



Climate Adaptation in Agriculture Study - Stakeholder Engagement



Executive Summary

Mentera was commissioned by the Welsh Government to engage with agricultural stakeholders on climate adaptation in Welsh farming. The study was delivered through a series of workshops with 63 farmers and 8 industry representatives, designed as knowledge exchange activities to support peer-to-peer learning and shared reflection on business change, rather than solely as an extractive research exercise. Mentera collaborated with Bangor University on workshop design, with Bangor University leading the qualitative data analysis. The findings complement a parallel literature review undertaken by IBERS, Aberystwyth University.

Across all workshops, participants consistently reported that climate conditions in Wales are becoming more extreme, less predictable and more variable. Wetter and milder winters, hotter and drier summers, increased storm events, and shifting seasonal patterns were widely observed. While total annual rainfall was often perceived to be broadly unchanged, rainfall was increasingly described as more intense and concentrated over shorter periods. Farmers reported that these changes are already having tangible impacts on land condition, infrastructure and farm management decisions.

Weather variability was described as affecting almost all aspects of farm operations. Participants highlighted narrowing weather windows for grazing, fertiliser application and field work; increased soil degradation from waterlogging and compaction; greater reliance on livestock housing; and rising infrastructure and management costs. Water availability was identified as an emerging pressure in areas previously unaffected, with springs and boreholes proving less reliable during dry periods.

Participants also reported an increase in disease and pest pressures, including extended fly seasons, higher parasite burdens and the emergence of diseases not previously common in Wales. Vegetation changes - particularly in upland and marginal areas, were linked to both climate effects and longer-term management and policy shifts, including reduced stock numbers and reduced active land management.

The findings show that many Welsh farmers are already adapting, largely through incremental, practical and business-led changes rather than radical system transformation. Adaptation responses commonly reported included adjusting stocking rates, breeds and grazing timings; placing greater emphasis on soil health and grassland resilience; changing cropping and reseedling strategies; investing in water and grazing infrastructure; and making selective use of trees and hedges to improve shelter and farm resilience. Decisions were strongly influenced by land type, farm scale, labour availability, economic viability and family circumstances, with farmers emphasising that effective adaptation must be farm-specific, rather than based on uniform approaches.

Most farmers anticipated continuing along existing adaptation pathways, focusing on efficiency gains, refined management and selective investment. While many could articulate plans over the next five years, there was considerable uncertainty beyond this timeframe due to market volatility, climate unpredictability, policy direction and regulatory pressures.

Overall, the findings demonstrate that Welsh farmers are actively adapting to climate change within the constraints of running viable businesses. However, adaptive capacity varies and is shaped by economic, structural and policy factors, highlighting the importance of flexible, outcome focused policy frameworks and continued investment in trusted advice and knowledge exchange.

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1. Introduction

The Welsh Government (WG) declared a climate emergency in 2019 due to increased scientific evidence on climate change challenges ([Welsh Government, 2019](#)). Substantive efforts to decarbonise were set out in both carbon budgets. Nevertheless, significant warming is locked in, and a need for climate change adaptation is now acknowledged. Climate change challenges include flooding, drought and extreme temperatures, and have a profound effect on farming practices - both directly and indirectly. The effect is projected to intensify in coming years. Yet there is limited evidence on the resilience of Welsh agriculture currently or how farmers might respond in the future, despite agriculture being a major land use in Wales. In its [2023 adaptation progress report for Wales](#), the UK Climate Change Committee (UKCCC) (2023a) identified this as a critical evidence gap. In response, the [Climate Adaptation Strategy for Wales](#) (Welsh Government, 2024) commits to reviewing the evidence base on likely climate scenarios and available adaptation strategies for Welsh farming.

The [Agriculture \(Wales\) Act 2023](#) (Welsh Government, 2023) legally embeds mitigating and adapting to climate change as one of its objectives, based on delivery of Sustainable Land Management (SLM). The SLM objectives underpin the [Sustainable Farming Scheme \(SFS\)](#) (Welsh Government, 2025), with an emphasis on supporting Welsh farmers in the sustainable production of food while also addressing the climate and nature emergency. The fundamentals of good practice to enable resilient farming systems is outlined in the SFS Universal layer. However, the Optional and Collaborative layers require more targeted actions, enabling land managers to collaborate to affect widespread changes. The findings of this research could especially help with ongoing development of these layers.

Whilst there is extensive research on farm decision making both with regards to adoption of environmental schemes/practices and wider farm practice/business changes (e.g. Rose et al., 2018), there is limited consideration of farmers' engagement with climate change mitigation (Jebari et al., 2024), and even less available research targeting farmers *adaptation* to climate change - particularly in the Welsh context. UK-wide research showed that >50% of farmers are adopting some greenhouse gas (GHG) mitigation measures (Jebari et al., 2024). Some measures for mitigation can also support adaptation (offering 'win-wins'). However, research emphasises the importance of understanding co-benefits, as farmers have been shown to adopt mitigation and adaptation measures not primarily for net zero and climate change goals, but for the wider benefits to their business (McNicol et al., forthcoming). The [UKCCC \(2023b\)](#) has called for greater investment in monitoring, innovation and training to support climate resilience in agriculture that impacts the delivery of a range of public good outcomes. To develop effective solutions for change, understanding farmer barriers and motivations is critical. This research is designed to address these challenges and needs, building on

established insight on farmer decision making more broadly (as discussed on Page 45) and applying it to this key research gap.

The Welsh Government commissioned Mentera to deliver workshops to capture the views of stakeholders (farmers and those working in the industry) on climate adaptation actions. Bangor University was sub-contracted by Mentera for the data analysis aspect of the study.

2. Objectives

The objectives of the Climate Adaptation in Agriculture Stakeholder Engagement Study, as set out in the competition specification, were to understand -

- A. Changes in farm practice over the past 20-50 years and understand of the factors driving those changes
- B. Farmer considerations for the future, including how far into the future farmers are planning and whether weather conditions are a factor
- C. What changes to farm practice farmers have made in response to changing climatic conditions and how do these changes, in practice, rank when compared to other factors which influence decision making for the future of farm businesses
- D. Farmer's perspective on climate-related issues in their local area and whether there are regional climate issues that may affect farming resilience in the future (i.e. risks to water supply, lack of shelter, management of forestry and woodlands etc)
- E. How is the farming industry thinking how climate change will impact Welsh agriculture, farm practices and or land use and do farmers factor in industry/academia analysis or not
- F. Provide analysis of the potential impacts of these changes in farm practice for farm businesses.

3. Methodology

3.1 Recruitment

3.1.1 Pilot Workshop

A face-to-face pilot workshop was carried out prior to commencing the farmer workshops to assess the workshop content and structure, including the questions, timings and facilitation techniques. Mentera staff members actively involved in a farming business beyond their day role participated in the pilot workshop. All farmers completed a screening questionnaire (further details below) to capture key information prior to attending the pilot workshop.

3.1.2 Farmer Workshops

An open expression of interest (EOI) window was launched, allowing Welsh farmers to register their willingness to participate in the study via the completion of a screening questionnaire. The questionnaire provided key demographic data, including farming enterprises, land type, scale and location, as well as the Welsh Government Segmentation Model questions (Appendix A). The questions specified in Appendix A allowed for the identification of farmer types (i.e. C/Y/M/R/U) according to the Welsh Government Segmentation Model clusters, as noted in the competition specification. Figure 1 provides an overview of the Model, along with an explanation of the clusters.

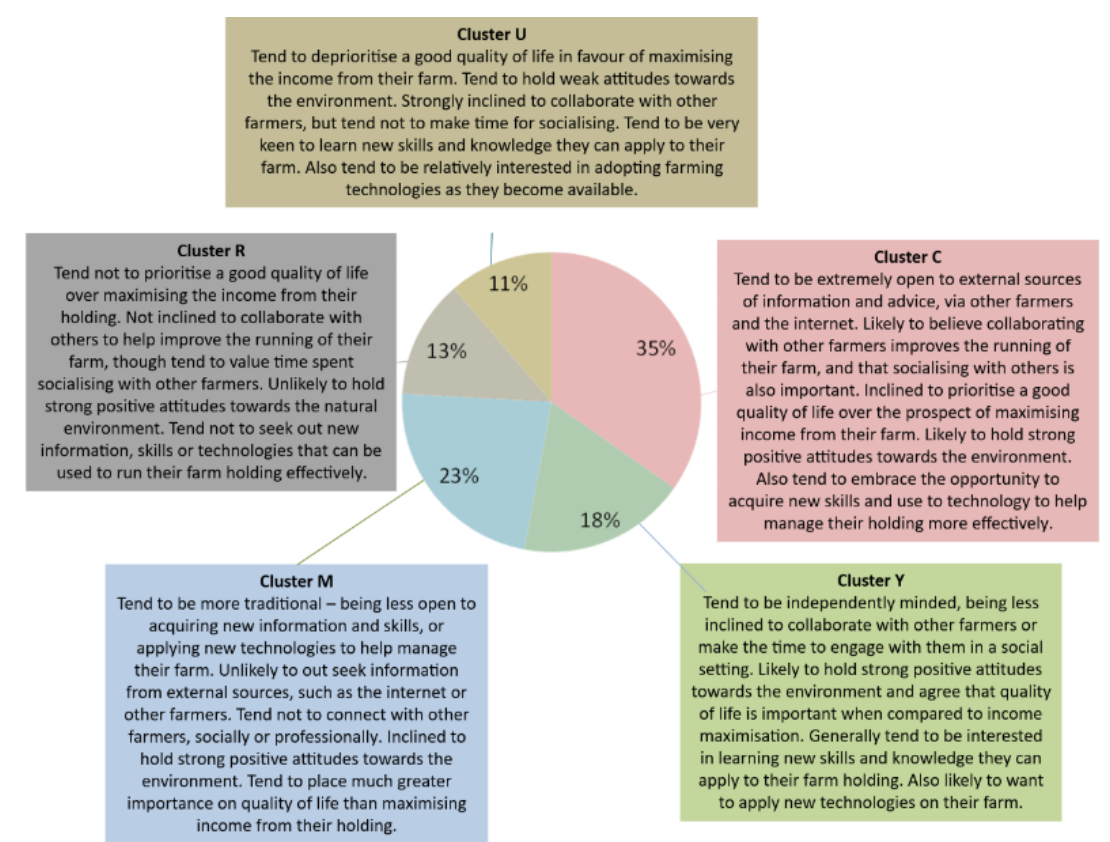


Figure 1. An overview of the Welsh Government Segmentation Model.

Cluster C – 35%

Tend to be extremely open to external sources of information and advice, via other farmers and the internet. Likely to believe collaborating with other farmers improves the running of their farm, and that socialising with others is also important. Inclined to prioritise a good quality of life over the prospect of maximising income from their farm. Likely to hold strong positive attitudes towards the environment. Also tend to embrace the opportunity to acquire new skills and use technology to help manage their holding more effectively.

Cluster Y – 18%

Tend to be independently minded, being less inclined to collaborate with other farmers or make the time to engage with them in a social setting. Likely to hold strong positive attitudes towards the environment and agree that quality of life is important when compared to income maximisation. Generally tend to be interested in learning new skills and knowledge they can apply to their farm holding. Also likely to want to apply new technologies on their farm.

