



This is a repository copy of *Ideals and practicalities of policy co-design – developing England's post-Brexit Environmental Land Management (ELM) schemes*.

White Rose Research Online URL for this paper:

<https://eprints.whiterose.ac.uk/219123/>

Version: Published Version

Article:

Little, R., Tsouvalis, J., Escoffié, J.L.F. et al. (2 more authors) (2024) *Ideals and practicalities of policy co-design – developing England's post-Brexit Environmental Land Management (ELM) schemes*. *Land Use Policy*, 147. 107343. ISSN 0264-8377

<https://doi.org/10.1016/j.landusepol.2024.107343>

Reuse

This article is distributed under the terms of the Creative Commons Attribution (CC BY) licence. This licence allows you to distribute, remix, tweak, and build upon the work, even commercially, as long as you credit the authors for the original work. More information and the full terms of the licence here:

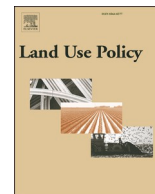
<https://creativecommons.org/licenses/>

Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.



eprints@whiterose.ac.uk
<https://eprints.whiterose.ac.uk/>



Ideals and practicalities of policy co-design – Developing England's post-Brexit Environmental Land Management (ELM) schemes

Ruth Little ^{a,*}, Judith Tsouvalis ^{b,c}, José Luis Fajardo Escoffié ^c, Susan E. Hartley ^d, David Christian Rose ^{e,f,**}

^a Department of Politics and International Relations, University of Sheffield, UK

^b Present address: Computing and Communications, Lancaster University, Lancaster, UK

^c Department of Geography, University of Sheffield, Sheffield, UK

^d School of Biosciences, University of Sheffield, Sheffield, UK

^e Present address: Agriculture and Environment, Harper Adams University, Edgmond, UK

^f Agriculture, Policy and Development, University of Reading, Reading, UK

ARTICLE INFO

Keywords:

Co-design
Environmental Land Management schemes
Collaborative policy making
England
Brexit

ABSTRACT

There are few examples of where co-design has been applied to active policy development on the scale or level of complexity of England's post-Brexit Environmental Land Management (ELM) schemes. ELM offers a fascinating 'laboratory' to analyse how co-design at this scale works in practice. This paper offers the first in-depth empirical assessment of the process from the perspectives of both the policy makers and stakeholders who were involved in the initial phase of ELM co-design from 2018 to 2020. Using interview data, we provide critical insights for both academics and government on 'pragmatic' applications of co-design to active policy development and reflect on what this tells us about the wider processes of policy development that may need to change in order to accommodate this more 'democratic' approach. Our analysis, which identified key barriers to co-design as articulated by institutional stakeholders and civil servants, revealed a mismatch between the principles and practices of 'co-design' in the initial development of ELM. These early-stage challenges included: (i) a lack of shared decision-making and empowering stakeholders to contribute to problem-definitions; (ii) confidentiality requirements that introduced barriers to information-sharing; (iii) insufficient transparency and feedback on what happened to stakeholder's contributions in terms of policy development; (iv) an absence of detail on the schemes, including proposed approaches, payment rates, advice, baseline measures, the kinds of 'outcomes' expected, and monitoring mechanisms; and (v) a repetition of themes that participants had already discussed. Many of these mismatches may be common to other policy arenas. We argue that improved application of policy co-design in government will rely on wider changes to political processes and the institutional culture and practices within the civil service.

1. Introduction

Following the approval of the Brexit Referendum in 2016 and the country's decision to leave the European Union (EU), the UK Government began to substantially reform its agricultural and environmental policies. The opportunity to make amends for the far-reaching, negative, environmental consequences (Pe'er et al., 2020) of the EU's Common Agricultural Policy (CAP), which the UK joined in 1973, underpinned these reforms (Defra, 2018). Although the CAP led to the establishment of the first Agri-Environment Schemes (AES) in the UK, it is today widely

criticised for having caused soil health deterioration, air- and water pollution, flooding, and biodiversity loss across the EU (Bateman and Balmford, 2018; Hayhow et al., 2017; Stewart et al., 2019, Pardo et al., 2020; Pe'er et al., 2020). "Greening" the CAP has been attempted since the 1980s, but the measures put in place have not sufficed to counteract the larger-scale impacts of CAP policies and instruments that continue to exacerbate agricultural intensification and environmental degradation (ECA, 2017). While in some countries, including England, ecosystems services provision seems to be improving (Armstrong McKay et al., 2019), there is widespread agreement that only a large-scale agricultural

* Corresponding author.

** Corresponding author at: Agriculture and Environment, Harper Adams University, Edgmond, UK.

E-mail addresses: ruth.little@sheffield.ac.uk (R. Little), drose@harper-adams.ac.uk (D.C. Rose).

<https://doi.org/10.1016/j.landusepol.2024.107343>

Received 7 April 2022; Received in revised form 2 September 2024; Accepted 3 September 2024

Available online 13 September 2024

0264-8377/© 2024 The Author(s). Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

transition to sustainability prevent the sector from causing further environmental damage (Elzen et al., 2012; Melchior and Newig, 2021). In the EU, strategies like "eco-schemes" are being introduced to achieve this, alongside conditionality measures of Greening and Cross-compliance in Pillar I of the CAP in the 2023 to 2027 policy round (Guyomard et al., 2023). Their efficacy has yet to be assessed.

It is in this context that the UK Government's Environment Secretary vowed in 2018 to achieve a "Green Brexit" (Gove, 2018) and declared that the new Environmental Land Management (ELM) schemes for England,³ as they came to be known, would be "co-designed" by the Government's Department for Environment, Food and Rural Affairs (Defra) with farmers and other agri-environment stakeholders (Defra, 2018). This promise for collaborative agri-environmental policy making can also be found in the Government's 25-Year Environment Plan, stating that the Government would "work with all of those who shape our land to design our future policy" as this would lead to better outcomes (HM Government, 2018: 25). At this scale of complexity, working with "all of those who shape our land", it was clear that policy co-design would not be easy, and a detailed academic evaluation of the case may identify important factors critical to its success, building on previous literature.

Drawing on previous research on policy co-design, outlined in the next section, this paper offers a reflexive critique to inform future research and policy making efforts, guiding stakeholders towards a more participatory and responsive governance paradigm. Our research underscores the potential of co-design as a powerful tool for fostering inclusive and effective policy development. However, to achieve this, the lessons learned need to be incorporated into the fabric of government structures.

2. Policy co-design

Co-design, also known as collaborative design or participatory design, entails involving stakeholders, including the public, in the policy development process (Blomkamp, 2018). It can be a valuable approach to create policies that are more inclusive, effective, and better aligned with the needs and aspirations of the communities they impact; a powerful tool in policy development. However, its success relies on genuine collaboration and commitment to inclusion. Regarding ELM, key policy decisions like the gradual phasing out of untargeted Direct Payments made to farmers and land managers under the CAP (in the UK, under the Basic Payment System (BPS)) had already been taken before the co-design process began. We return to why this is significant below. Instead of BPS payments, the Government decided that farmers⁴ would receive money for the delivery of "public goods" under three new, complementary, AES which – at the time of publication – were still under development and which they will have to join to be eligible for these payments. Environmental public goods are aligned to Government policy objectives and commitments enshrined in policies like the 25-year Environment Plan (HM Government, 2018), the Environment Improvement Plan (2023), the 2050 Net Zero carbon emissions commitment, and Nature Recovery. They include clean air, clean and plentiful water, thriving plants and wildlife, reducing the risks of harm from environmental hazards, using resources from nature more sustainably and efficiently, and enhancing beauty, heritage and

engagement with the environment (HM Government, 2018).

The transition period allocated for the co-design process and the replacement of CAP-related schemes with the newly developed ELM schemes was seven years, beginning in 2021 (Defra, 2020a). The commitment to develop a key post-Brexit policy⁵ with stakeholders represents a marked acceleration of the trend in UK government and policy circles towards "open policy making" (HM Government, 2012). This puts the onus on policy makers to be "open to new ideas, new ways of working, new insights, new evidence and experts" (Norman, 2020). Although the use of public engagement methods like multi-stakeholder dialogues, deliberative processes, transdisciplinary learning, co-production and co-design (the latter generally undertaken on a much smaller scale than ELM co-design and directed at product- and service development) has increased as a result (Kasemir et al., 2003; Rutter et al., 2012; Siebenhüner, 2004; Voß and Kemp, 2006), open policy making across the civil service remains ill-defined. A recent study has found that not only has it failed to result in a "commitment to 'opening up' policy formulation to less powerful groups", but it has also given rise to a "ratcheting preoccupation with involving private sector elite experts" in the policy making process (Exley, 2021: 452). One reason for this is that the establishment of the UK Cabinet Office's Behavioural Insights Unit in 2010, the endorsement of open policy making in 2012, and the founding of the Policy Lab in 2014, all coincided with considerable resource- and staff cuts being made across Government, with Whitehall losing one-third of its budget and the civil service 15 to 20 % of its staff during that time (Exley, 2021). "Doing more with less", therefore, became an important imperative for opening policy making up to new external actors (Exley, 2021, 459). With the institutional memory and capacity of the civil service fading fast, the Government needed to commission experts to fill the gaps, and these were predominantly drawn from the commercial sector. This shortage of resources available could also go some way towards explaining why many government departments continue to prefer using traditional consultation methods over resource-intensive participatory methods like co-production and co-design to this day.

