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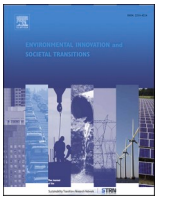

Research article

Assessing regime destabilisation through policy change: An analysis of agricultural policy in the United Kingdom during Brexit

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ABSTRACT

In sustainability transitions research, the deliberate destabilisation of socio-technical regimes is increasingly recognised as a central intervention point. Absent, however, are granular approaches for assessing whether regime destabilisation actually occurs in processes of systemic change. We propose to assess regime destabilisation through shifts in the institutionalisation of field logics. Methodologically, we employ Socio-Technical Configuration Analysis to map changes over time in the composition and alignment of institutional and technological concepts embedded in sectoral policy.

Empirically, we assess the extent to which post-Brexit agricultural policy reform in the United Kingdom marks the destabilisation of an unsustainable regime. Assessing legislative debate transcripts, we find that the previously dominant regime is only partly destabilised, as pre-existing development trajectories along established configurations of field logics, policy goals and instruments remain. These findings support the validity of our conceptual approach. Moreover, they nuance expectations about large-scale policy change as windows of opportunity for regime shifts.

1. Introduction

In sustainability transitions research, structural shifts in energy, mobility or food systems are thought to occur when exogenous shocks generate pressures on existing systems, opening a "window of opportunity" for regime change (Geels and Schot 2007, p. 406; Normann 2019; Herrfahrdt-Pähle et al., 2020). Recent research has highlighted the deliberate destabilisation of socio-technical regimes as a central intervention point to support such systemic change (Turnheim and Geels 2013; Kanger et al., 2020). Following this argumentation, effective governance for sustainability transitions requires detailed assessments of both current socio-technical regime configurations, their development trajectories and potential signs of their decline. However, an approach to assess ongoing processes of systemic change, including clear criteria for whether and how regime destabilisation is actually taking place, remains missing (Turnheim 2023).

Therefore, we propose to assess regime destabilisation through shifts in the institutionalisation of field logics in an organisational field containing a number of more or less strongly aligned socio-technical configurations, mapping these shifts through sectoral policy change. Such 'field logics are used as guiding principles that offer specific rationalities, set the rules of the game, allocate power and

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status and steer attention towards specific problems and solutions' (Fünfschilling and Truffer 2014, p. 775). Following Fünfschilling and Truffer (2014), we understand socio-technical regimes as the most highly institutionalised core of socio-technical systems such as energy, mobility or agriculture (cf. Fünfschilling and Binz 2018).

In this paper, we study regime destabilisation in agri-food systems, which are major contributors to current environmental sustainability challenges, including climate change, habitat destruction and biodiversity loss, as well as chemical and plastic pollution (IPCC 2019; Westhoek et al., 2016). Demands for major shifts in the production and consumption of food are therefore becoming increasingly salient political issues, and the applicability of concepts from sustainability transition and regime destabilisation research has been demonstrated many times (El Bilali 2019; Hebinck et al., 2021; van Oers et al. 2021). The European Union's (EU) Common Agricultural Policy (CAP) has played a key part in establishing farming practices that are detrimental to climate and biodiversity, and locking in a trajectory of agricultural intensification (Pe'er et al. 2020; ECA 2017; Fuchs et al., 2020). After leaving the EU, the United Kingdom's (UK) agricultural policy claims to deviate starkly from the CAP by introducing a subsidy approach based on the principle of public money for public goods (Boon et al., 2022; Hill 2021). This approach seemingly responds to many of the strongest criticisms associated with the CAP, most centrally its area-based support for agricultural production. Brexit presents a major socio-political shock to UK agriculture. The cessation of the CAP as an external constraint on UK policymaking allows for both changes in the agricultural governance architecture and new approaches to policy interventions that were not possible during EU membership (Hill 2022; Gravey 2019). However, whether these shifts correlate with regime destabilisation in UK agriculture remains unclear.

Against this backdrop, we examine UK agricultural policy during the Brexit period. Here, we systematically bring together recent institutionalist scholarship on the nature and empirical conditions of socio-technical regime change, with the literature on regime destabilisation governance. We seek to address two research questions: *Which field logics are underlying UK agricultural policy and its change over time? To what extent are the dominant socio-technical configurations in UK agriculture being destabilised during the UK's exit from the European Union?*

This article makes three main contributions to the literature. Conceptually, we present an approach to assess the extent of regime destabilisation by studying policy change as a component process of such systemic change. We thereby contribute to the understanding and iterative assessment of regime destabilisation processes. Such processes are key aspects of transitions in the making, but have so far mostly been discussed from a longitudinal, historical perspective (Callorda Fossati et al. 2023). Empirically, we assess the severity of changes in post-Brexit UK agricultural policy in the UK, and the amount of destabilisation of the socio-technical regime of which it forms a part. This yields insights into the political shifts in UK agricultural policy reform, and allows inference on the development pathways set during this process. This reform process is particularly relevant as the UK is becoming a "field experiment" for future reform of the CAP (Hill 2021), and thus future developments of European agriculture more broadly. Lastly, our study opens up conceptual issues about the stability and potential destabilisation of polycentric regimes.

2. Literature review and conceptual approach

2.1. Socio-technical regime change and destabilisation

The concept of socio-technical regimes is central to the study of sustainability transitions, which were originally introduced as "regime shifts to sustainability" (Kemp et al., 1998). Recent research has focused on assessing such regimes empirically. Fünfschilling and Truffer (2014) suggested to conceptualise socio-technical regimes in terms of the institutionalisation of *field logics*, elaborating on the rule-based understanding of regimes mentioned above. Such field logics are sectoral translations and aggregations of institutional logics, which stem from foundational institutions in Western society, including the state, the market, the profession or religion, and offer distinct rationalities to guide behaviour (Fünfschilling and Truffer 2014; Thornton and Ocasio 1999; Runhaar et al., 2020). For a given societal sub-system such as agriculture, these logics are the "organizing principles that govern the selection of technologies, define what kinds of actors are authorized to make claims, shape and constrain the behavioural possibilities of actors, and specify criteria of effectiveness and efficiency" (Lounsbury, 2002, p. 255, cited in Runhaar et al., 2020, p. 138). On this basis, Heiberg et al. (2022, p. 3) define regimes as "the most highly institutionalized elements in an organizational field", i.e., well-aligned configurations of social and technological system elements corresponding to a set of field logics (c.f. Fünfschilling and Binz 2018; Fünfschilling and Truffer 2014; 2016; Runhaar et al., 2020). With Kluttz and Fligstein (2016, p. 190) and DiMaggio and Powell (1983, p. 148), we understand fields as an "institutionally defined arena", comprising all actors that "in the aggregate, constitute a recognized area of institutional life". The realm of a socio-technical regime is thus delineated by the institutions dealing with a particular issue, such as agricultural policy. This approach provides a theoretically well-founded and empirically tested operationalisation of socio-technical regimes.

As part of their institutional nature, socio-technical regimes are, however, not rigid nor monolithic. Instead, there is always "a gap between the ideal pattern of a rule and the real pattern of life under it" (Streeck and Thelen 2005, p. 14). That is in part because the field logics structuring regimes are never fully coherent: in agriculture, for instance, a productivist, a neoliberal logic and a more recent multifunctional logic have long co-existed, as we explain in Section 4 (cf. Wilson 2007; Erjavec and Erjavec 2020; Gravey 2022). This semi-coherence shapes the conditions under which agency is exerted and governments intervene into the socio-technical systems; ultimately, it influences how regime change comes about (Runhaar et al., 2020; Fünfschilling 2019). Runhaar et al. (2020) argue that two characteristics of field logics describe the semi-coherence of a particular regime: their *institutionalisation* and their *degree of coherence*. The former denotes the "impact of a [field] logic on the behaviour of actors and the diffusion of practices" (Runhaar et al., 2020, p. 139). The latter describes the number and alignment of logics in a field, i.e., how many logics there are and whether they compete or apply to distinct sub-fields (ibid.).

The semi-coherence of socio-technical regimes thus plays a major role as a condition under which destabilisation occurs, as well as for transition dynamics more generally (Fünfschilling and Truffer 2014; Fünfschilling 2019). Runhaar et al. (2020, p. 139), for instance, hypothesise that regimes with a higher number of logics present in them are less coherent and "allow for deviating actions (i.e. more agency), which in turn can increase chances of structural change in the ways in which sectors operate (i.e. transitions)". System change is thus "dependent on the availability and legitimacy of alternative institutional rationalities" (Fünfschilling 2019, p. 19), and the destabilisation of socio-technical regimes can be measured in terms of the dissolution of firmly entrenched configurations revolving around such institutional rationalities. However, the complete erasure of strongly institutionalised system elements is very rare, and old and new elements are likely to mix and reconfigure during destabilisation processes (Novalia et al., 2022).

2.2. An institutional approach for assessing regime destabilisation through policy change

To assess regime destabilisation through UK agricultural policy, we build on recent advances regarding the mechanisms and governance of such processes (Turnheim and Geels 2013; Kivimaa and Kern 2016; Rosenbloom and Rinscheid 2020; Rinscheid et al., 2021; van Oers *et al.* 2021; Frank and Schanz 2022; Koretsky et al., 2023). Following Turnheim and Geels (2012, p. 35), we understand regime destabilisation as "the process of weakening reproduction of core regime elements". It occurs when techno-economic dysfunctions or socio-political pressures threaten the existence of incumbent regimes and unlock their trajectories, such that actors' commitment to the rules and structures of such regimes diminishes (Turnheim and Geels 2013; Martínez Arranz, 2017; Patterson, 2021; Turnheim 2023).