Cluster M – 23%

Tend to be more traditional – being less open to acquiring new information and skills, or applying new technologies to help manage their farm. Unlikely to seek information from external sources, such as the internet or other farmers. Tend not to connect with other farmers, socially or professionally. Inclined to hold strong positive attitudes towards the environment. Tend to place much greater importance on quality of life than maximising income from their holding.

Cluster R – 13%

Tend not to prioritise a good quality of life over maximising the income from their holding. Not inclined to collaborate with others to help improve the running of their farm, though tend to value time spent socialising with other farmers. Unlikely to hold strong positive attitudes towards the natural environment. Tend not to seek out new information, skills or technologies that can be used to run their farm holding effectively.

Cluster U – 11%

Tend to deprioritise a good quality of life in favour of maximising the income from their farm. Tend to hold weak attitudes towards the environment. Strongly inclined to collaborate with other farmers but tend not to make time for socialising. Tend to be very keen to learn new skills and knowledge they can apply to their farm. Also tend to be relatively interested in adopting farming technologies as they become available.

Breakdown: C 35% | M 23% | Y 18% | R 13% | U 11%

The EOI window was promoted through Mentera's various engagement routes, including via existing networks, partnerships and organisations, communication channels, as well as word of mouth at agricultural events and via industry connections. A total of 79 applications were received.

3.1.3 Industry Workshop

Industry representatives working with farmers were invited to attend the industry workshop (17 representatives invited including Farming Unions, Hybu Cig Cymru, Agriculture and Horticulture Development Board, National Parks and Trust, vets, feed suppliers, meat and milk processors). Each invited organisation was limited to one participant to ensure comprehensive and balanced representation.

3.2 Data Collection

3.2.1 Outline of workshop delivery

One pilot workshop (in-person), seven farmer workshops (six face-to-face pan-Wales, one online) and one industry workshop (online) were conducted during February and March 2026. All workshops took place over approximately two and a half hours.

The pilot workshop was delivered bilingually by the Mentera staff members responsible for the farmer and industry workshops, with the extended project team (Bangor University and Welsh Government staff) also in attendance to observe and provide feedback on the delivery. Minor amendments to the delivery of the workshop's key questions were made following the pilot workshop (i.e. to ensure that participants focused on the broader picture in the first part of the workshop before considering their farm-level practices, as detailed later).

The farmer workshops were delivered in both Welsh and English depending on the participants' preference. Two of the in-person workshops (North East and North West Wales) were delivered through the medium of Welsh, and the remainder of the farmer and industry workshops were delivered bilingually. Participants that attended the in-person farmer workshops received a £50 voucher from an agricultural merchant of their choice, whilst those attending the online farmer workshops received a £25 voucher. The vouchers were offered as an acknowledgement of their time commitment and the travel costs associated with attending the workshop.

3.2.2 Sample

Following a review of the applications received during the EOI window, all applicants (79 in total) were offered to attend a face-to-face workshop in the first place, with those unable to attend in-person offered a space at the online workshop. The farmer workshops were attended by 55 participants in total (49 at the in-person workshops and

6 at the online workshop), with the number at each workshop varying between six and twelve participants.

A total of eight farmers of varied demographics and farming systems (Table 1) attended the pilot workshop. An equivalent number of participants ($n = 8$) attended the industry workshop.

The demographics and characteristics of the sample as a whole (Table 1 below), reflect a range of farm and farmer types which are reflective of businesses operating across Wales, but should not be viewed as fully representative. Some important distinctions to note include the larger proportion of farmers under 55 years old; a larger proportion of full-time farmers and a higher proportion of farms over 25 hectare (ha) than is typical of the sector (Senedd Research, 2022; Thyer et al., 2024). These observations should be considered together with the discussion of the patterns in farmer segmentation type (Page 18), when interpreting the data. Specifically, it is noted that age can significantly influence farmers' decision making and their willingness to innovate, although this is often connected to distinctions in succession pathways (Daniele, 2024), which are explored in the analysis. Equally, farmer capacity is an important consideration when reflecting on their opportunity to make changes, often impacted by off-farm work. Whilst more than half of the sample identified as full-time, limitations in capacity were still an important discussion point, often reflecting on wider labour availability across the sector. Farm size also affects decision making, with the small and very small farms that dominate the Welsh sector often seen to be less motivated by economic drivers (Bradley et al., 2021). The sample may, therefore, reflect a more business-orientated mindset than is typical. The segmentation analysis is a useful reference point in this regard to consider alongside measures of farm size, to better understand the blend of drivers for different farm types (see Page 19). Further reflections on the impact of both sector and farmer segment distinctions are considered on Page 19.

Table 1. Key demographics and farm characteristics of the participants represented across the pilot and farmer workshops.

Age	Pilot workshop	Farmer workshops
Under 30	2	1
31-55	4	35
Over 55	2	19

Work Status <i>(some farmers selected multiple options)</i>		
Full-time farmer – own farm	0	32
Full-time farmer – tenant	0	8
Part-time farmer – own farm	7	10
Part-time farmer - tenant	1	4
Farm worker	0	3
Contractor	0	3
Other*	0	7

Farm type		
Hill	1	8
Upland	4	26
Lowland	3	21

Farm size in hectares (ha)		
1-25 ha	1	6
26-100 ha	5	21
101-300 ha	2	17
301+ ha	0	11

Main farming enterprises <i>(most farmers selected multiple options)</i>		
Beef	6	40
Sheep	6	46
Dairy	2	3
Pigs	0	2
Poultry	0	0
Arable	0	6
Horticulture	0	3
Woodland	1	3
Other**	0	6

***Share farming partnership, retired, working elsewhere**

****Haulage/contracting, tourism, organic, goats**

3.2.3 Workshop Locations

The pilot workshop was held at Menai Science Park, Gaerwen, Anglesey. The locations of the in-person farmer workshops were determined following farmer recruitment with the

aim of ensuring a central location within each region of Wales for the participants (Figure 2). This allowed for an adequately geographically spread representation of farmers, with some emphasis on locale and area as the unifying experience in the workshops. This approach was deemed fundamental in ensuring the reflections of different farmers managing differing farming systems in all areas of Wales were captured during the workshops.

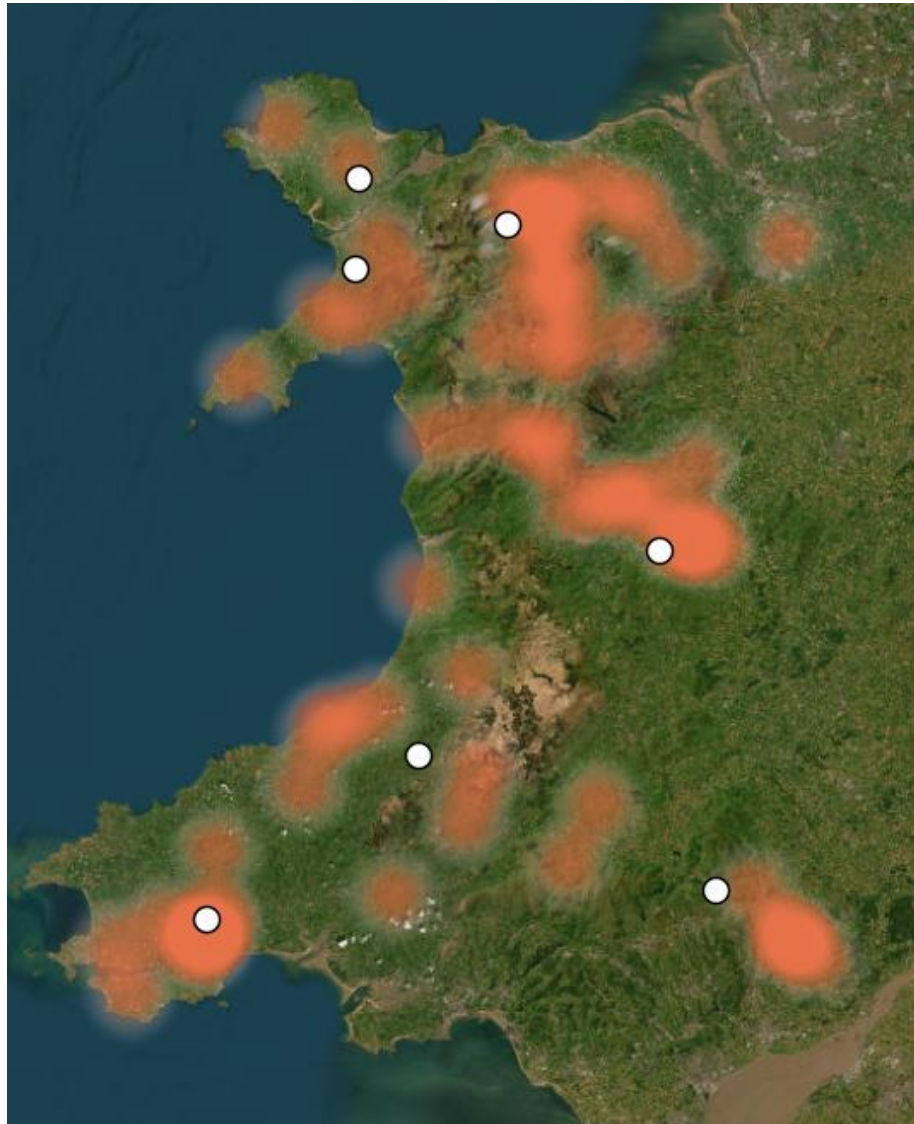


Figure 2. Locations of a) face-to-face workshops, including the pilot workshop (white pin markers), and b) participants' locations (orange areas). © Esri and its data providers. Sources: Esri, DigitalGlobe, GeoEye, USGS and others.

Locations: Gaerwen, Llanrwst, Caernarfon, Newtown, Llandysul, Narberth, Brecon.

The industry workshop was delivered online to maximise participation from industry representatives located pan-Wales.

3.2.4 Workshop Structure

The workshop design was developed by Mentera, with input by Bangor University to ensure the integration of key insights from the literature on farmers' decision making. This included giving space to enable reflection on the capacity, opportunity and motivational factors that can underpin farmer behavioural changes (Evans et al., 2025; Wynne-Jones et al., 2023), although without naming these explicitly as they are abstract academic framings. For example, the questions sought to uncover the extent of farmers' knowledge of climate change and how they might adapt, as well as exploring the drivers and barriers that they perceived to making changes. Existing insight also prompted tailored questions to support more generative conversations that were attentive to farmers' ways of knowing and cultural norms, for example around changes in 'the farm environment' rather than a narrow focus on 'climate change' which could be contested (Simmonds et al., 2025). Prompting to explore how farmers engaged with key terminology such as 'adaptation' and 'resilience', and how they conceptualised processes of change, were again responsive to the importance of understanding farmers' distinct ways of knowing, but also the need to attend to everyday experiences of change (e.g. Šūmane et al., 2018).

Taking these insights into account, the workshops were structured around three key questions, as outlined in Table 2, with some further prompts given under each, as discussed further below. Each question related back to the study objectives (Section 2).

Table 2. Workshop key questions and their relevance to the study objectives (Section 2).