According to the *Think Local Act Personal Partnership's* Ladder of Participation, "co-production" and "co-design" are the most *participatory* approaches available in terms of their devolution of power. Co-production is listed above co-design here as it is understood to equip participants with decision-making power while co-design is seen here to simply involve them in the design process. However, designers like Del Gaudio et al. (2018:2) would disagree; for them, co-design involves "the designer's reduced power exercise" and the participants' increased "influence and transformative ability as to the process", which are pre-requisites for democratisation, a key principle of co-design historically⁶ (Cooper, 2019). In the context of government, however, this is hard to achieve. Governance and regulatory arrangements, as others have noted, embody "institutionalized systems of rules, organizations, and practices" (Rothstein, 2007:585). In other words, the success of co-design in this space depends largely on the type of political system in place (in the UK, a representative democracy) (see also Chilvers and Kearnes, 2020; Parsons and Rumbul, 2021).

Although there is plenty of evidence that shows that co-design, used with small, site-specific groups, can generate feelings of involvement and ownership among participants and foster shared understandings

³ Agricultural policy is a devolved issue in the UK, meaning that devolved administrations are responsible for generating their own policies. The Environmental Land Management Schemes, the subject of this paper, apply to England only.

⁴ For the purpose of this document the term "farmers" encompasses farmers, tenants, landowners, land managers, growers and foresters unless specified otherwise. The notion of "stakeholder" refers to institutions and (representational) organisations with a stake in agriculture (e.g. National Farmers Union, National Trust, National Parks Authorities, the Horticultural Association etc.)

⁵ At the point of the UK leaving the EU, agricultural payments accounted for c.37 % of the EU budget (Helm, 2017)

⁶ Co-production originated in the US in the early 1970s during the economic recession, and in the context of the communitarian movement. It was aimed at empowering citizens to become involved in the development of public services and their provision (Parks et al., 1981; Ostrom, 1996). Co-design, on the other hand, evolved in Scandinavia during the 1970s and its main focus was on involving workers in the development of better work processes and technologies. Both approaches were underpinned by strong ideals of democratization.

and a common language between stakeholders and policy makers, thereby leading to better policy outcomes (Bradwell and Marr, 2008; Hagen and Rowland, 2011; Stewart et al., 2019), considerable uncertainty remains as to whether “co-design can feasibly leap from designing programmes and services to developing and implementing public policies” (Blomkamp, 2018:737). Co-design, while promising, has potential pitfalls, such as reinforcing existing power inequalities if not carefully managed, as well as requiring additional time and resources (Chambers et al., 2021; Lemos et al., 2017). In the context of government policy-making, a key challenge is how to scale up locally proposed solutions into system-wide responses, leveraging multiple delivery channels within large organisations to achieve higher-level policy change. The answers will depend on many factors, including “how well the process is embedded within the policy innovation system” (O’Rafferty et al., 2016:3573) and how experimental and responsive that system can be made to be (Ansell et al., 2017; Escobar, 2013; Tsouvalis and Little, 2019b).

ELM co-design in England is the responsibility of the Department for Environment, Food and Rural Affairs (Defra), and within this government department, there has been a notable movement towards open policy making over the past two decades. The chief reason for this has been an erosion of public trust in the relationship between scientific advice and regulatory policy precipitated by the outbreaks of Bovine Spongiform Encephalopathy (BSE) in 1996 and Foot and Mouth Disease in 2001 (Frewer and Salter, 2002). To regain it, Defra has commissioned citizen panels on bovine tuberculosis (Defra, 2006a, 2006b, 2010, 2014), held a climate change summit in 2007, and used citizen science to address tree- and plant disease epidemics (Defra, 2021). While each of these examples saw the involvement of a greater number of participants in the policy making process, the outputs derived, however, are better described as “evidence generated to inform policy” rather than as direct engagement of citizens in policy development. More genuine participation in policy making here can perhaps be claimed in the case of the establishment, in 2011, of Defra’s Animal Health and Welfare Board for England (AHWBE), described as “a very different - and very radical - model of opening up the policy making process” (Rutter, 2012:26). The AHWBE was made up of a mix of Defra officials and seven non-departmental experts in 2024, the latter appointed by Defra, and advises ministers on strategic animal health and welfare policy relating to domestic animals in England. This model represents a clearer focus on the co-production of policy but relies on the input of a very small number of carefully selected individuals.

The Government’s declared intention for Defra to “co-design” the new ELM approach has placed an onus on Defra to deliver meaningful involvement of a very large number of stakeholders in the policy development process rather than simply obtaining their views through consultation exercises aimed at gathering evidence to inform decision-making. Since 2018 (up to the point of paper submission), Defra has contracted over 130 Tests and Trials (explained below) that have involved over 7000 farmers, and over 800 farmers are piloting the Sustainable Farming Incentive (for further details see Dodsworth et al. forthcoming). Using co-design for policy development at that scale and level of complexity – for national agricultural policy reforms - is, as far as the authors know, unprecedented, providing ample opportunity to explore the scope of co-design here.

This paper presents the first evaluation of ELM co-design based on the perspectives of both civil servants and stakeholders involved in the process between 2018 and 2020. It complements a wider suite of empirical inquiry into the co-design of ELM assessing how stakeholder input will shape the schemes under development. Our chief objective is to contribute a reflexive assessment of how participatory approaches like co-design can be implemented and refined to generate policies that more effectively take into account their users’ needs and experiences. We thereby respond to a call for the “further development of the theoretical and practical framework of co-design for policy and public services” (O’Rafferty et al., 2016:3573), made following an evaluation of

how co-design fared in the context of policy interventions in Ireland. This found that implementing co-design was difficult here because the roles that citizens and non-governmental intermediaries could play in the process were ill-defined, and “the competencies and mind-sets required for co-design are not typically found within the public sector organisations that are responsible for environmental policy in Ireland” (O’Rafferty et al., 2016). A similar study of co-design conducted in New Zealand also found that civil servants generally had insufficient knowledge of the co-design approach and did not know how to use it (Blomkamp, 2018).

The findings presented in this study shed light on the significance of co-design in policy development and its potential to enhance inclusivity and effectiveness in governance. However, as our study indicates, the initial phases of ELM co-design revealed several areas for improvement. This paper makes a significant contribution to policy learning and scholarly understanding of the potential of co-design for policy development and the difficulties of adhering to its principles in the context of government. The findings presented hold broad international relevance as the approach has become popular with governments in other countries; including New Zealand (Mark and Hagen, 2020), Australia (Evans et al., 2016), and Wales (where co-design is used to develop the post-Brexit Sustainable Farming Scheme).

3. Methodology

Eighteen institutional stakeholders (land managers, associated organisations and representatives with relevance to ELM - see inclusion criteria below) and eleven civil servants (including three from the devolved administrations) were interviewed as part of this study. All had participated in ELM co-design between 2018 and 2020 and our focus was on their experiences of the process. Some questions asked were co-produced with Defra civil servants from the ELM team to help them improve co-design regarding issues they had identified as challenging. The majority were formulated by the research team and all the questions were open-ended to allow for digression and critical reflection during discussions. Apart from relevant information about the respondents and the organisation they worked for (e.g. their background and role in the organisation, the nature of the organisation and its role in ELM co-design, their/the organisation’s experience of using participatory methods, and the organisation’s relationship to and experience of Defra), the bulk of the questions were focused on the ELM co-design process. This included questions about why they thought Defra was using it, how Defra approached it, how they perceived and had experienced the ELM co-design process, and whether and how they thought it could be improved. The semi-structured interviews were carried out online using Zoom due to Covid-19 lockdown restrictions. All interviews were recorded and transcribed, with written permission from the participants.

Institutional stakeholders were identified through a mapping exercise carried out in 2019. This combined a wide review of agricultural stakeholders and a review of respondents to the Health and Harmony Consultation (Defra, 2018) and led to the creation of a stakeholder list containing over 200 entries. The list was narrowed down by applying the following inclusion criteria: organisations with vested interests or links to environmental land management, agriculture, and/or the broader agriculture industry (including food system actors, food producer and processors, representative organisations/bodies, retailers, financiers, etc.) and organisations whose primary activities (work, interests, and/or policy activities) were directly related to or would be impacted on by ELM. The organisations remaining were then allocated to seventeen categories (see Appendix 1). Stakeholders from each category were approached for interview and eighteen interviews were secured. Representatives from every category were included except for Water Services and Animal Health and Welfare, where recruitment proved more challenging. From the eighteen organisations selected, fourteen were members of Defra’s Strategic Engagement Group, which

was formed in 2018 as an advisory group on the Tests and Trials (explained below) and funded by Defra as part of the ELM co-design process. It was made up of key stakeholders initially selected by Defra. The group changed name and format several times during the time of our investigation. It also grew from a relatively small group into one with over forty participants by 2020. Additional stakeholders were invited by Defra to join following their recommendation by existing group members. Including a disproportionate representation of members of this group in our sample was purposeful as we wanted to find out how this co-design mechanism worked and how the institutional stakeholders who participated in it saw their role and the co-design process (a specific set of questions was included for members of this group).