As socio-technical regimes stabilise a system's trajectory through path dependency and lock-ins, the destabilisation of incumbent configurations "is unlikely to occur without some form of policy intervention" (Normann 2019, p. 102; Unruh 2000, 2002; Jewell et al., 2022; Oliver et al., 2018). Thus, actively destabilising, i.e. *discontinuing* regimes becomes "a problem of action for policymakers" (Stegmaier et al., 2021, p. 4; Stegmaier 2023). However, while previous research focused on actor coalitions (Roberts 2017; Markard et al., 2021) or used policy instruments and strategies to track deliberate regime destabilisation (Kivimaa and Kern 2016; Lindberg et al., 2019; Frank and Schanz 2022), policy changes have not been empirically linked to field logics at the core of socio-technical configurations. Here, we argue that tracing such policy change can offer an insight into shifts in the rules structuring a socio-technical system, and shed light also on emergent, or "passive" (Stegmaier 2023, p. 83) aspects of regime destabilisation. We follow Fünfschilling and Truffer (2014) and Heiberg et al. (2022) in the institutional perspective on socio-technical regime change, who assert that the strength of a socio-technical regime is dependent on the number and alignment of alternative socio-technical configurations in a field, each corresponding to a particular field logic. "The organizational field as a whole will, in general, hold a variety of more or less strongly aligned and institutionalized socio-technical configurations composed of technological and institutional concepts that get promoted by diverse actor coalitions" (Heiberg et al., 2022, p. 3). We thus propose to conceptualise regime

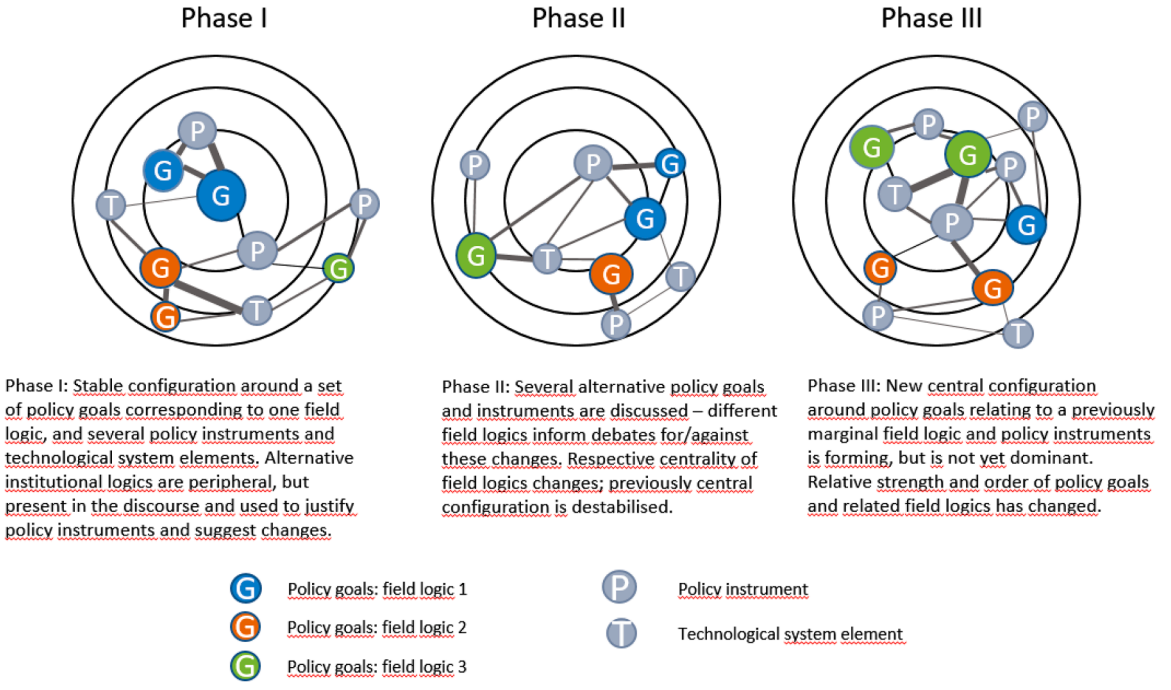

Fig. 1. Illustration of conceptual approach to assess regime destabilisation indicated by socio-technical configurations. The size and centrality of nodes represents their degrees of institutionalisation, see Section 5.2. A configuration of central nodes connected through wide edges (a bold line connecting two circles) represents a socio-technical regime (own work, based on Heiberg et al., 2022).

destabilisation as a *reduction in regime institutionalisation*. Such a reduction is expressed in terms of reduced coherence between the institutional and technological concepts in an organisational field (Fünfschilling and Truffer 2014; cf. Kungl and Hess 2021; Kluttz and Fligstein 2016).

The relation between policy and underlying field logics becomes manifest in discourse. The term, here, "encompasses not only the substantive content of ideas but also the interactive processes by which ideas are conveyed. […] [Discourse] refers not only to structure (what is said, or where and how) but also to agency (who said what to whom)" (Schmidt 2008, p. 305). Following scholarly traditions of sociological and discursive institutionalism (cf. Thornton and Ocasio 1999; Schmidt 2008), Runhaar et al. (2020) have shown that regime institutionalisation can be assessed through the "coordinative discourse", which policymakers engage in to construct policy (Schmidt 2008, p. 310). In coordinative discourse, policymakers exchange ideas about institutions, and present arguments for and against changing them (Schmidt 2008, 2010). Discourse is therefore a medium for the "deep-structural rules" which make up the socio-technical regime (Fünfschilling and Truffer 2014, p. 774). Ideas associated with incumbent regimes have to be discursively challenged, deliberately or not, for regime destabilisation to occur (Davidson 2019; Kuokkanen et al., 2018; Stegmaier et al., 2014; Roberts 2017; Simoens et al., 2022).

However, when using policy to assess regime destabilisation, a criterion linking policy change to regime destabilisation is needed. In political science, Hall (1993, p. 279) distinguished three levels of policy change (in declining order): "the overarching goals that guide policy in a particular field, the techniques or policy instruments used to attain those goals, and the precise settings of these instruments". In discursive institutionalist literature, the second and third levels (policy instruments and goals) are explained as changes in the *ideas* underlying policy; whereas the first (instrument recalibration) can occur as learning without new ideas taking root. Change at the second and third levels therefore translates to change in deeply institutionalised "programmatic ideas" (Schmidt 2008, p. 306). We therefore contend that an analysis of policy for regime destabilisation, has to assess ideational changes expressed in shifting discourse about policy instruments and the relative order of policy goals behind them. These shifts can be assessed as changes in the relative degrees of institutionalisation of ideas about policy goals, policy instruments and technological system elements expressed in coordinative discourse between policymakers. Regime destabilisation then translates to full or partial decline of the policy goal order and its associated policy instruments. Such deinstitutionalisation is the result of "pressure fronts", which need to be mobilised by resourceful actors, and of counter-movements to them (Turnheim 2023, p. 45; Novalia et al., 2022; Maguire and Hardy, 2009). Fig. 1 illustrates our conceptual approach. In the example illustration, a highly institutionalised socio-technical configuration of policy goals relating to one field logic, policy instruments and technological system elements is destabilised, such that the field shifts towards new configurations in which other field logics are central.

Importantly, socio-technical regimes consist of more than policy – not all of the deep-structural rules shaping a sector are directly expressed through policy goals and instruments. Policy change alone therefore does not constitute regime change, and regime destabilisation does not simply equal policy dismantling (Bauer et al., 2012). However, we contend that, in situations in which the existing order is challenged, policymakers are likely to either reaffirm or contest the deeply institutionalised rules and ideas ordering a socio-technical system, thus making them more visible (Yuana et al., 2020; Heiberg et al., 2022). In such "critical moments" (ibid.), the coordinative discourse between policymakers therefore reflects shifts in ideas about a socio-technical system particularly well.

3. Case study: the CAP and competing agricultural policy discourses

Agricultural policy is a relatively coherent policy domain (May et al., 2006). As "the consistency of policy goals is in itself a potentially powerful integrative force" (May et al., 2006, p. 384), this policy coherence can be considered an indicator for a strong and stable socio-technical regime in the sector. As Melchior and Newig (2021, p. 5) summarise, "there seems to be wide agreement on characterising the dominant sociotechnical system in agriculture as neoliberal, productivist, and industrial agribusiness supported by political incentives and focusing on markets". Agricultural policy is one of several important drivers behind the development of this socio-technical system (ibid.).

In Western Europe, this regime is closely linked to the EU's Common Agricultural Policy. In the second half of the 20th century, the dominant approach to agricultural policy revolved around supporting domestic production and increasing efficiency to achieve steady, cheap supplies of agricultural products (Feindt 2010). To combat overproduction ensuing from this policy approach since the 1980s, the CAP shifted towards direct payments to farmers decoupled from production, but instead based on farmed area, in the so-called Pillar 1 of the CAP (McMichael 2009; Feindt 2010). While still aiming to support family farms and stabilising agricultural incomes, agricultural policy gradually shifted towards a market orientation through the removal of price supports. In addition to policy, this foundational orientation towards markets is driven by political-economic pressures, and finds its expression in a policy mix which incentivises efficiency, increasing production, further intensification and specialisation (Duru et al., 2015; Wilson and Burton 2015; Levidow 2015). This model was complemented iteratively by broader sustainable rural development elements and agri-environment measures in Pillar 2, as well as environmental minimum standards connected to subsidies in Pillar 1 (Feindt 2010). These policy measures mark the well-documented entry of an environmental sustainability logic into agricultural policy-making.