Number	Question	Study objective link
Q1	What changes have you seen to your farm in terms of the farm environment over the last few decades compared to at present?	A, D
Q2	What have you changed in your farming practices in recent years/decades in response to changing pressures and climate conditions (if any)?	A, C, D
Q3	What are your farming plans in the future?	B, D, E, F

The first part of the workshop (Q1) focused on thinking broadly about the farm environment. Here, the participants were individually invited in turn to reflect on changes to the land and landscape features, vegetation/crops grown on the farm, wildlife, weather patterns experienced. Using this around the room approach ensured that each individual's voice was heard, including the quiet voices. Participants were asked whether they had seen similar changes locally or not, before thinking back over the recent decades (timescale not specifically noted but participants were encouraged to think about the past 20 years, and beyond, if able to do so) about changes they had noticed across the agricultural sector in terms of adapting to environmental pressures. Lastly,

the overall impact of these changes on land use, management, vegetation, crop growth, soil and livestock systems was discussed.

In the second section of the workshop (Q2), participants were asked to consider their farm-level practices and discuss changes (if any) made to the day-to-day management of their systems, in response to changing conditions on and off the farm. Participants explored the motivations behind these changes, including climate-related drivers and other contributing factors. The impact of these changes on the farm business, including the new opportunities and challenges they presented, was discussed. To close this section of the workshop, the discussion focused on the farm adjustments required in response to these changes, along with the information used to guide those decisions.

For the final part of the workshop, the focus shifted to future planning (Q3). Participants were asked to reflect on their plans for the near (next one to five years) and distant future (next five to 20 years, and beyond, if able to). The discussion explored the changes they anticipate and the plans they are putting in place to address them. Furthermore, the key drivers (later discussed in results section) associated with these changes and plans were discussed. Consideration was given to the adjustments needed to strengthen farm resilience (both from a climatic and economic perspective), as well as exploring how to plan when changes are made on-farm, and the data used to support such decisions. Attention was given to the key barriers that may impede change, the extent to which existing support mechanisms are being utilised, as well as further support required to enable farmers to adapt to future climate-related change, and other emerging challenges. To conclude, participants considered the wider question of how the farming industry views the implications of a changing climate on Welsh agriculture and land use.

The questions for the industry workshop followed the same themes. However, during this workshop, participants were invited to share insights from an industry wide perspective, as opposed to personalised or location-specific reflections. Participants were encouraged to consider perspectives from within their sectors of work, ensuring that the views of all farming enterprises were represented.

The workshops were conducted entirely through discussion, with the three key questions presented on a slide deck to help focus participants' attention. When outlining the workshop expectations at the start, the facilitator emphasised the importance of ensuring everyone's voice was heard, encouraging active listening so that all participants could contribute equally. Post-it notes were placed around the room to encourage those who preferred not to speak up to share their thoughts in writing. Participants in the online workshops were also encouraged to make use of the meeting 'chat' function. The facilitator's email address was shared with participants, inviting everyone to send any additional thoughts or comments that arose after the workshop.

A note taker from Mentera attended all workshops to capture the key messages. All workshops were audio recorded in-line with UK GDPR having gained permission from the participants.

3.3 Data Analysis

Workshop recordings were transcribed and then translated into English if necessary. Thematic analysis of the transcripts was undertaken by one researcher at Bangor University to draw out key patterns across the discussions for each question. The approach taken followed the standard principles of Braun and Clarke's (2006) 6 –step approach, moving from familiarisation with the data, through to coding and theme development, refinement and definition. Given the clear structure of the workshop, a more deductive approach was taken applying pre-determined codes and themes as dictated by the questions posed (e.g. different codes for different types of weather/climatic/environmental observations). Nonetheless, attention was also given to more emergent elements in the data as needed. Coding was done manually in Microsoft Word. The themes identified largely mapped on to the topic of the key questions asked (i.e. environmental changes; business or practice changes; future planning), but some cross-cutting themes (decision making; information sources) were also identified. Equally it should be noted that farmers discussions did not always map neatly on to the order of questions, and some themes were present across the workshops.

Through this coding, and broader application of themes, commonalities and distinctions were identified in: the environmental and weather changes reported by participants for Q1; specific practices and approaches the farmers had adopted to respond to changing pressures under Q2; and identification of common concerns for the future, and how the respondents sought to make their businesses resilient to these anticipated challenges, for Q3. This enabled the different research objectives, as detailed in Table 2, to be addressed.

Across all discussions, the approach sought to draw out insight on how farmers understood climate change and the ways in which they perceived adaptation and resilience. The research also sought to understand how the farmers were making decisions to change their practice and/or approach, including key sources of information and support that were informing and facilitating their adaptations. Whilst the analysis was conducted in English, careful consideration was given to the importance of language in accurately conveying intended meaning, and where relevant sought to consult the Welsh versions of transcripts to understand how key issues were conceptualised.

Understanding how different types of farms and farmers are experiencing and responding to climate change was an important objective for this research. The approach, therefore, considered potential differences in experiences and behaviours between farm sectors, and between farmer types. A segmentation analysis of respondents using data captured from the screening questionnaire was undertaken using the Welsh Government

segmentation tool (Lee-Woolf et al., 2014). The segmentation types are outlined in Figure 1. The results (Figures 3 and 4) were used to support the thematic analysis to identify if there were any patterns in the data due to the different sector or segmentation types. The relevant segmentation type letter (C/Y/M/R/U) for each farmer is shown in square brackets after quotes shown in the findings for Q2 and Q3 (not included for Q1 quotes as segmentation type was unlikely to have impacted farmer observations of the weather and other environmental changes). Quotes from the industry workshop are also noted in square brackets for Q2 and Q3.

4. Findings

4.1 Segmentation Model results

As previously mentioned, a review of the participants' questionnaire responses in line with the Welsh Government's Segmentation Model (Figure 1) allowed for the identification of farmer types (i.e. C/Y/M/R/U). Figures 3 and 4 demonstrate the cluster breakdown in both the pilot and farmer workshops. As seen in Figure 3, the pilot workshop was dominated by 'C' participants, and lacked any 'M' and 'R' participants.

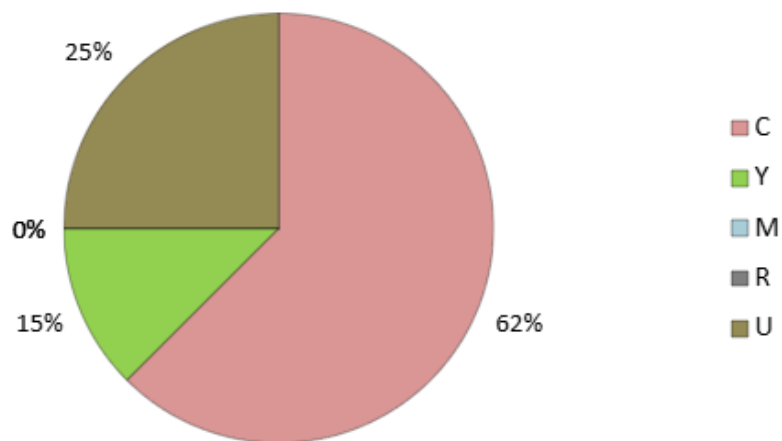


Figure 3. Pilot participants cluster breakdown (n = 8).

All clusters of the segmentation model were represented in the farmer workshops (Figure 4). Some clusters were more dominant than others (i.e. only small 'M' and 'R' populations).

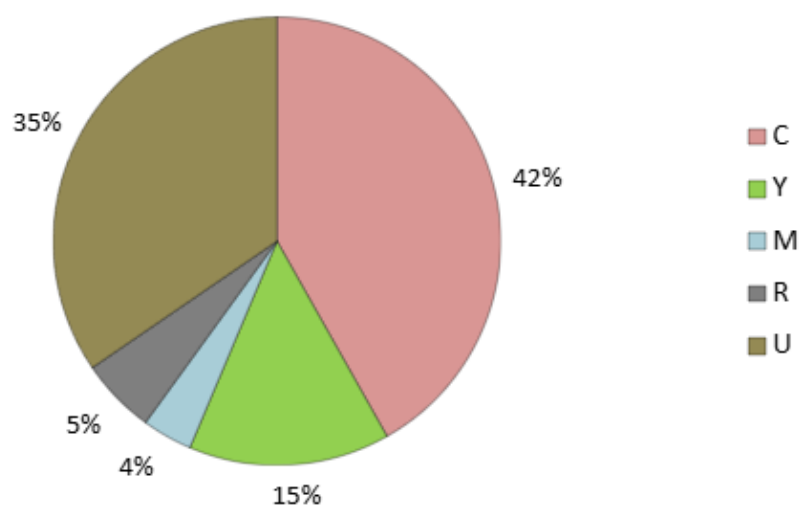


Figure 4. Farmer cluster breakdown (n = 55).

The relevance of these farmer clusters to the workshop outcomes is discussed below.

4.2 Relevance of findings in terms of sector differences and farmer clusters

As noted earlier, central to this research was to explore how various types of farms and farmers operating across different sectors experience and respond to climate change. In terms of sector differences, it is notable that similar themes were discussed across the different workshops. Whilst more distinctions might have been anticipated, given the geographical distribution of the workshops, and associated distinctions in the sectors and environmental conditions in different regions, there was a high level of commonality in the experiences between the groups.

In terms of farmer cluster differences, whilst a good diversity of farmers in terms of demographics and farm type, size and enterprises (Table 1) was recruited despite a relatively small sample size in the context of the wider industry, it is not surprising that there was an over-representation of the farmer types who prefer to engage more with other farmers and are most open to learning about new skills or technologies (Clusters 'C', 'Y', 'U'). As only five participating farmers were from Clusters 'R' or 'M', it is not possible to draw out clear patterns in farmers' responses according to type. However, for some areas of discussion to follow, e.g. their choices regarding sources of information, drivers of change or the uptake of technologies and efficiency measures, some observations relevant to the farmer types are noted, with reflection on how different farmers might engage otherwise.

In relation to respondents' values towards the environment, there was a more even split in the sample, following the established clusters, with 'C', 'Y' and 'M' associated with strong environmental values, and 'R' and 'U' with weaker environmental values. However, this does not appear to have substantially impacted on how the respondents perceive or are responding to climate change, as demonstrated in the workshop outcomes below, with all farmer segmentation clusters contributing to the discussions.

The analysis also notes, where relevant, when the respondents felt that their approaches or insights were at odds with what the wider industry might be doing or thinking. As noted with their segmentation clusters, the workshop attendees can be seen as a more proactive and innovative cohort generally than is typical across the whole of Wales. One indication of this was their decision to sign up to participate in this study. Nonetheless, when following Lee-Wolf et al's (2014) analysis, there is still a substantial number of Welsh farmers amongst the sector as a whole who are similarly engaging with the need for change (Figure 1). Even for 'R' farmers, who 'tend not to seek out new information, technologies or skills', the drive to maximise their income is seen to drive change for the respondents. 'M' farmers, who are more traditional in their outlook, and less driven by income, might be seen as a more difficult cohort to engage with, but their value of the

environment and their quality of life could present important areas to connect with them. As only two 'M' farmers were recruited, it is not possible to reach wider conclusions about this segment. Moreover, as one of the Cluster 'M' farmers discussed listening to podcasts and being engaged with rotational grazing, biological soil sampling, and changing stock and farm infrastructure, care is needed when making assumptions about the behaviours or choices of farmers in the different cluster types.

4.3 Workshop outcomes

The data from all workshops (pilot, farmer and industry workshops) were amalgamated for the analysis and reporting.

For reporting purposes, changes in environmental conditions (including weather and climate), along with their impacts, will be considered together. This approach reflects the way workshop participants described both the changes they have experienced and the resulting effects on their agricultural systems, which were inherently linked.