Eight civil servants were interviewed from England (of which six were members of Defra's ELM team), two from Scotland, and one from Wales. Representatives from Northern Ireland's civil service declined to participate due to not having a functioning government at the time. Participants from the devolved administrations were selected due to their close involvement with evolving agri-environmental policy. The reason for including them in our interviews was to gain insight into how actors working in the devolved administrations viewed and implemented co-design. Interviews with members of Defra's ELM team were facilitated by their team leader. The data were inductively coded (where codes emerge from the data), both manually and using the qualitative data analysis software QSR NVivo 11. The majority of findings presented and discussed represent views expressed by more than one respondent. Qualitative data were not meant to be representative of a population but to allow for the identification of consistent themes and patterns across groups, here, institutional stakeholders and civil servants involved in ELM co-design. Where quotations are used, the anonymity of the respondents is maintained, referencing quotes with an "S" for stakeholder and a "CS" for civil servant followed by an assigned identification number. Written consent to quote from interviews was obtained from respondents and full ethical approval for the project was gained from the University of Sheffield. Parts of the research of particular interest to Defra civil servants were co-produced with them. Defra strongly supported the project and enabled access to ELM staff for the purpose of interview and participant observation (in Defra, undertaken by the research lead).

4. ELM Co-Design 2018 to 2020: beginnings

Defra's development of ELM co-design commenced with a mix of "formal" consultation exercises and early attempts to introduce co-design into the policy making process. The *Health and Harmony* consultation (February 2018) was heralded by the Government as "the first step on the road to a new agricultural policy outside of the EU" (Defra, 2018:6). It introduced the idea of an "agricultural transition" to provide a period of adjustment for farmers and established the direction of travel towards an agricultural policy designed to incentivize and reward agricultural practices that deliver environmental benefits. The future envisioned for the agricultural sector and its role in looking after the environment were clearly defined here, and the decision to phase out BPS payments and replace them with payments for the delivery of environmental public goods was announced. This determined the direction of travel for ELM co-design without stakeholder input. Two years into the process, Defra still described co-design as something that would help the government department "design and deliver a scheme that works for its users and achieves *our goals* for the sector..." (Defra, 2020a:10, emphasis added). A well-documented problem with "pre-framing" in participatory efforts, like ELM co-design, is that it locks participants into existing premises and assumptions, thereby foreclosing discussion and debate, and the opportunity for a more open, public framing of matters of public concern, effectively depoliticising them (see Chilvers and Kearnes, 2020; Wynne, 1991; 2007; Latour, 2004).

Resistance to the Government's framing of ELM increased over time,

as exemplified by the publication of a White Paper published by ten agri-environment stakeholders in 2020 entitled "Our vision for a Sustainable Food and Farming Scheme" (SFFS, 2020; emphasis added). The paper emphasised the importance of food production, which, it was argued, should take a higher priority in post-Brexit agricultural policy. Farming's historically important role in providing the nation with food, and the emphasis of successive agricultural policies post World War II on agricultural intensification has profoundly shaped farming culture and identity in Britain (Burton, 2004; Burton et al., 2008; Coulson and Milbourne, 2022; Cusworth and Dodsworth, 2021). A significant change in emphasis as in the case of ELM policy is therefore bound to profoundly challenge what many agricultural stakeholders associate with the purpose of farming. However, the White Paper was not simply a reassertion of farming culture and identity. It was also an expression of the mounting frustration felt by many stakeholders about the perceived lack of progress made by ELM co-design.

In the context of government, it is important to remember that "policy design takes place in a crowded space consisting of prior initiatives [...] and a range of other overlapping policies" (Mohr et al., 2013:2). This makes the collective setting and definition of the goals and objectives of a co-design process hard to achieve here. Civil servants involved in ELM co-design were aware that

"co-authorship is what co-design is all about, but as a practicality of how that works in the Civil Service at the policy design stage, it's easier to collaboratively author ideas than it is to collaboratively design final policy" (CS3).

While Defra civil servants working on ELM found it relatively easy to brainstorm with participants and jointly generate ideas during activities, incorporating them into policy design was more difficult at this level, where many factors influence the direction and outcome of the process. As a result, many of our interviewees compared the ELM co-design process to a series of consultations and focus groups –the more 'traditional' policy mechanisms of public consultation. They highlighted a lack of joint decision-making, "no co-creation", as a stakeholder put it, and urged Defra "to make it co-design" (S3).

The methods set up to include co-design in ELM policy development laid the groundwork for applying co-design principles and practices throughout ELM policy areas, including the creation of a programme called "Test and Trials" (T&Ts). This was designed to be a "collaborative and iterative method to policy development... enabling Defra to work with stakeholders to understand how critical building blocks of the new scheme could work in a real-life environment, with different user groups and across different geographies" (Defra, 2020a: 4). The T&T workstream was generally regarded as the central tenet and perceived "owner" of the co-design activities for the development of ELM in Defra. Between 2018 and 2020, the T&T team:

- led on the development of the "Stakeholder Engagement Group" described above;
- conducted four rounds of online co-design workshops across England with farmers involved in the Countryside Stewardship Facilitation Fund (CSSF, an initiative supported by Natural England, an executive non-departmental public body sponsored by Defra);
- commissioned three rounds of T&Ts, with 74 being funded across England by the time of the interviews. The T&Ts covered different land types and involved farmer-led groups, membership organisations, conservation charities and Defra group-led projects that jointly trialed elements of the proposed ELM schemes, focusing on one or more of the six predefined themes of land management plans, advice and guidance, spatial prioritisation, collaboration, payments and innovative delivery mechanisms. Around 3000 farmers were involved (for further details see Little et al. 2023).

Below, we present findings from our semi-structured interviews with stakeholders (S) and civil servants (CS) involved in ELM co-design

between 2018 and 2020, focusing on the challenges and barriers they identified in government-led co-design. Our analytical aim is to provide a strategic overview of areas of disjuncture that may need to be addressed in future processes, particularly concerning large-scale, complex policies. An overview is given in [Table 1](#).

4.1. Mismatched temporalities and expectations in policy co-design

Synchronizing the time it takes to co-design policy with a large, diverse body of stakeholders with the time policy makers are given to find answers to specific policy questions is always challenging, but more so during politically volatile times. The Government’s decision to start ELM co-design *before* finalising negotiations on the Brexit had many negative repercussions for the co-design process. For one, it exacerbated the mismatch between the temporality of policy making and that of co-design. ELM team members soon realized that “the more people you have involved, the slower the decision-making” (CS4). They knew that “co-design takes time and is iterative and long” but had “to provide answers for the short term” (CS7). Stakeholder Engagement Group members complained that “information is thrown at us, and they expect an immediate response – there is not enough time to critique” (S4). Some felt that, consequently, “no comment” [was taken] as affirmation that we’ve approved [suggestions made]” (S11). This led many stakeholders to conclude that the Government was “running against a false timetable [that has to be] delivered by January 2021” (SH9). ELM team members, on the other hand, thought that the “Early [workshop] rounds were too early in the policy development to have an impact. They would be more useful now (late 2020)”. The same respondent thought that this had impacted on Defra’s ability to establish a long-term relationship with participants and made “managing expectations ... very hard” because policy was changing so rapidly (CS2).

There was also the widely shared view that too much time had been “lost” during the early years by Defra’s taking a “blank sheet” approach to ELM co-design, where the Department tried to build up the policy from scratch rather than draw on the extensive experience with past AES of co-design participants. Instead, Defra approached ELM co-design from the perspective of encouraging stakeholders to contribute their perspectives on what the *new* schemes might look like. This created an unwieldy process whereby the overarching policy aim of “public money for public goods” had already been established and in response to which stakeholders were consulted about their ideas of how to achieve this in the new schemes. All this took place in the context of a plethora of past AES, some of which were still in place.

A key principle of co-design is “openness”, and in many cases, this means starting “from scratch”. However, concerning Defra’s “blank

sheet” approach to ELM co-design, many participants interpreted this as their valuable, long-term experiences of being active in the agri-environment field being disregarded. As a result, the early years of ELM co-design were considered to have achieved little and many stakeholders lamented how much time they had wasted working on it, observing that “for about 1.5 years, there was absolutely no progress” (S11), and “[w]e discussed the same thing over and over again. [...] It’s a lot of our time” (S15). During interviews, ELM team members too admitted that the approach “didn’t work” (CS2).

These contrasting temporalities, expectations and tensions were exacerbated by the volatile political situation in which co-design unfolded. Combined, they led to increasing concerns that the initial hopes and expectations of ELM policy and what the co-design process could achieve would be dashed.

4.2. Political uncertainty and confidentiality

As observed above, the ELM co-design process was subject to considerable external pressures, including protracted Brexit negotiations, a national election, and the Covid-19 pandemic. Brexit provided a highly political and volatile context where many different exit scenarios were on the table until a deal was finally reached to enable the UK to leave the EU on 31 January 2020. These factors created considerable challenges for ELM co-design and created an atmosphere of secrecy and confidentiality that had far-reaching, negative effects on Defra’s evolving relationship with co-design participants. One civil servant noted how early co-design had been “hampered” by EU exit negotiations (CS4) while another observed that “the lack of clarity about the policy at the start was quite frustrating” (CS5). This feeling was shared by stakeholders, who felt that Defra was not providing them with enough “substance” (S4).

There were strict limits as to what ELM civil servants could “meaningfully do co-design on” because of “confidentiality” issues which imposed “a real limitation to do co-design in this policy space. Every meeting... this interview we are having now; the stakeholder engagement team is aware of it” (CS2). While confidentiality meant that ELM team members had to navigate the additional bureaucratic issues of informing the stakeholder engagement team about their activities, they could also not be open with co-design participants for “fears that people would be getting the wrong idea”. As a result, ELM team members had to strike “a hard balance” because “we want to be open” but “you don’t want people to jump to conclusions” (CS2). Stakeholders knew that Defra was “very worried about confidentiality and leaks” (S8) and strongly felt that this “hinders co-design. Defra say we are not allowed to share information; most documents are confidential” (S5). However, if “you really want to co-design,” another noted, “you have got to let go, and you have to be open and explicit where you are and let people have an equal power relation with you” (S13). Defra’s fear of “leaks” also prevented membership organizations like the National Farmers Union and the Tenant Farmers Association from discussing information they received with their members, a missed opportunity to obtain more views that could have contributed to ELM co-design. “Stakeholders doing policy development with farmers would have liked to share information from the conversations they had with DEFRA [...] to get feedback” (S18). Over time, confidentiality eroded trust and this led to a deterioration in the relationship between stakeholders and Defra, discussed in more detail in Section 3.3.1.

