluctant to pay for advisory services (e.g. Estonia) or seek them only as a last resort, facing an emergency or when experiencing financial pressure (e.g. Greece).

Farmers' willingness to take action depends on the credibility of the measures and their immediate relevance: identifying the appropriate measure for the farm and being able to prove its benefits are key in this process, but this is not always easy or even possible. That is why there is a strong consensus on the need for **participatory approaches to support adoption** of climate-smart farming practices:

- Farmers must be involved in identifying and selecting which climate-smart practices are relevant for their farm. This participation strengthens their ownership of the measures and improves their effectiveness.
- This collaborative approach is consistent with **experimentation methodologies on pilot farms**, which aim to co-develop solutions with farmers and acquire technical and economic references to ensure their acceptability and feasibility (e.g. France, Germany, Italy, Ireland, Spain, Greece).
- Furthermore, dissemination of innovations by **on-farm/on-field demonstration** is particularly effective, and needs to be further developed. To overcome the obstacle of cultural factors, such as social norms, values, beliefs, lifestyles, and social interactions, and worldviews , several engagement mechanisms have been identified: mobilizing leading farmers or "champions", promoting and rewarding good practices, recognizing collective initiatives and agricultural

leadership. These mechanisms help to strengthen social acceptability and promote the dissemination of innovative practices on a larger scale.

4.4 Farmers' needs – the advisors' perspective

Advisors' needs are closely linked to those of farmers, who are effectively their "clients." In this section, we summarize what can be learned about farmers' needs from the advisors' perspectives and practical experiences. As previously noted, advisors recognize the importance of starting from farmers' real demands. Two main types of advisory needs typically arise when farmers contact an advisor:

- **Addressing technical or issues**: farmers often seek help to solve urgent or recurring technical and economic challenges. In these cases, they expect advisors to mobilize their technical expertise, analyze data, optimize production from both a technical and economic standpoint, and provide inspiration by sharing experiences from other farms, training, or literature. According to focus-group participants, this is the most common entry point into climate-smart advice.
- **Receiving an external perspective on the farm's long-term future and sustainability**: as as second entry point, farmers also contact advisors when they need support in reflecting on strategic decisions, such as succession planning, major investments, or significant system changes. In these situations, they expect advisors to apply strong soft skills—active listening, facilitation, and a holistic view of the farm. For climate-related questions specifically, farmers need advisors to provide insights on projected climatic trends affecting agriculture (e.g. likelihood of summer droughts, opportunities for earlier sowing, emergence of new pests) (France, Italy, Germany). Beyond climate projections, farmers also require guidance on future regulatory developments, financial incentives, and subsidy opportunities

Regardless of the initial entry point, once new or adapted practices are considered, farmers have specific needs related to the **feasibility** and **impact** - economic, technical, labor organization - of these practices.

- **Economic impact & feasibility**: the most important is to **secure money by** selling carbon credits or get certification which provide market advantages (France, Spain, Estonia),or get better interest rate from bank (Denmark, Estonia) and/or **improve farm efficiency** (Ireland, Estonia).
- **Technical & labour organisation feasibility and impact**: farmers want to be able to refer to & learn from other farmers or trials where the practice and its implementation are described. **Farm visits, on-farm demonstrations, farmer discussion groups, benchmarking tools with other farms, description of results and experiments, and testimonials of other farmers** are all potentially useful sources of information for the farmer to figure out whether or not to implement and maybe adapt the practice to their own farm.

The farmer might also need to acquire new skills and knowledge, which can happen through formal **training** or through **hands-on experimentation** on a small scale, where farmers test approaches themselves and learn from successes and failures.

Furthermore, these advisory needs of farmers exist within a wider context that must positively encourage and empower farmers to engage in climate-smart transitions. This means that farmers need an enabling **AKIS characterized by trust, open collaboration, and information sharing**. Advisors across all focus groups stressed the importance of alignment among the various actors that interact with the farmer (e.g. veterinarians, feed and seed suppliers).

There is also a clear need for information and tools which are **accessible**, easy to use, easy to understand, inexpensive (Germany, Italy) and **reliable**, both in terms of methodology and data security (Germany).

In addition, farmers also need **clarity on market expectations and fair remuneration** through those markets. In the Italian focus groups, it was emphasised that when farmers receive low remuneration, and market prices are very volatile, it is difficult to invest for the future. In the Spanish group, producers were described as being exhausted by a continuous avalanche of market requirements.

Finally, the **political context** can be difficult to navigate – there is in several countries a lack of visibility on important decisions like future taxes, subsidies, and environmental regulation (named in the British and Danish groups). **Societal discourse and expectations** can have diverse influences: in Estonia and Ireland, farmers sometimes feel scapegoated, which complicated discussions on climate topics, whereas in Denmark, the engagement of banks and financial actors encourages farmers to undertake climate diagnostics.

It is important to note that the needs of farmers will largely depend of the nature of the envisaged farming practices: **high-investment changes** (e.g. precision-farming equipment) require financial security and long-term predictability; **knowledge-intensive changes** (e.g. introducing new crops into rotations) demand substantial technical and scientific learning; **long-term practices** (e.g. soil carbon sequestration, agroforestry) require patience and trust, as benefits may only appear after many years.

5 Connecting focus group results with other project activities and literature

In this section, we discuss the barriers and levers faced by farmers and advisors in relation to climate-smart farming, comparing the focus group findings with insights from other project activities as well as relevant reports and publications. Rather than covering all results, we focus on selected examples where the information gathered complements the focus-group discussions or helps deepen interpretation and inspire potential actions.

5.1 Advisory skills: needs and opportunities

The needs of advisory skills are diverse, as expressed during the focus groups:

- Being able to build a general and holistic view of a farm.
- Having good technical knowledge on specific aspects.
- Having a good economic understanding.
- Managing and understanding specific climate tools (monitoring, benchmarking).
- Having good listening skills as well as facilitation skills for managing farmers' training and discussion groups.

These results are backed up and broaden by a survey which was conducted at the beginning of the CSA project and answered by 1104 advisors from all the countries in the project. Respondents were mainly advisors (79%) and managers of advisors (14%) (Suomela, et al., 2023). They were asked to rank the most important methodological skills for an advisor in the context of climate-smart farming.

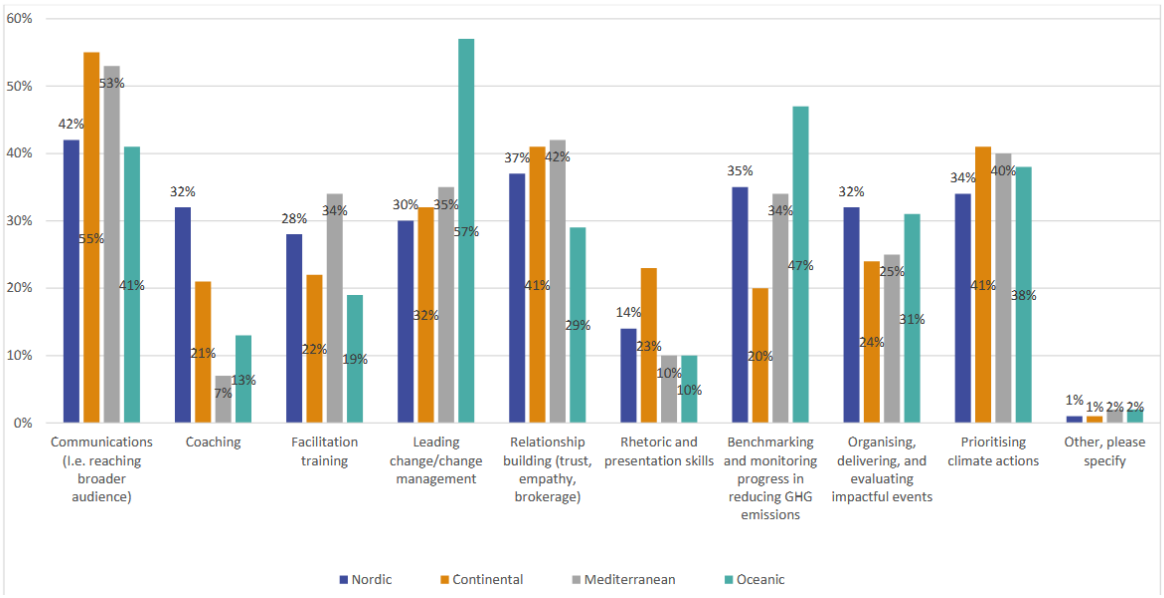

Figure 2 Three most import skills for advisors as answered in the large online survey (Suomela, et al., 2023)

Skills that were mentioned less in the focus groups, such as communicating to a broader audience and organising impactful events, are appearing strongly in this survey. This is probably due to the fact the focus group had a strong focus on the farmer – advisor relationship, where the survey broadens the advisors' function to engaging more farmers.

