

Ready or not, here I come: Understanding English farmers perceptions of the changes in UK agricultural and environmental policy

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Abstract

Under the new post-Brexit era English agricultural and environmental policies are changing, with a transition away from direct payments to agri-environmental schemes. With a significant proportion of farmers reliant on direct payments for their viability, there is a need to understand farmers awareness of the proposed changes in farm policy, and to assess the extent to which English farmers are adapting their businesses to changes in policy. This research used transcribed qualitative in-depth semi-structured interviews conducted with 34 farmers across England and representative of the main industry sectors. Thematic content analysis using NVivo and attributional information was used to analyse farmer responses. The research found that there existed predominantly negative views about the ELMs and the Sustainable Farming Incentive pilot. Alarmingly over a third of farmers did not know the financial impacts of future policy changes and over a fifth of farmers had undertaken no planning at all, with only a third of farmers planning for reduced support. The results identified that the in-coherence between the ELMs policy and international trade policy was the main source of farmers' resentment towards the new policy and opportunities to improve the design of future schemes and policy to align with farmers' goals.

Keywords: sustainable farming incentive (SFI), Environmental Land Management Scheme (ELMs), agricultural policy change, farmers decision making

JEL code: Business administration M1

1. Introduction

The UK having left the EU, has set its own agricultural and environmental policies (The Agriculture Act 2020) to transition to a legislative framework that, in England¹, intends to pay farmers and land managers for public goods such as environmental or animal welfare improvements (including reducing carbon emissions). Recently, farmers in the UK received the majority (>80%) of the £3.5 billion spent by the UK government on agricultural support under the EU's Common Agricultural Policy (CAP), as direct payments based on land ownership. During the transition period the amount of direct support will decline subject to farm scale and the new Environmental Land Management Scheme (ELMS) will be phased in from January 2021 (DEFRA, 2020). The transition period and beyond represents a significant disruption and external threat or opportunity to the operation of farming businesses in the UK.

A significant proportion of English farmers are reliant on Direct Payments through BPS to produce a positive Farm Business Income (FBI) (Figure 1). The proportion of farms expected to produce a loss increases from 16% to 42% with the removal of Direct Payments. However, this assumes that BPS induced distortions in asset values and resource allocation within the agricultural sector remain constant with the removal of Direct payments, which may not be the case due to structural adjustment and changes in market values for resources occurs with the removal of BPS.

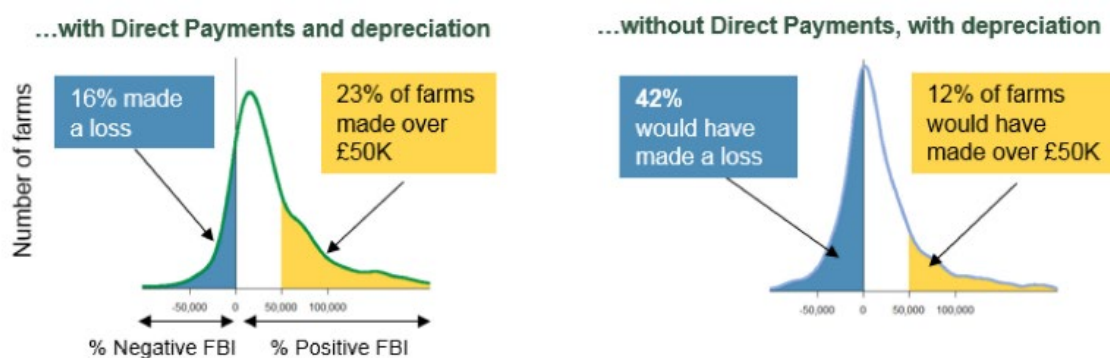


Figure 1: Change in distribution of Average Farm Business Income (FBI) over 2014/15 to 2016/17 inclusive and exclusive of Direct payments.

¹ Devolved nations are responsible for their own Agricultural and Environmental Policy. At the time of writing Scotland had launched its public consultation (see: <https://www.gov.scot/news/stability-certainty-and-simplicity-in-rural-support/>); Wales is transitioning to their Sustainable Farming Scheme (<https://gov.wales/written-statement-agriculture-wales-white-paper-summary-responses-and-welsh-government-policy>); and Northern Ireland has recently announced their Future Agricultural Policy Framework Portfolio and is embarking on an extensive consultation process to develop a policy framework (<https://www.daera-ni.gov.uk/news/poos-publishes-vision-future-farming-policy-ni>).

Source: DEFRA (2018)

The impacts of Direct Payment removal on different farm types is not homogenous, and farm types such as LFA and Lowland grazing Livestock, Mixed farms and tenanted farmers (Direct payments equivalent to 83% of FBI) in England are likely to be most impacted by the transitioning away from the BPS (Figure 2).