4.3. Internal factors impacting on ELM co-design

In this section, we consider barriers to ELM co-design that require institutional adjustments within the civil service if open policy making is to be achieved through approaches like co-design.

4.3.1. Staffing, capacity and capabilities

When the ELM policy development process began in late 2017/early

Table 1
Challenges to government-led ELM co-design, 2018 to 2020.

Barriers to ELM co-design	Description and Effects
Mismatched temporalities	Co-design timescales (slow) not matching policy making timescales (fast)
Political uncertainty	Uncertainty over post-Brexit arrangements leading to stakeholder fears and excessive Government secrecy, impacting information sharing and open dialogue
Recruitment and staff turnover	High civil service staff turnover and new, often inexperienced, staff leads to knowledge gaps and limited trust
Silo thinking	Limited information sharing within Defra; teams struggle to work collaboratively
Institutional cultures	Many civil servants in Defra are sceptical of qualitative approaches like co-design
Government hierarchies and power	Several hoops to jump through impede decision-making. Budget for co-design not always available
Feedback loops and communications	Civil servants struggle to communicate with stakeholders about how their views have been used in policy design
Inclusivity of the process	Some stakeholders are harder-to-reach whilst others find it easier to engage with government

2018, there was only a very small team ELM team in post to begin developing the policy, in tandem with conducting the larger-scale *Health and Harmony* consultation. Expertise on co-design in the team was limited and there was an evident need to establish an understanding of its core principles and practices. As part of a secondment, one of the co-authors worked with Defra, Natural England and social science evidence colleagues to provide a short introduction to the ELM team on the principles and practices of co-design. These were informed by a co-design literature review (Tsouvalis and Little, 2019a, 2019b) and underpinned by the centrality of trust, transparency and a commitment to sharing power in the process of policy development. Adhering to these principles was difficult for the ELM team, as evidenced in the previous section. In particular, learning to differentiate between conventional policy making processes that tend to rely on a narrow set of specialized expert knowledges and a method designed to recognize a wider set of expertise within the policy development process, took time.

Initially, one ELM team member observed, “[w]e were limited by the amount of people we had that could do CSFF (Countryside Stewardship Facilitation Fund) co-design workshops. [We] could have done much more with more people” (CS2). Stakeholders noted how Defra “took time to structure the process and build up the team,” but also commented on the “high staff turnover,” and that “staff were inexperienced” (S8). This proved detrimental to “building up relationships” (S12): participants lost “track of people; where they are, where they’ve moved to” (S6). Those involved in T&Ts “ended up working with lots of different people, which is really difficult” (S18).

Stakeholders blamed civil service recruitment and training practices for this: “Defra staff are not trained in participation” (S3). Even civil servants were surprised that Defra was employing people who had not “received training to do co-design” (CS5) (CS3) (CS7). Upskilling in co-design was felt to be essential, with one respondent suggesting that “co-design should be part of every Defra staff member’s work objectives and form part of their personal development plan” (CS2). There were fears that high staff turnover would lead to a continual erosion of co-design knowledge and experience. Brexit and Covid-19 increased staff turnover in Defra, as it did across government (Institute for Government, 2019; Institute for Government, 2022), with key staff members regularly moved to other priority policy areas. In the process, key co-design skills were lost. As a solution, another ELM team member suggested that “a central unit [should be formed] that coordinates and feeds lessons back to the department as a whole [...]. Keeping institutional memory is the hardest thing” (CS5).

Our study also identified another significant knowledge gap of civil servants employed to work on ELM co-design: that of agriculture and/or the environment. “Colleagues within ELM don’t necessarily have a huge amount of experience around agriculture or environmental policies”, one ELM team respondent said “[We need] “the right people with the right skills sets in Defra doing the job” (CS5). As well as knowledge and experience, interpersonal skills were highlighted by many stakeholders who thought that “you need people with the right personality traits and who are good collaborators.” (S11). “To engage with farmers effectively, Defra has to make sure the process is relevant to them and not condescending. Understand the situation/context of those you are talking to ...” (S5). Many new Defra ELM staff members were regarded to lack this understanding, which contributed to further eroding the trust farmers and stakeholders had in Defra. In Defra’s Agricultural Transition Plan published in 2020 (Defra, 2020b), gaining farmers’ trust is listed as one of eight “guiding principles” set down for the co-design and implementation of ELM. By 2021, Defra still struggled with this problem and fears were expressed that as a result, desired participation levels in the new ELM schemes would not be achieved (NAO, 2021). One of the civil servants interviewed reflected on how difficult it was for Defra to undertake co-design without trust, saying “[p]eople can distrust Government. There’s sometimes a lot of history that you have to try and overcome. Some people can be scared, some people can be frightened” (CS8).

These findings point to the substantial challenges faced by the co-design process as ELM developed from small beginnings to a substantial programme. Attempts were made to mitigate the dilution of the application of co-design as more and more streams of work were added to the programme (see Section 4), but the rapid expansion of personnel in the policy team that resulted from it together with the expanding scope of the work and the high turnover of staff made effective, consistent co-design difficult. This was exacerbated by “silo thinking” in Defra.

4.3.2. Silo thinking

As the ELM team transformed from a relatively small team to policy and evidence personnel of over 100 by early 2019, it became evident that the approach of co-design was not necessarily understood or an embedded part of the policy development process across the entirety of the programme. Many substantive policies develop into streams of work (regarding ELM, this included work streams on land management plans, advice and guidance, payment mechanisms and more) that can become ‘silos’ as studies have shown (White and Dunleavy, 2010; Hegele, 2021). What this means is exemplified by the comments made by these ELM team members, who described how in the early days, there was “some knowledge sharing ... between different co-design teams” (CS3), but by late 2020, different ELM teams worked “quite vertically. The join-up across teams needs to be strengthened” (CS5). There was a strong feeling that silo thinking impacted negatively on the co-design process and that Defra “shouldn’t be working in silos to avoid creating an inconsistent experience and journey for people” (CS8). Stakeholders were “[f]rustrated for a long time with silo-thinking in Defra” and with one “team working on animal welfare and elsewhere a team working on productivity [and] quite often you find those silos develop things that contradict and conflict with each other” (S6). There is “no strategic direction, and a lack of a clear systems approach” in Defra (S9), one stakeholder lamented, and another noted that there are “a million different departments in Defra, all designing their own thing” (S11). The “biggest challenge” for Defra, the respondent continued, “is to break the institutional culture” of Defra (White and Dunleavy, 2010; Hegele, 2021). The “Top-line [might] say ‘we’ll link things together’, [but] underneath, there might be massive clashes, duplication, wasted resources” (S12).

To address this problem, the then head of the social science evidence team for ELM mapped the ongoing co-design activities, designated a policy ‘owner’ for co-design in each of the work-streams and implemented activities to reassert the principles and practices of co-design as a policy development approach. Each of these interventions was designed to create an institutional and structural mechanism to embed both a continued understanding and adoption of co-design across all elements of the programme. It was also a method designed to future-proof the policy teams’ engagement with co-design and deal with issues of staff ‘churn’.

4.3.3. Cultural barriers

Cultural barriers were another challenge for Defra to succeed with co-design, one ELM team member said, “[p]olicy areas need to buy into the process. [...] Without buy-in from the policy areas, it’s hard to achieve”. The same respondent also observed that the attitude of policy colleagues to co-design was “mixed. Some are sceptical... there is an element of “we have always done it this way, why do we need to change if it works?” [...]. It’s a massive culture change” (CS1). Stakeholders noticed that “Co-design is a big shift for Defra, it’s not the traditional approach taken” (S2). For some ELM team members it was clear that “Some higher up people might simply view it [co-design] as another way of gathering evidence” (CS2), while others thought that policy design was “still done by policy experts behind closed doors and ... we just go out for feedback” (CS7). Indeed, “[p]olicy making tends to be very centralized. Policies come down and get implemented” (CS5), we were told. This impacted on how ELM team members could implement co-

design: “[w]hen you’re in policy and you’re working your way through all of those structures and you’ve got very tight turnarounds, how you see stakeholders and how you see the value of it is quite difficult. It can seem like an add-on” (CS7). By “add-on”, we assume the respondent referred to “co-design” as an additional extra, a method used to complement the evidence gathered through the more traditional methods preferred by policy makers. A social scientist working for another government department but participating in Defra’s Stakeholder Engagement Group explained it this way; “[o]n an intellectual level, my policy colleagues understand that co-design should be collaborative, participatory and an evolving process, but on an operational level they find it very, very hard. It’s very radical for them.” (S13). Without buy-in from policy makers and senior civil servants, gaining acceptance for a radically different approach to policy making in Government will be very difficult. According to one ELM team member, “[a]fter the initial strategy was written, many early ambassadors of co-design left Defra. We lost our main advocate. We need senior buy-in.” The challenge of “buy-in” can of course be exacerbated by high staff-turnover (discussed in section 3.3.1), and one way of addressing this could be by creating roles for co-design “ambassadors” within teams to cement continuity of co-design advocacy and practice in the civil service. It is noteworthy that stakeholders could also find co-design challenging because they were not used to working (or being involved) in policy making in that way. Some commented on the potential “openness” of the co-design process and the fact that Defra could now involve stakeholders other than those they usually engaged with during policy development: “they [Defra] try to involve all the stakeholders; in the past it would have been just with specialist groups” (S5), groups to which these stakeholders belonged.