As previously mentioned, the relevant segmentation type letter (C/Y/M/R/U) for each farmer is shown in square brackets after quotes shown in the findings for Q2 and Q3. Quotes from the industry workshop are also noted in square brackets.

4.3.1 Past and present changes in environmental conditions, and their impacts (Q1)

4.3.1.1 Observed changes in on-farm environmental conditions

All participants agreed that the weather has become increasingly extreme and unpredictable, diverging from historical weather patterns. They noted that they had observed shifts in the timings of 'seasons', temporal patterns and weather. Many described having to 'chase the weather' and the difficulty of requiring a high degree of adaptability and responsiveness to what the weather conditions allow in any given year. Many participants recognised the challenge of no longer being able to rely on established weather patterns and their associated farming plans -

"In the last five years - you could go from exceptionally wet, and the ironic thing is once it stops raining, it'll be a drought... we have to be ready for it really. Yes, because of that, things are changing..."

"The weather patterns have changed. We have 6-8 weeks of extremities of rain, 6-8 weeks of dry weather and it's like a switch then back... As the agriculture industry, we are first to see the changes ('ar flaen y gad') and see so much change in the climate..."

Common issues associated with these changes included the difficulty in getting onto land in the spring to apply fertiliser or for livestock turnout, with a strong emphasis on having to be reactive to change -

“I remember when we were making hay, we didn't have to worry about it being down for three, four days...not having to stress on the forecast all the time.”

“Our opportunities to get on the fields and our timing in horticulture... your windows can be very tight. The book is thrown out the window now and you have to make really reactive decisions and actually being reactive is not a great place because it's really nice to be able to plan things...”

There was consensus among the participants that winters have become wetter and milder, with fewer cold weather events (frost and snow). Many farmers reflected on memories of extended snow and frost events, which are no longer experienced -

“Roads completely blocked for six weeks with snow. Don't see that anymore.”

“I remember the amount of snow, in the 80s... It was nothing that we had to carry milk down to the road for a period of 7 to 10 days sometimes to meet the lorry. There was so much snow and ice...that doesn't happen now does it?”

Coupled with the broader sense that winters are generally milder, with fewer cold extremes, there was extensive discussion regarding the extension of the summer growing period into a mild autumn and winter, suggesting a shift in seasons. While extended grass-growing seasons created opportunities for system and practice changes in some cases (e.g. earlier turnout of cattle due to being able to keep the grass over winter for the spring), there was also a concern that the milder, wetter winters are contributing to greater pest burdens -

“We don't get hard frosts that kills everything (grass) off in the winter. It's too mild, it's still growing.”

“You just don't get frost in the winter anymore... So, your pests and diseases sort of linger on through the winter then.”

Extended heat waves and drought in summer was noted by participants in some areas. Several participants expressed their concern of the associated challenges on grass growth (e.g. reduced number of silage cuts, a need for supplementary feeding and growing fodder for use during the warmer months), as well as impacts on animal health (e.g. heat stress, emergence of new diseases), performance and fertility (reduction in ewe scanning percentages). Many participants reported water availability emerging as a problem in areas previously unaffected (e.g. boreholes running dry), highlighting the need to consider water supply, capture and storage options. Some farmers were able to cope without irrigation despite the drought summers (i.e. of arable crops) but acknowledged the importance of thunderstorms to support crop growth -

“We're having more weather from the Azores and France in the summer which is thundery downpours and for us growing potatoes, last summer, although it was dry all the way

through generally, we had thunderstorms in May that was enough rain to support those potatoes so we don't have irrigation through the summer... ”

Despite these challenges, the summer droughts presented new opportunities for the participants farming wetter grounds on heavier soils, due to less flooding resulting in improved grass growth and producing more silage than required.

Many farmers were concerned about the rising incidence of fires on the hills. Across the groups, participants discussed how various policies and schemes over time (e.g. headage payments and agri-environment prescriptions) had affected vegetation (e.g. taller heather, gorse) and management practice changes resulting in increased fire risk –

“The fires last year has shown [we have an issue with] over growth, because if there is a lot of over growth, fires do spread don't they.”

“(as a response to reduced stock numbers on the hills) one type of vegetation increases or the vegetation load increases... then, of course, you get the added risk of when it goes on fire... it goes on fire in a serious way. It burns really badly. So I think there's certainly an issue there.”

Across the workshops, most participants reported experiencing flooding incidents throughout the year, even in some cases interspersed with periods of drought, reflecting the sense of greater extremes being experienced. Many questioning whether the flooding reflected an overall increase in rainfall or more intense rainfall occurring during major storm events. Some individuals had historical data to support this –

(Discussing readings from their hydro-scheme) “we're roughly, pretty much [have] the same amount of rainfall during the whole year. I'd noticed it anyway but the hydro confirmed it, that the rain events are for a shorter period but more intense. So, we're actually producing less electricity from the hydro now than we were 10 years ago because we're either too much water for the system or not enough.”

(Similar observations of monitoring rainfall). “Dad always records rainfall every month of the year, and he has done for as long as I can remember. The rainfall isn't massively different, so it hasn't been, but it's just the quantities and it's all or nothing, isn't it, which is causing, well, with us anyway, which is causing the bigger effect – it's not more rain, it's just when we get it.”

There was a very strong sense that wet weather was seen to impact grazing and reseeded practices, with resultant changes and adaptations needed. Wetter conditions influence the use of machinery more generally on the land, along with impacts on animal health (lameness/mastitis), and ability to lamb and calve outside. Consequently, some farmers noted that their land's carrying capacity was reduced at various time points during the year due to flooding, shifts in vegetation and underlying impacts on soil condition (more boggy areas, water courses moving and affecting grazing access), leading to greater

livestock housing requirements and associated costs, which in turn could influence broader business decisions (e.g. stock numbers) –

“We've noticed that the riverbanks and so on, they've deteriorated over time because of the amount of flooding”

“You've got to be careful now...grazing in the winter, you've got to be ready to move stock. You can't get as much grazing out of the land that you could have before. So I suppose it restricts the use of that land. If some of that land used to be ploughed and reseeded, now that's virtually a no-no... it takes a very long time to get a good, grassland re-established... [if it's] ground that's likely to be underwater because the plants don't have a chance to get established before they get flooded out...”

“With the climate changing, poaching is a problem. Yeah, a lot more rain. Had to invest in, I think two or three sheds to accommodate the ewes, looked at all different kinds of systems – grazing, outdoors, growing stubble turnips but yeah, the weather, the management of the ewes, because we were early lambers in January, it could be horrendous sometimes.”

“If we do get that wet start or the wet Autumn and the wet Spring, it's a struggle - the cows don't go out probably until the end of April, where, with the grass that we have growing, they should be going out in end of February-March, but we just can't get them out, they make too much of a mess. And then, in the Winter again, they could be outwintered a lot of the youngstock. But we can't, it's just too wet, so there's a lot of waste there.”

Across the workshops, participants observed more stormy, windy weather than in the past – creating damage to farm infrastructure and trees being brought down. There was a general sense amongst the participants of having to adapt accordingly. However, it was acknowledged that adaptation may be easier in some areas than others (i.e. coastal/exposed areas) –

“I've started to definitely describe myself as a climate change farmer because I think that I'm seeing a lot of change... certainly being a coastal farmer here with polytunnels... windier, definitely. And that's something that we've really noticed. And that's been very impactful on us.”

Some participants reflected upon how their land now requires more active management than in the past due to climatic and systematic impacts on soil condition (soil erosion, nutrient loss, compaction). A few farmers commented on observed management changes, with some regions moving towards more intensive farming systems and an expansion of arable production systems, often involving larger machinery that may have negative implications for soil health.

Beyond the climate, vegetation changes was a common discussion point across the workshops, largely perceived to be driven by policy changes. As noted earlier, upland

areas were perceived to be particularly affected by a reduction in stocking numbers, with increased tall heather, bracken and gorse arising; but also rushes and *Molinia* appearing in wet areas across the farm. Several participants expressed concern regarding the reliance on schemes and questioned whether some agri-environment schemes had provided environmental ‘improvements’. The balance in focus between the environment and production was also discussed, as was frustrations around farmers’ autonomy and insights to best practice on-farm in comparison with policy directives. To the contrary, some participants voiced that that schemes have allowed them to make desired, specific environmental changes on the farm, including capital works such as fencing and hedge planting.

Several noted that more trees and hedgerows are now being planted, countering past changes. This was often perceived as a positive change; utilising marginal field areas to provide shade/shelter during extreme weather events. However, some participants expressed their concerns in losing productive farmland for tree planting. There were mixed views regarding the extent to which policy and market pressures affect farming in relation to the environment.

Some participants noted links between vegetation changes and the wildlife present. There was a strong sense of concern about an increase in pests, including badgers. Decreases in ground nesting birds (and birds generally) and hedgehog populations were a concern for many. However, other acknowledged good levels of farm wildlife, especially in areas where land was managed specifically for their benefit. Changes arising from specific schemes, such as Glastir was recognised to improve biodiversity by some, despite not always being aesthetically pleasing. Other participants were less certain about scheme impacts on farm biodiversity, with diverse opinions on farm wildlife populations. Table 3 summarises the positive and negative changes in wildlife populations noted by workshop participants in relation to specific schemes (e.g. headage payments, Glastir) and a combination of other factors.

Table 3. Impacts of a combination of factors, including specific schemes on observed wildlife and biodiversity.

Positive	Negative
Presence of lizards on the land	Declining fish numbers in pools on the mountain and salmon in the river
Increased flora populations within stock-excluded woodland	Declining bird populations due to a reduction in stocking numbers of land (Black Grouse, Hen Harriers) and increased predatory populations (Curlews, Pewits). Also, less Cuckoos and Skylarks reported

Presence of habitat encouraging songbird population	Reduced stocking numbers resulted in problems with heather, rushes, feg
Golden plovers nesting on the hills as a result of appropriate grazing management – short sward heights	Increased predatory populations negatively affecting newborn lambs

Disease outbreaks, including novel diseases, often linked to changes in climatic conditions, were a topic of conversation in all workshops. Several participants mentioned having to intervene more frequently and vaccinate livestock, with some noting that new diseases emerging in the area had not previously been encountered by the local vet –

“We’ve also noticed things in terms of diseases... we’re dealing with things that wouldn’t have to deal with sort of even five, six years ago. Barber’s Pole, for example, we’ve had. And our vet had a bit of a shock because previously that was only seen in the southeast and... like Australia. [Due to] Climate change. Very much so... the research that I’ve done is that it’s migrated into the southeast and now it’s coming up to some parts of Wales... definitely climate change. And then... with our sheep - fly stripe, we’re getting into November, which we wouldn’t have had even five, six, seven years ago because of these milder winters and sort of wet autumns.”

“One thing with the lambs definitely is we have to put the fly treatment on much earlier than we used to. Probably because of the hot, humid springs we’ve been having. That means it runs out halfway through summer you have to do it again.”

Table 4 summarises the diseases and pests reported to be on a rise, as well as their impacts, as noted by the workshop participants.

Table 4. Increased diseases and pests observed by participants, and examples of on-farm disease management.