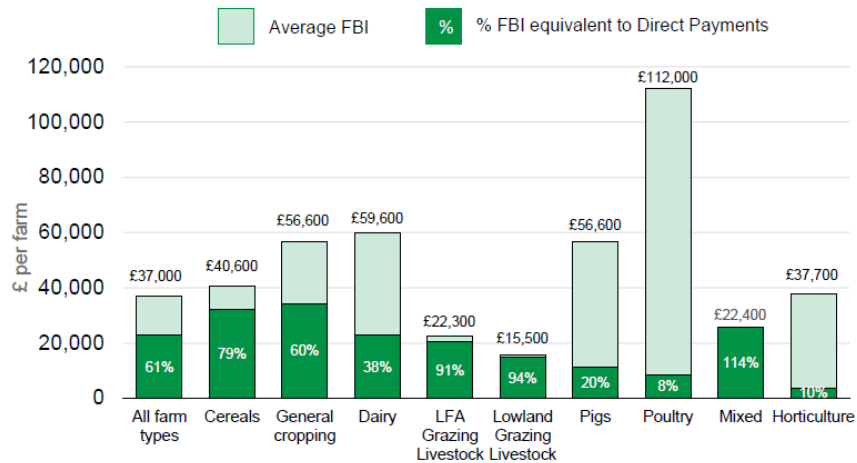


Figure 2: Average FBI and the proportion of FBI equivalent to Direct Payments for different farm types across 2014/15 to 2016/17.

Source: DEFRA (2018)

ELMS is set to further enhance existing agri-environmental schemes under the overarching Environmental Stewardship (ES) land management scheme. The current ES scheme includes three sub-schemes, Entry Level Stewardship (ELS), Organic Entry Level Stewardship (OELS) scheme, and the Higher Level Stewardship (HLS) scheme. These schemes, as well as the Countryside Stewardship (CS) scheme, which is focused on supporting farmers and land managers to implement a range of environmental improvement actions, will be phased out in 2023 and become part of ELMS. There is evidence that previous schemes have not achieved adequate public value for money and have been environmentally ineffective, both in the UK and within the EU (Brown et al., 2021). The core component of ELMS relevant to English farmers is the Sustainable Farming Incentive (SFI) scheme which is expected to expand overtime to promote the adoption of sustainable farming actions. In addition, the Local Nature Recovery and Landscape Recovery schemes will focus on local (community) environmental priorities and support long-term land use change projects.

The SFI² is currently designed to provide a simple and straightforward approach to paying farmers for the provision of public goods, such as cleaner water and air, and carbon reduction. The SFI is designed with ‘action-based payments’ for farmers adopting environmentally friendly practices that go beyond regulatory requirements. The SFI pilot actions are grouped into packages set out initially as eight standards covering arable & horticulture land, arable & horticulture soils, improved grassland, improved grassland soils, low and no input grassland, hedgerow, on farm woodland, and waterbody buffering standard. It is envisaged that the number of standards available will increase overtime and payment rates based on an ‘income foregone’ approach for actions contained within each standard will be modified based on farmer feedback. More than one standard can be applied to the same area of land, as long as the standards are not in conflict. For details of the rules, please refer to DEFRA’s website³.

A significant emphasis of the Agricultural Transition Plan (DEFRA, 2020) is the focus on co-design and stakeholder engagement in the development of the ELMS approach to agri-environmental schemes. A core component to the co-design process is the use of pilots and tests over 2021-2024. This co-learning process is aimed at identifying the best way to deliver the SFI, and by 10 Oct 2021 938 farmers from across England have applied to be part of the SFI pilot⁴. Figure 3 indicates the proportion and number of farm types and sizes that have applied to the SFI pilot, of which 22% are fully tenanted farmers (rent all of their land) with 39% of participating farmers having farms over 150 ha in size³. The SFI pilot agreements will last for three years and payments to participating farmers will be quarterly in arrears. Early feedback from farmers indicates that the current version has issues with ‘goodness of fit’ (i.e., fitting inflexible standards into existing farms), payment levels being insufficient to meet standards, and some technical difficulties with the application process.

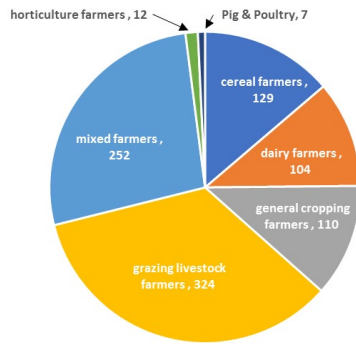
This component of developing ELMS provides a unique opportunity to investigate the response from farmers involved in the ‘tests and trials’ to understand the likely uptake of ELMS and SFI, and its potential impact on farm business performance, preparedness and future strategic planning in response to transitioning away from BPS.