4.3.4. Hierarchies, bureaucracy, political systems

Government hierarchies and bureaucratic procedures were identified by civil servants as obstacles to co-design: “[t]here’s always a lot of hoops you have to go through to get the engagement team helping and you can’t just do things. [...]” (CS5), an ELM team member lamented. What is worse, another said, is that “you can’t really make any decisions” (CS3). “With Government,” a third explained,

“you have a lot of different layers... you have ministers and people who have been elected and ... who potentially have a mandate. There’s ... internal politics, the set up, and policy. There are hurdles (e.g. financial issues, governance matters).” When asked how this affected co-design, the reply was “I can never promise that what they [participants] tell me will be directly implemented, [...] I just have no control over the ultimate decision” (CS8).

Doing co-design successfully in the context of a representative democracy was considered as virtually impossible: “Ministers might come and say we don’t care what you found in your workshops, that’s what we are going to do... having to go back and explain this to farmers is really hard...” (CS2). ELM team members described how difficult it was to do co-design in a “department where you’re advising in a representative democratic system... Aligning a deliberative one is challenging. I can do all the most wonderful co-design in the world ... but then I could have a minister who doesn’t agree” (CS7).

Additionally, another pointed out, “[t]he budget is held by a single stakeholder, and that’s usually a central Government department. [...] there is always going to be a level of power that a central Government department holds that usually doesn’t devolve to a local group” (CS3). As a result, civil servants began to ask “how do you build co-design into your governance? How do you embed it in policy making rather than it being an add-on thing [?] [...] The relationship isn’t equal. It’s hard to co-design when you don’t have an equal responsibility. There’s a power dynamic at play there...” (CS7). While the ELM team members struggled to effectively do co-design for these reasons, stakeholders too were aware that “co-design is a real issue for Defra because its freedom is curtailed; they need Ministerial sign off for everything” (S8). Another observed that “Government departments are extraordinarily

hierarchical and that means you’re often talking to people who actually have very little or no actual decision-making power within Defra [...] that makes it difficult [...] [to] actually properly co-design something” (S18). Some even thought that “we are seeing it all designed by Ministers” (S12), or that co-design was “just a nice word used because the government wants to offload responsibility but not power” (S14). This escalating feeling of disillusionment was exacerbated by concerns over the perceived lack of effective feedback loops in Defra’s communication with co-design participants.

4.3.5. Feedback Loops

Many Stakeholder Engagement Group members criticized Defra for failing to provide feedback on how their contributions had influenced policy development: “[b]etween 2018–2019 the stakeholder group was asked for views and ideas but never saw how that information was being used and entered into policy” (S8), one member said. Another agreed, adding that “it doesn’t necessarily feel like our input is being taken on board” (S4); because, as a third noted, there is no “feedback loop” (S11). There was a lack of understanding where knowledge and input was used and how knowledge then travelled within Defra: “there is an ‘iceberg’ of policy people behind them [the ELM team], and it is hard to understand what *they* do with the feedback provided. [...] (S3), or, “they present us with stuff they have done, we give feedback and *they take away* what we’ve said” (S11).

Eventually, stakeholders were “becoming very tired of it [co-design]” (S13), one said, and another one even felt that “they exploit us. [...] they rely on people like us to do it because we’re passionate about it. And that is wrong” (S11). Then, “everyone [from the Stakeholder Engagement Group] got really angry with Defra because they were very unproductive meetings and people thought they were wasting their time [...]. There was an all-out riot by all the members of the group” (S3). Some vented their frustration publicly in the farming press (Aglionby, 2020; Kay, 2020). Stakeholders demanded from Defra to “be valued for what we can contribute” (S11). Reflecting on that event, an ELM team member said: “I think a lot of those people ... were critical because they haven’t seen the level of detail they want to see. But that level of detail doesn’t yet exist” (CS2). When probing further into this, however, the problem appeared not to be the lack of detail, but the unwillingness of Government “to release detail into the public sector ... until it’s been cleared by ministers” (Aglionby, 2020; Kay, 2020). Again, the Government’s fear of causing “a massive panic” (CS2), as a civil servant described it, was shown to hinder co-design, leading to the experience of co-design participants of it as an “extractive” process where they were simply used as information sources rather than equal partners in policy development.

4.4. Inclusivity and diversity

“Diversity and including a diverse range of stakeholders” (S7) were described as key principles of “good” co-design both by stakeholders, and by ELM team members: “[r]eaching out to lots of people, not just the usual suspects” (CS2). However, in these early stages of policy development, Defra did not manage to steer clear of “traditional power dynamics” according to the same respondent, who also observed that “some might consider the [Stakeholder Engagement] Group as a co-design element; I don’t see it as a central element. It’s a very specific group of people; same people having a big – possibly too big – influence” (CS2). A member of that group agreed, criticising that it included “the same loud voices instead of [Defra] taking the risk to hear other opinions” (SH15).

Interviewees identified a range of potential stakeholders that had been left out of ELM co-design process at that time. Among them were farmers (S3, S5, S10), the Poultry Board (S5, S12), the Pig Sector (S12), the Dairy Industry (S5), Horticulture (S5), Ethnic Minority Groups (S7), all UK citizens (S7), and other sectors (air, soil and water) (S10). ELM team members acknowledged that “[w]ith so many voices that try to

take over the process we're struggling. We are being dominated by particular interests and voices. I want to shift the focus back down to farmers and users a bit more" (CS7). However, including farmers "beyond CSFF farmers for co-design workshops" proved difficult for Defra, an ELM team member explained, due to its "lack of data/info [...] on farmer networks/clusters" (CS1). Defra particularly struggled to include farmers in the initial co-design process that had "never previously been engaged in agri-environment schemes" (CS5). Stakeholders noted that Defra had for a long time been "struggling with those harder to reach. They need to understand how these groups are working and what is relevant to them. [...]" (S5).

This missed opportunity to broaden the agri-environmental stakeholder landscape was highlighted when one stakeholder lamented the absence of "ethnic minority groups" in the co-design process. "The farming sector is so male and white dominated. As farming affects the food we eat and the environment, it does affect *all* UK citizens. The process needs to be more diverse" (S7). Another thought that "Defra misses out key people from ecosystems management and people who provide key services to the public (flood risk management, water supply, air quality)" (S10). Because ELM will set up "a system that rewards public goods and it's going to change the kind of look and feel of the countryside, which people enjoy," a third stakeholder felt, "There should be a focus group or a Citizen Jury or something to check whether ELM is actually going to deliver what people value in the countryside" (S18).

In the next section, we reflect on our findings and discuss how they can move our thinking on in terms of applying co-design to active, national, policy making processes like ELM.

5. Discussion

In 2018, stakeholders were excited about the potential of ELM to effect long-desired, positive changes in the agri-environment field and expectations of the co-design process were high. However, as the initial policy development process unfolded there was an evident mismatch between the "ideals" of inclusive, participatory co-design and the "practicalities" of active policy development. The result has been a pragmatic application of co-design that reveals much about the potentials and limitations of applying this approach to active, national policy development. As a living laboratory of a co-design application at that scale and level of complexity, ELM co-design provides useful insights on what needs to change here to make the approach implementable and work for truly "open" policy making.

In this paper, we have presented the findings from the first in-depth, academic study of the Government's attempts to co-design post-Brexit agricultural policy in England between 2018 and 2020 analysed, from the perspectives of both policy makers and external stakeholders involved in the process (see De Boon et al., 2022 for an additional stakeholder perspective). Studies in other policy contexts have rarely empirically investigated co-design of government policy involving such high stakes and executed under such conditions of uncertainty. Our analysis has shown what co-design entails in this space, thereby making a significant contribution to a better understanding of the barriers to co-design in active policy development, enabling the positing of recommendations on how to overcome them. Such an understanding is vital if approaches like co-design are to be increasingly used by governments across the world to tackle issues on the scale of ELM, which is aimed at a large-scale systems transformation, here, of the agricultural sector towards sustainability.

Academic research that has questioned the feasibility of applying co-design to developing and implementing public policies points to the fact that the ambitions of Defra were likely to be optimistic (Blomkamp, 2018). As early as 2019, the National Audit Office (NAO, 2019) raised concerns about the viability of the timescale for ELM policy implementation and identified a real risk of low uptake of the schemes as Defra had not provided sufficient guidance to help farmers adapt their

businesses.

In the remainder of the paper, we turn to the question of what our paper has contributed to knowledge around the challenges of undertaking policy co-design, particularly at such a large scale. In the process, we draw out a number of recommendations for policy-makers and future research, spotlighting these in the conclusion.