It is interesting to see that skills in change management are emphasised as particularly relevant by the advisors from the Oceanic cluster (7 countries: BE, DK, FR, IE, NL, PT, UK). This finding was also supported by observations made during the Train-The-Trainer courses (TTT). During these course, it appeared that the concept of "change management" appears to be more integrated in the reflections of advisors from those countries, while "coaching" appeared stronger in Nordic countries.

This vision of multi-skilled advisor is also backed up by the results of a workshop conducted during the kick-off meeting (the Rich Picture exercise) where several groups represented the Climate-Smart Advisor with many arms (see an example Figure 3).

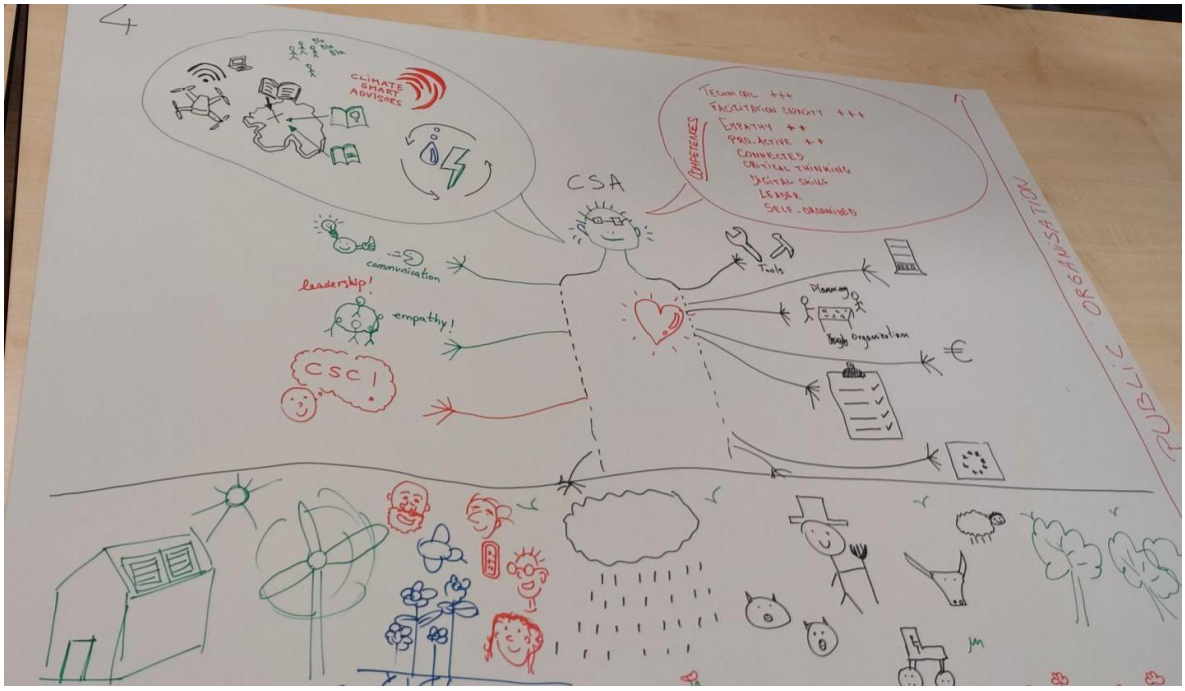

Figure 3 Poster produced by one of the groups and representing the ideal Climate-Smart Advisor (Kick-off meeting, May 2023)

We do not have a complete overview about which skills are missing or should be in focus for upskilling advisors but we can offer some insights based on a short survey completed by all the advisors in the two TTT courses. In terms of technical thematics and knowledge , soil health and biodiversity ranked highest for both groups of 40 advisors. This is an important point also because soil health measures both can be linked to adaptation and mitigation measures and are often considered as quite interesting by many farmers (see next parts). In terms of experience and needs, around half of the advisors indicated to have never used a calculation tool for accounting of farm GHG emissions. They are also asking for a better understanding of the climate mechanisms and on-farm practical measures (see Table 6).

In terms of soft skills, the advisors attending the TTT indicated they were keen to improve facilitation, communication, and group management skills, receive feedback on their teaching approaches, and better coordinate with their advisor groups. Many were also looking forward to network and learn from other European advisors, sharing experiences, and gaining new methods and insights.

Further insights about skills and knowledge needs within the CSA network were also gathered through the Community of Practice network of the CSA advisors. Each Community of Practice, formulated one or more learning questions (i.e. questions that they want to work on within their community). These questions are gathered and can be grouped in 3 main categories:

- Capacity development – question example: How to strengthen the advisors' role in innovation processes?
- Advisory Practice – question example: How to support climate-smart farmers to support other farmers in climate-smart activities?
- Farming Practice – question example: What impact does grazing have on the CO2 footprint and on biodiversity?

Based on these insights, it is clear that the needs for skill development are quite diverse from person to person, organisation to organisation and country to country. Therefore it is important for managers of advisory services to evaluate together with the advisors the needs for upskilling. It is also worth noting that the advisors within our network express a strong motivation for upskilling as they consider this a positive part of their professional identity ("I want to be recognised as a good advisor", "I want to stay qualified advisor").

Pending questions and reflections for further work:

Regarding individual versus collective skills, it is not considered as realistic to expect a single advisor to master all the competencies listed above. This makes **coordination among advisors with different areas of expertise essential**. However, such coordination is often described as a challenge across many countries and organizations (see also the following section on AKIS).

There is broad agreement among advisors that peer-to-peer learning—farmers learning from other farmers—is one of the most effective ways to encourage the adoption and testing of new practices. Despite this, **advisors do not always focus on developing their own skills as facilitators of on-farm demonstration events** or other peer learning environments. Are advisors already highly skilled in this area, or is there untapped potential for improvement? We believe the latter is more likely, but this deserves further exploration.

A shift in advisor posture is also needed. On climate change, advisors often learn at the same time as farmers. In a single year, both waterlogging and drought may occur, and there is limited hindsight. Taking the traditional "expert who knows" stance is not only impossible but potentially risky. As an experienced advisor explained during the French AKIS meeting in December 2025, the role increasingly becomes one of helping farmers make "the least-worst decisions." This evolution challenges the advisor's credibility and, ultimately, the trust relationship with farmers. In the CSA project, we often observe advisors seeking reassurance in their role as "experts." It may be useful to reflect on how advisors can remain valuable to farmers even when they cannot claim full expertise—identifying which other skills they can rely on. Is it possible, and acceptable, to say: *"I don't know more than you, but we will try to learn together"*

5.2 Advisory context: a well-functioning AKIS

As developed in parts 4.3.3, 4.3.4 and 4.3.5 a well-functioning AKIS can be a key lever for climate-smart transition. Behind a well-functioning AKIS are many things:

- An AKIS where advisors have **time and economical resources** to follow a farmer in a (potentially long) change journey, but also time for developing their knowledge, skills and network: This aspect was mentioned in all focus groups, and is also backed-up by the online survey where a important outcome was: "Barriers for advisors to act upon climate change are often related to disability to invest in it." (Suomela, et al., 2023)
- **Collaboration of advisors within an organisation** in order to combine their skills to support farmers in different aspects: this aspect is explored in the CSA project, for instance through one

of the CoPs, who have as main learning question “How do we achieve a good alliance between advisors with various competences and how do we put together a useful knowledge resource?” We don’t have a common answer to this question yet, but we could report on a discussion with an Irish advisor: “In the health sector, we all have a generalist doctor, who can send you to a specialist when needed. If you see various specialists, the generalist is in charge of keeping an overview and coordinating. Shouldn’t we also do something similar in farming? I feel that we are missing this role of coordinator/generalist advisor.” It would be interesting to explore if some countries have experience with this question and how they tackle it.