² <https://www.gov.uk/government/publications/sustainable-farming-incentive-scheme-pilot-launch-overview/sustainable-farming-incentive-defras-plans-for-piloting-and-launching-the-scheme>

³ <https://www.gov.uk/guidance/sustainable-farming-incentive-pilot>

⁴ <https://defrafarming.blog.gov.uk/2021/10/15/update-on-the-sustainable-farming-incentive-pilot/>

a) Farm types



b) Farm sizes

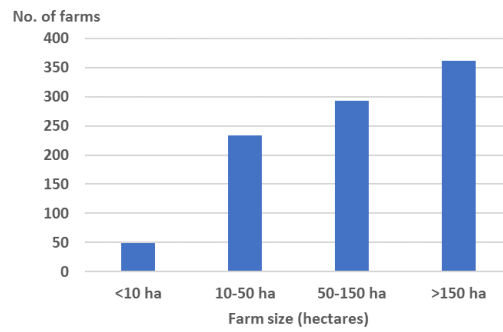


Figure 3: Participating farms in SFI pilot: a) Proportion and number of farm types; b) Distribution of farm sizes.

Source: DEFRA (2021³)

A big range of studies have been undertaken to understand factors influencing farmers decision making in environmental related issues such as participating in or withdrawal from agri-environment schemes (Lastra-Bravo et al., 2015; Brown et al., 2021), adopting best practices in environmental management (Baumgart-Getz et al. 2012; Prokopy et al., 2019) and land use changes (Poppenborg and Koellner, 2013; Arnott et al., 2021). Broad themes of influences include internal and external factors. External factors comprise policy design, external enabling factors and market factors. Internal factors most commonly found in the literature are related to capacity of farm and farmer, farm management approaches and farmers psychological factors. Figure 4 provides a summary of the two sets of factors influencing farmers environmental management decisions found in extant literature.

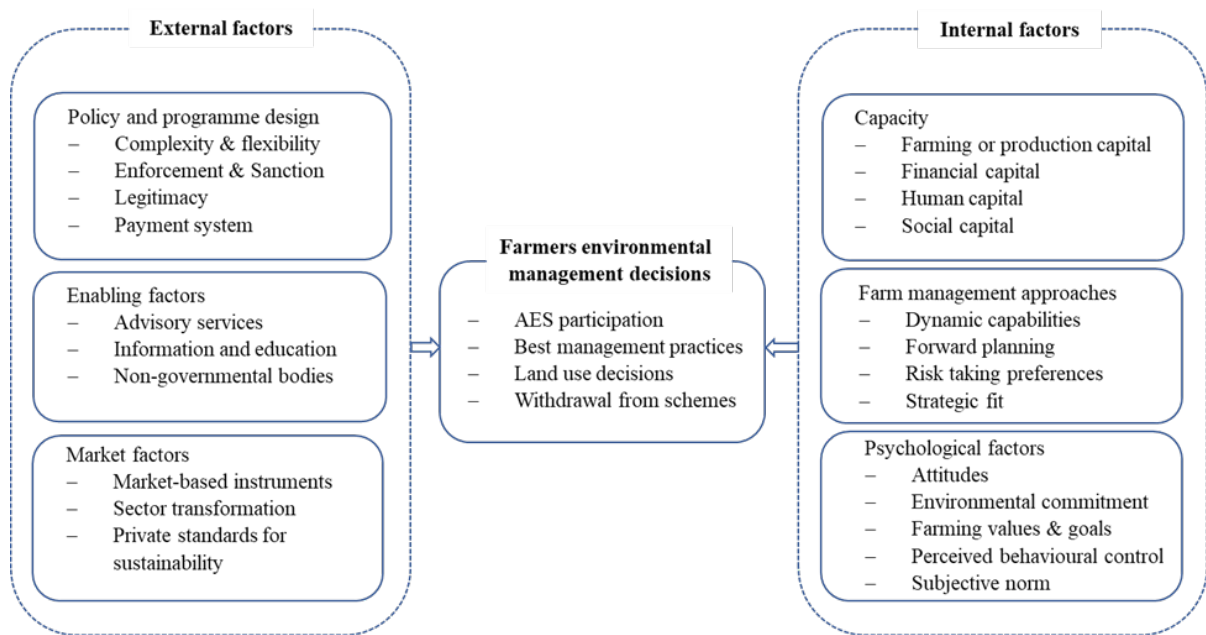


Figure 4: Summative framework of factors influencing farmers environmental management decisions (Huang et al., 2022)

The aim of this study is to explore farmers' views about the new agricultural policies and the extent to which English farmers are adapting their businesses to the changes in UK agricultural and environmental policy.

2. Methods




























Primary data for this project was collected through qualitative in-depth semi-structured interviews conducted with 34 farmers. Five of the interviewed farmers also provided written confirmation about the costs and payments received from SFI. Data analysis was conducted in thematic content analysis approach in NVivo. Three broad themes were used to categorise the codes: 1) farmers' understanding and knowledge about agricultural policy and the ELMs; 2) farmers' plans and actions in response to the proposed changes of agricultural policy in England; 3) farmers' views and attitudes about the ELMs in general. Attributional information about farmers and their farming business were also captured.

3. Findings

3.1 Characteristics of the respondents

The sample is largely representative of the production sectors (i.e. beef, sheep, dairy, arable, pork) across a range of farm sizes, geographical locations and land types. Table 1 shows the distribution of the sample in terms of geographical location.