Much was known about the potential challenges of policy co-design from previous literature, which our findings reinforce. Existing studies of research co-design and co-production (e.g. Chambers et al., 2021; Lemos et al., 2017) had identified the potential for participation activities to reinforce existing power inequalities, favouring some "easier-to-reach" voices over others. Several studies noted the fact that co-design processes would take considerable time (e.g. Hurlbert and Gupta, 2015; Lemos et al., 2017), which might not be compatible with fast-pace policy-making environments (Blomkamp, 2018; O'Rafferty et al., 2016). Studies specifically on government policy co-design explored the complex institutional structures and cultures of policy-making as hindrances to large-scale participation exercises (Blomkamp, 2018; O'Rafferty et al., 2016). A study of co-design in Ireland found that implementing co-design was difficult because the roles that citizens and non-governmental intermediaries could play in the process were ill-defined, and "the competencies and mind-sets required for co-design are not typically found within the public sector organisations that are responsible for environmental policy in Ireland" (Blomkamp, 2018; O'Rafferty et al., 2016). A similar study of co-design conducted in New Zealand also found that civil servants generally had insufficient knowledge of the co-design approach and did not know how to use it (Blomkamp, 2018).

Our findings support these observations. The timescales envisaged for the development of ELM in England were overly optimistic given that the negotiations over the EU-UK Withdrawal Agreement were ongoing. Co-design was hampered by entrenched policy making cultures, complex bureaucratic structures, fears of leaks, and the resultant confidentiality of information. On paper (i.e. the 25-year Environment Plan or the *Health and Harmony* consultation document), the game had changed towards open policy making, but on the ground, the rules of policy making stayed largely the same. Some civil servants did lack knowledge of how to do co-design, affected by high staff turnover. Lastly, there were fears from some stakeholders that certain voices had been prioritised more than others. All of these factors led to frustrations both for the stakeholders and the civil servants involved in ELM policy development.

Whilst our case corroborates previous findings on the complexities of policy co-design, we draw attention to two important additional factors—the impact of uncertainty and inadequate feedback loops. Both insights can help anticipate challenges in future co-design processes. Though arguably all government policy-making occurs within a context where there is always some uncertainty and change, our research highlights that policy co-design is likely to be most challenging during periods of higher uncertainty. In times of significant policy flux—such as the once-in-a-generation transition we studied, marked by volatile politics, changing governments, and uncertain arrangements with the EU—decision-making becomes particularly difficult. Additionally, our case shows how achieving substantive stakeholder inclusion in policy co-design is not simply about making sure all voices are heard in the first place (though our findings suggest some were heard more than others). Rather, it is also about giving feedback to those stakeholders who inputted views as to if and how they were acted upon. In a small-scale trial aimed at generating lessons for policy-codesign (trial between researchers and land managers), Barkley et al. (2024) acknowledge the importance of establishing multiple feedback loops (e.g. post-meeting summaries, opportunities to give feedback face-to-face and via email/online).

In light of the many challenges that have constrained the ability of Defra to co-design ELM to date, it seems prudent to pose the question of whether the principle of policy co-design, achieved in different contexts at a smaller scale, can ever be implemented in government (Chilvers and

Kearnes, 2020). Structures and cultures of the UK government are currently not well-suited to the process of co-design, particularly for the development of high-stakes, national-scale policies, where the extended community of interested stakeholders generates a wide range of expectations and views. This begs the question as to whether the ideals historically associated with co-design place unrealistic expectations on civil servants (Blomkamp, 2018). The extent to which policy systems can be experimental, adaptive, and responsive depends on many different factors and co-design may not be fully achievable here in practice.

However, perhaps a more positive and progressive question to ask is: how can co-design be made more workable within active government policy making contexts and its well-rehearsed constraints of time, resources and expertise (Hoppe, 2011)? Key recommendations arising from our empirical data on how to improve the functionality of co-design for policy makers are to:

- 1) mitigate the impact of high staff turnover on skills and the continuity of co-design relationships;
- 2) attend to upskilling and skills retention amongst departmental staff on principles and practices of co-design;
- 3) ensure understanding and buy-in from senior civil servants and Ministers on the value of co-design;
- 4) dedicate sufficient resources to the process (money, time, and the right people with the right skills and expertise);
- 5) enhance the transparency of the co-design process (e.g. provide clarity on what can and cannot be influenced by participants and whether the exercises undertaken are genuine co-design or a more participatory form of evidence gathering)
- 6) share information and address communication deficits (put mechanisms in place to close loopholes; and
- 7) enhance inclusivity and diversity in the co-design process.

Here, we note that Defra took steps to change elements of the ELM co-design process over time, with reflexivity playing a key role (Future Farming Blog, Defra, 2021). In response to the NAO report (2019), Government Ministers also redoubled their commitment to involving a wider range of stakeholders in the co-design of ELM, which led to the establishment of a central co-design team in Defra and the appointment of a senior lead for co-design in the food and farming directorate, of which ELM is a part. Changing that one person, according to one of our respondents, made “a massive difference” (S11). In response to issues highlighted by our research findings, Defra also made changes to their engagement processes, including the establishment of mechanisms to engage “harder to reach farmers” (Hurley et al. 2022; Little et al. 2023). These included the development of networks of “ambassadors” that engage with farmers at local, in-person, events, and closing the feedback loop by giving co-design participants a better idea of how their inputs are shaping evolving ELM policy. Addressing these issues was an important first step in re-building and retaining the trust of farmers and institutional stakeholders in Defra. Nevertheless, gaining farmers’ trust remains a key challenge for Defra according to the NAOs evaluation of ELM (NAO, 2021). Defra is closely monitoring its progress here via its ongoing Farmer Opinion Tracker for England (Defra, 2024). Making use of the help of skilled intermediaries here could be useful for Defra, as recent research suggests (White et al., 2021). Trust in advisors, government representatives, manufacturers, and others has long been known to play a key role in the decision-making processes of farmers, both regarding the uptake and implementation of environmentally friendly farming practices, and regarding the decision to join an AES (Hurley et al., 2020; Inman et al. 2018; Lastra-Bravo et al. 2015; Sutherland et al. 2013; Tsouvalis and Little, 2019b).

6. Conclusion

Defra’s commitment to co-design marks a significant step-change in the Government’s rhetoric around open policy making, in an area of

policy where not only many livelihoods but also the state of the environment are at stake. Successful ELM co-design is, therefore, critical. Without extensive uptake and implementation, the sustainability of the schemes will be compromised in terms of the potential environmental benefits accrued, making it unlikely for the Government to succeed in meeting its “long-term environmental objectives, which are heavily dependent on a high level of participation” in ELMs (NAO, 2021:44). Furthermore, with BPS payments going, the economic and social impacts on the farming population could be significant. The National Audit Office (NAO, 2019) has estimated that at the time of leaving the EU, 42 % of farms in the UK did not make money over and above the BPS payments they received, and in a sector where social and personal hardship are already key issues and mental health and wellbeing is a major concern, there is little room for error (Hurley et al. 2020; Lyon et al. 2020; White et al. 2021). While some of the hurdles identified by our research can be addressed through a reassessment of the co-design process, others, discussed in Section 3, require more fundamental shifts in the structural and institutional norms of government. Co-design counts as among the most participatory forms of public engagement, but there are substantive challenges that need to be navigated in order to create a more permissive institutional context to embed both its principles and practices in the civil service. Extractive evidence-gathering needs to be replaced here by applications of co-design that travel the full length of the policy development process, from design through to implementation.

Whilst the results from our research point to important changes that need to be made in the application of co-design principles to active policy development, there are remaining questions that need to be answered in future research.

To enhance co-design methodologies, future research could focus on refining and expanding them to ensure their applicability across diverse policy domains. Investigating and evaluating the effectiveness of different co-design techniques and their outcomes in various contexts can provide valuable insights into tailoring participatory approaches to specific policy challenges. Additionally, exploring the role of emerging technologies in facilitating co-design processes warrants investigation, as digital tools and platforms may offer novel ways to engage stakeholders effectively.

To address power dynamics more effectively, avoiding inequality reinforcement and achieving substantive inclusion, further research is needed to understand the complexities of power dynamics and their impact on policy outcomes. Developing frameworks to promote equitable representation and amplifying marginalised voices in co-design efforts will contribute to more inclusive and just policy development. Whilst we note that relevant frameworks do exist (e.g. Chambers et al., 2021), these have largely not been formulated in the context of government policy co-design.

This could be more achievable if policy-makers prioritize capacity building among stakeholders to facilitate their active participation in co-design processes. Providing training and resources to community members, especially those from underrepresented groups, will empower them to contribute meaningfully to policy development. Research on effective capacity-building strategies can inform policy interventions aimed at bolstering stakeholder engagement. Policy-makers should also consider integrating co-design principles into policy development frameworks. Incorporating public engagement and participatory decision-making as integral components of the policy-making process can foster a culture of inclusivity and responsiveness in governance. This shift requires institutional support and recognition of the value of diverse perspectives in crafting robust policies. How best to achieve this requires further research.

There is also a need for the better understanding of how knowledge travels through government departments like Defra – in following how the results of co-design are used and incorporated into the policy development process, important lessons can be learned on when and how co-design becomes more of an extractive, evidence gathering

activity than a participatory approach of designing "with" rather than "for". For co-design to remain true to its ideals in an active policy environment, civil servants need to be equipped with the practical building blocks of co-design knowledge and methods, which is something academics can help with through their active engagement with policy makers.

To explore the impact of co-design policies, long-term evaluations are crucial to assess their effectiveness and sustainability. Where possible, within funding constraints, researchers should conduct rigorous evaluations to measure the outcomes of co-designed policies, comparing them with traditional policy-making approaches. Longitudinal studies can provide valuable insights into the durability of co-designed solutions and their potential to address complex societal challenges.