Disease/pest	Impact
TB	Farmers changing their system – moving to finish the cattle on-farm (so that they can still be sold finished even with TB outbreak in the herd), keeping less stock or buying in less and retaining own replacements, reducing movement of stock
Worms	Worm burden noted as a particular issue in ewes – having to monitor faecal egg count (FEC) more frequently and change worming strategy, more willing to seek advice from the vet

Fluke	More wet areas/standing water, increase in fluke perceived to be due to less birds to eat the snails – having to test faeces more regularly
Novel diseases – Barber’s Pole, Schmallenberg, Blue Tongue	Heightened alertness to novel diseases - intervention required, vaccinate livestock
Contagious Ovine Digital Dermatitis (CODD)	Intervention required to treat stock more regularly
Ticks – Tick Borne Fever	Inadequate grazing of the hills (and overgrowth) resulting in increase in tick population, management of land where diseases are a problem required, e.g. outwintering cattle to trample bracken (habitat for ticks)
Other health issues e.g. respiratory diseases	Consider changes in livestock management – to house or not, clammy shed conditions

Across the workshops, farmers discussed other drivers of change beyond climatic conditions coupled with policy changes. These drivers include wider structural and market pressures that influence labour availability, farm size, the need for off-farm employment and the costs of inputs. Adaptation because of these drivers of change was noted to be challenging due to reduced labour availability and limited time.

Sectoral shifts, such as a reduction in the number of dairy farms, yet the existing farms becoming larger, along with a reduction in stocking densities, and moves from livestock to arable production in some areas, were noted as influencing management capacity. Many participants described system changes as adaptation strategies, including altering livestock numbers and types, or adjusting crop choices and rotations. Some farms, dairy systems in particular, have intensified in response to market pressures and the need to increase output. Others have instead focused on reducing inputs or diversification (discussed later) to supplement the farm income, leading to a growing sense of polarisation.

Workshop participants also generally highlighted a decline in young people entering the sector, alongside increasing external investment. These trends were seen to add further pressure and contribute to a shift within the farming community. Conversely, the horticultural sector (especially organic systems), was observed by participants to be seeing an influx of young entrants. Yet, the opportunity for these individuals to access land and establish themselves is deemed to be out of reach for many, posing major challenges for new starters, as reported by some participants.

Changing regulatory pressures (e.g. The Control of Agricultural Pollution Regulations [CoAP], TB controls) was discussed as impacting management decisions, harmonising with other pressures -

“I think we should be worried about the future of suckler herds in Wales. I've seen a reduction in suckler herds and their management of habitats - obviously with sucklers, you've got the animals that don't need the high nutritional value and they can be used to manage habitats and, with the reduction in the profitability of suckler herds, and slowly losing them in Wales, we're losing that as a management tool for habitats.”

“We're probably one of half a dozen farmers [in local area] now that have got suckler herds. So go back 20 years ago, you probably would have had double the number of that. But thanks to the failure of the TB policy and NVZs, etc, it's driven a lot of farmers to the point where they don't keep cattle around here anymore now, which is a real shame, actually.”

Participants noted that the Basic Payment Scheme has enabled some farmers to remain on their farms with low stock numbers, rather than handing the farm over at retirement. A range of wider factors also appear to be contributing to a gradual trend of reduced stock numbers over time, which was a common discussion point across the workshops –

“Without that throughput of stocking density... to cut back on our hill ground is a detrimental thing. Whereas, our lowland ground with all those inputs (from higher stocking) are on fire. You know, it's very easy to cut back so much that you actually have a negative effect on your soil fertility and your soil health. And then you end up growing less and less and less. And then you start destocking because you don't want to buy the concentrates and fertilisers in. It's very easy to go backwards.”

4.3.1.2 Observed distinctions between climate impacts on own farm (and locales) and the sector more generally on a regional and national scale

Some participants noted that the weather can be very localised, e.g., rain or thunderstorms occurring in isolated pockets but not experienced ‘down the road’ –

“I guess we're in a bit of a pocket where like the mountains are like a rain shadow, and when it comes over to us... we drive 10 minutes to town, it's wet there - we go home, it's dry.”

“We do have thunderstorms, albeit it seems that they can be very localised and we can have a thunderstorm with us and a mile down the road you're not having it and it's just luck at the draw.”

That said, there was a sense that the challenges are much the same but different farm(er)s are equipped to handle them to different degrees –

“On one side of me quite a big dairy farm who have invested very heavily in the last few years. And I would say that they have coped better with some of the similar changes we’ve seen...They’re able to maintain the sort of Victorian era field drainage, you know, better than we have... but one thing for sure is that when you go to the mart, everyone complains about the same things and they are usually mud, sheep being lame, wind. So yeah, I feel definitely we’re all sort of in it together in terms of the experiences we’re having with the weather.”

Participants recognised that the effects of weather differ depending on soil type and physical geography – even within a region. They stressed the need for farm-specific, tailored solutions. Nonetheless, extreme weather events will still have an impact regardless of the underlying conditions, just in different ways –

“Home is very shallow soil and we rent various blocks and obviously they’ve all got their own challenges, I suppose, because the extremes again...the wet places are sitting wet and the dry places are burning off.”

(Speaking to ‘neighbouring’ farmer) “You keep Lims (Limousin cattle), they’re inside half of the year... Whereas my grounds a fair bit drier than yours and we’re only next door... I could keep cows out all year then.”

4.3.2 Farming practices and interventions in response to the observed changes in environmental conditions (Q2)

4.3.2.1 Willingness to change and the need to be responsive

Across all workshops, participants discussed how they are adapting their practices to meet these changing pressures. Often these pressures are as much economic as they are environmental – for example, trying to sustain a viable business amid increasing costs, labour management challenges, and significant time demands. Nevertheless, there was a strong sense that many adaptations are also being shaped by the changing climate, which is a challenge for the agricultural sector. In many cases, the degree of changes undertaken were noted as being quite substantive. Other participants described the utility of ongoing field experiments (both formally through the likes of Farming Connect’s Our Farms Network and independently), while many farmers are continually refining their systems. The workshop discussions reflected that many participants held a progressive (forward-thinking and proactive), engaged mindset, with a strong willingness to trial new ideas.

A prominent theme threaded into the participants’ comments was the requirement to be more attentive and responsive to climatic changes, including shifting weather windows and emerging risks. Many farmers referred to the fact that the “textbook” approach is no longer applicable.

4.3.2.2 Stock-related changes

Many workshop participants (mainly 'C' farmers, see Figure 1 for description) reported changes in their stock numbers, often reflected against historic and long-term changes, e.g. headage payments driven by the Common Agricultural Policy to increase stock numbers, which many were now reversing. Several farmers reported a reduction in stocking numbers in recent years to reduce the pressure on the land and build farm resilience, in response to the changes discussed previously (such as wetter land, grass growing limitations). To the contrary, other participants voiced that they were increasing their livestock numbers to maximise their profits. Additionally, several participants discussed systems shifts in terms of the enterprises kept, system change along with breed/genetic-related changes for various reasons -

"We were fuller stocked for what the land could hold, because it's not the best land. We found those pressure points during the year when we had to feed to make up for things..." [C]

"...we had a suckler herd...in the shed from November until April. Now we've gone back to how my grandfather was doing things, keeping smaller cattle weighing about 400-450kg, instead of 600kg. They make a lot less mess. So yes, I see on the hill farm we're going back in time a bit, and all of the neighbouring farms are doing the same..." [C]

"We can't blame those for wanting to diversify and going into milking, they can grow more grass (now the winters are milder)." [C]

(Referring to transitioning to keeping pigs on the farm) "We used to fatten about 500 cattle a year... but we got rid of them as they weren't financially viable anymore and we still wanted the muck ... dad historically would always buy P and K for the crops, but we don't buy any now." [U]

"At one stage at 2,500 ewes, was driven by the headage payment probably and then reduced numbers over the years. Just trying to do better from less really rather than...invested a bit more in better genetics. And not driven by quantity. Trying to concentrate on the quality..." [C]

"We now want to look at being more efficient with the sheep, we DNA tested them all 2 years ago and weigh the lambs. We are scanning tomorrow so any thin ewes is going to a terminal sire so we are much more strict with our breeding policies, we basically don't want to be carrying passengers." [C]

Many discussed changing the timing of lambing and calving to respond to weather and grass availability. Changing market conditions and managing cash flow over the year was deemed to be a key factor alongside the changing climate and associated environmental pressures –

“We pushed our lambing back this year, because it's got so dry at some points during the Summer where there wasn't that flush of grass to turn the ewes out to the rams. So, you know, that's one practical example, really of how you have to adapt, really to the changes to the climate.” [Y]

4.3.2.3 Soil, crop, grassland and grazing management

Soil as the fundamental element of a farming system, and consequently, its management, was a key theme identified across the workshops in terms of adapting to changing conditions. Many farmers reported adopting min-till approaches and direct drilling to reduce soil compaction and erosion issues, as well as utilising cover crops to avoid bare soil. The importance of soil testing and analysing the soil profile, including its biological composition (as well as chemical) was a common theme across the workshops. Many changes in practices relating to the soil were linked to crop/grassland and grazing management, e.g. varying the timing of grazing to reduce poaching issues, utilising nutrients readily available on the farm –

“We have gone to assess the soil profile more than its chemical composition. We changed the farm from a dairy farm to a beef herd... We produced a lot of slurry when we milked and not much muck, which negatively affected the soil profile over time... we had little earth worms and terrible aeration. We've tried to rectify this over time by using a bit more muck so that the earth worms can do their job like they used to in previous generations. Also when we are reseeded we try and just use a power harrow to keep as much carbon in the soil as possible.” [C]

With growing emphasis on soil condition, slurry and manure management frequently emerged as a related theme; particularly how changing weather patterns affect decisions on storage and timing of spreading, as well as utilising these on-farm nutrients effectively. While the CoAP Regulations are clearly an important factor influencing these decisions; the changing weather, ground conditions, as well as infrastructure plans and costs also influence these decisions –

“...two years ago we had to invest in a shed to keep farmyard manure where we would have liked to spend our money on building a shed to keep the stock in. But it's a £36,000 shed to keep farmyard manure in for a couple of months a year, then it's empty for probably six months of the year. So it's quite difficult to justify that kind of payment but that's the kind of challenges that we're facing with a wetter year as well.” [U]

Several farmers reported trialling new approaches to maximise grass production and liveweight gain. This included implementing different grazing systems, e.g. rotational, mob and strip grazing, reseeded with more diverse seed mixtures, e.g. multispecies leys, incorporation of clovers and maintaining higher grass covers, as well as adopting regenerative agriculture principles (e.g. minimising soil disturbance and maximising plant diversity). This was often done in collaboration with Farming Connect or through

discussion groups, where farmers shared ideas and explored which approaches were best suited to their own farms. This was notable of the 'C' and 'U' participants.