Table 1. Location of the sampled farm and the participants of the SFI pilot

<u>County</u>		Whole sample		SFI pilot participants	
Cornwall		1	2.9%		
Cumbria		2	5.9%		1
Derbyshire		1	2.9%		1
Devon		2	5.9%		1
Hertfordshire		1	2.9%		
Lancashire		3	8.8%		
Leicestershire		1	2.9%		1
Norfolk		4	11.8%		
Northamptonshire		1	2.9%		1
Oxfordshire		1	2.9%		1
Somerset		2	5.9%		1
Staffordshire		1	2.9%		
Sussex		1	2.9%		
Suffolk		1	2.9%		1
Warwickshire		2	5.9%		
Wiltshire		1	2.9%		
Gloucestershire		1	2.9%		
Yorkshire		8	23.5%		5
<u>Total</u>		34	100.0%		13

The 34 interviewed farmers' ages ranged from 30 to 80 with a mean age of 54, with seven respondents being female and 27 were male. They were located across most of England with some concentration in Yorkshire and Norfolk. Most sampled farms were lowland farms with a mixture of tenanted and owned land. Over 1/3 of the farmers (n=13) interviewed were due to take part in the SFI pilot. Of the 21 who are not participating in the SFI pilot, five were not eligible, two applied but then withdrew, two may apply in the next round, one was unclear and one intended to apply. In total there were 35 individual standards being implemented across the 13 farms participating in the SFI pilot. The remaining non-participating 10 farmers expressed no interest in applying for SFI. In regards to the ELMS tests and trials, 13 farmers participated, 8 of those subsequently applied for the SFI pilot.

3.2 Understanding of agricultural policy and sources of information

More than half the respondents (19 in all) regarded their **understanding of government policy** as either “reasonably good” or “good”. Nine believed that they had a “low level” of understanding the policy and six claimed a “moderate” level of understanding (Table 2).

Table 2: Level of understanding of agricultural policy and awareness of ELM in sampled farms

Understanding of agricultural policy	Frequency	%
Low level of understanding	9	26.5%
Moderate understanding	6	17.6%
Reasonably good understanding	10	29.4%
Good understanding	9	26.5%
Awareness of ELM		
Limited awareness	5	14.7%
Moderate awareness	17	50.0%
Good awareness	12	35.3%

As for the **awareness of the new ELM**, five respondents considered their level of understanding about the new ELM to be “limited or very low”. Half the respondents considered they had “moderate awareness of the new ELM”, and about one-third considered their level of awareness to be “good”.

Regarding the **sources of information** about agricultural policy and the new ELM schemes, the most mentioned was farming press/media, with two farmers claiming that farming press was their predominant sources (Table 3). Farming press mentioned included Farmers Guardian, Farmers Weekly, and Farming Today on Radio 4. Consultants and agents were the second most used sources. Most of those farmers tended to use consultants or agents to help with claims and grant applications. The costs of using consultants for such matters ranged from under £500 to over £5,000 per year. Informal networks included farmers discussion groups, neighbours or other farmers, the Farming Network, the Farming forum, Agricultural shows and auctions.

Table 3: Information sources regarding agricultural policy for all sampled farms

Information sources	Frequency	%
Farming press	19	55.9%
Consultants and agents	14	41.2%
Informal network	14	41.2%
Government sources	13	38.2%
Other organisations	13	38.2%
Websites in general	9	26.5%
Social media	7	20.6%
Family members	6	17.6%

Eleven respondents reported government sources including DEFRA (including their blogs), Rural Payment Agency, and Natural England. Some respondents were very positive about DEFRA sources, suggesting that they are very “*accessible and up to date*”. The quotes below compared different sources of information and how DEFRA has increasingly become the primary source of information about policy issues.

“Historically it would probably have been Farmers Weekly and possibly online articles and possibly or probably quite heavy reliance on the NFU and them distributing information. I've now started or signed up to, I don't know whether I've got them all, but some of the DEFRA blog posts that are written. I found those quite useful. They tend to be quite accessible now. They're quite well written. They're quite up-to-date obviously with the information that comes out. They come straight to my email, so I'm able to read them in the evenings or whatever. I wouldn't say they're necessarily the primary source of information, but they've become very significant in terms of my understanding of the wider schemes and options available.

I get quite a lot of information off the internet in various forms. I try not to get drawn too much into the slanging matches that tend to go on. I would much rather know that something is happening and then go and look for the information myself. I'm quite happy going and finding the information if I know that something exists. Then the primary source of information generally is DEFRA, to get it straight from the heart of where it should be coming from.” (Respondent 32)

Other organisations such as NFU, AHDB, CLA, NSA and internet searches in general were used by some respondents. Social media such as Twitter and Snapchat were mainly used by younger farmers.