Researchers have linked such policy changes to dominant agricultural policy discourses. Discussing shifts in European Commission argumentation surrounding CAP reforms between 1991 and 2017, Erjavec and Erjavec (2020) identify three central discourses: first, neomercantilism exemplified a "dependent or state-assisted agricultural paradigm" (ibid., 664) based on an exceptionalist understanding of agriculture, and is strongly linked to agricultural *productivism*. Second, *neoliberal* policy discourse embraces a market orientation of agriculture, including the aim to treat agriculture as an ordinary economic sector. Lastly, *multifunctionality* discourse emerged to justify agricultural subsidies through the public goods agriculture provides, such as the protection of cultural landscapes and the achievement of environmental targets. Over the past 30 years, these discourses have been continuously present, although with

changing relative importance (Wilson and Burton 2015; Tilzey and Potter 2008; Erjavec and Erjavec 2020; Feindt 2018).

Importantly, these discourses relate to socio-technical configurations with technological and material implications (Marsden and Sonnino 2008; Wilson 2007; Darnhofer et al., 2015). As field logics, they structure a "relationship between agriculture and agricultural policies" (Wilson and Burton 2015, p. 62) and are associated with different agricultural practices. Following a productivist logic, for instance, agricultural production becomes increasingly organised along principles of intensification through the use of machines and chemicals, specialisation, industrialisation and concentration into fewer, larger farms (Wilson 2007; Duru et al., 2015). In a neoliberal logic, the (international) competitiveness of agriculture is paramount, promoting farming practices increasing economic efficiency, which emphasises technological innovation driven by international agribusiness, digitalisation of farming and favours further specialisation (Erjavec and Erjavec 2020; Wilson and Burton 2015). At the level of farming practices, these two logics are strongly mutually reinforcing. A multifunctional logic, lastly, is associated with production diversification, extensification (e.g. through the reduction of biochemical inputs), environmental protection measures such as buffer strips and shifts to income diversification and part-time farming (Wilson 2007; Marsden and Sonnino 2008). However, as policies embodying these logics coexist and support, incentivise or even mandate farming practices, agriculture on the ground is shaped by all three logics at once. While they matter for the development of farming on the ground, they can be neatly distinguished from each other only at the level of policy. Thus, tracing the relative dominance of field logics in agricultural policy is not a proxy measurement of the material parts of a socio-technical system, but an assessment of the regime it is shaped by.

Post-Brexit agricultural policy reform in the UK promises to initiate a dramatic break from previous CAP policy making. In a rare display of agreement, Conservative Party government officials and environmental activists have hailed Brexit as an opportunity to leave the CAP behind, and build a new farming policy based on the principle of public money for public goods (Gravey 2019; Gove 2019). Here, we aim to understand this policy change, and to assess whether and to what extent UK agricultural policy reform between 2013 and 2020 marks the destabilisation of the dominant socio-technical regime, of which policy is a central component.

4. Research design, methods and materials

4.1. Socio-Technical Configuration Analysis for regime destabilisation

In this paper, we assess whether UK agricultural policy reform marks a process of regime destabilisation, by tracing changes in the field logics underlying sectoral policy. Analysing parliamentary debates, we assess deontic statements by actors about the agricultural system. These statements represent how actors think the socio-technical system of agriculture works, and how policy should intervene into it. We trace the logics underlying actors' statements regarding agricultural policy reform before, during and after Brexit to infer the reconfiguration of field logics over this period. Following Fünfschilling and Truffer (2014) and Heiberg et al. (2022), we understand highly institutionalised and coherent configurations of field logics and other institutional and technological system elements to constitute socio-technical regimes. If these configurations significantly reduce their coherence, we speak of regime destabilisation.

In our analysis, we focus on the policy aspect of socio-technical regimes. We assume that the central field logics structuring the socio-technical system of agriculture are present in agricultural policy debates: during parliamentary debates and committee sessions, expert witnesses and members of parliament refer to socio-technical system elements, which allows us to uncover underlying logics and rule-sets.

As Fünfschilling and Truffer (2014) have argued, the socio-technical regime represents the most strongly institutionalised parts of a socio-technical system – and thus the parts with the highest degree of structuration. Regimes structure actors' behaviour, but equally enable their agency (ibid.). However, as agency is thus not external to socio-technical regimes, the causal pathways between policy and regime change are not unidirectional, as policy change is both a function of dominant field logics as well as an input to changes in socio-technical configurations (of which field logics are a central part). Policy can thus be understood both as the object of change and an intervening factor. However, we cannot measure regime changes in terms of policy change *and* the destabilising functions of policy interventions at the same time – if so, we would use policy as both explanans and explanandum. We therefore focus on the former, analysing policy change to track changes in the socio-technical regime over time. Longitudinally uncovering changes in the institutionalisation of field logics underlying sectoral policy allows us to trace the particular regime destabilisation processes and uncover internal tensions and struggles within the socio-technical system, as well as the effects of external shocks such as Brexit. This fits well with a processual understanding of destabilisation governance, in which governance is part of changes in the speed, scale and directionality of transition processes (Lindberg et al., 2019; Frank and Schanz 2022).

In a recent methodological development, socio-technical configuration analysis [STCA] has been suggested as an approach to measure the coherence of field logics (Heiberg et al., 2020, 2022). Here, socio-technical regimes are operationalised as "more or less strongly aligned and institutionalized socio-technical configurations composed of technological and institutional concepts that get promoted by diverse actor coalitions" (Heiberg et al., 2022, p. 3). STCA is based on and uses a similar analytical procedure as Discourse Network Analysis [DNA] (Leifeld 2009, 2017). STCA represents an expansion and formalisation of the discourse analytical methods that have previously been employed to assess configurations of field logics in transition studies (Runhaar et al., 2020; Fünfschilling and Truffer 2014). While our study is based on public policy materials, for which DNA was originally developed, STCA adds conceptual tools for the study of socio-technical regimes, which are the central focus of our study. In STCA, the strength of socio-technical regimes is assessed in terms of the coherence with which actors use technological and institutional concepts relating to a particular socio-technical system (see Fig. 1) (Heiberg et al., 2020, 2022). By "[*m*]apping different actor statements around institutional and technological concepts as relational structures (networks)", STCA enables analysis "to depict the emergence of new, as well as shifts in the dominance of existing socio-technical configurations" (Heiberg et al., 2022, p. 2). While existing research employing STCA has

highlighted regime shifts favouring new, previously marginal field logics and related configurations, we employ the method to analyse the destabilisation of socio-technical regimes.

4.2. Materials and analytical steps in STCA

Our research analyses the socio-technical configurations to which UK agricultural policy between 2010 and 2020 relates. It covers the last CAP implementation, which was debated in Westminster between late 2010 and 2013, the deliberations about the 2018 Agriculture Bill providing rules for the transition phase, and the 2020 Agriculture Act setting the path towards post-Brexit agricultural governance.

As primary materials, we use parliamentary debates in the House of Commons retrieved from Hansard, Westminster's online repository, using the search terms "Common Agricultural Policy" and "Agriculture Bill/Act", as our primary materials. To ensure comprehensive coverage, we accessed official parliamentary reports compiling witness examinations, committee and chamber debates and written evidence. The analysis focuses on parliamentary evidence sessions, in which a highly diverse range of expert witnesses state their perception of how agriculture works and how it should be intervened into. Additionally, we analyse the first plenary debate in each reform cycle. Altogether, the transcripts included in the final analysis comprise just over 427.000 words or approximately 690 pages. These materials yield a representation of the socio-technical regime through the lens of actors engaging in parliamentary agricultural policymaking, which includes policy goals and instruments, but also issues of agricultural practices and technologies. In order to complement our understanding of the policy processes and political debates, we led three orienting conversations with experts in UK agricultural policy, and drew on technical reports by the House of Commons library and research institutions before coding.

We developed a coding scheme employing an iterative process. First, we identified three established field logics in agricultural policy from research literature as top-level concept codes. Here, we built on Runhaar et al. (2020) assessment of field logics in Dutch agricultural policy and research on EU agricultural policy discourses, see Section 4 (Erjavec and Erjavec 2020; Tilzey and Potter 2008; Wilson 2007). Second, we developed a tree of concept codes inductively from the materials, specifically covering the topics of policy goals, subsidy logics, regulatory and subsidy policy instruments and the agricultural governance architecture. Policy goal codes were deductively associated with the three top-level codes representing field logics. Moreover, we added actor codes inductively to the coding scheme. Based on Baker and Demaio's (2019) food systems actor framework, we distinguished between state, market, civil society and hybrid actors. State actors encompass political parties, which play a particularly significant role in our materials.

Coding was carried out by the first author and iteratively discussed with the authorial team using MAXQDA. The inductively developed coding scheme was evaluated and regrouped after coding ca. 20 % of coded documents, and finalised after all documents had been coded once. We then recoded all documents with the final coding scheme. Text segments were coded for actors and concepts used.