"We have put in a 100 acre block of techno grazing [a method of rotational grazing] in, we have managed to increase the herd by 30% on the same area of land and managed to reduce inputs. I have also noticed the workload has improved [reduced]..." [R]

"Like a lot of other people have been saying, we've been doing a bit with herbal leys and overseeding some stuff into to get a more diverse pasture so that we can get through summers like last year..." [U]

Some described altering their current livestock housing approach, linked with breeding patterns to ensure the grass can cope with the increasingly variable weather conditions. Examples included bringing cattle in earlier to protect spring grass growth, and calving in the autumn to reduce summer grazing pressure. Others noted the introduction of maize or root crops into their systems, with mixed outcomes due to varying land suitability –

"Done a bit more outwintering on forage crops over the winter rather than getting tack land here, there and everywhere. Wetter winters are making that a bit more of a challenge, but it does mean that we can keep them at home a bit more." [C]

"I've seen in Pembrokeshire in general over the last 20-30 years, there's a lot more maize being grown because herds have got much bigger, they need a lot of feed and maize is your insurance against a dry summer because maize usually does okay in a dry summer. If it's a wet summer then your grass silage is going to benefit from that. It has changed the landscape of Pembrokeshire in that maize has been grown in probably what you'd call marginal areas for growing maize previously." [U]

"With the kind of weather patterns we're having that winter cropping or planting cereals in the autumn and oilseed rape gives you more resilience against climate change because if you're like last year sowing a spring crop, it struggled to get going and because of the dry spring and yields were down but with the crops that were in all winter they had a head start and were able to cope better. So that is probably important in building climate resilience, the winter cropping." [U]

4.3.2.4 Water management

Water management was a prominent discussion point across the workshops, with several commenting on how this was a new, perhaps unexpected, pressure. This pressure was resulting in the adoption of new, costly practices, including rainwater harvesting, irrigation, installation of boreholes and having to expand on-farm water infrastructure. Some farmers were also fencing out ditches and rivers to manage stock access, particularly in areas where watercourses were prone to drying out in the summer or becoming poached in the winter. Others were linking changes to their grazing and cropping systems to water management –

“We've had to invest a lot in our water system, we're on a spring water supply. That's both because of the extremely droughted summers. We've had a couple since I've been back in charge of the farm. So we've actually had to invest in making sure there's enough water all year round. But also on the delivery system itself, on the other end of the scale, and there's too much water about, so the animals don't poach everything when they go to drink. We've had to put a lot more troughs in a lot more places.” [C]

“We have used more red clover – seems to help us in drier weather.” [U]

4.3.2.5 Green infrastructure

Several participants acknowledged the benefits of trees and hedges for shelter on their farms, with some comments regarding re-establishment of hedgerows that were previously removed for various reasons. For some participants, there was an awareness of additional benefits of trees and hedges on-farm, including to manage run-off and improve infiltration on steeper and exposed ground. Whilst some of the tensions of tree planting proposals through the SFS were discussed; overall, the discussion was positive for the principle of planting the right tree in the right place –

“We're looking to reinstate hedgerows probably as quick as we can, to be honest with you, because with the mob grazing system that I'm sort of using now, ideally, I need the fields to be sort of 3 1/2 to 4 1/2 acres, something like that... with the hot summers we're getting, I think shelter areas in the field, certainly for the cattle and stuff, would be very, very handy... Willow and Alder and certain trees like that, they are known to have anthelmintic properties” [U]

“We have had examples where landlords have literally sold the land from under the tenant farmer and planted trees because that's where the easy money is coming from. And it's totally disheartening to see... But on the other extreme, it's quite good. We've seen a good number of farms... where, yes, people are planting the right trees in the right place... planting them along water courses, so there's the added benefits it brings to those”. [Industry quote]

4.3.2.6 Minimising costs - input and labour requirements

Generally, respondents were aiming to minimise infrastructure costs but some raised concerns around enforced changes with regards to housing periods due to unpredictable weather patterns. Some raised concerns about relying on contractors with tighter weather windows. Several farmers were aiming to reduce their input requirements, particularly synthetic fertilisers and bought in-feed, to become more self-sufficient, with some individuals changing their systems (e.g. outwintering stock) to enable this. This links to earlier evidence on changing stocking and grazing practices. Conversely, some farmers reported having to return to housing livestock indoors during winter because of increasingly wetter conditions. Renewable energy production (and anaerobic digestion) on farm was part of this conversation, and although some farms were implementing this,

it did not form a significant part of the discussions. There was a strong sense of farmers being more 'in control' of their systems, with this perceived as a key element of being resilient.

Another common theme was participants reporting on attending to their margins more closely and removing costly elements from the business (e.g. feed, inputs, staff) -

"We're growing, always looking for alternative crops, we're growing varieties of crops now, not only just grass and silage. In terms of things like clover, we've cut down from probably 200 kilos of N per hectare on average on the farm to about probably 140 now and the red clover leys are only getting like 40 to 50 kilo per year. Which is significant, you know, environmentally and financially for the business." [C]

Many noted that monitoring and benchmarking their businesses was key, including genetics and performance; and even weather. It was interesting to note which farmer clusters (Figure 3) were doing this - mostly 'U', 'C' and 'R', which aligns with the typical drivers and desires of these segments. Monitoring was not simply seen as a way to be more competitive with others, but to refine their own system to maximise the business' performance in the circumstances presented -

"Definitely benchmarking more. We're also using technology in the sense of using cloud-based systems and sort of weighing and things like that... we've taken advantage of Welsh Government efficiency grants... particularly as we work both off-farm, it's more efficient, but there should eventually be financial benefits as well." [U]

"Benchmarking against yourself in previous years is brilliant. That is so useful. It's like we do it through Farming Connect as a group. So everyone kind of gets to see everyone else's figures and that there is a temptation to look at everyone else in the business group about how much are they making per hectare? Then why aren't I getting that? And you can't because as you say, every farm's different, they've got different opportunities." [U]

Several farmers mentioned lowering their labour requirements by moving to hardier, more 'easy care' and 'low maintenance' breeds of stock. Many participants also commented on simplifying their systems with the aim of reducing costs, often also linked to the farmers working off the farm, and animal health and welfare improvements.

One key theme throughout the participants' discussions around adapting to change was the need to adopt bespoke management practices for their farm's specific needs.

A common point with the various changes made, was the need to adapt to their specific farm needs, and that a 'one size fits all' is unfeasible. Participants from farmer clusters 'M' and 'Y' in particular stressed this point. This concern frequently stemmed from a desire to assert individual autonomy in decision making, emphasising the detailed knowledge of their own farm's needs. Some of this discussion reflected responses to

policy requirements, expressing frustration that schemes and support mechanisms must be sufficiently flexible to accommodate different needs, and enable farmers to implement measures that are suitable for their farms –

“I think it’s to do with assessing the farm as a unit on its own. I think there’s been a lot of comparing over the last 10-15 years but a farm needs to be assessed on its own, what is its strengths, what is its weaknesses and what is going to going to work on the farm. What works here won’t work elsewhere... it was ‘one size fits all’ in the past but now the approach is a bit more tailored to the farm.” [M]

4.3.2.7 Diversification and working off-farm

A few of the participants discussed changing routes to market or exploring new income streams to maximise income (e.g. B&B livestock, pick your own, turkeys). In some instances, these changes directly responded to shifting environmental conditions (as with shift to arable/dairy noted earlier). However, most participants noted the primary driver for these changes being economic. In other cases, there was a blending of options to respond to different needs, e.g. bringing livestock in on a B&B system for additional income but also to benefit from the manure produced by these animals, at a time when the costs of keeping their own stock were too much.

A common theme, and often a frustration was the need to diversify or seek alternative work off the farm to reduce financial risk to the farm business. The implications of this on labour availability was discussed, with lots of on-farm decision making based on the fact that the participants also worked off the farm. For some, the question of family and quality of life also came to the fore here.

4.3.2.8 Technology

The use of technology was noted as becoming increasingly important for monitoring and aiding on-farm decision making throughout the workshops (with different farmer clusters, not just the ‘C’ participants as the segmentation model might suggest). A range of technology was mentioned, from the use of software and apps on the computer and mobile phones, to EID systems and no-fence collars used. Many farmers referred to the link between technology and livestock genetics and improved performance. Some participants reflected that technology is seen to be supporting change in all aspects of farming. However, many also emphasised the importance of reverting to traditional farming practices when required. Participants in the industry workshop in particular raised concerns about the overwhelming amount of data required from farmers for different requirements, and the inconsistency and lack of alignment between different requirements. Concerns were raised that this is not helpful for farmers when making decisions -

“Not telling people what they need to do where, but helping to give the information so people can make a more informed decision and so the decisions being made are sort of

all aligned, because I think that's part of the problem at the moment. We're not looking at the same data. So we're all sort of advising and funding different things.” [Industry quote]

4.3.3 Future projections for farming plans (Q3)

As with earlier questions, responses initially centred on farm-specific contexts before broadening out to consider implications for the wider sector. There was considerable overlap with discussion under Q2 regarding recent or ongoing changes, particularly in relation to specific practices that farmers were planning to adopt in the future. Overall, the types of adaptations envisaged tended to reflect continuity rather than a substantive difference from adaptations already underway. This is not to suggest a lack of openness to learning, experimentation, or innovation—indeed, respondents demonstrated a high level of proactivity in the discussions - but future plans were more commonly framed as incremental rather than transformative. A small minority of farmers did describe more ambitious or radical plans, such as working with industry partners to develop novel technologies or approaches, though such examples were not typical. Similarly, while some respondents reflected on the potential for more substantial sector-wide shifts (for example, changes to farm size and amalgamation, levels of new entrants, technology uptake, business diversification), discussions rarely extended to fundamentally different models of production, labour or supply chains.

The motivations underpinning planned changes were consistent with those discussed earlier, i.e. the need to respond to evolving pressures and to enhance the long-term resilience and viability of farm businesses. While decision making processes and interpretations of resilience are explored in greater depth in a later section, it is notable here that pressures were generally framed in a holistic and interconnected way. Resilience was typically understood in economic, environmental, and social terms, with climate considerations integrated alongside other drivers rather than treated as a standalone factor.

Most farmers appeared to have a reasonably well-developed sense of their future direction, often having reflected on this prior to the discussion, suggesting that forward planning forms part of their routine business practice. Although a small number indicated that they did not anticipate significant changes, the majority articulated clear objectives looking ahead. At the same time, many expressed a strong sense of uncertainty about the future. While they were able to discuss anticipated changes over the next five years, extending this horizon to twenty years was widely seen as far more uncertain. The factors contributing to this uncertainty are explored in more detail in a subsequent section.

To demonstrate the prevalence of specific anticipated changes and the associated concerns that farmers sought to tackle, illustrative examples are presented under the sub-headings below.

4.3.3.1 Changes to livestock numbers and efficiency gains

Despite lots of previous discussion of reducing livestock numbers to ensure resilience, several participants noted looking to expand for profitability, often driven by succession plans. Some were taking on more land to enable increases in stock numbers -

“we've looked at sort of doubling cow numbers and tripling output... “I've got three daughters, I'm intending to position the business in a way that we can split it three ways and it's actually viable” [C]

Some were aiming to continue with the trend of reduced stock numbers to rationalise numbers so that they could reduce future costs, or changing livestock practices in a way that they perceived would be better suited to the land. In some cases, reduced stock numbers was explicitly linked to labour considerations - not only as a means of reducing costs, but also in response to retirement or health pressures, or to create capacity for other business activities to grow.

4.3.3.2 Technology

The use of technology was often discussed in relation to improving efficiency and livestock management, particularly through genetic improvement. Technology was also highlighted later when discussing information sources used for decision making. Many participants recognised the increasing role of technology -

“Farming used to be sort of labour intensive, and then we moved into an era where it was very input intensive... we're moving into now this era where farming is becoming data intensive. So, we're going through this journey to where data is much more important... I know a lot of farmers they say, data is great, but don't take your eyes off the animals. And there's definitely, you need to have, I think in this modern day and age where we have all of this technology available and it's getting better every day, the amount of advancements we've seen in the last five years alone, you know... So I think trying to stay engaged with that, trying to stay on top of what's new and relevant and learn how to use it as it comes out rather than getting left behind. It's going to be one of my main things” [C]

4.3.3.3 Optimising grazing management and associated infrastructure

Improving grazing management and associated infrastructure was commonly identified as a forward-looking priority to adapt to wetter winters and drier summers. This included trialling different leys and rotations to build resilience, alongside increasing forage production to maintain viability when grass growth could not be relied upon.