3.3 Farmers current situation

Whether or not farmers have taken any measures informed by the proposed changes to plan for the future, shockingly, about one third of respondents have no idea about the amount of reduction of direct payments until 2027. A further third of farmers had begun to plan for reduced BPS income, and over a fifth of sampled farmers have undertaken no planning at all, although many respondents expressed a need and wish to do things differently. Those that have initiated actions had considered entering into new or other existing schemes, scaling up or scaling down, improving efficiency, or constraining investment. On-farm diversification was the most favoured strategy to cope with the change in agricultural policy and reduced BPS income. Table 2 provides a summary of the responses.

Table 2: Current and prior participation in agri-environmental schemes, reliance on BPS and diversification for all sampled farms

Have you taken part in any existing agri-environmental schemes?	Frequency	%
No	10	29.4%
Yes	24	70.6%
How much do you rely on direct payment from BPS?		0.0%
Reliant	15	44.1%
Somewhat reliant	5	14.7%
Not reliant	14	41.2%
How has direct payment supported your farm business?		0.0%
A major source of income to achieve profitability	15	44.1%
A minor source of income	15	44.1%
Buffer for price volatility and other uncertainties	7	20.6%
Working capital for fertiliser, labour and rental	5	14.7%
Investment to improve farm infrastructure	3	8.8%
Low food price	2	5.9%
Have you undertaken any diversification activity previously?		0.0%
No	10	29.4%
Yes	24	70.6%

The main diversification strategies revolved around making better use of farm resources, and included farm premises conversion, providing farm related services, spreading costs of machinery by providing agricultural contracting, direct selling through farm shop or online channels or local butchers, entering into new energy sector or developing farm specialisation. Figure 5 shows more details under each type of activities.



Figure 5: Details of farm business diversification in hierarchical order

3.4 Views about the ELMs and SFI pilot

Respondents were asked about their views on the ELM schemes in general and the SFI pilot in particular. There were more negative views than positive views for both as shown in Figure 6 below.

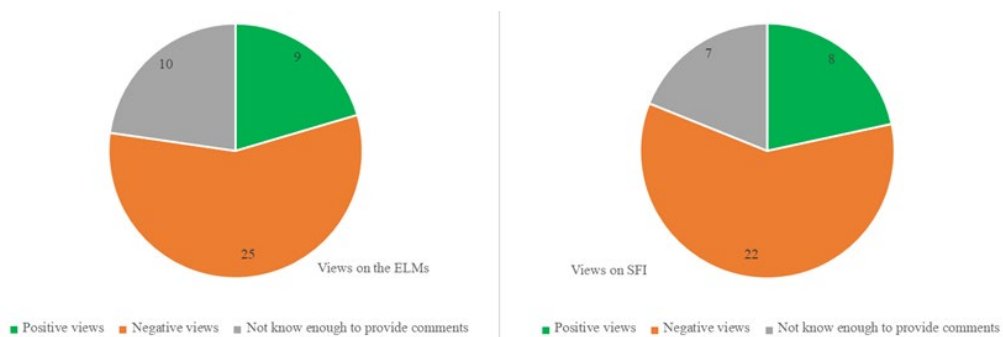


Figure 6: Distribution of all sampled farmer views on the new ELMs and specifically SFI

Nine respondents expressed **positive views** about the ELM. In terms of the scheme design, two believed that it was good in principle and the aims for the countryside were good and hoped that everyone can apply for the lower level of SFI. Three believed that the payment will still support farming but in different ways. Some believed that it was also good that the government is consulting farmers as commented by Respondent 3: *“The point of the pilot is to find out what does work before it becomes mandatory”*.

Ten respondents said that they could not comment because they did not know enough about it.

Regarding **views on SFI**, overall, the themes are very similar to those about the ELM.

Positive views included:

- Going in the right direction
- Convinced that it’s a good theory
- There is a need to change intensive farming
- Easy to get into lower SFI standard levels particularly

Commenting on the potential impact of SFI on the farm business, six respondents indicated that it will be straight forward and there should be no major challenges. Those farmers were either already doing it or had carefully selected standards to suit their farm structure. One respondent mentioned that this will be a good opportunity for them to take less profitable areas out of production.

Eight respondents commented on concerns about the **cost implications of SFI standards** if they have to do something new. This included soil testing and the challenges on the establishment of insects and pollinator mixes. One was worried about whether they will be able to make mid-way changes or reclaim the land after the end of the scheme. Four commented on their worry about compliance and potential repercussions.

Negative views about the ELM were provided by 24 respondents in the following five areas:

- Communication and clarity and related uncertainties
- Scheme design
- Lack of trust in government’s motivation
- Payment rate not attractive enough

Eight respondents commented about the need for better **communication and clarity** of directions. Some were concerned that it was too complicated for some people as explained by Respondent 07:

"I have worked in a professional capacity and managed a large department. I had to read documents and apply for grants, et cetera. ... I've got someone helping me to fill this in. The two of us together are thinking this is crazy."