- An AKIS with **exchange, openness between organisations, dialogue** between research advisory, education and farmers, an AKIS where farmers’ needs, questions and trials are at the centre. This point also emerged from the online survey: “according to the respondents, their motivation to act upon climate change can be increased through increased cooperation between different actor types and increased support for the implementation of climate actions. (…) The need to have an open discussion with other actor types, such as supply chain actors and community, is also reflected in the open responses of the respondents” (Suomela, et al., 2023)
- In terms of climate change, one can foresee that the future climate of region x can be similar to the actual climate of region y. To deal with anticipated changes in crops, pests, etc… , it would be good to **organise learning between regions and potentially between countries**. This subject was addressed during a workshop conducted at the General Assembly meeting in Almeria in May 2024. The conclusions of the workshop point to different possibilities: “Emphasis on cross-border knowledge sharing through in-person exchanges, such as operational groups, Living Labs, cross-country farm visits (e.g., HR/SK/CZ), and EIP Agri supported demonstrations.(…). Examples include the support for cross-country visits through networks like EUFRAS and SEASN. Exploration of student and advisor exchange programs, such as those highlighted from Germany, to strengthen ties across the region.» (Meeting notes, GA meeting in Almeria)

5.3 Difficulties and opportunities for supporting climate-smart transition

5.3.1 Advisory needs and drivers for change: the farmer’s and advisory journey

As mentioned before, the focus groups gave some elements about farmers advisory needs and drivers for change towards climate-smart farming.

During other project activities, we have tried to capture more precisely what is important for farmers to change and when. Behavioural change is often conceptualised as a linear process as described in the ‘Change towards Integration of Agri-environmental Practices' (CIAEP) framework (Dumont, Ruiz, & Campeau, 2025). But based on the experience of the advisors in our network, this is not the case. It would be better described as a journey with ups and downs until the farmer eventually comes to the stage where he/she is comfortable in new routines. This is also reflected in a workshop format developed in the CSA project (Evrat-Georgel & Bedoin, The Farmer's and advisory Journey towards climate-smart farming, 2024). The tool includes three types of cards which can be placed and linked by the participants on a large piece of paper:

- Farmer Journey Cards: representing phases such as doubt, awareness, experimentation, dropout, and commitment. Note that participants can add new cards if it is relevant for them.
- Advisory Activity Cards: interventions ranging from technical advice to peer learning facilitation or showcasing success stories.
- Enabling Factors & Motivations Cards: highlighting internal and external drivers such as profitability, trust in the advisor, or future-proofing concerns.

This workshop was performed also in the context of the Train-the-Trainer course (TTT) in January 2026 (Farmer cards for that workshop are presented in Annex 8.3). The cards chosen at the start of the farmer's journeys differed from group to group and several had various starts reflecting a diversity of farmer's situations:

- Faces a crisis situation (8/10)
- Gets interested in the subject of climate change (5/10)
- Faces difficulties (5/10)
- Sees climate change effects on farm – new card added by a group (1/10)
- Faces new regulation – new card added by a group (1/10)
- Understands the mechanisms of climate change and the consequences on the planet/region/farm (1/10)
- Reflects on its farm global strategy and objectives (1/10)
- Wants to try to act on the climate issues (1/10)

It reflects the various triggers observed by the advisors and illustrates the fact that change can come from a combination of **intrinsic motivation** and from **obligations**, being pushed by a changing environment and changing legislation. However, most of the farmer's journeys built by the advisors start with some kind of challenge or difficulty for the farmer. This difficulty will trigger thoughts and reflections for the future and that is where a window of opportunities for change can open up.

Advisors built the journey of the farmer combining cards related to **emotions** (for example "Gives up"), to **cognitive** aspects (for example "Reflects on how new practices could be implemented on the farm " and to **concrete actions** (for example "makes a small test"). Some groups constructed the journey as a linear process, others as a more "messy" process with feedback loops. Most groups acknowledged the fact that the farmer will face difficulties in the trials and implementation, that he or she will need to try new solutions and also find continuous motivation to try again.

Fout! Verwijzingsbron niet gevonden.5 presents the farmer's journey for one of the groups. The orange cards are the farmers' steps. The white cards represent facilitating factors and advisory actions which might help in moving the farmer forward in their journey.

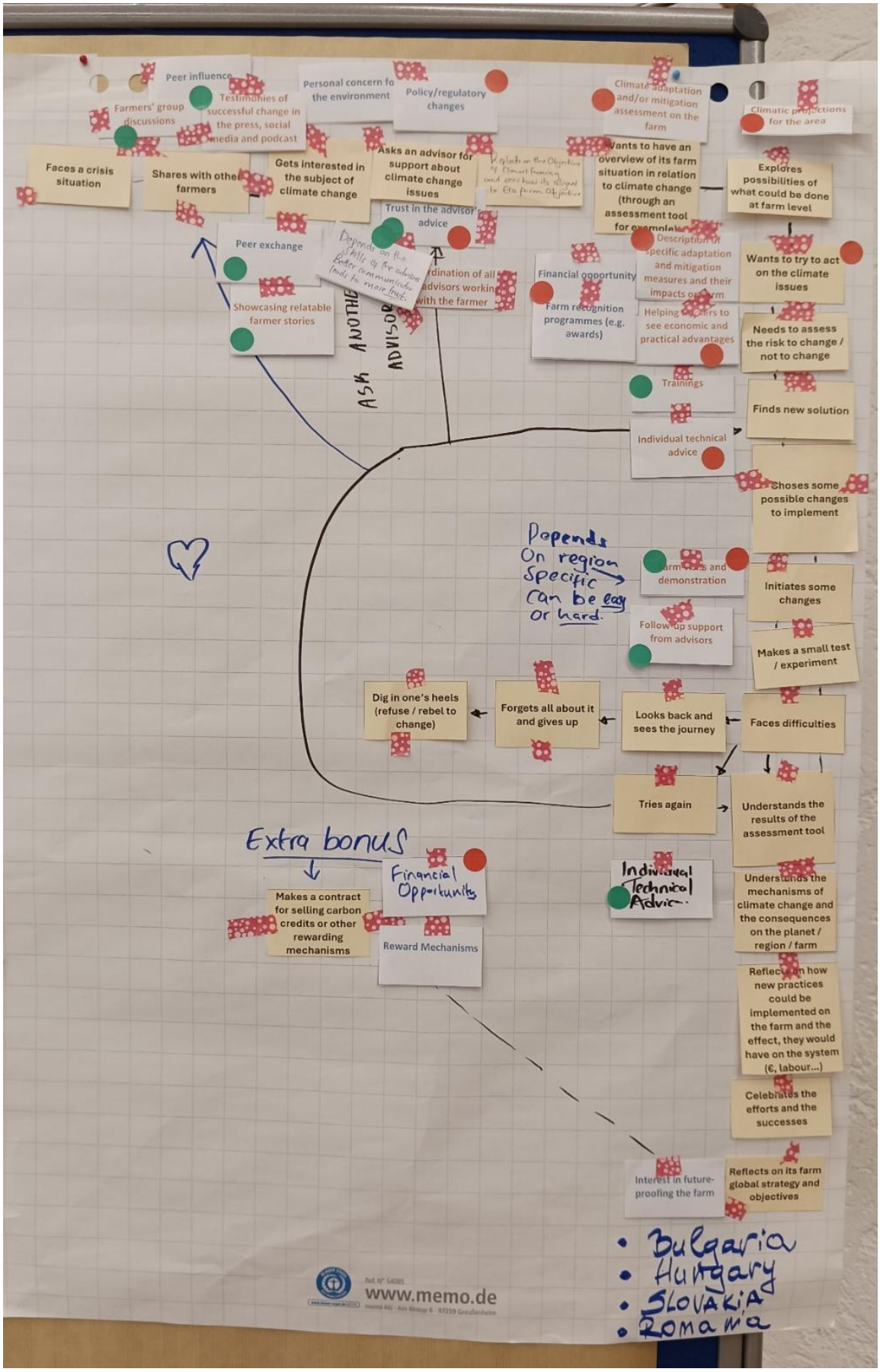

Figure 4 Farmer's and advisory journey as built by one of the groups during TTT2

Several review articles have been published in the last 10 years compiling studies trying to understand the adoption of new practices (Rosário, Madureira, Marques, & Silva, 2022) (C. A. K. Dissanayake, 2022) (Ansari & Tabassum, 2018) (Borges, Lansink, & Emvalomatis, 2019).