We use these codings to qualitatively assess configurations of concepts – including field logics and other socio-technical system elements – and their use by actors. Moreover we perform network analyses mapping these configurations. To this end, the coding tables are exported to Excel, and transformed into one-mode adjacency matrixes in R; then network analyses are carried out in Visone (see Appendix). We assess the degree of institutionalisation of a concept following the methodology developed by Heiberg et al. (2022, p. 4; cf. Heiberg and Miörner 2022), based on its degree centrality and the number of actors using it: "Degree centrality measures the number of other concepts that a concept is linked to in the discourse […]. In concept congruence networks, degree centrality reflects the number of other concepts that have been co-mentioned in a congruent way". A concept is therefore central if it is used congruently with many other concepts. "Visually, a concept's degree centrality score may be represented by its position in a radial centrality layout" (ibid.), with concentric circles representing different values of degree centrality. Moreover, the size of a node represents the number of actors that refer to a given concept. Together, a node's position in the radar plot and its size, serve as a measure of a given concepts degree of institutionalisation. In a further step, we identify congruent storylines in the concept network through the alignment between concepts. A (wider, darker shaded) edge in the network graph represents that (more) actors use the concept pair congruently. A network graph depicts the socio-technical configurations that dominate the organisational field at one point in time, and thus allows inference on the socio-technical regime. For additional explanations of our methodology, see Appendix.

Here we provide two sets of radar plots per time period. The first set of radar plots shows the configurations of policy goal concepts relating to the three field logics, indicated by node colours. We interpret these plots to represent dominant storylines and *programmatic ideas* (see Section 3.1) in agricultural policy over time: how different policy goals become more or less central and fall in and out of use. As each policy goal concept is associated with a field logic, we can assess changes in the relative dominance of each logic and the corresponding socio-technical configuration, but also their internal alignment and hybridisations: for instance, which productivist or neoliberal policy goals are central and how they relate to each other, changes over time. A second set of radar plots represents the changing regulatory approaches over time and their association with the three field logics. As described above, all policy goal codes are associated with a top-level code for the field logics of productivism, neoliberalism or multifunctionalism. To reduce graph complexity, we therefore collate all policy goal codings into the respective top-level code in MAXQDA. We then create network graphs based on these codes, as well as concept codes for policy strategies, instruments and governance architecture aspects, calculating the position and size of nodes as well as edge strengths by the method described above. The two sets of graphs thus show change on Hall's (1993) third (order of policy goals) and second level (policy techniques and instruments) of policy change. We use both sets of graphs to describe whether and how the socio-technical configurations and underlying field logics in UK agricultural policy change over time. Through these two sets of plots, we examine the extent of regime reconfiguration in our case study.

Destabilisation, however, is a measure relating to the socio-technical regime as a whole, and thus the composition of the concept congruence network. Based on the approach by Heiberg et al. (2022), we calculate network density, average degree centrality and

average numbers of actors as another aspect in our discussion of the extent to which socio-technical regimes are destabilised in our case study (see Appendix). First, network density indicates how many of the theoretically possible links between all concepts in the network actually exist. A higher density indicates that more concepts are used coherently, and is therefore an indicator for stronger alignment of the overall network. Second, we calculate the average degree centrality of concept nodes, as well as the average sum of actors referring to each concept (both normalised to a range between 0 and 1). Higher averages indicate stronger degrees of institutionalisation across the socio-technical configurations (see Heiberg et al., 2022, p. 5). Regime destabilisation would therefore be associated with declining values over time for these measures.

Importantly, STCA is based on qualitative, discourse-analytical engagement with the materials. Compared to previous methods for assessing socio-technical configurations, it adds further analytical steps of quantification and aggregation of their discursive representations and articulations (Heiberg and Miörner 2022). These do not replace, but complement the qualitative, discourse-analytical engagement of the materials. The numerisations and transformations of qualitative results followed by quantitative analysis allow a graphical portrayal of the associations between central concepts and field logics valid for a particular discursive setting. They do not, however, permit an absolute description of a socio-technical regime or an evaluation of its strength in purely quantitative terms. We therefore limit our interpretation of the quantitative data to the configurative level, i.e., we use them as descriptors of associations between concepts as they are used by actors in agricultural policy reform processes. Similarly, we interpret aggregated descriptive network statistics only in terms of changes over time, not as absolute measures of the strength of a socio-technical regime.

5. Results

5.1. Changing configurations of UK agriculture (2013–2018–2020)

5.1.1. 2013 CAP reform

During the debates leading up to the 2013 CAP reform, policy goals associated with all three field logics are strongly

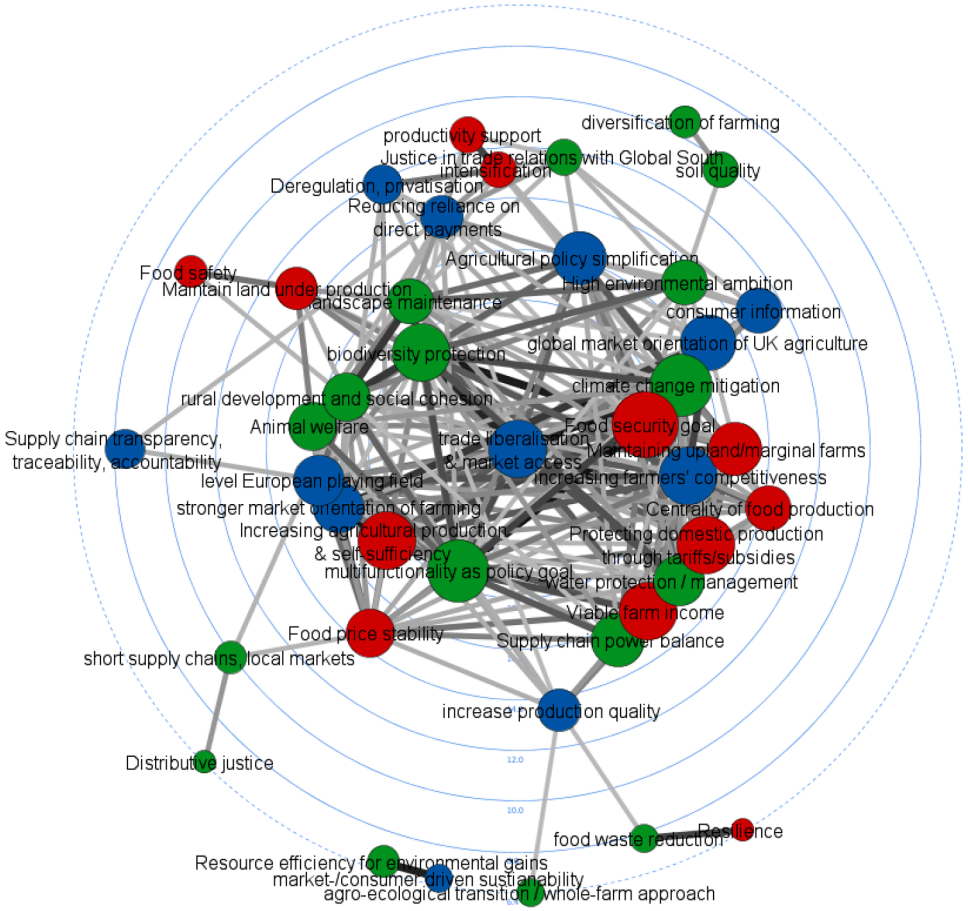

Fig. 2. Reform debates 2010–2013 – concept congruence network depicting configurations of policy goal concepts associated with the productivist (red), neoliberal (blue) or multifunctional (green) field logics. A node's centrality and size indicate the degree of its institutionalisation. (Wider, darker) edges indicate that actors use the concept pair (more) congruently. Edge filter value 0,42. Centrality range 6,4 – 19 (own work).

institutionalised and coherent, as Fig. 2 portrays. This indicates a polycentric structure of the organisational field at the outset of the examined period. The most strongly institutionalised concepts are the ideal-typically productivist goal of food security, which unites the highest number of actors behind it, and the neoliberal goals of trade liberalisation and market access for imports and exports. At the centre, a productivist configuration revolving around strongly institutionalised policy goals such as viable farm income, food price stability and the promotion of domestic production is closely linked to a configuration displaying the neoliberal tendencies of previous decades, expressed through a focus on competitiveness and market orientation. However, as has amply been shown in the research literature (Erjavec and Erjavec 2020; Gravey 2022; Feindt 2018), the 2013 CAP implementation also marks a stronger institutionalisation of multifunctionalism in European agricultural policy. Environmental and social policy goals are firmly institutionalised, and the multifunctionality of agriculture is recognised by a broad range of actors.

This impression of balance from the aggregated overview contrasts with a detailed look at the actors associated with individual concepts. While civil society actors favour concepts linked to multifunctionalism, the European Commissioner for Agriculture frequently refers to both productivist and multifunctional concepts. Representatives of the UK Department for Environment, Food and Rural Affairs (DEFRA) adhere to a decidedly neoliberal discourse. "Pillar 2 is payment for public goods, so it is perfectly transparent—the taxpayer can see what it is they are getting for their money—we are also […] working on the whole concept of deregulation and changing the whole culture about how we implement and enforce regulation" (House of Commons Library, 2011, p. 102).