There was also some confusion about the definition of sustainability and public goods. Some farmers asked whether food is a public good. Some commented on whether maturing shrubs should be allowed to mature or whether they will have to cut down to fit the rules for payment.

Closely related to the community and clarity is the sense of uncertainties caused by the potential changes. Many farmers commented on the unfairness that the reduction of the direct payments has already been implemented whilst the new schemes are still in trials and piloting.

Regarding the **scheme design**, 17 respondents commented on this. Five of those commented on the need to distinguish between different types and sizes of farms. There is a need to assess what is already on farm rather than focusing on new actions. There was a feeling that the new schemes will harm small farms and benefit large farms and land owners. Some believed that the government want to give up food production completely as commented by Respondent 22: "I think they're going to let agriculture go to the wall in this country. The ELM scheme is their token gesture." This does not fit into many farmers' values who believed that farmers' role is to feed people. One farmer commented that "*you can't eat trees*". Some believed that this is the same as Countryside Stewardship and Environment Stewardship. Why should we reinvent the wheels? Whilst some others would like to see more radical changes and more options and felt disappointed that it is a waste of an opportunity.

There was a considerable **lack of trust in the government's motivation**, some believing **it's all about cutting costs** and diverting money to other areas. One farmer commented that 75% of the budget for all agricultural support is not spent on supporting farmers directly due to perceived costs of monitoring, enforcement and other support activities provided by

DEFRA and relevant advisory bodies. Some commented about the consultation process and suggested that it was done too late. It should have “*started three years ago but they are still making it up*”. Some believed that the consultation was **delivering a pre-written conclusion**. Some farmers were concerned about the constant changes and updates. They felt that they can’t make plans when not knowing what is going to happen. The lack of trust in government is also reflected in the perceived **incoherence of policies between sustainable farming and international trade**. Many farmers felt that the new trade deals will mean importing food with lower standards and higher negative environmental impact which is contradictory to sustainable farming messages for UK agriculture. Farmers expressed the importance of the government supporting local food production as shown in the quotes below.

*“If you want farmers to stand on their own two feet, you can't let in cheap food from Australia produced at lower standards. The trade policy is absolutely key. In fact, you can probably save loads of public money and do more good by very careful trade policy than anything else. **All the good work of ELMS and things like that could be eclipsed in one final swoop by signing a trade deal with Brazil or the Australian.**” (R6)*

*“I think for the environment, we are going to have to **cut back on imports.**” (R8)*

“I question which way the government needs to drive the industry of the country. Stop worrying about importing things, let's drive people to produce them at home.” (R17)

More than half of the respondents (N=14) felt that the **payment rate is too low or not attractive enough**. One raised doubt that there was proper costing research done on the schemes. There was a need to not only properly consider the opportunity costs of taking land out of production, but also to **pay farmers to provide the environmental services** for the general public as expressed by these two farmers: “*We should be paid to be the custodians of the countryside.*” (R17) and “*I expect they trim their garden hedges nicely and keep their lawns cut.*” (R14).

3.5 Recommendations made by farmers

Recommendations and general comments made by some respondents include: 1) more individual farm support or payment to cover consultation costs, 2) farmers’ economic

sustainability should be prioritised, and 3) more flexibility and more localised assessment about the eligibility of farm for SFI standards and 4) SFI application process.

A number of farmers commented the need for more **individual farm support** directly from DEFRA or RPA. Otherwise, the scheme should include **costs for using a consultant** for making applications and claims. This is particularly needed for small farms or those who are not that computer literate as commented by Respondent 07:

“How many farmers who are small like this are necessarily going to be able to afford to have someone to help them to do it? ... There's no payment for getting your application in. In my opinion, it's a wasted opportunity. There could have been a system brought in which allowed for the Rural Payments Agency to look at individual farms more closely and tailor broad schemes to individual farms, but that isn't really what this is about.”

Another recurring theme was about the need to balance “carrots and sticks” and the need to recognise that farming is a risk-taking business due to external uncertainties and **economic sustainability of farmers should be prioritised**. R32 commented that *“if carrots are going, farmers may take more risk to break regulations”* and money which could have been spent on supporting farmers will have to be diverted to monitoring and enforcement.

About the SFI pilot, many commented about the need for DEFRA advisors or local delivery groups to work with farmers more closely and not taking a one size fits all model. Five respondents suggested that there should be more **flexibility to allow tailored plans and more appreciation for what the farm already has**, and what one can do relatively easily to improve as shown in the quote below from Respondent 24:

“it's not even better than nothing because it's giving you money for tying your hands behind your back basically. I think yet again, it's one-size-fits-all. There's no flexibility, there's no sense of valuing what you might already have on your own really.”

Respondent 23 also commented that

“for a North Yorkshire moorland, upland farmer, or a Cumbrian upland farmer, it's not going to work. They need completely different approaches. From that point of view, I think, although it's complicated for DEFRA to manage, I think they could have achieved so much more by just creating local delivery groups and allowing the farms to look at

the public goods that were being sought and come up with their own proposals to deliver them with a good degree of flexibility and agreed custom farm plans for each farm.”