Results from the farmer's and advisory journey reveal similarities with the model presented by Dissanayake et al (Figure 6). However, the journeys constructed by the advisors in CSA and reflecting their daily practice in advisory, are less linear and more "messy". This in turn was also reflected by a workshop discussion held during the General Assembly meeting November 2025: "*Planning is a process involving ongoing dialogue, learning, and adaptation, rather than a one-off delivery of a fixed plan.*" (Minutes from GA meeting, November 2025)

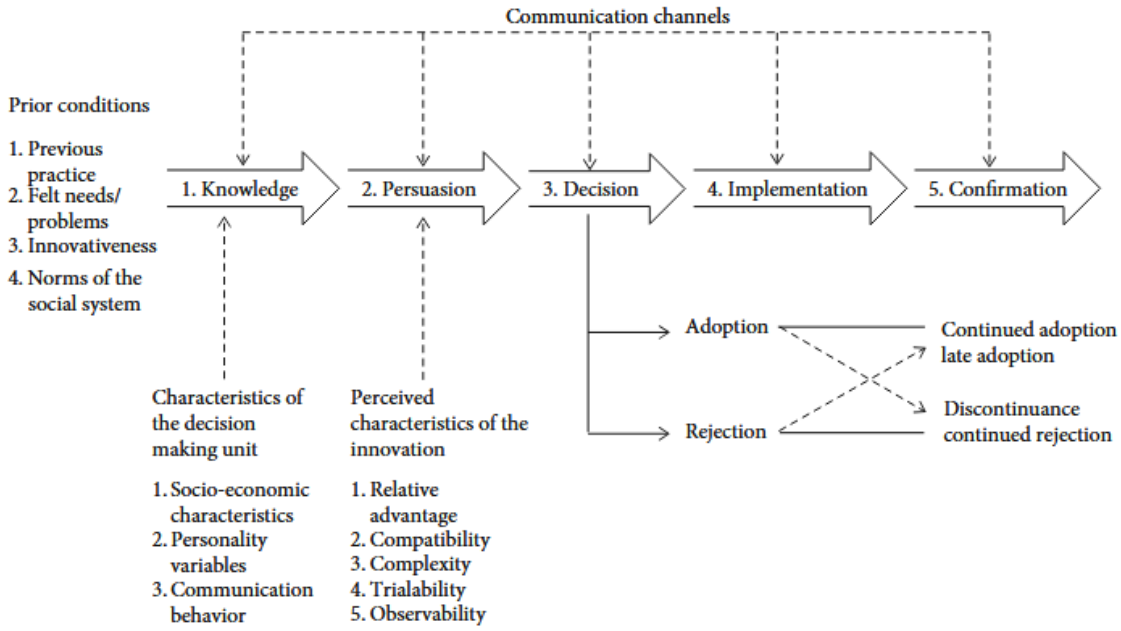

Figure 5 Model for innovation-decision process extracted from (C. A. K. Dissanayake, 2022)

5.3.2 Structural factors affecting change

As mentioned earlier, some structural factors, such as ageing farmer population and land tenure, were spotted as barriers in the focus groups. This is coherent with what has been described in literature (Wreford, A, & G., 2017). Literature also emphasises two other important factors:

- Small farms can have difficulties to adopt new practices if those practices require a large financial investment. Several technological developments are developed and designed with large farms in mind, and are not suitable to on small farms. (Dessart, Barreiro-Hurlé, & Bavel, 2019).
- Available infrastructure in the territory can also be a driver or a barrier for adoption of some practices, as for example the presence or absence of an irrigation network or a gas or electricity network to collect renewable energy produced on farm. (Wreford, A, & G., 2017).

5.3.3 "Space" for change

Behavioural change is a complex process, affected by a wide range of internal and external factors. abits play an important role: acting "as usual" saves energy and mental load. Farmers' habits were mentioned as a barrier in the Italian focus group, echoing findings in the literature (N.Dunphy,

Kearney, & Flannery, 2025). Changing practices requires **mental space**, motivation, and energy. Often, it simply is not the right moment to innovate. Voluntary change competes with daily pressures. Conversely, change may be forced by crises—economic strain, technical failures, or labour shortages—which reduce the mental space available for learning and investing. Focus groups highlighted that the severity of difficulties influences what is realistically possible.

Adopting new practices involves risk: financial (costs, lower yields), organisational (increased workload), and personal (uncertainty). Yet, **not changing** also entails risk in a changing climate. As one advisor put it during TTT2:*"If you don't change, you'll die."*

Risk-taking capacity is higher when the farm is financially stable and workload manageable, but it also depends on personal profiles. This is illustrated by a participant at the TTT: *"Some farmers are "first movers"—innovators willing to learn through experimentation. Others prefer a "follower" position, waiting until peers have tested new approaches."*

5.3.4 Motivation to act: climate perceptions, values and knowledge

In the CSA project, both adaptation and mitigation practices are considered and discussed. In general, adaptation practices are well-accepted because farmers directly experience the impacts of climate change on their farms. Studies show that repeated extreme weather events naturally drive adaptation (Dessart et al., 2019).

Mitigation is however more challenging. Barriers include:

- Climate scepticism (Is climate change real? Is it human-made?)
- Fairness concerns (Why should farmers act if aviation, transport, or industry contribute more?)
- Perceived limited agency ("Will my efforts matter?")
- Uncertainty about long-term climate changes

This scepticism is both bound into debates in society, media and social media and also personal knowledge and information of the farmers.

The topic of climate resistance was discussed in a workshop at the GA meeting in November 2025. Discussions highlighted that resistance often stems not from unwillingness but from feelings of blame or overload, frustration with public discourse, and/or negative emotional associations with the word "climate". As part of the same discussion, advisors also suggested some effective strategies, including:

- build trust and focus on the person behind the farm
- avoid abstract climate terminology—use local, concrete references (soil, water, livestock decisions)
- break topics into manageable steps
- acknowledge existing good practices
- use peer-to-peer stories to spark curiosity

Farmers may perceive some "new" practices as contradicting their **values** or traditions—sometimes feeling they are being asked to "go backwards" (Spanish FG). Practices that could reduce animal welfare, change land use traditions, or lead to ploughing permanent grassland may conflict with core values. The controversies around the use of synthetic methane inhibitors are a good illustration of those conflicting values (source: workshop at TTT2).

Yet values can also motivate action. Some farmers, labelled as “environmentalists” and described as having a “high level of agreement with farming goals that promote environmentally-friendly production, animal welfare, public health, and employment in rural areas” feel a strong responsibility toward environmental and social impacts (Gemtou, et al., 2026). Others find pride in visible landscape features—such as hedgerows—and take inspiration from peers adopting environmentally friendly practices (Wreford, A, & G., 2017).

5.3.5 Collective dynamics and social network

New practices are easier to adopt if there is a social consensus around them: for example, when the whole family supports the change or when the farmer sees added value in/for the neighbourhood. (German FG)

Local social norms shape what is considered as a “good farmer”. In some regions, tensions between agricultural and forestry sectors affect perceptions—for example, woodland planting may be frowned upon (Felton, et al., 2023). This phenomenon shows the importance of the attitudes of their neighbours and families for the decision to adopt a specific practice.

In literature the social norms are explored for example in Dessart et al.((2019), who distinguish between a descriptive norm (comparison to others, conditionality of cooperation between pairs, conformism), signalling motives linked to a need of social status and injunctive norm (Figure 7).