This balance between discourses, moderately skewed towards neoliberal and productivist concepts, is also expressed in policy

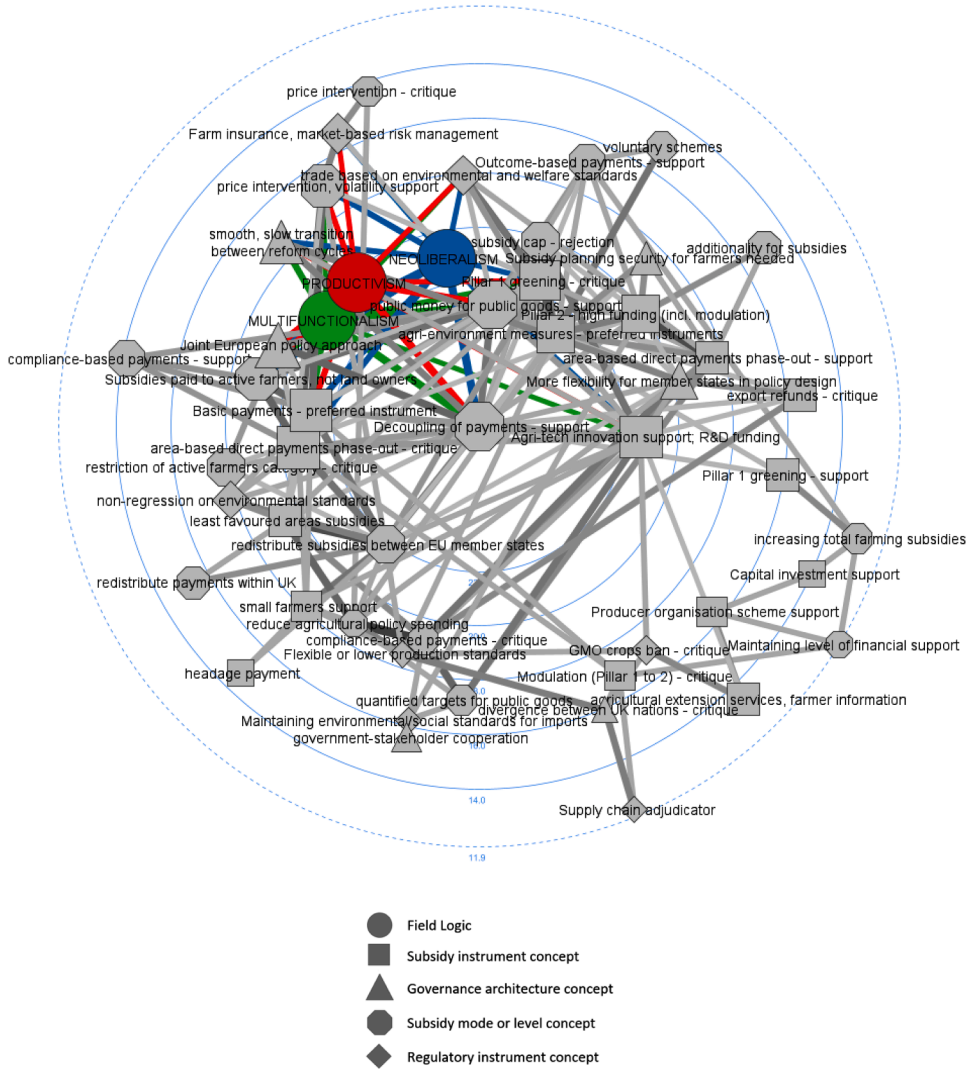

Fig. 3. Reform debates 2010–2013 – concept congruence network of field logics and associated policy concepts. Field logics are represented by a node aggregating all associated policy goals. A node's centrality and size indicate the degree of its institutionalisation. (Wider, darker) edges indicate that actors use the concept pair (more) congruently. Coloured edges indicate a close association with a field logic. Edge filter value 0,45. Centrality range 11,9 – 23. (own work).

instruments. Most strongly institutionalised is the further decoupling of payments from production subsidies. This is often coupled to calls to reorient the CAP towards a public money for public goods principle – a policy goal shared by a range of actors across political parties, research institutes and civil society, although it is not yet central. This reorientation is linked to a growing recognition of "the negative effect that certain farming practices have on the environment and climate" despite large public spending on agriculture (ECA 2017, p. 8). Overall, neoliberal policy goal concepts are linked most strongly and widely to policy elements in the configurations shown in Fig. 3.

Within the polycentric regime structure of socio-technical configurations manifest during the 2013 reform, the CAP's productivist legacy is reflected in the strong institutionalisation of support for basic payments, price intervention, and coupling of subsidies to active farmers (instead of land owners claiming Singe Farm Payments without agricultural production, see Allen et al., 2014). These concepts make up the most strongly institutionalised core of the field. Part of this configuration is a technological modernisation agenda, criticising GMO bans and supporting stronger agri-technological innovation support. We also identify a peripheral configuration representing an alternative vision for CAP reform, characterised by a shift towards Pillar 2 measures, direct payments phase-out, voluntary schemes, and reduced agricultural policy spending. The public money for public goods principle serves as a boundary concept for these configurations.

5.1.2. 2018 Agriculture Bill

The policy concept configurations manifest in the 2018 agricultural policy reform debates deviate markedly from the previous period. Multifunctionalist policy goal concepts are relatively strongly institutionalised, and this configuration forms a distinct cluster in Fig. 4. Importantly, the multifunctional logic develops and consolidates further: more explicitly non-productivist (Wilson 2007) concepts, including a deliberate extensification of agricultural production or an agroecological transition towards whole-farm

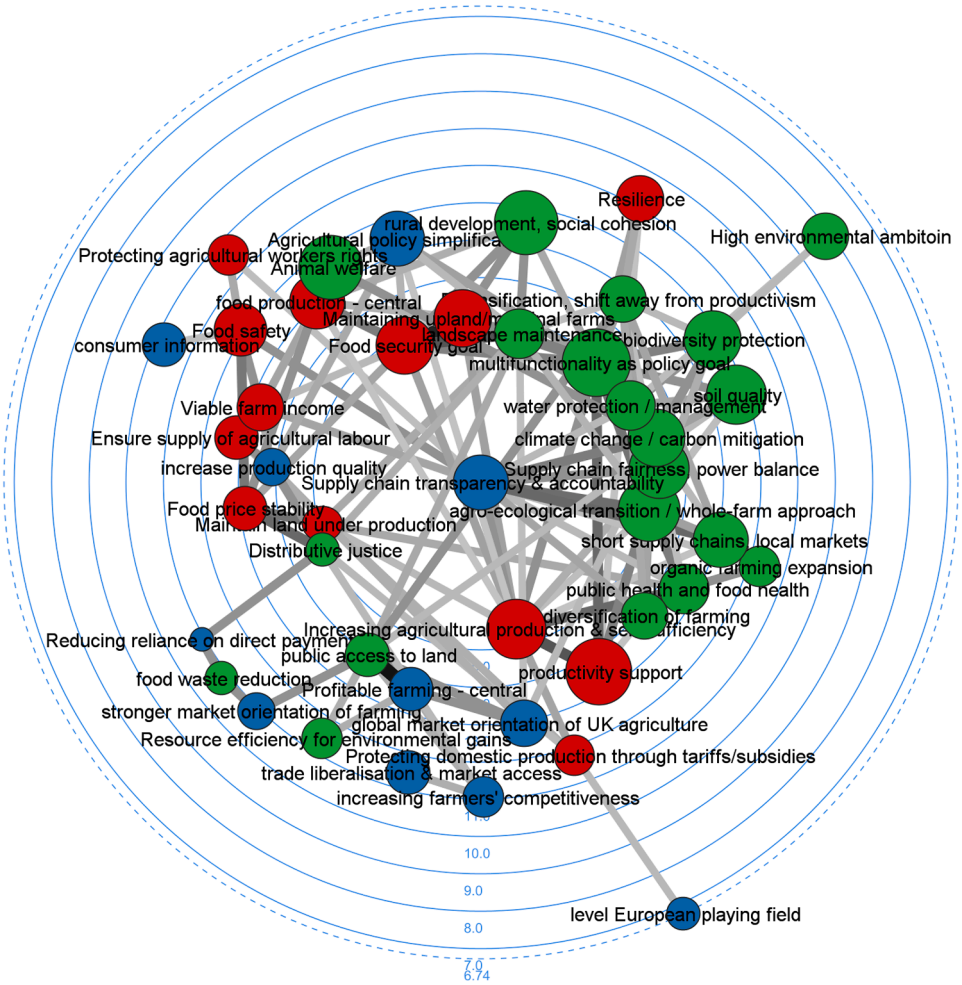

Fig. 4. Reform debates 2018 - concept congruence network depicting configurations of policy goal concepts associated with the productivist (red), neoliberal (blue) or multifunctional (green) field logics. A node's centrality and size indicate the degree of its institutionalisation. (Wider, darker) edges indicate that actors use the concept pair (more) congruently. Edge filter value 0,4. Centrality range 6,7 – 15,9 (own work).

approaches of environmental management are now a strongly institutionalised part of the configuration. This configuration represents the emergence of an alternative vision and practice of farming in which farms can specialise on providing environmental benefits beyond intensive food production (Gaitán-Cremaschi et al., 2019; Monbiot 2022).

With Brexit imminent, changing trade relations with the EU pose the risk of disruption to food supply chains to a UK which imports over 30 % of its food from it (Lang et al., 2017). As a consequence, the goal of ensuring food security re-enters policy debates. In Fig. 4, it is a central part of the productivist configuration alongside concepts such as increasing domestic agricultural production and self-sufficiency, enhancing farm income and agricultural productivity support. This configuration is partly connected with neoliberal concepts, most notably supply chain transparency and agricultural policy simplification. A focus on well-functioning supply chains is centrally a means for increased market orientation, but also acts as a boundary concept to issues of fairness and power imbalances between farmers, agricultural corporations and retailers addressed in multifunctional discourse.