Regarding the guidance and support provided and the **application process**, some commented about the application platform not being user-friendly and one person mentioned that they had to go back four steps to find out instructions. Some suggested a hardcopy manual would be useful.

4. Conclusion

The key factors perceived by farmers which will affect their decision making included: 1) a desire to continue farming and maintain farming lifestyle; 2) uncertainties created by the loss of direct payments before the formal introduction of new schemes; 3) the high opportunity costs of taking out productive land for the new scheme; 4) potential of increased pressure from international trade, seen by most farmers as contradictory to sustainable farming messages from the government (i.e. importing food with lower standards and higher negative environmental impact); 5) insufficient reward in the new payment schemes of the natural capital created through sustainable farming; and 6) erosion of trust in government's motivation to introduce the new policy.

Overall, the uptake of the lumpsum scheme to encourage exit farming completely is likely to be very low. Many farmers will prefer more intensive farming to make up for the loss of BPS. Many farmers will not engage with the schemes to avoid possible restrictions or punishments. To achieve transformational changes for future farming in the UK, it is essential that the new policy will align farmers' economic sustainability with the expectations about environmental and social sustainability. Sustainable farming and food system in the UK should be seen as a shared responsibility in the society and the farmers should be rewarded for the eco-environmental services they provide not just on an income foregone approach, but on the basis of full recognition of the natural and social capital created through sustainable farming.

5. References

Baumgart-Getz, A., Prokopy, L.S., Floress, K., 2012. Why farmers adopt best management practice in the United States: A meta-analysis of the adoption literature. *Journal of Environmental Management* 96, 17-25.

Bazeley, P. and Jackson, K. (2013), *Qualitative data analysis with NVivo*, Sage Publications Limited.

Blackstock, K.L., Ingram, J., Burton, R., Brown, K.M., Slee, B., 2010. Understanding and influencing behaviour change by farmers to improve water quality. *Sci Total Environ* 408, 5631-5638.

Brown, C., Kovács, E., Herzon, I., Villamayor-Tomas, S., Albizua, A., Galanaki, A., Grammatikopoulou, I., McCracken, D., Olsson, J.A., Zinngrebe, Y., 2021. Simplistic understandings of farmer motivations could undermine the environmental potential of the common agricultural policy. *Land Use Policy* 101.

Burton, R.J., 2014. The influence of farmer demographic characteristics on environmental behaviour: a review. *J Environ Manage* 135, 19-26.

Burton, R.J., Paragahawewa, U.H., 2011. Creating culturally sustainable agri-environmental schemes. *Journal of Rural Studies* 27, 95-104.

Burton, R.J.F., Kuczera, C., Schwarz, G., 2008. Exploring Farmers' Cultural Resistance to Voluntary Agri-environmental Schemes. *Sociologia Ruralis* 48, 16-37.

Cullen, P., Ryan, M., O'Donoghue, C., Hynes, S., hUallacháin, D.Ó., Sheridan, H., 2020. Impact of farmer self-identity and attitudes on participation in agri-environment schemes. *Land Use Policy* 95.

Cusworth, G., Dodsworth, J., 2021. Using the 'good farmer' concept to explore agricultural attitudes to the provision of public goods. A case study of participants in an English agri-environment scheme. *Agriculture and Human Values*, 1-13.

DEFRA, 2018. *Agriculture Bill: Analysis and Economic Rationales for Government Intervention*. Department for Environment Food & Rural Affairs, London, UK, p. 64.

DEFRA, 2020. *The Path to Sustainable Farming: An Agricultural Transition Plan 2021 to 2024*. Department for Environment Food & Rural Affairs, London, UK, p. 66.

Dessart, F.J., Barreiro-Hurlé, J., van Bavel, R., 2019. Behavioural factors affecting the adoption of sustainable farming practices: a policy-oriented review. *European Review of Agricultural Economics* 46, 417-471.

Han, G., Arbuckle, J.G., Grudens-Schuck, N., 2021. Motivations, goals, and benefits associated with organic grain farming by producers in Iowa, U.S. *Agricultural Systems* 191.

Huang, I.Y., Behrendt, K., Parker, E., Hill, N., Purewal, A.K., Swales, D., and Baker, S., 2022. Are English farmers ready for the changes in UK agricultural and environmental policy? SFI pilot project report submitted to Agriculture and Horticulture Development Board (AHDB), UK, January 2022.

Ingram, J., Gaskell, P., Mills, J., Short, C., 2013. Incorporating agri-environment schemes into farm development pathways: A temporal analysis of farmer motivations. *Land Use Policy* 31, 267-279.

Lastra-Bravo, X.B., Hubbard, C., Garrod, G., Tolón-Becerra, A., 2015. What drives farmers' participation in EU agri-environmental schemes?: Results from a qualitative meta-analysis. *Environmental Science & Policy* 54, 1-9.