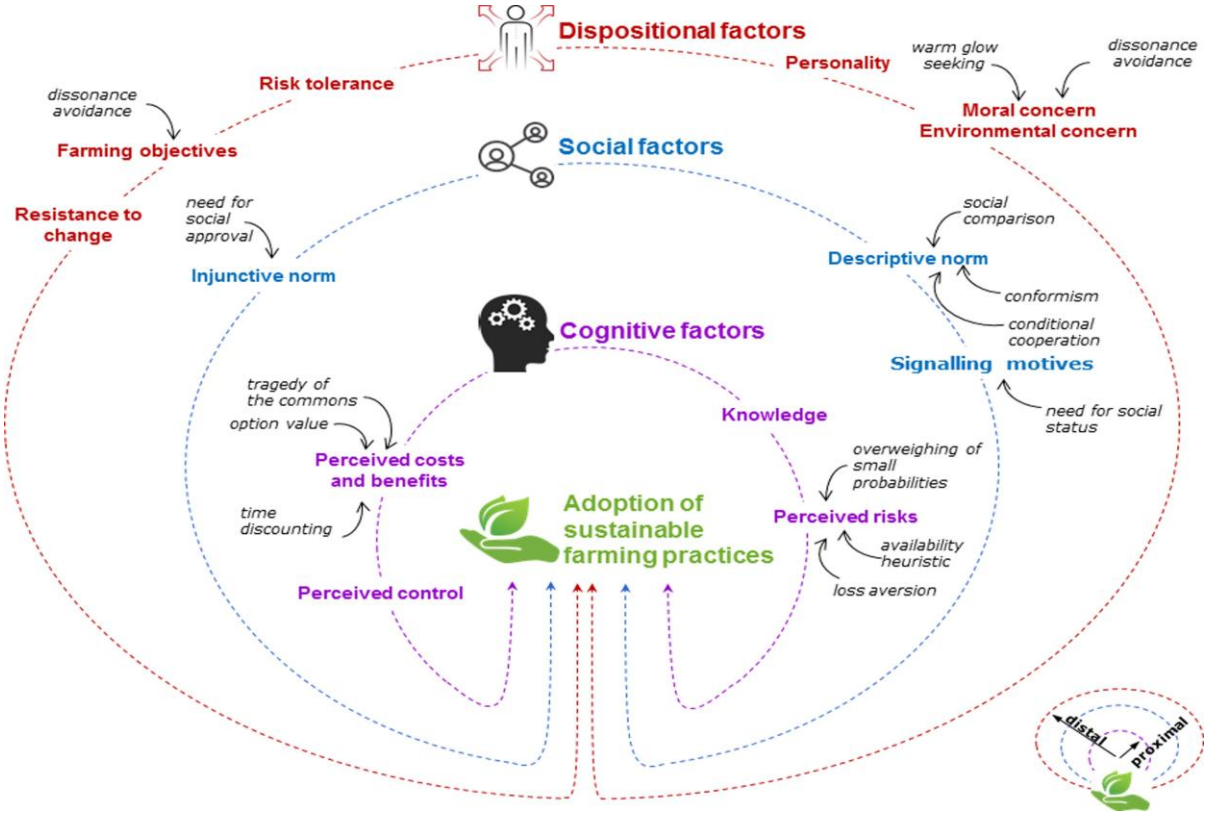

Figure 6 An integrated framework of behavioural factors affecting farmers’ adoption of sustainable farming practices. (Dessart, Barreiro-Hurlé, & Bavel, 2019)

Social norms are especially important for the “follower” farmers and less for the “innovators”, as was also shown by (Farstad, Melås, & Klerkx, 2022):

"*The farmers in our study needed and valued both support, exchange of experiences, and supply of new knowledge – like most farmers. However (…) it was not a social or professional network that pushed them into this way of developing their farm*." (Farstad, Melås, & Klerkx, 2022)

When early adopters are present in a local area, peer-to-peer learning between farmers and groups of co-development will be an important lever for several farmers. Learning together and learning from each other can create a momentum for the adoption of new practices. (Magrini, et al., 2019)

5.3.6 Practical and operational aspects

The adoption of new practices can be related to the practical and operational aspects on the cross-road between specific farm situations, the farm system and the specificities of the new practice.

The main questions are:

- Does the practice make sense in the particular pedo-climatic and farm context?
- What would be the impact on the farm operating cost?
- What would be the impact on farm output, both in terms of quantity and quality of product?
- What would be the impact in terms of workload and work difficulty?
- Does the farm have the financial capacity to make the investments?
- Are there economic rewards?

These themes frequently surfaced in the CSA project.
Oversimplifying cost assumptions or ignoring farm-specific contexts can hide real transaction costs (e.g., learning, adapting systems), which hinder adoption (Wreford, A, & G., 2017). A "small steps" approach - testing a practice on a small plot or with a small group of animals - can ease adoption of larger changes later.

5.3.7 The role of the food chain

Food chain dynamics were not widely mentioned in focus groups, possibly because (public) advisors often have limited connection to supply chains. Nonetheless, supply-chain structures have a well-documented influence on farming practices (Wreford, A, & G., 2017):

- **Competitive contracts focused on yield** may discourage climate-smart practices and push for higher fertiliser use.
- **Market and processing constraints** (e.g., lack of buyers for climate-resilient crops) can block adoption.
- **Standards and certification schemes** (e.g., GlobalGAP) can incentivise or discourage specific practices.

Farmers can make systemic transformation of their farming system alone, but it is easier when the whole food-chain system has changed. This has been studied as Multi-Level Perspective (MLP) in for example (Magrini, et al., 2019). The adoption patterns of new practices will be different for farmers in the niche/new sector than later when the main "regime" has changed. For example, in several regions there are neither buyers of crops nor facilities to clean the seeds of flax, buckwheat or chickpeas, even if they could be quite beneficial in a crop rotation. The "front runners" will try the new crops with (perhaps self-built) equipment and direct sales, requiring substantial time and efforts to establish. Building up a full supply chain will require collective or private investments from the "socio-technical regime". When this new socio-technical regime is established, then the adoption of the practice by many farmers is facilitated (Magrini, et al., 2019).

5.3.8 Political context and societal expectations

In the Spanish focus group it was mentioned that some farmers perceive certifications as a "fee" to reach an objective. In addition, it seems that the consumer does not receive clear information about this effort, so there is no appreciation of the farmers' efforts. As a result, the farmer in general reacts with resistance, and feels that these measures may harm his production and profitability. Therefore, turning the message around is essential: to make the farmer understand the benefits at the land level and how advantageous it is to apply these sustainability measures, while at the same time supporting awareness and appreciation at market/consumer level. In Denmark, the proposed agricultural climate tax makes farmers anxious. It prompts discussions on mitigation but also leads many to "wait and see," thereby delaying system changes on the farm. Finally, it was also mentioned that farmers are aware of public opinions and want to be perceived as "doing the right thing." Yet public expectations are often contradictory: demanding cheap food, "clean" food, and a "clean" environment simultaneously.

This more anecdotal evidence indicates that policy decisions can enable or hinder systems change. Farmers may delay action if they expect future subsidies or payments. Also, climate policy evolves rapidly, and many marketed "innovations" lack solid evidence. Related to this, (Wreford & Adger, 2017) mentioned that it can be difficult to combine high levels of productivity with high levels of sustainable commitment, and misaligned agricultural and climate policies—such as production-oriented subsidies or certain insurance schemes—can also inhibit climate-smart adoption.

5.4 Adapting advisory activities to diverse contexts

5.4.1 Diversity according to farming practices and context

In the previous pages, we have listed and commented on barriers and levers for both farmers and advisors for the adoption of climate-smart practices. However, it is important to note the large variation between possible climate-smart farming practices.

At the TTT 2 in January 2026, the 40 advisors worked in groups on 6 different farming practices and discussed prerequisites, barriers and needed support to facilitate their adoption.

For example, for agroforestry development, the following needs were identified by the group:

- Identify clear objectives (biodiversity, wind…)
- Detailed knowledge of advantages and disadvantages -> cost and time/work to keep it clean for example, competition for water and light
- Convinced and skilled advisors
- Rewarding mechanisms (subsidies…)
- Knowledge about species (competition, survival…)
- Markets for by-products
- Marketing certificates

The possible solutions and supports identified were then as follows:

- Advisors training
- Farm visits, peer-to-peer testimony
- State/local subsidies
- Develop woodchip demand/policy supporting wood use for energy

- Organize collective production of woodchip
- Expert forestry advice
- Local action groups including farmers, municipalities, citizens and advisors.

This example also provides a nice illustration of the fact that **the solutions are not only to be found in technical optimization and the farmer-advisor relationship but also require collaboration with other actors, at various levels.**

The proposed solutions will also be different from practice to practice and we would advocate that it is important to **look at barriers, levers and solutions for each of the most promising farming practices in a given context**.