“If the patterns continue, we'll have to look into growing – we've experimented before with Lucerne crops, may be deeper rooting... legume mixes now for the different rooting patterns to get, because obviously if you've got a deeper rooting plant, hopefully you can take the water up better for longer... It's long gone - the days of monocultures.” [U]

Changes to housing patterns were widely discussed, aimed at cutting costs and responding to weather pressures, although there were concerns about whether animals could be kept out during wetter winters. However, milder winters were viewed positively by some, as they created greater opportunities for winter grazing. There were also concerns about land loss linked to wet conditions, flooding and constraints on drainage.

4.3.3.4 Soil health

Many farmers expressed their desire to focus on maintaining or improving soil health, including direct drilling, adopting regenerative farming principles (as previously mentioned), and in some cases, outlining ambitions to move towards what they described as more 'carbon-focused' systems -

"So we'll have a complete field by field analysis of a deep carbon (in soils) on the farm...can start to analyse what is happening on our soils and how that affects root growth and how the mineralization of the plant is in been improved..." [C]

4.3.3.5 Expansion of trees and hedges

Several participants discussed increasing tree cover and hedges on-farm in the future to provide shelter, in some cases to replace trees lost to storms. A frequently raised point was the fact that planting trees was not appropriate on all farms (reflecting wider tensions experienced in relation to the SFS). However, those participants that noted tree and hedge planting as a strategy in the future were planning to do so as it aligned with their own priorities. Farmers who had adopted more rotational grazing systems also highlighted the need for adequate shelter for each paddock, with system changes creating opportunities for additional hedges. Grant support was seen as important in helping to meet the associated costs (as discussed later on).

"We did a project with heat stress in dairy cows this last summer with some very telling results. And on that score, grazing paddocks and getting more trees in to provide more shelter in the future - it's not a short-term answer but in the long term, it is and if you are looking to the next generation etc, it's really important. So building that resilience into the business. It's going to be key really for the future, especially climate change the way it's going." [C]

4.3.3.6 Cost control and return on investment considerations

Controlling costs and assessing return on investment emerged as a common theme, building on earlier points around efficiency gains and monitoring. This echoed discussions under Q2, where many respondents described the increasing need to run farms more explicitly as businesses -

"We've got a big list of stuff of things that we need to do – whatever pays back faster goes to the top... (and) because we all work as well, we have to optimise that, X amount of hours going to the farm." [C]

“You can't run a farm like a farm anymore. You have to run like a business ... every animal on your farm these days has to pay for itself. And if it isn't, it can't stay.” [R]

A large proportion of these respondents were 'C' farmers, who may not typically prioritise maximising income but nonetheless demonstrate strong innovative tendencies. Beyond this, similar responses were made by 'R' and 'U' farmers, who might be expected to focus on income maximisation. Many also discussed a need to pay more attention to market requirements to be resilient.

4.3.3.7 Diversification

Diversification was frequently discussed as a means of reducing risk by “not putting all eggs in one basket”. Examples include renewable energy, tourism ventures and direct sales of produce. However, workshop participants also highlighted the challenges involved, including market saturation in some areas (tourism – camping, B&Bs) and recent regulations affecting holiday cottages, which were seen to limit opportunities. While diversifying income streams was widely viewed as necessary, many expressed frustrations at the need to work off-farm or manage multiple businesses, echoing points raised earlier on -

“It's such a shame that the industry has to look at diversifying for cash flow... we have nearly 500 cattle at home in total.... You would think that it would be enough, but it isn't.” [R]

The participants most focused on diversification tended to be 'C', 'Y' and 'U' farmers, who typically seek out new ideas, skills or technologies, as might be expected.

4.3.3.8 Retirement & succession issues

Retirement and succession emerged as key factors shaping future plans for many participants. Several farmers reflected on how they were intending to manage this transition, e.g. by supporting and considering the needs of two households, balancing off-farm employment for some family members or exploring new business ideas to enable wider family involvement. Intentions to increase profitability and to leave land in “better condition” were often explicitly linked to the prospect of the next generation taking over to make farming more viable and attractive to them. Some participants commented on the next generation acting as an important driver for change -

“Next five years, increase production, really widen it up. Cow numbers need to go up, sheep numbers go up. As I say, son coming into business, we'll look at the store cattle and that's a big enterprise which pays his wages...And just that transition... we're seriously lucky because we have a son coming into the business. I wouldn't know if we didn't have anybody what we think - we probably wouldn't, would we? We'd just tick over.” [Y]

However, others acknowledged, often with a sense of sadness, that they felt farming as a profession has become less attractive overall, making it difficult to draw young people to enter the industry. Health considerations also featured prominently in some workshops, with older farmers describing the need to reduce workloads, make farm work less physically demanding, or move towards partial retirement.

4.3.3.9 The role of support schemes

Grants and support schemes were frequently discussed, particularly the SFS, alongside other funding options, such as Growing for the Environment. A common concern was whether the SFS would provide long-term security, with many respondents expressing frustration around ongoing uncertainty. Engagement with schemes and grants was typically linked to aspirations to expand hedging, adopt more resilient grazing or cropping systems, or invest in equipment to support greater resilience. Some participants expressed their concerns about schemes and grants being difficult to apply for or slow in progressing. More often, schemes were not seen to be appropriate in being too prescriptive (e.g. Growing for the Environment seed mixture requirements was particularly noted, as many were discussing multispecies leys as an important adaptation approach) -

“...what mixes of herbal leys and seed types would work in different farms. There's no one-size-fits-all, but the danger is everything gets put into one basket and we're trying to make one-size-fits-all without having enough knowledge.” [Industry quote]

“Future changes must marry up the right crop or livestock system to the right farm topography. Must avoid trying to farm by spreadsheet!” [Industry quote]

The need for flexibility in the schemes, and the ability to tailor to farms, was stressed as very important, and extended to discussions of regulations. This was notable in terms of timing and how environmental conditions are very dynamic (and increasingly so with climate change) and need to be observed and adapted to year on year rather than working to a set specification.

Many farmers expressed their desire not to be dependent on subsidies in the future. This was often connected to their ambitions to increase profit (and sometimes, production levels). Subsidies were often seen to have driven a more complacent approach which had not encouraged innovation within the sector. Some of the participants questioned whether the SFS and associated policy had adequately balanced environmental aims with production, linking this to wider concerns about the sector's future and food security. Nevertheless, most farmers stressed that they did not wish to harm the environment or to produce at the cost of the environment. While some demonstrated a stronger commitment to enhancing the environment, often shaped by their land or values, there was also broad agreement that the industry could not be viewed as a polluting industry going forward.

Carrying on from a previous point, investing in aspects such as farm infrastructure (e.g. water, grazing, housing, diversification) was an aim for the future for many, often linked to changing climatic pressures as well as succession plans.

4.3.4 Farmer perspectives on climate change, resilience and adaptation terminology

Within the farmer workshops, many participants were explicitly using the term 'climate change' when reflecting on current and future adaptation requirements, indicating that it is generally accepted within the agricultural industry terminology of the sample for this study. Resilience was another term that many farmers used explicitly without prompts -

"We're trying hard to develop that 50 kilo ewe that will live on fresh air, produce twins and sell for 150 quid each in the market. But we're still working on that one! It's building resilience within the business really is our main aim." [U]

As previously mentioned, a culture of experimentation was common, with farmers regularly adjusting their systems and businesses. Adaptation was therefore not an unfamiliar concept. As discussed further in the section on decision making processes, responding to emerging issues was also widely described, suggesting that adaptation forms part of farmers' day-to-day routine. Many also characterised farmers as highly adaptable.

Both resilience and adaptation were expressed in holistic terms, that connected environmental, economic and social pressures on the farmer. Participants described resilience as the ability to adapt across multiple, interconnected pressures, reflecting the realities that farmers face. Decisions about past and future changes were shaped by the need to respond simultaneously to markets, policy, weather, labour availability and personal/family circumstances. Openness to change emerged as a common theme.

Recognising the need for change emerged as an important factor across the workshops. While most participants clearly observed and acknowledged a changing climate, a small minority were unsure. Participants also noted wider scepticism about climate change within the sector, which was seen as a barrier to adaptation, even though some felt awareness had improved over time -

"We have seen it [climate change] for years, many of us don't want to admit it, but those that do, we are trying to futureproof our businesses. We are here sitting tonight because we want to be farming in the future and we are willing to look at every opportunity to make us as resilient as possible." [C]

"I'm becoming very sceptical about the climate change agenda, actually. I can see that there's differences in the weather, but who's to say that that's not just a pattern, you know? So just because it's wetter and we don't get the colder winters here, it could be totally different in 10 years time. Who knows, isn't it?" [U]

At the same time, there was considerable frustration with the climate change narrative generally, particularly perceptions of the sector being scapegoated. Scientific and policy framings were not always well received or seen as meaningful in practice. Instead, many farmers expressed a preference for focusing on practical adaptation measures, especially where these aligned with business viability and profitability.

There was concern by some participants that climate change is not widely prioritised within Welsh agriculture, with a “business as usual” mindset acting as a barrier to adaptation. Reflecting on how to communicate about climate change adaptation and future resilience, a few key lessons came to the fore, nicely summarised in the Industry workshop -

“I think sometimes it's about perhaps breaking down the language. We're really, we're awful, we use words like transformation, transition, and it assumes that farmers are doing everything that's wrong now, but actually I think if we're very careful on language, we can get much more engagement perhaps in these sort of areas.” [Industry quote]

“the notion of sort of win-wins... making it feel much more sort of bottom up rather than top down... that's why I do light up in the chat there about business resilience. And I think that's better because we all want that as farmers. It means different things to different farmers, but ultimately we want... resilience and sustainability.” [Industry quote]

For some, there was a sense of opportunity that needed to be better capitalised on -

“I think where we are, we've got a huge advantage in comparison with other countries, that we can still grow grass, we need to back our livestock industry and we need to keep the numbers up because I think we're in a great area to produce it... I think we've got the climate here to do it.” [U]

4.3.5 Future concerns and barriers preventing change

Most participants anticipated that existing climate pressures would continue to intensify, shaping future plans as outlined above. Table 5 summarises the key areas of concern and barrier preventing change in the future.

Table 5. Key areas of concern and barriers in the future.