With the loss of the CAP as a unifying factor, the governance architecture between the four nations of the United Kingdom becomes a central issue of agricultural policy reform. Among the most strongly institutionalised instrument and governance architecture concepts are demands for more competencies for devolved administrations but also warnings of divergence between UK nations (see Fig. 5). Policy instruments for the reorientation of UK agriculture – potentially outside the Common Market – take centre stage and displace previously strongly institutionalised concepts. Protectionist instruments, such as the maintenance of agricultural production

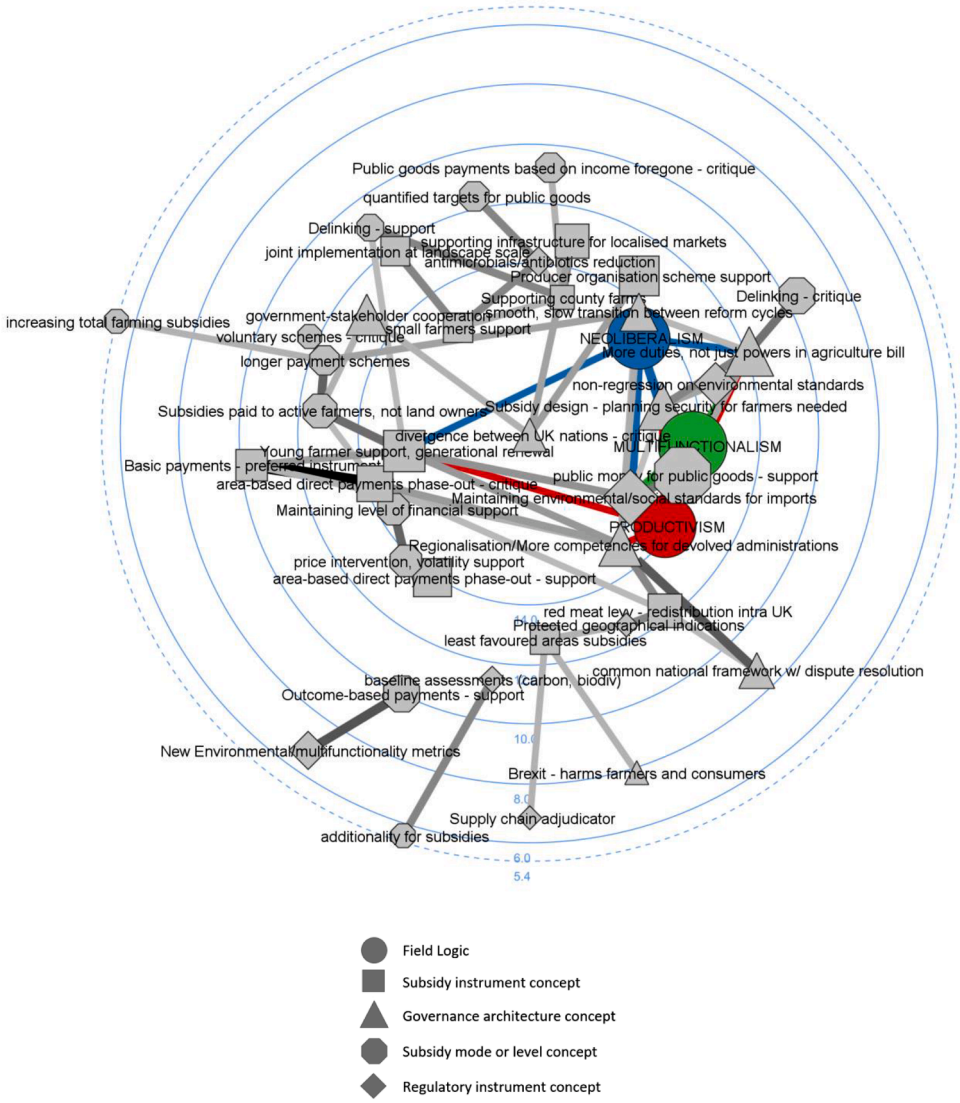

Fig. 5. Reform debates 2018 - concept congruence network of field logics and associated policy concepts. Field logics are represented by a node aggregating all associated policy goals. A node's centrality and size indicate the degree of its institutionalisation. (Wider, darker) edges indicate that actors use the concept pair (more) congruently. Coloured edges indicate a close association with a field logic. Edge filter value 0,4. Centrality range 5,4 - 16 (own work).

standards for imports, are no longer assured by EU regulation and thus gain salience. Fewer explicitly technological concepts are strongly institutionalised within the dominant configuration; among them is supporting infrastructure for localised markets. Even though the public money for public goods principle maintains its place as one the most strongly institutionalised concepts, the strong institutionalisation of environmental policy goals is not fully reflected in corresponding policy instruments. A configuration around policy instruments relating to organic agriculture, reduced pesticide use, climate change, biodiversity support or water protection – largely absent in 2013 – appears at the margins in the 2018 configuration.

This shift is also related to changes in the discursive networks between actors (see Figs. 13-14, Appendix). During the 2018 reform process, the previously tight-knit actor network is weakened. As in 2013, the Labour parliamentary group is still the central actor, holding the strongest discursive overlap with others. However, coalitions of actors with particular agendas emerge within the larger network. A group of actors coalescing around neoliberal policy goals and related concepts comprises the Liberal Democrats and the National Farmers' Union; another cluster contains environmental NGOs, research actors and the Green party.

5.1.3. 2020 Agriculture Act

In the 2020 reform debates, the balance between three firmly institutionalised configurations has been replaced by a relative prominence of multifunctionalism. Fig. 6 shows that the configuration centring around environmental and social goal concepts now dominates the regime in relative terms. However, despite the multifunctional goals being relatively more central, the 2020 reform debates are overall less coherent, with actors referring to a broader set of goals. Visually, this translates to fewer edges, less clustering, and reduced centrality values in Fig. 6.

Multifunctionality as an explicit policy goal is the concept used by the largest number of actors. Environmental policy goal concepts are also frequently used by actors who otherwise favour productivist or neoliberal policy approaches, thereby establishing numerous, strong links between biodiversity protection, climate change mitigation, soil quality or animal welfare and other, non-environmental

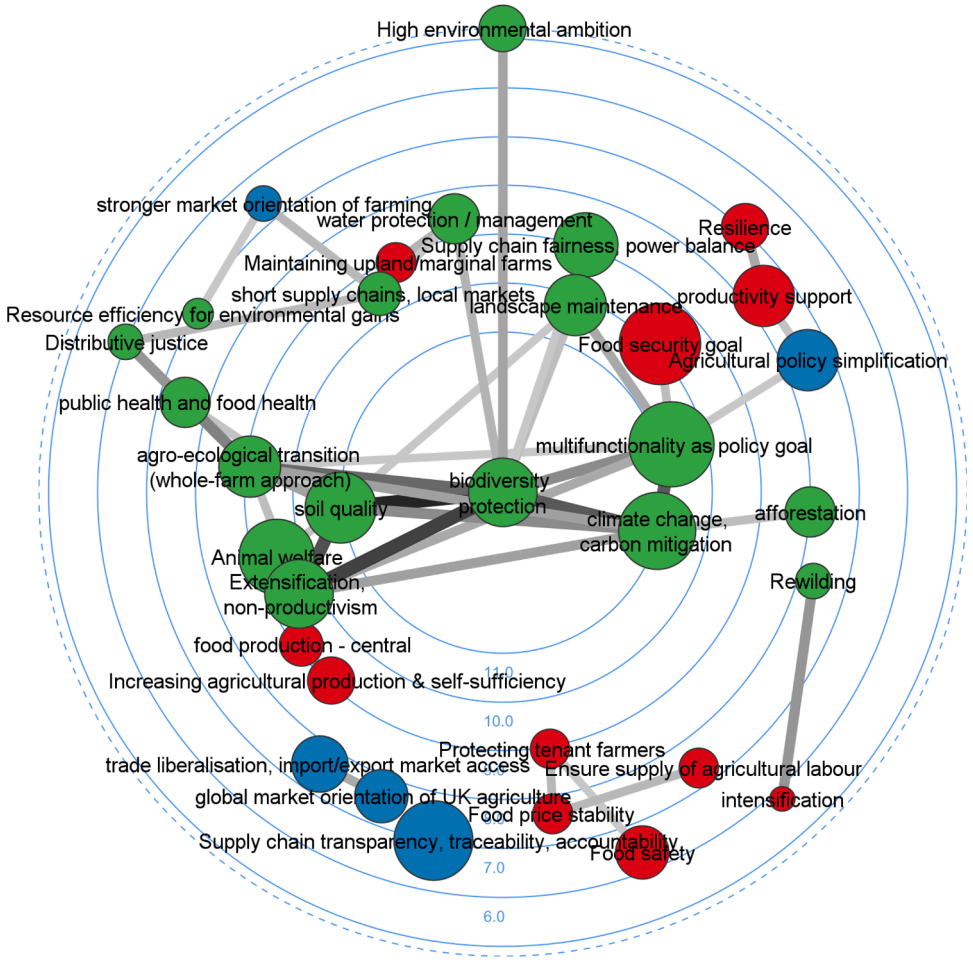

Fig. 6. Reform debates 2020– concept congruence network depicting configurations of policy goal concepts associated with the productivist (red), neoliberal (blue) or multifunctional (green) field logics. A node's centrality and size indicate the degree of its institutionalisation. (Wider, darker) edges indicate that actors use the concept pair (more) congruently. Edge filter value 0,4. Centrality range 4,8 – 11,6 (own work).

concepts. This shift towards a multifunctional field logic is further exemplified in a stronger institutionalisation of high-ambition policy goals. Concepts like an agroecological transition ("whole-farm approaches"), extensification or explicit demands for more stringent environmental goals are now clearly part of the configuration. Mirroring an increasing problematisation of meat consumption (Garnett 2015; Willett et al., 2019), these demands are linked to extensive animal husbandry models and meat-alternative technologies. While food security (a productivist goal) and supply chain transparency (a neoliberal goal) remain strongly institutionalised, other neoliberal and productivist goal concepts are now more marginal.