Le Coent, P., Préget, R., Thoyer, S., 2021. Farmers follow the herd: a theoretical model on social norms and payments for environmental services. *Environmental and Resource Economics* 78, 287-306.

Lienhoop, N., Brouwer, R., 2015. Agri-environmental policy valuation: Farmers' contract design preferences for afforestation schemes. *Land Use Policy* 42, 568-577.

McCann, E., De Young, R., Erickson, D., Sullivan, S., 1997. Environmental awareness, economic orientation, and farming practices: a comparison of organic and conventional farmers. *Environmental Management* 21, 747-758.

Murphy, G., Hynes, S., Murphy, E., O'Donoghue, C., 2014. An investigation into the type of farmer who chose to participate in Rural Environment Protection Scheme (REPS) and the role of institutional change in influencing scheme effectiveness. *Land Use Policy* 39, 199-210.

Niskanen, O., Tienhaara, A., Haltia, E., Pouta, E., 2021. Farmers' heterogeneous preferences towards results-based environmental policies. *Land Use Policy* 102.

Noguera-Méndez, P., Molera, L., Semitiel-García, M., 2016. The role of social learning in fostering farmers' pro-environmental values and intentions. *Journal of Rural Studies* 46, 81-92.

Pannell, D.J., Marshall, G.R., Barr, N., Curtis, A., Vanclay, F., Wilkinson, R., 2006. Understanding and promoting adoption of conservation practices by rural landholders. *Australian Journal of Experimental Agriculture* 46, 1407-1424.

Poppenborg, P., Koellner, T., 2013. Do attitudes toward ecosystem services determine agricultural land use practices? An analysis of farmers' decision-making in a South Korean watershed. *Land Use Policy* 31, 422-429.

Ragin, C.C., 2008. *User's guide to Fuzzy-set / Qualitative Comparative Analysis*, University of Arizona

Tucson, AZ.

Riley, M., 2016. How does longer term participation in agri-environment schemes [re]shape farmers' environmental dispositions and identities? *Land Use Policy* 52, 62-75.

Russi, D., Margue, H., Oppermann, R., Keenleyside, C., 2016. Result-based agri-environment measures: Market-based instruments, incentives or rewards? The case of Baden-Württemberg. *Land Use Policy* 54, 69-77.

Schroeder, L.A., Isselstein, J., Chaplin, S., Peel, S., 2013. Agri-environment schemes: Farmers' acceptance and perception of potential 'Payment by Results' in grassland—A case study in England. *Land Use Policy* 32, 134-144.

Sullivan, S., McCann, E., De Young, R., Erickson, D., 1996. Farmers' attitudes about farming and the environment: A survey of conventional and organic farmers. *Journal of Agricultural and Environmental Ethics* 9, 123-143.

Sutherland, L.-A., Calo, A., 2020. Assemblage and the 'good farmer': New entrants to crofting in Scotland. *Journal of Rural Studies* 80, 532-542.

Sutherland, L.A., Burton, R.J., Ingram, J., Blackstock, K., Slee, B., Gotts, N., 2012. Triggering change: towards a conceptualisation of major change processes in farm decision-making. *J Environ Manage* 104, 142-151.

van Dijk, W.F.A., Lokhorst, A.M., Berendse, F., de Snoo, G.R., 2016. Factors underlying farmers' intentions to perform unsubsidised agri-environmental measures. *Land Use Policy* 59, 207-216.

Van Herzele, A., Gobin, A., Van Gossum, P., Acosta, L., Waas, T., Dendoncker, N., Henry de Frahan, B., 2013. Effort for money? Farmers' rationale for participation in agri-environment measures with different implementation complexity. *J Environ Manage* 131, 110-120.

Waldman, K.B., Giroux, S.A., Farmer, J.R., Heaberlin, B.M., Blekking, J.P., Todd, P.M., 2021. Socioeconomic threats are more salient to farmers than environmental threats. *Journal of Rural Studies* 86, 508-517.

Willock, J., Deary, I.J., Edwards-Jones, G., Gibson, G.J., McGregor, M.J., Sutherland, A., Dent, J.B., Morgan, O., Grieve, R., 1999a. The role of attitudes and objectives in farmer decision making: Business and environmentally-oriented behaviour in Scotland. *Journal of Agricultural Economics* 50, 286-303.

Willock, J., Deary, I.J., McGregor, M.M., Sutherland, A., Edwards-Jones, G., Morgan, O., Dent, B., Grieve, R., Gibson, G., Austin, E., 1999b. Farmers' attitudes, objectives, behaviors, and personality traits: The Edinburgh study of decision making on farms. *Journal of Vocational Behavior* 54, 5-36.

Wilson, G.A., Hart, K., 2001. Farmer Participation in Agri-Environmental Schemes: Towards Conservation-Oriented Thinking? *Sociologia Ruralis* 41, 254-274.

Zimmermann, A., Britz, W., 2016. European farms' participation in agri-environmental measures. *Land Use Policy* 50, 214-228.