Areas of concern/barriers	Impact	Quote
Increased disease risk	Create a sense of uncertainty – how to prepare and manage. Farmers having to be more attentive and responsive	<i>“I think we will see more viruses, e.g. Bluetongue, Schmallenberg, things we can't control. With regards to worms and fluke, we need to make sure we treat</i>

		<i>animals correctly to avoid resistance.” [C]</i>
Market instability	Uncertainty - larger changes harder to pursue, leading farmers to focus instead on day-to-day resilience through incremental efficiency gains. Wanting to have a better understanding of the market	<i>“I guess what I want to do and what we will be doing looks very different at the moment I guess. Just the market volatility.” [C]</i>
Rising costs	Linked to market uncertainty – all costs increasing	<i>“Electric fences, water troughs, you know, all these things that can help your farm system, they all cost money and the cost of them is going up like that every year, you know, it doesn't seem to matter what you're looking to do infrastructure wise.” [U]</i>
Labour constraints	Anticipated to be worse in the future – often linked to discussions around the need to work off-farm and succession	<i>“There is a staff shortage out there in the industry. It's hard to find young boys or girls that want to go into the industry to do these jobs.” [C]</i>
Regulation and policy pressures	Uncertainty – many felt that adopting a more independent approach and reducing the reliance on subsidies would help address these uncertainties and allow for flexibility going forward (e.g. without SFS requirements). This was often connected with wider policy trajectory and the government's stance on food production. The CoAP regulations and their impact on stocking rates/systems with regards to aspirations for regenerative farming	<i>“That's a concern of mine with SFS though. Where's it leading? Because a lot of good farmers are already doing that anyway and then you start getting yourself tied up... Is that going to be a choke hold on what you can do with your own farm? That is my concern of it. We're already trying to do our best. Everyone in this room has highlighted that we're already trying. But if you start to get on to that, the government has a hold on you.” [U]</i> <i>“I am very conscious of a number of farms who've</i>

	approaches was also discussed. Planning restrictions was also considered to be a barrier, with some expressing their views that there appears to be a lack of joined-up thinking between different departments/enforcers. Digital exclusion was a concern for many – impacting many farmers’ abilities to engage successfully with schemes, grants and regulatory requirements	<i>either had grants or the offer of grants for things like covering slurry stores, covering or maintaining manure stores, adapting their livestock housing and what have you, only to have the planning consent turned down by other elements of government and organisations because they feel that, oh, but they'll be polluting the environment more. But it's joining things up a little bit and making sure that those planning barriers don't stop farmers being able to adapt.” [Industry quote]</i>
Supermarket dominance, supply chain issues, and structural shifts	Compounded with previous concerns, the loss of key infrastructure e.g. abattoirs impacting direct sales. Frustrations expressed with supermarkets (particularly given current milk prices – February 2026) but participants’ capacity to change the current system felt limited	<i>“There needs to be more regulation on where we sell our sort of products really, rather than regulating the farmer. I think the regulation needs to be, you know, in the next stage really, and targeting those supermarket” [Y]</i>
Media perception and influence	Public’s lack of understanding about food production and farming – untapped potential to gain more engagement and support as it was suggested that when farming is presented in accessible and relatable ways, public interest increases and responses are often positive. Concerns about media representation linked to climate change	<i>“The industry feels put upon, doesn't it? And the industry feels blamed for everything... that's the perception of farmers that we just seem to get blamed for everything... So just try and get away from that culture and say... farmers are part of the solution, not part of the problem. And a bit more positive message in there... talking the industry up” [Industry quote]</i>

	discussions resulting in disengaged farmers	
Next generation and structural changes in the sector	Challenge of bringing the next generation in, create opportunities to make the industry more appealing and viable. Farm amalgamation (polarisation in farming units) and labour/social transitions	<i>“Try and make sure that we protect that community. We've got a lot of young staff members as well, so that's the other decision behind that drive forward is they need more if they're going to continue to grow, we don't want to lose them. So we need to do something in order to keep them” [C]</i> <i>“We have we have a responsibility to maintain the social fabric in our in our countryside and in our communities... we will see mega units, large landowners, large businesses driving that cost of production down.” [Industry quote]</i>

4.3.6 Decision making process

The evidence presented here illustrates that the factors driving decision making and behavioural change are frequently interrelated, encompassing economic, environmental and social considerations. While there is growing emphasis on farmers operating with a business mindset, economic factors are consistently weighed alongside environment and social factors that influence the suitability of adopting specific practices. Across this body of evidence, the increasingly evident constraint of the climate emerges as a significant influence on farmers’ decision making and ability to act.

The workshop discussions also reveal some useful insights on the change process. Farmers often initiate change when something goes wrong or not as planned, or unforeseen events that prompt a reassessment of their systems. Challenging situations are frequently used as opportunities to adapt and experiment new approaches. Change may also occur incrementally over time, shaped by evolving circumstances and accumulated experiment. A common theme throughout the workshops was a commitment to continuous improvement, carrying out small, low-cost experiments. These insights reinforce earlier observations regarding farmers’ inherent capacity for adaptability -

“Reactively. It's farming what we're seeing with problems. Yeah. It's reacting to the latest problem and working out a way to fix it.” [R]

“Sometimes go outside and it is regularly led by the weather. That change has to happen. You have to make really quite quick decisions sometimes about how that change is going to be enacted but also to make sure you're thinking through all of the knock on effects of that and what that also means, just for your business further down the line.” [U]

In terms of the information used to guide decision making (in the past, present and future), insights revealed that a large proportion of the participants were engaged with Farming Connect, often members of discussion groups, or otherwise engaging with their peers to gain ideas.

“Farming Connect. They are a lot to do with it. Farming Connect has been a huge help to us as a business over the years. We've completed courses, had people out to help us. Farming Connect to someone who does use it has been hugely beneficial to our business. It's moved our business forwards.” [C]

“Discussion groups, I think that's really important because it's your peers, isn't it? It's people, it's not someone sat in an office thinking, oh this is a good idea. It's people that are actually doing it.” [C]

Many participants also emphasised the importance of family considerations in ensuring that decisions aligned with their needs. Returning sons or daughters in particular often introduced new ideas, and many respondents described the challenge of balancing the priorities and perspectives of different generations.

Following discussions about the need for farm-specific adaptations, many participants emphasised the importance of farmers making their own decisions. Engagement with external expertise was also considered valuable, such as vets and consultants, with some discussions on when paid advice represented good value. However, there was scepticism among some towards trusting ‘experts’, as well as tensions on top-down advice and policy directives.

Others highlighted reading about different approaches through farming press and online sources, as well as listening to podcasts and attendance at industry events, including on-farm events. Technology was often mentioned as a tool to help decision making -

“Use more technology. We use technology quite a bit now ourselves, EID. We use EID as much as we can, so data recording, whether it's weights (of stock), whether it's that ewe's maternal traits... We record everything so you can look back at data - that cow, that sheep isn't working for you. Get rid of it.” [U]

It is important to explicitly connect insights into how farmers learn and develop ideas with the earlier discussion of decision making and change processes, particularly in

understanding how access to ideas and knowledge can enable or prompt change. An emerging norm around seeking advice was noted, facilitated by increased availability. However, most of these comments came from 'C' and 'U' cluster participants, and there was a belief that a proportion of the farming community are not currently engaged -

"I think despite all the various bodies...who put that information out there.... there's a chunk of farmers out there that we never engage with, that don't engage and don't get that information." [Industry quote]

4.3.7 Further support requirements in the future

As outlined throughout the findings section, many participants discussed the grants and schemes they currently utilise, along with the challenges associated with these fundings mechanisms, including the Sustainable Farming Scheme that began on 1 January 2026, more broadly. These reflections point to areas where farmers feel additional support will be needed going forward to allow them to make necessary and anticipated changes on-farm. Similarly, in the future concerns and barriers section (Section 2.3.5), participants highlighted a range of constraints, including regulatory issues, labour availability and encouraging new entrants. Throughout the workshops, participants repeatedly reinforced the view that a 'one size fits all' approach is unsuitable. Collectively, these findings reinforce the need for further targeted support in the future.

Some participants expressed their views on specific further support that would be beneficial in the future -

"There is an excellent understanding of what the soil should be, but there's a difficulty in funding the investment needed to correct that soil result... We can't afford to correct it... and lime is a relatively cheap input, but if somebody needs 3, 400 tonne to correct their farm, they don't have the money or disposable money to you. So, that is something we need to look at, I think." [Industry quote]

"(At a recent meeting) the farmers there all stated that one thing... to have a sort of machinery type ring... share the costs... looking at things like subsoilers and aerators and things like that. And then min-tillage we were talking about, the farmers that were from Pembrokeshire on smaller farms and they were saying we can't afford to do this. Is there any way around that?" [U]

Some participants also identified a need for additional support related to environmental management in the future -

"it's the loss of knowledge and skills with regards to the environment on the farm really over the years because of the need to scale up and the time constraints in doing woodland management, hedgerows or whatever. Yes, it's been happening through schemes but it's always been, that's where contractors have been so valuable because,

*whereas, the farmer used to be able to have the knowledge and time and skills to do that.
That's sort of gone by the wayside now because of the necessity of it.” [C]*

5. Conclusions and Implications

The Climate Adaptation in Agriculture Stakeholder Engagement Study explored how Wales' farmed environment, and consequently, farming practices have changed over time. Furthermore, the factors driving these changes, and how farmers are responding and planning for the future in the context of climate adaptation was investigated. Agricultural stakeholders (farmers and industry representatives) in Wales, including farmers and industry representatives, demonstrated a strong awareness of climate change and were actively adapting their farming systems in response to climatic shifts as well as other influencing factors. Changes in climatic conditions over time were identified, including altered rainfall patterns, increased weather variability and seasonal shifts. Participants had a strong awareness of the practical implications on their day-to-day farming operations and decision making. While this study primarily focused on the changing climate, a range of additional drivers of change for on-farm adaptation was also explored. Participants also discussed future projections in detail, in terms of the climate and reflected on their anticipated relevance for productivity, land management, infrastructure and farm resilience.

As a small, exploratory study offering insights into the perspectives of a specific subset of farmers, the findings should be interpreted alongside the broader body of research on Welsh agriculture. Nonetheless, the discussions among stakeholder across Wales in this research indicate that a proportion of the agricultural sector demonstrates a degree of readiness to respond to climate challenges. This highlights the importance of ensuring that policy frameworks, advisory services and financial support mechanisms are well aligned with on-the-ground realities and build upon existing adaptive behaviours rather than adopting a one-size-fits-all approach.

The findings of this study make a valuable contribution to Wales' climate adaptation evidence base and have clear implications for the future development of agricultural policy. The discussions highlight the need for policies that will support proactive climate adaptation and recognise the diversity of farming systems in Wales. In doing so, the outcomes of this work may help strengthen the resilience of Welsh farming systems while supporting the delivery of future climate adaptation in Wales.

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Appendices

Appendix A. Welsh Government segmentation model questions.

- On a scale of 1-5 (where 1 is 'not at all important' and 5 is 'very important'), how important is talking to other farmers as a source of information and advice for you personally?
- On a scale of 1-5 (where 1 is 'not interested at all' and 5 is 'extremely interested'), how interested are you in accessing information or advice about farming on the internet?
- To what extent do you agree or disagree with the statement - 'Achieving a good quality of life is more important to me than maximising income from my holding'
- To what extent do you agree or disagree with the statement - 'All farms should strive to be as environmentally sustainable as possible'
- To what extent do you agree or disagree with the statement - 'Collaborating with other farmers improves the running of a farm'
- To what extent do you agree or disagree with the statement - 'I always make time to socialise with other farmers'
- To what extent do you agree or disagree with the statement - 'I am always looking to learn new skills and knowledge that I can apply to my holding'
- To what extent do you agree or disagree with the statement - 'I am keen to apply new technology on my holding as it becomes available'
- To what extent do you agree or disagree with the statement - 'I am happy to take advice about managing the natural environment on my holding'.