Knowledge sharing is vital for advancing the adoption of co-design in policy development. Policy-makers and practitioners should collaborate to document and share best practices, success stories, and lessons learned from co-design initiatives. The dissemination of these insights can inspire other regions and countries to embrace participatory approaches and promote cross-learning among different stakeholders. Research can contribute here in terms of identifying the most effective ways of doing this

This research underscores the potential of co-design as a powerful tool for fostering inclusive and effective policy development. The findings presented here offer a roadmap for future research and policy-making efforts, guiding stakeholders toward a more participatory and responsive governance paradigm, but only if the lessons learned are incorporated into the fabric of government structures. However, to achieve truly "open" policy making, power will need to be devolved to people *outside* of the system, and this is currently made very difficult by the system of representative democracy in place in the UK. Perhaps it is time to consider what the ideals and practicalities of co-design, as enacted in large-scale policy developments such as ELM, teach us about

this

CRediT authorship contribution statement

Ruth Little: Conceptualization, Funding acquisition, Methodology, Project administration, Supervision, Writing – original draft, Writing – review & editing. **David C. Rose:** Conceptualization, Funding acquisition, Methodology, Writing – review & editing. **Judith Tsouvalis:** Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Writing – original draft, Writing – review & editing. **Sue E. Hartley:** Conceptualization, Writing – review & editing. **José Luis Fajardo-Escoffé:** Conceptualization, Investigation, Methodology, Writing – review & editing.

Declaration of Competing Interest

Since the initial submission of the paper, Dr Ruth Little has moved to a position with the Department for Environment, Food and Rural Affairs (Defra), but retains an Advanced Visiting Research Fellowship at the University of Sheffield. Final edits were made whilst Dr Little was based at Defra.

Data availability

The DOI for the paper will be available at <https://doi.org/10.5255/UKDA-SN-856065>.

Acknowledgements

This project was funded by the ESRC - 'Agri-Environmental Governance Post-Brexit: Coproduction of policy frameworks' (ES/S007830/1) - a collaboration originally between the Universities of Sheffield and Reading.

Appendix 1. Organisation From Which Interviewees For the Study of ELM Co-Design were Selected

-
- 1) Non-Government Public & Non Ministerial Bodies
 - 2) Agricultural Research & Advisory
 - 3) Environmental Research & Advisory
 - 4) Think Tanks
 - 5) Agri/Environment Schemes & Certifications
 - 6) Trade Bodies (in/ex-port)
 - 7) Non-Agri Domestic Commercial Organisations (including Supermarkets)
 - 8) Plant Protection Product, Crops & Seed Organisations
 - 9) Finance & Land Agents
 - 10) Agri-environmental Trusts & Councils (including Heritage)
 - 11) Water Services
 - 12) Parks, Forestry & Woodland
 - 13) Rivers, Ponds & Water Conservation
 - 14) Wildlife, Biodiversity & Bees
 - 15) Animal Health & Welfare
 - 16) Farmer Organisation
 - 17) Rural Community Organisation
-

References

- Aglionby, J., 2020. Defra is looking into spreadsheets rather than out to farmers when it comes to ELMs. *Farmers Guard*. Accessed: 10 May 2021).
- Ansell, C., Sørensen, E., Torfing, J., 2017. Improving policy implementation through collaborative policy making. *Policy Polit.* 45 (3), 467–486.
- Armstrong McKay, D.I., Dearing, J.A., Dyke, J.G., Poppy, G.M., Firbank, L.G., 2019. To what extent has sustainable intensification in England been achieved? *Sci. Total Environ.* 648, 1560–1569.
- Barkley, L., Chivers, C.-A., Short, C., Bloxham, H., 2024. Principles for delivering transformative co-design methodologies with multiple stakeholders for achieving nature recovery in England. *Area*. <https://doi.org/10.1111/area.12963>.
- Bateman, I., Balmford, B., 2018. Public funding for public goods: a post-Brexit perspective on principles for agricultural policy. *Land Use Policy* 79, 293–300.
- Blomkamp, E., 2018. The promise of co-design for public policy. *Aust. J. Public Adm.* 77 (4).
- Bradwell, P., Marr, S., 2008. Making the Most of Collaboration: An International Survey of Public Service Co-Design. Report. Demos in Association with PwC's Public Sector Research Centre, London.
- Burton, R., 2004. Seeing through the 'Good Farmer's' eyes: towards developing an understanding of the social symbolic value of 'Productivist' behaviour. *Sociol. Rural.* 44 (1), 195–215.
- Burton, R.J., Kuczera, C., Schwarz, G., 2008. Exploring farmers' cultural resistance to voluntary agri-environmental schemes. *Sociol. Rural.* 48 (1), 16–37.