The concept congruence network of policy instruments and governance architecture concepts shown in Fig. 7 equally displays the increasing relative dominance of a multifunctional logic. Here, the public money for public goods principle is the most strongly institutionalised concept and most closely linked to demands for non-regression on environmental and social standards as well as the maintenance of such standards for imports. While EU trade law previously fulfilled this protectionist function, the 2020 Agriculture Act does not enshrine equivalence standards to protect domestic production against imports into law. Doing so is a demand shared by a very broad church of actors across political parties, and from farmers' unions to environmental NGOs – although not by UK

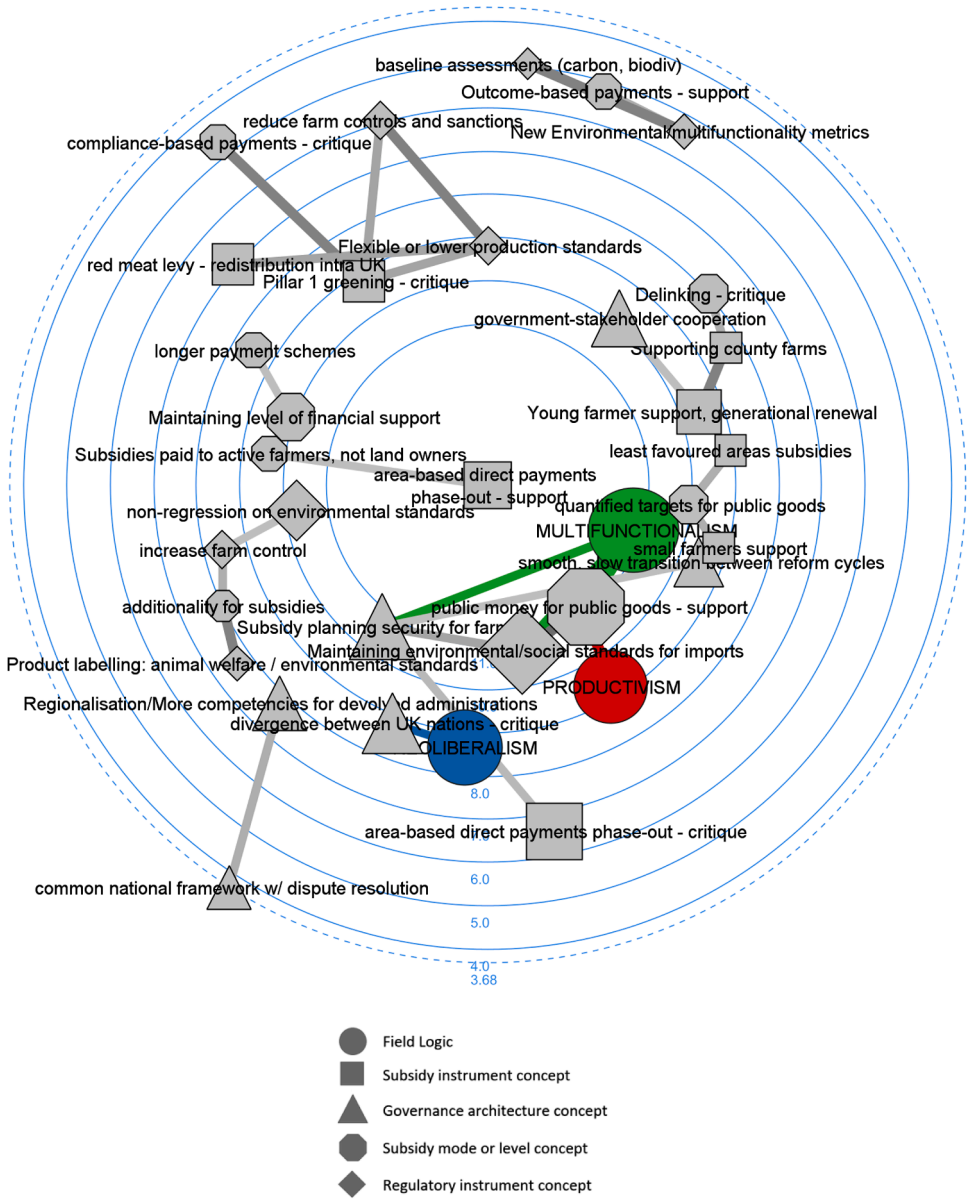

Fig. 7. 2020 reform - concept congruence network of field logics and associated policy concepts. Field logics are represented by a node aggregating all associated policy goals. A node's centrality and size indicate the degree of its institutionalisation. (Wider, darker) edges indicate that actors use the concept pair (more) congruently. Coloured edges indicate a close association with a field logic. Edge filter value 0,4. Centrality range 3,7 – 11,6 (own work.

government – and becomes a linchpin determining whether or not actors support the reform bill in parliament.

A central aspect of policy instrument change is a gradual phase-out of area-based support over seven years. Even though very few details of the replacement scheme are known, it marks one of the most profound agricultural policy reforms since the UK acceded the CAP. On average, it is expected to decrease farm incomes and output (Hill 2022). Nevertheless, most actors welcome this phase-out as part of a general shift to a public money for public goods approach. This repositioning is consolidated in the 2020 debates, to the point that fundamental opposition to the new subsidy principle has become rare. However, a coalition between Farmers' Unions and party and government representatives from the devolved administrations argues against a full phase-out and suggest to maintain area-based payments to protect farmers during the Exit from the Common Market.

The discursive shift towards multifunctionalism has implications for actor networks, too. With the 2020 Agriculture Act, DEFRA shifts its position towards multifunctionality, most centrally through the public goods-focused subsidy scheme: Secretary of State Theresa Villiers claimed that "providing more space for biodiversity, trees and nature will […] be at the centre of many of the environmental land management schemes that we will be able to take forward under the Bill" (House of Commons Library). The department thereby puts itself at the centre of the actor network, displaying strong discursive overlap with both a growing environmentalist actor coalition and farmers' unions. State and industry actors representing devolved interests form another actor cluster – highlighting the growing importance attributed to devolution issues in the 2020 reform debate.

5.2. *Examining regime destabilisation through network analysis*

Regime destabilisation is a systemic phenomenon. In a polycentric regime, it can be assessed only across socio-technical configurations. The network graphs from the previous sections clearly become less dense over time, with fewer links between the concept nodes (see Fig. 12, Appendix). Moreover, the scale of the network graphs change, with the innermost concentric circles indicating lower values of degree centrality over time. To address the level of the organisational field directly, we complement the previous qualitative and quantitative assessments of the reconfiguration of UK agricultural policy with aggregated network statistics (see Section 5.2). Fig. 8 displays their development over time, including network density, average degree centrality of concept nodes, as well as the average sum of actors referring to each concept. For these calculations, full networks are used for all years, without the edge filters applied in Figs. 2–7. The following graphs display (relatively weak) trends only; individual values cannot be interpreted directly, as discussed in Section 5.2. However, together with the network graphs, they point towards an overall *reduction in regime institutionalisation*.

At a highly aggregate level, these statistics thus confirm the tendencies revealed by the detailed results. Comparing all concept congruence networks, network density (reflecting the proportion of actual edges between concepts to all possible edges) decreases slightly over time. Measures for average degree centrality of concepts (reflecting the average of the respective number of concepts that are co-mentioned congruently) and average sum of actors (normalised per time period), overall confirm this declining trend over the study period. Disaggregating these results for the three field logics, the reduced institutionalisation of neoliberal concepts contributes most to this decline, although a reduction is visible for all three logics, as Figs. 9–11 show. These instances of disaggregation thus confirm that the multifunctional configuration strengthens its relative position over time. Differentiating between policy goal and policy instrument/governance approach networks reveals that the latter declines consistently and more strongly; whereas the results for policy goal networks are more mixed, but confirm the overall declining trend (see Table 1, Appendix). In sum, it is thus the aspects of the socio-technical regime relating to policy instruments and governance architecture applied to agriculture that decline the strongest.

Overall, these findings indicate a reduction in the coherence and institutionalisation of the socio-technical configurations represented in agricultural policy discourse. Over the study period, actors participating in agricultural policy reform debates refer to a wider set of concepts, each of which unites a smaller set of actors behind it. The loss of the CAP's externally determined policy framework

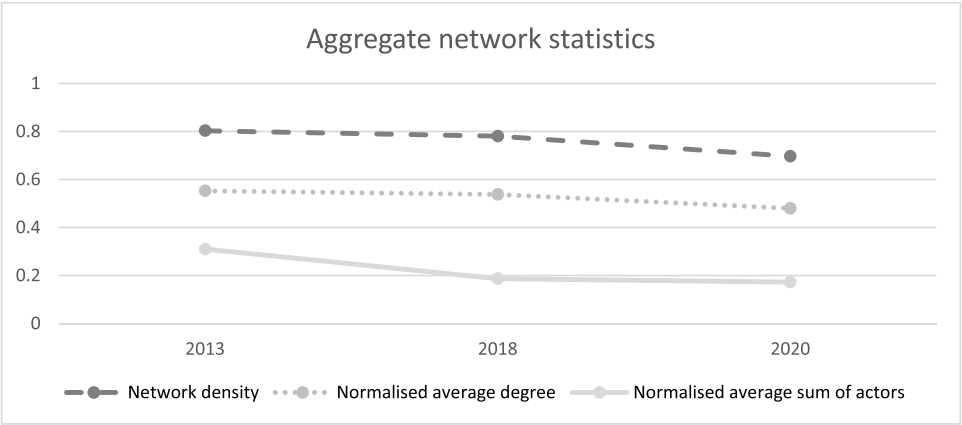

Fig. 8. Aggregate statistics for concept congruence networks over time. The two network types are collated in this graph (own work).