In connection to this, Nettle et al. (2022) have proposed a framework to identify the most suited advisory methods depending on the maturity of the innovative practices (Figure 8) (Nettle, Major, Turner, & Harris, 2022).

Table 3. A framework for assessing the relative strength of extension methods (1 through 9) according to the attributes of the context for change (A, B or C), derived from the review and case study findings.

Extension methods (1–9)	A	B	C
	The farm-practice context and impact from change is known and uncontested	The farm-practice context and impacts from change are known, yet there are complexities and uncertainties in implementing change	There is complexity, uncertainty or long time-frames in changing farm practices or in knowing the impacts from change
1. Facilitated groups/ peer learning	Moderate	Strong	Strong
2. Technology development	Moderate	Strong	Strong
3. Training	Strong	Moderate	Weak
4. Information provision and access	Strong	Moderate	Moderate
5. One-on-one/ consultancy (coach)	Strong	Strong	Weak
6. E-extension	Strong	Moderate	Weak
7. Co-innovation	Weak	Moderate	Strong
8. Best management practice	Strong	Moderate	Weak
9. Social marketing	Strong	Moderate	Weak

Figure 7 Extract from the paper of Nettle et al. (2022) on the strength of extension methods in different situations

In each country and context, farming practices could be assessed according to this framework, in order to reflect on the best advisory practices for a given farming practice (and associated challenges). It is important to make this assessment at local level, as the same practice discussed at the TTT fell under category A (easy, already many farms are doing it) in one country, but in category B (complexities and uncertainties of the actors) in another one.

5.4.2 Recognising and understanding trade-offs

Recognising the proper farming practices which support a sustainable future is still an issue and assessment of their impacts at a local level remains an issue. We came across two different trade-offs:

- What makes sense from a climate adaptation or mitigation point of view, might not be positive for other aspects of sustainability such as biodiversity or animal welfare. Effects are also often not straightforward to measure or calculate.

- "Correct" climate-smart measures at farm level might not have a positive climate-smart effect on regional or longer term perspective.

Trade-offs between climate measures and other dimensions of whole farm sustainability is often a blind spot of the climate calculating tools and the suggested actions. More and more modules are developed to take into account economic aspects, but the wider social and other environmental impacts can be difficult to calculate and are therefore not taken into account. For example in the French context, reducing calving age may in some regions result in a drastic reduction of the use of permanent pastures for heifers and youngstock and this may lead to a ploughing of permanent grassland. (Tarekeg Erekalo, et al., 2024) assessed climate-smart farming practices and technologies for biodiversity, water and energy efficiency and animal welfare improvement in the European context. It showed that several climate-smart farming practices showed win-win perspectives, but not all and not for all contexts, so this should be specifically checked-up or estimated in each context.

Trade-offs between effects on farm, local and regional level are nicely illustrated in a recent chapter by Delbaeke et al. (2025), which discusses the so-called rebound effect. Measures intended to improve water-use efficiency often lead to increased overall consumption—a rebound effect described by Jevons' paradox. For example, farmers who adopt more efficient irrigation technologies may choose water-intensive crops or expand irrigated areas, ultimately increasing total water use. This can shift vulnerability within a watershed: intensive irrigation upstream reduces water availability downstream. Studies also show that public water-conservation programmes can unintentionally raise water consumption. Such rebound effects can be prevented only through strict regulations, such as water-use quotas or limits on cultivated area. These types of maladaptation are often detected only after it has already occurred. A key challenge, therefore, is to identify critical situations early (Debaeke, et al., 2025)

These aspects have, to our knowledge, not been discussed in the CSA project yet, but would be relevant to consider.

5.4.3 Integrating climate smart advice in routine advisory work

We have discussed in the previous sections how advisors can increase their skills to deliver climate-smart advice. But the question remains if climate smart advice fits more in a specialist or a generalist profile. It could be argued that to reach more farmers, and obtain most impact, there is a need to integrate the ClimateSmartAdvisors concepts and practices into the routine (i.e. generalist) advisory work. This discussion is also reflected as a Learning question in the Dynamic Learning Agenda of the project: How to meaningfully integrate climate mitigation and adaptation into routine advisory? A workshop was organised to collect insights and answers to this question at the GA meeting in November 2025. Based on the discussion, it is suggested that if we want to meaningfully integrate climate change mitigation and adaptation into routine advisory work, the focus should be on embedding climate actions into existing advisory conversations, especially through practical, economic, and sustainability lenses. Advisors must be equipped with the right training, tools, and incentives, and the **advice should be aligned with what matters most to farmers, such as financial security, farm resilience, and long-term planning**. Further suggestions included:

- Start from soil health & organic matter: Increasing soil organic matter improves adaptation (better water retention, resilience) and mitigation (carbon sequestration). Seen as a "win-win" that's easy to promote and widely accepted by farmers.
- Work on water management: actions like water storage and cover cropping help with both drought resilience and reducing emissions through improved soil health.

- Follow a farm system approach: looking at the whole system, from economic and social conditions to agronomic practices, allows advisors to embed climate-smart advice across the board.
- Start with adaptation, then link to mitigation: farmers are more open to adaptation messages. Advisors can introduce mitigation benefits as a co-benefit, once trust and interest are established.
- Demonstration & Practical Examples: showing good examples of farmers who are doing well builds confidence and shows feasibility.
- Economic framing & future benefits: Long-term investments that show financial gain or reduced risk offer strong motivation, especially when tangible benefits are clear

Finally, it is also important to acknowledge that a substantial part of European farmers are not well connected to advisory services and might only for example read the local farmers' journal or so, therefore some of the measures mentioned above are to be spread more widely across the AKIS to reach as many farmers as possible.

6 Conclusion

The transition to Climate-Smart Farming depends fundamentally on the quality of support provided to farmers, and this deliverable confirms that effective advisory work is shaped by a combination of technical expertise, interpersonal skills, and supportive system conditions. Across all focus groups and project activities, a consistent message emerges: **climate-smart advice works best when it is practical, farmer-centred, economically grounded, and embedded in trusting, long-term relationships**.

Advisors are key actors in the climate transition, yet they operate within significant constraints. Time limitations, fragmented advisory systems, variable access to tools and training, and uncertainty around climate projections all affect their ability to guide farmers effectively. Advisors therefore emphasise the need for:

- More time and continuity to build trust, follow up on actions, and support behavioural change;
- Better access to harmonised, locally adapted tools with clear methodologies and affordable licensing;
- Strengthened technical, economic, and methodological training, including practical knowledge on CSF measures;
- Improved soft skills, enabling advisors to address emotional responses, scepticism, and risk perceptions among farmers;
- Closer collaboration within the AKIS, ensuring coherent messages, multidisciplinary support, and regional innovation networks.

The findings also underline that farmers' engagement is shaped by economic feasibility, perceived risks, market expectations, peer practices, and broader policy signals. Demonstrations, peer-to-peer learning, and participatory approaches are particularly powerful levers for adoption, especially when combined with clear economic or resilience-related benefits. At the same time, structural elements—such as land tenure, labour capacity, farm size, or missing infrastructure—can strongly limit the room for change.

A key insight emerging from the analysis is that **climate-smart transitions are not linear**. They involve experimentation, setbacks, learning loops, and emotional processes. Advisors increasingly operate not as directive "experts" but as facilitators who accompany farmers through complex, uncertain decisions. This requires a posture shift supported by training, networks, and organizational frameworks that value reflexive, interdisciplinary work.

The CSA project already contributes to these needs by fostering peer learning, enabling advisors to formulate and explore learning questions, and creating spaces for shared reflection across countries and sectors. The insights gathered here serve as a foundation for strengthening this work further. In the next phase of the project, integrating farmers' direct perspectives will be essential to develop an even more comprehensive picture of climate-smart transitions and to refine the guidance and tools offered to advisors.

Overall, this intermediary analysis shows that accelerating CSF adoption requires **simultaneous action at multiple levels**: advisor capacity building, improved tool ecosystems, supportive policies and market conditions, and strong local networks. By reinforcing these elements, the European advisory community can play a decisive role in enabling resilient, low-emission, and future-proof farming systems.