- Chambers, J.M., Wyborn, C., Ryan, M.E., et al., 2021. Six modes of co-production for sustainability. *Nat. Sustain.* <https://doi.org/10.1038/s41893-021-00755-x>.
- Chilvers, J., Kearnes, M., 2020. Remaking participation in science and democracy. *Sci. Technol. Hum.* 45 (3), 347–380.
- Cooper, R., 2019. Design research – its 50-year transformation. *Des. Stud.* 65, 6–17.
- Coulson, H., Milbourne, P., 2022. Agriculture, food and land: Struggles for UK post-Brexit agri-food justice. *Geoforum* 131, 126–135.
- 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'. *Agric. Hum. Values* 38 (4), 929–941.
- De Boon, A., Sandström, C., Rose, D.C., 2022. Perceived legitimacy of agricultural transitions and implications for governance. Lessons learned from England's post-Brexit agricultural transition. *Land Use Policy*. <https://doi.org/10.1016/j.landusepol.2022.106067>.
- Defra. 2006a. Public Consultation on Controlling the Spread of Bovine Tuberculosis in Cattle in High Incidence Areas in England: Badger Culling Summary of Responses, London: Defra.
- Defra. 2006b. Public Consultation on Controlling the Spread of Bovine Tuberculosis in Cattle in High Incidence Areas in England: A Report on the Citizens' Panels, London: Defra.
- Defra. 2010. Bovine Tuberculosis: The Government's Approach to Tackling the Disease and Consultation on a Badger Control Policy, London: Defra.
- Defra. 2014. Defra Bovine TB Citizen Dialogue. Cross-Cutting Summary. OPM Office for Public Management/Dialogue by Design – Making Consultation Work.
- Defra. 2018. Health and harmony. The future for food, farming and the environment in a Green Brexit. February 2018. CM9577. Crown copyright.
- Department for Environment, Food & Rural Affairs (Defra). 2020a. Environmental Land Management Policy Discussion Document. February 2020.
- Defra. 2020b. The Path to Sustainable Farming: An Agricultural Transition Plan 2021 to 2024. November 2020.
- Defra. 2021. A Plant Biosecurity Strategy for the United Kingdom. Consultation. August 2021. Crown Copyright.
- Defra. 2024. Farmer Opinion Tracker. (<https://www.gov.uk/government/statistical-data-sets/farmer-opinion-tracker-for-england>).
- Dodsworth, J., Lasko, R., Little, R. (forthcoming) Stick your wellies on: messy development and participation processes with England's new Environmental Land Management policy'. In *Managing biodiversity in agricultural landscapes: Conservation, restoration and rewilding practices in farming*; Reid, N., Smith, R., Paton, D., Eds.
- ECA. 2017. Greening: a more complex income support scheme, not yet environmentally effective. European Union (EU) 2017.
- Elzen, B., Barbier, M., Cerf, M., Grin, J., 2012. Stimulating transitions towards sustainable farming systems. In: Darnhofer, I., Gibbon, D., Dedieu, B. (Eds.), *Farming Systems Research into the 21st Century: The New Dynamic*. Springer: Dordrecht, The Netherlands, pp. 431–455.
- Escobar, O., 2013. Public engagers and the political craft of participatory policy making. *Public Adm. Rev.* 73 (1), 36–37.
- Evans, M., Terrey, N., 2016. Co-design with citizens and stakeholders. In: Stoker, G., Evans, M. (Eds.), *Evidence-based Policy Making in the Social Sciences: Methods That Matter*. Bristol Policy Press, pp. 243–262.
- Exley, S., 2021. Open policy making in the UK – to whom might policy formulation be 'Opening Up'? *J. Soc. Policy* 50 (3), 451–469.
- Frewer, L.J., Salter, B., 2002. Public attitudes, scientific advice and the politics of regulatory policy: the case of BSE. *Sci. Public Policy* 29, 137–145.
- Future Farming Blog, Department for Environment, Food and Rural Affairs. 2021. From user-centred design to co-design. Author: Janet Hughes. Published: 23 March 2021. Available at: (<https://services.blog.gov.uk/2021/03/23/from-user-centred-design-to-co-design/>).
- Gove, M. 2018. Green Brexit. A new era for farming, fishing and the environment. Speech delivered to Prosperity UK. Available at: (<https://www.gov.uk/government/speeches/green-brexit-a-new-era-for-farming-fishing-and-the-environment>). Accessed: 03.02.2022.
- Guymard, H., Détang-Dessendre, C., Dupraz, P., Delaby, L., Huyghe, C., Peyraud, J.L., Reboud, X., Sirami, C., 2023. 'How the Green Architecture of the 2023–2027 Common Agricultural Policy could have been greener'. *Ambio* 52 (8), 1327–1338.
- Hagen, P. and N. Rowland. 2011. Enabling Codesign. Johnny Holland (blog), (<http://johnnyholland.org/2011/11/enablingcodesign/>).
- Hayhow D.B., Bond A.L., Douse A., Eaton M.A., Frost T., Grice P.V., Hall C., Harris S.J., Havery S., Hearn R.D., Noble D.G., Oppel S., Williams J., Win I. and Wotton S. 2017. The state of the UK's birds 2016. The RSPB, BTO, WWT, DAERA, JNCC, NE, NRW and SNH, Sandy, Bedfordshire.
- Hegele, Y., 2021. The impact of department structure on policy making: how portfolio combinations affect interdepartmental coordination. *Public Policy Adm.* 36 (4), 429–451.
- HM Government. 2012. Civil Service Reform Plan. June 2012. Crown Copyright.
- HM Government. 2018. A Green Future: Our 25-Year Plan to Improve the Environment. Crown copyright.
- Hoppe, R., 2011. Institutional constraints and practical problems in deliberative and participatory policy making. *Policy Polit.* 39 (2), 163–186.
- Hurlbert, M., Gupta, J., 2015. The split ladder of participation: a diagnostic, strategic, and evaluation tool to assess when participation is necessary. *Environ. Sci. Policy* 50, 100–113.
- Hurley, Paul, Lyon, Jilly, Lyon, Jessica, Tsouvalis, Judith, Rose, David Christian, Little, Ruth, 2020. Inclusive design of post-Brexit Agri-Environmental Policy: identifying and engaging the 'Harder to Reach' Stakeholders. *Empir. Study Univ. Sheff. Read. Rep.* (<https://doi.org/10.15131/shef.data.12506123.v2>).
- Hurley, P., Lyon, J., Hall, J., Little, R., Tsouvalis, J., White, V., Rose, D.C., 2022. Co-designing the environmental land management scheme in England: the why, who and how of engaging 'harder to reach' stakeholders. *People Nat.* 4 (3), 744–757.
- Inman, A., Winter, M., Wheeler, R., Vrainb, E., Lovett, A., Collins, A., Jones, I., Johns, P., Cleasby, W., 2018. An exploration of individual, social and material factors influencing water pollution mitigation behaviours within the farming community. *Land Use Policy* 70, 16–26.
- Institute for Government (Sasse, T. and Norris, E.). 2019. Moving on the costs of high staff turnover in the civil service. (<https://www.instituteforgovernment.org.uk/publications/moving-on-staff-turnover-civil-service>).
- Institute for Government (Clyne, R. and Bishop, M.). 2022. Staff turnover in the civil service. (www.instituteforgovernment.org.uk/explainer/staff-turnover-civil-service).
- Kasemir, B., Jaeger, C., Jager, J., 2003. Citizen Participation in Sustainability Assessments. *Public Participation in Sustainability Science. A Handbook*, pp. 3–36.
- Kay, A., 2020. Defra's ELMs faces fresh criticism after documents reveal its similarity to old schemes. *Farmers Guard*. Accessed 10 May 2021).
- Lastra-Bravo, X.B., Hubbard, C., Garrod, G., Tolon-Becerra, A., 2015. What drives farmers' participation in EU agri-environmental schemes?: Results from a qualitative meta-analysis. *Environ. Sci. Policy* 54, 1–9.
- Latour, B., 2004. *Politics of Nature*. Harvard University Press, Cambridge, MA.
- Lemos, M.C., Arnott, J.C., Ardoin, N.M., et al., 2017. To co-produce or not to co-produce. *Nat. Sustain.* 1, 722–724.
- Little, R., Lyon, J., Tsouvalis, J., 2023. 'The co-design of post-Brexit agri-environmental policy – focusing on environmental land management in England'. In: Attopp, A., Heron, S., McAreavey, R. (Eds.), *Rural Governance in the UK: Towards a Sustainable and Equitable Society*. Routledge, Abingdon, pp. 54–77.
- Lyon, Jessica; Hurley, Paul; Hall, Jilly; Tsouvalis, Judith; Rose, David Christian; Little, Ruth. 2020. Inclusive design of post-Brexit Agri-Environmental Policy: Identifying and engaging the 'Harder to Reach' stakeholders. A Quick Scoping Review. The Universities of Sheffield and Reading. Report. (<https://doi.org/10.15131/shef.data.12506582.v3>).
- Mark, S. and P., Hagen. 2020. Co-design in Aotearoa New Zealand: a Snapshot of the Literature, Auckland Co-design Lab, Auckland Council.
- Melchior, I.C., Newig, J., 2021. Governing transitions towards sustainable agriculture—taking stock of an emerging field of research. *Sustainability* 13, 528. <https://doi.org/10.3390/su13020528>.
- Mohr, A., Raman, S. and Gibbs. 2013: Which publics? When? Exploring the policy potential of involving different publics in dialogue around science and technology. Sciencewise-ERC.
- NAO. 2019. Early Review of the New Farming Programme. HC 2221. Session 2017-2019 5 June 2019.
- NAO. 2021. The Environmental Land Management Scheme. HC 664. Session 2021-2022 15 September 2021.
- Norman, A. 2020. Policy Innovation – What, When and How. Policy Lab Blog. Publishes 22 May 2020. Accessed: 26 July 2021.
- O'Rafferty, S., de Eyto, A., Lewis, H.J., 2016. Open Practices: Lessons From Co-design of Public Services for Behaviour Change. In: Lloyd, P., Bohemia, E. (Eds.), *Proceedings of DRS 2016: Design + Research + Society*. Design Research Society, Brighton, pp. 3573–3590.
- Ostrom, E., 1996. Crossing the great divide. co-production, synergy, and development. *World Dev.* 24 (6), 1073–1087.
- Pardo, A., et al., 2020. 'To what extent does the European common agricultural policy affect key landscape determinants of biodiversity?'. *Environ. Sci. Policy* 114, 595–605. <https://doi.org/10.1016/j.envsci.2020.09.023>.
- Parks, R.B., Baker, P.C., Kiser, L., Oakerson, R., Ostrom, E., Ostrom, V., Percy, S.L., Vandivort, M.B., Whitaker, G.P., Wilson, R., 1981. Consumers as coproducers of public services: some economic and institutional considerations. *Indiana Univ. Univ. North Carol.*
- Parsons, A. and Rumbul R. 2021. Participation vs. representation: Councillor attitudes towards citizen engagement. MySociety Report. Available at (<https://research.mysociety.org/publications/>).
- Pe'er, G., Bonn, A., Bruelheide, H., Dieker, P., Eisenhauer, N., Feindt, P.H., Hagedorn, G., Hansjürgens, B., Herzog, I., Lomba, Á., Marquard, E., Moreira, F., Nitsch, H., Oppermann, R., Perino, A., Röder, N., Schleyer, C., Schindler, S., Wolf, C., Zingg, Y., Lakner, S., 2020. Action needed for the EU agricultural policy to address sustainability challenges. *People Nat.* 2 (2), 305–316.
- Rothstein, H.F., 2007. The institutional origins of risk: a new agenda for risk research. *Health Risk Soc.* 8 (3), 125–221.
- Rutter, J., Marshall, E. and Sims, S. 2012. The "S" Factors: Lessons from IFG's policy success reunions. Institute for Government's Policy Success Reunions, Institute for Government. January 2012.
- SFFS). 2020. White Paper. Authors: Environment and Farming, National Sheep Association, Sustainable Food Trust, Royal Association of British Dairy Farmers, Young Farmers Clubs. Issue date 23 September 2020.
- Siebenhüner, B., 2004. Social learning and sustainability science: which role can stakeholder participation play? *Int. J. Sustain. Dev.* 7, 146–163.
- Stewart, B.D., Burns, C., Hejnowicz, A.P., Gravey, V., O'Leary, B.C., Hicks, K., Farstad, F. M., Hartley, S., 2019. Making brexit work for the environment and livelihoods: delivering a stakeholder informed vision for agriculture and fisheries. *People Nat.* 1 (4), 442–456.
- Sutherland, L.-A., Mills, J., Ingram, J., Burton, R.J.F., Dwyer, J., Blackstock, K., 2013. Considering the source: Commercialisation and trust in agri-environmental information and advisory services in England. *J. Environ. Manag.* 118, 96–105. <https://doi.org/10.1016/j.jenvman.2012.12.020>.

- Tsouvalis, J. and Little, R. 2019a. Co-design, co-production and participatory policy making. Insights from the social sciences. Working Paper 1 produced for Defra, September 2019.
- Tsouvalis, J. and Little, R. 2019b. Factors influencing farmer participation in agri-environment schemes (AES). Evidence from the social sciences. Working Paper 2 produced for Defra, September 2019.
- Voß, J.-P., Kemp, R., 2006. Sustainability and Reflexive Governance: Introduction. In: Voß, J.-P., Bauknecht, D., Kemp, R. (Eds.), *Reflexive Governance for Sustainable Development*. Edward Elgar, Cheltenham, pp. 3–30.
- White, A., and Dunleavy, P. 2010. Making and breaking Whitehall departments: a guide to machinery of government changes. Institute for Government. LSE Public Policy Group, London, UK.
- White, V., P. Hurley, J. Hall, J. Lyon, J. Tsouvalis, D.C. Rose, and R. Little. 2021. Engaging 'harder to reach' farmers: the roles and needs of skilled intermediaries. Research Report. Universities of Sheffield and Reading.
- Wynne, B., 1991. Knowledges in context. *Sci. Technol. Hum. Values* 16 (1), 111–121.
- Wynne, B., 2007. Public participation in science and technology: performing and obscuring a political-conceptual category mistake. *East Asian Sci. Technol. Soc.: Int. J.* 1, 99–110.