7 Bibliography

Ansari, S. A., & Tabassum, S. (2018). A New Perspective on the Adoption of Sustainable Agricultural Practices: A Review. *Current Agriculture Research Journal*. doi:http://dx.doi.org/10.12944/CARJ.6.2.04

Borges, J., Lansink, A., & Emvalomatis, G. (2019). Adoption of innovation in agriculture: a critical review of economic and psychological models. *International Journal of Innovation and Sustainable Development*.

C. A. K. Dissanayake, W. J. (2022). Theories and Models of Technology Adoption in Agricultural Sector. *Human Behavior and Emerging Technologies*. doi:https://doi.org/10.1155/2022/9258317

Debaeke, P., Graveline, N., Lacor, B., Pellerin, S., Renaudeau, D., & Sauquet, E. (2025). *Agriculture et changement climatique - Impacts, adaptation et atténuation.* Versailles: Quæ. doi:https://doi.org/10.35690/978-2-7592-4012-8

Dessart, F., Barreiro-Hurlé, J., & Bavel, R. v. (2019). Behavioural factors affecting the adoption of sustainable farming practices: a policy-oriented review Open Access. *European Review of Agricultural Economics*. doi:https://doi.org/10.1093/erae/jbz019

Dumont, A., Ruiz, J., & Campeau, S. (2025). The Change towards the Integration of Agri-environmental Practices (CIAEP) into farmer's practices system: An affective, cognitive, and behavioural process. *Journal of Rural Studies*. doi:https://doi.org/10.1016/j.jrurstud.2024.103479

Evrat-Georgel, C., & Bedoin, F. (2024). *CSA Focus Group - report from the 10 national reports.* Internal project document.

Evrat-Georgel, C., & Bedoin, F. (2024). *The Farmer's and advisory Journey towards climate-smart farming*. Récupéré sur FarmingForClimate: https://www.farmingforclimate.eu/details/162/The%20farmer's%20and%20advisory%20journey%20towards%20climate-smart%20farming

FAO. (s.d.). Climate Smart Agriculture . Consulté le 2026, sur FAO - Climate Smart Agriculture:. Consulté le 02 15, 2026, sur https://www.fao.org/climate-smart-agriculture/en/

Farstad, Melås, M., & Klerkx. (2022). Climate considerations aside: What really matters for farmers in their implementation of climate mitigation measures. *ournal of Rural Studies*. doi:https://doi.org/10.1016/j.jrurstud.2022.11.003

Felton, M., Jones, P., Tranter, R., Clarck, J., Quaife, T., & Lukac, L. (2023). Farmers' attitudes towards, and intentions to adopt, agroforestry on farms in lowland South-East and East England. *Land Use Policy*. doi:https://doi.org/10.1016/j.landusepol.2023.106668

Gemtou, M., Kakkavou, K., Anastasiou, E., Fountas, S., Marcus, P. S., Gohar, I., . . . Pazos-Vidal, S. (2024). Farmers' Transition to Climate-Smart Agriculture: A Systematic Review of the Decision-Making Factors Affecting Adoption. *sustainability*, 16. doi:https://doi.org/10.3390/su16072828

Gemtou, M., Kornelis, M., Isakhanyan, G., Pedersen, S. M., Fountas, S., Puggaard, L., . . . Izco Zabalza, A. (2026). Sowing the seeds of change: unveiling farmer types to promote climate-smart agriculture adoption in Europe. *Journal of Rural Studies*. doi:https://doi.org/10.1016/j.jrurstud.2026.104043

Magrini, Martin, Magne, Duru, Couix, Hazard, & Plumecocq. (2019). Agroecological Transition from Farms to Territorialised Agri-Food Systems: Issues and Drivers. Dans Bergez, Audouin, & Therond, *Agroecological Transitions: From Theory to Practice in Local Participatory Design.* Springer. doi:https://doi.org/10.1007/978-3-030-01953-2

N.Dunphy, Kearney, S., & Flannery, S. (2025). Behavioural Drivers and Barriers for Adopting Climate Mitigation Actions on Dairy Farms. *Advancements in Agricultural Development*, Volume 6, Issue 4.

Nettle, R., Major, J., Turner, L., & Harris, J. (2022). Selecting methods of agricultural extension to support diverse adoption pathways: a review and case studies. *Animal Production Science*. doi:https://doi.org/10.1071/AN22329

Rosário, J., Madureira, L., Marques, C., & Silva, R. (2022). Understanding Farmers' Adoption of Sustainable Agriculture Innovations: A Systematic Literature Review. *Agrnomy*, 12(11), 2879. doi:https://doi.org/10.3390/agronomy12112879

Suomela, M., Triste, L., Debruyne, L., Evrat-Georgel, C., Bedoin, F., & Barry, N. (2023). *State-of-play, gaps, barriers and drivers of CS-AS across member states and associated countries.* Récupéré sur https://climatesmartadvisors.eu/wp-content/uploads/2024/12/D1.1_State-of-play-gaps-barriers-drivers-of-CS-AS-across-MS-AC_WP1_V1.0.pdf

Tarekeg Erekalo, K., Pedersen, M. P., Christensen, T., Denver, S., Gemtou, M., S., F., & Isakhanyan, G. (2024). Review on the contribution of farming practices and technologies towards climate-smart agricultural outcomes in a European context. *Smart Agricultural Technology*. doi:https://doi.org/10.1016/j.atech.2024.100413

Wreford, A., A, I., & G., G. (2017). *Overcoming barriers to the adoption of climate-friendly practices in agriculture.* Paris: OECD Food, Agriculture and Fisheries Papers. doi:http://dx.doi.org/10.1787/97767de8-en

8 Annexes

8.1 Main features of Climate-smart tools and methods as discussed in the focus group

	What's important for farmers to use a tool	What's important for advisors to use a tool	Conclusions
FR	• Sell carbon credit or get certification • Compare its results with other farms • Predict agroclimatic local conditions	• Be able to make simulations with the tool • Have visuals results easy to explain • Facilitate exchange in a group • Identify/describe actions/levers and their impact	• Advantages/disadvantages of tools depend on target and objectives • To raise awareness: need tools easy to use and understand, because advisors have not enough time to make diagnostic and follow-up • Need tools which are accessible • Tools for prospective: projection too far for some farmers/helps to reassure some on farm economy
IRL	• Easy to use • Based on their own farm results • Help improve productivity	• Be accurate: Data entered into the tool need to be reliable • Have visual results easy to understand	• Tools have to instil confidence for both farmers and advisors • While having tools is beneficial, time is required to ensure that farmers commit and follow through the agreed action plan è regular farmer/advisor contact is the only way and advisors are struggling to have enough time to ensure this
DK	• Be able to compare its results with other farms • ESG (Environmental, Social and Governance) reporting to the bank, perhaps to get a better interest rate	• Be able to make simulations with the tool • Have visuals results, which helps explaining the results • Identify and describe of actions/levers and their impact	• Difficult for the farmer to understand why different tools give different results, difficult for advisors to explain • Advisors positive about using tools: makes talking about climate easier • Scenario calculations often show a too low reduction of emissions which is demotivating for the farmer • Necessity to include cost/benefit considerations with practices to implement • Benchmarking against other farms help conversation and understanding of the results • Difficult to follow up with the farmer to ensure progress
HR	• Reward mechanism or payment of additional subsidies • Punishment system	• Have a good knowledge to be able to explain the problem properly and simply • Have precise data	• Most of the tools are in the form of applications/new technologies which advisors are not used to è familiarising advisers with this is essential
ES	• Sell carbon credits or get certification • Be more efficient in the use of inputs and follow	• Do a better accountancy cost/benefit analysis	• The ease of use and simple results visualization are the most important criteria to use a tool

	What's important for farmers to use a tool	What's important for advisors to use a tool	Conclusions
	the environmental path: soil regeneration, increase biodiversity	• Generate data for better decision-making • Have more information for dissemination and transfer process • Allow to fulfil the regulatory requirements concerning compliance with the limits for access to CAP subsidies	• But many tools are not user-friendly for growers • Tools are based on datasets that are not location-specific, which makes tailored advice more difficult
DE	• Tool tested or developed by an authorised body • Calculator easy to use and to understand • To have farmer's data secured	• Tool should predict agroclimatic conditions in the local area • Tool easy to handle: visual results	• Too many different calculators on the market • Limited time available for diagnostics, and specially for follow-up afterwards
IT	• Ability to compare their results with other farms • Predict agro-climatic conditions in the local area • Face climate change without expensive practices/instruments	• Make simulations with the tool • Obtain tailored advice for farmers • Facilitate info transfer	• The tool chosen must be tailored for the context farm: technologies cannot always be used • One of the main difficulties is to raise awareness of farmer that CSF also may bring economic return
EE	• Data to make management decisions • Sell carbon credit or get certification providing market advantages • Compare results with other farms • Improve production efficiency • Optimize inputs on farm • Assess farm sustainability • Collecting data farms for food company ESG reports	• Input data which can be used for decision management • Help identify of the potential problem areas • Improve time planning and work efficiency • Provide an opportunity to be proactive • Increased knowledge • Improved data analysis	• For advisors, use of different tools could help: - Optimize work organization - Provide farm data for decision management • They need to know how to interpret and analyse the data • Some advisors who don't use digital tools rely on discussions with farmers and what they see on field
EL		• Have tools available in Greek language	• Various useful applications but not in Greek: language barrier is one of the major barriers to use tools

	What's important for farmers to use a tool	What's important for advisors to use a tool	Conclusions
UK		• Look at the easiest/cheapest tool • Tools that offer win-wins according to the farmers' goals and interests • Access to evidence base supporting a tool	• Multiple options for tools to use with farmers

Main features of Climate-smart tools and methods as discussed in the focus group (Evrat-Georgel and Bedoin, 2024)

8.2 Advisory approaches related to the use of Climate-smart tools and methods as discussed in the focus group

	How to raise farmers awareness	How to bring farmers to action: follow-up	Solutions	Difficulties
FR	• Economic rewarding mechanisms: Carbon trading, certification, other subsidies • Use technical entry instead of CC (word "Climate change" not sexy compared to equipment demonstrations for example) • Utilise existing groups • Consider that some farmers convinced by environmental entry	• Co-construct actions with farmers understanding their system and desires, and support them to get from the diagnostic to practice implementation • Propose practices which have positive impacts on economic and/or labour	• Coordination between CC advisors and daily advisors on the farm • Be opportunistic as advisor, linking CSF to the economic gains generated	• Some advisors are not interested/convinced about CC • Farmers have often difficulties to imagine the future in 3 to 5 years, mainly because of economics conditions
IRL	• Starting with the farmer's baseline position • Discussing the targets • Showing the effects of implementing change	• Arranging a follow-up with progress at one to one and groups/events • Bring it back to the basics (costs and profit) holding events on farms: "seeing is believing"		
DK	• Climate is included in the overall planning and advice at farm level	• Keeping up the farmers' motivation for climate actions	• Advisors want to work interdisciplinary with their colleagues è	• Complexity and practices effects on the entire farm are difficult to capture

	How to raise farmers awareness	How to bring farmers to action: follow-up	Solutions	Difficulties
	• Also in economic advice: some banks require climate calculation		some advisory services have already this setup	• Lack of faith in models' calculation on C storage
HR	• Enable exchange of knowledge at the local level • Involve farmers in discussions/research on their farm	• Highlight positive examples of successful practices • Remind/point out incentives or penalties	• Work to familiarize advisors with new technologies like software application tools	• Lack of national tools • Advisors not used to new technologies
ES	• Help demonstrate to customers that farmer' practices are sustainable for environment • Demonstrate a better cost/benefit analysis	• For on-farm action plan: - Focus on point with highest emission 'more short-term results) - Listen to the farmer/sector - Know real data from their farm and show the plan is of direct benefit to them • For adoption of changes in farms: - Focus on low-cost investments for action plan - Present tools as a benefit rather than an obligation (e.g. field logbook) - Point out the beneficial results associated with changes in strategies, especially those related to their farmers' system (e.g. with on-farm demonstration)	• To achieve a profound change for climate-smart agriculture, need to: - Develop a plan to raise awareness in the sector - Bring together all points of view: farmers, advisors, administration - Periodical soil analysis (on a long-term approach) - Certification and reward mechanisms - Help producers to change their role from farmer to manager - Assume associated environmental responsibilities - Make the transition to regenerative agriculture	• Perception of some practices as not so advantageous at the productive level (even though they may be beneficial to reduce emissions or to adapt)
DE	Farmers are sufficiently aware.	• Raise trust with farmer: spend time with farmers, treat with humility and appreciation, stay	• To have enough time to advise • To have no competition	

	How to raise farmers awareness	How to bring farmers to action: follow-up	Solutions	Difficulties
	For advisory taking into account: • Motivation to act • Facilitating learning • Measures that can be used before, after or instead of a tool • Communicating the results of a calculation • Working with action plans • Dealing with farmers • Coordinating with other advisors	honest on conflicting goals • Networks and group counselling: work with demo farm, demo areas and good examples • Make climate-friendly measures required by law • Recognize the successes of advice	between network farmers • Recommend small measures first	
IT	• Advisors' priorities: - Farmer's training - Economic availability to purchase/use tools - Make farmers perceive the real need to use environmental monitoring tools	• Advisors' shrewdness and strategies: - Understand the farmer's approach to innovation - Frame the business in the farmer's context - Identify the smart practices already adopted - Consider the investment capacity	• Approach and interactions strategies of advisors are: - Farm's intrinsic characteristics and needs - Emotional and motivational aspect - Examples and strategies used with or by other farmers • Clearer legislation	
EE	• Understand the challenges and goals of the farmer • Enable the farmer´s understanding of the accompanying benefits of tools: highlight the direct connection between data driven decisions and monetary benefits	• Propose tools which are easy to use and easy to incorporate into daily practices/activities • Explain to the farmer the methodology behind the results: transparency helps to build trust and empower farmers to make informed decision	• Train advisors to use tools • Knowledge increase of the farmers • User friendly interfaces of the tools	• Tools need to account all production types: lack of tools for livestock grazing, market gardening and agroforestry
EL	• Hosting demo events in farmer groups to communicate new sustainable methods,	• One to one advisory for tailor made advising	• Reach out to advisors and properly train them	• Language barrier • Difficulty in assessing regional conditions needed to adapt

	How to raise farmers awareness	How to bring farmers to action: follow-up	Solutions	Difficulties
	strategies and technologies		• Disseminate and showcase tangible outcomes to highlight the benefits of new practices • Provide experimental field to experiment CSF practices and demonstrate it	application to specific context • "Privacy" concerns about farm data collection • Lack of confidence in results accuracy • Difficulty in transferring knowledge to rural areas • Competitive behaviours among advisors: gap between academia and advisors
UK	• Understand and work with the farmer: relationship-focused approaches è inform on advisory style to use, are you: - Diagnosing/solving a problem - Proactively seeking to become a CS farm - helping to monitor progress/offer accountability	• Peer to peer learning with benchmarking between systems • Encourage small-scale farm trials • Prioritize issues with the farmer, suggesting practices which offer win-wins		• Some farmers are difficult to reach • Only 30% of farmers are willing to pay for advice • Concerns about farm data ownership can make farmers reluctant

Advisory approaches related to the use of Climate-smart tools and methods as discussed in the focus group (Evrat-Georgel and Bedoin, 2024)

8.3 Cards of the farmer's and advisory journey as used during TTT 2 in Freising, January 2026

Celebrates the efforts and the successes	Makes a contract for selling carbon credits or other rewarding mechanisms	Wants to have an overview of its farm situation in relation to climate change (through an assessment tool for example)	Understands the mechanisms of climate change and the consequences on the planet/region/farm	Reflects on how new practices could be implemented on the farm and the effect, they would have on the system (€, labour…)
Choses some possible changes to implement	Makes a small test/experiment	Forgets all about it and gives up	Understands the results of the assessment tool	Tries again
Dig in one's heels (refuse/rebel to change)	Needs to assess the risk to change/not to change	Gets interested in the subject of climate change	Asks an advisor for support about climate change issues	Faces difficulties
Explores possibilities of what could be done at farm level	Shares with other farmers	Initiates some changes	Wants to try to act on the climate issues	Finds new solution
Reflects on its farm global strategy and objectives	Looks back and sees the journey	Faces a crisis situation		

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