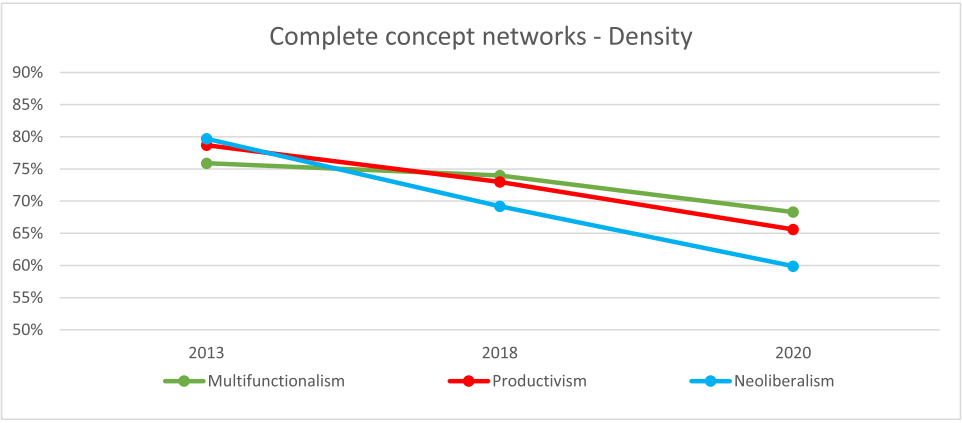

Fig. 9. Network density measures for concept congruence networks over time. The two network types are collated in this graph (own work).

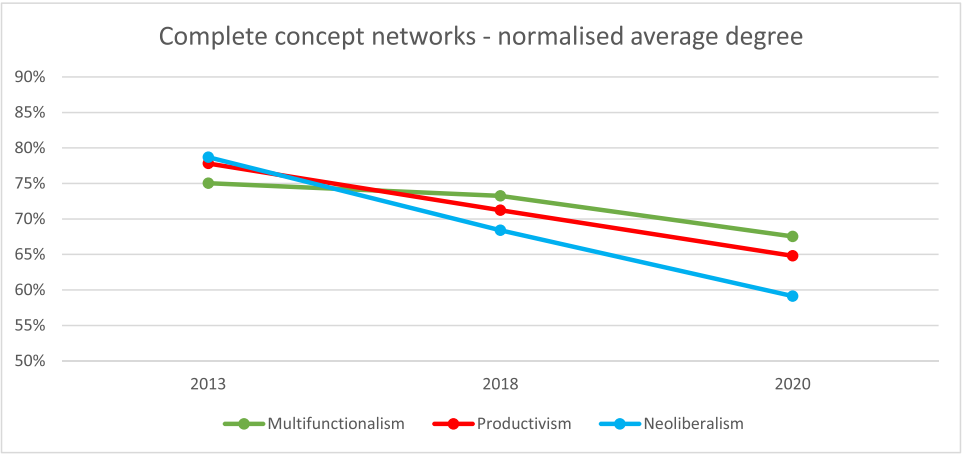

Fig. 10. Normalised average degree measures for concept congruence networks over time. The two network types are collated in this graph (own work).

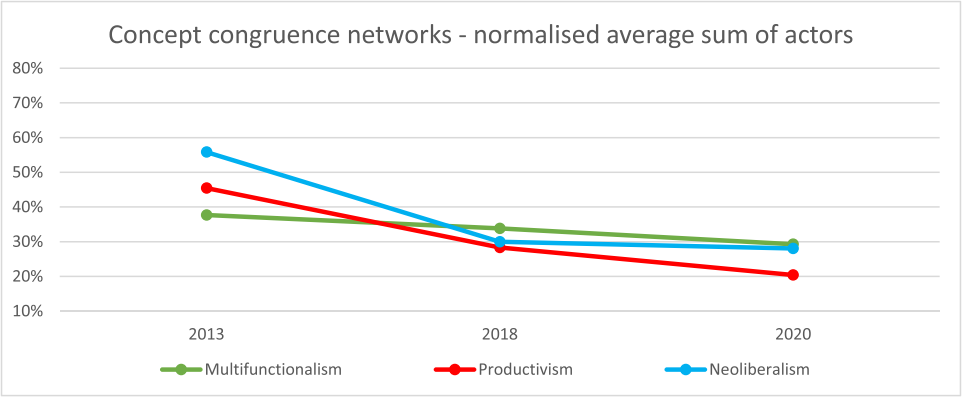

Fig. 11. Normalised average sum of actors measures per concept node for concept congruence networks over time. The values are derived from policy goal networks (own work).

opens up space for actors to argue for different pathways of reform: differing political agendas, ranging from high-quality food production oriented towards export markets to agroecological production aimed at low environmental footprints and shortened supply chains for local food, become feasible projects outside of the Single Market.

Importantly, our method does not permit us to define a quantitative threshold for regime destabilisation. Nevertheless, these findings confirm the above-described de-institutionalisation of a polycentric goal order and associated agricultural policy design, against the backdrop of the increasing importance of specific environmental policy goals. As advances in research describe the environmental impacts of agricultural production in more clarity and detail (Springmann et al., 2018; IPCC 2019; Poore and Nemecek 2018), agri-environmental policy becomes more politicised in recent years, with a particular focus on climate and biodiversity impacts. Addressing these goals thus features more prominently in the configurations. While a shift towards more multifunctional understandings of the purposes of agriculture has been previously described in the literature (Erjavec and Erjavec 2020; Gravey 2022, 2019; Feindt 2018), our analysis highlights that the choice and design of agricultural policy instruments has shifted only partially as well.

6. Discussion

Our results show a marked shift in the socio-technical configurations enshrined in agricultural policy over time: in the 2013 reform debates, the relatively well-aligned, although polycentric field included three, similarly strongly institutionalised configurations. From there, coordinative discourse shifted towards less overall regime coherence and the relative dominance of a multifunctional storyline - especially among policy goal concepts. Both the relative institutionalisation of policy instruments and the policy goal order have clearly shifted. Nevertheless, the previous regime – i.e., the most strongly institutionalised parts of the socio-technical system of agriculture - has not been entirely dismantled and replaced, but rather partially reconfigured.

These results have several implications: first, they serve as evidence that an institutional perspective on sustainability transitions (Fünfschilling 2019) provides a conceptual foundation to connect policy change with regime destabilisation. Here, we have demonstrated how tracing field logics enshrined in changing sectoral policy illustrates regime stability over time. In studies of ongoing regime destabilisation processes, eventual decline is not certain. Frank and Schanz (2022) show that while perspectives on regime destabilisation governance already offer insights into the dynamics of decline, a clear criterion for the extent of policy change that is relevant for regime destabilisation is missing, reducing the comparability of assessments across time periods and cases. Describing policy change according to field logics offers such an empirical criterion, such that our approach is suitable to address ongoing regime shifts with improved conceptual rigour and higher granularity. Moreover, by highlighting the recalibration and hybridisation of policy goals associated with distinct field logics – as well as their links to policy instruments and the governance architecture – it does so in substantial detail, even on the relatively short timescale our empirical material covers. Thus, even though this short time span made observing full regime decline rather unlikely, the approach illuminated a shift in the socio-technical configuration that is highly compatible with existing literature on agricultural policy change.

This is made possible as our approach addresses the temporality of destabilisation processes by introducing a logic of iterative assessment to the study of regime destabilisation. For instance, Turnheim and Geels (2012) and Karltorp and Sandén (2011) draw on varied evidence spanning a period of at least 30 years, to craft one coherent story spanning their entire study periods. Studies assessing policy mixes for regime destabilisation, on the other hand, trace regime shifts through instrument mixes and actor preferences in a cross-sectional manner (cf. Kivimaa and Kern 2016; Lindberg et al., 2019). The approach presented here goes beyond these contributions, in that it enables the assessment of socio-technical configurations iteratively at discrete points in time to discuss whether or not a regime is destabilising. We can thereby zoom in on ongoing or historical processes of regime destabilisation and discern aspects of socio-technical regimes whose change aggregates up to the decline of a particular configuration. This iterative regime assessment is however subject to the limits we discussed in Section 5; however, if based on compatible coding schemes and materials, our approach produces fine-grained representations of the socio-technical configurations which can be compared across time or cases.

Second, and regarding the case study, our findings suggest that a major external shock in our case did not create space for new, radically different system configurations. Instead, it led to a reconfiguration along existing development pathways, in which previously strongly institutionalised system elements still play a part, while a slow shift towards multifunctionalism – long described in the literature – continues. Significantly, institutional change is therefore only partial, despite circumstances conducive to regime destabilisation. These developments differ clearly from the ideal-typical depiction of regime destabilisation processes in Fig. 1: regime destabilisation is generally perceived in terms of the dissolution of one dominant regime organised around one single field logic (e.g. Turnheim and Geels 2012). This raises conceptual issues regarding the semi-coherence of socio-technical regimes: while e.g. Fünfschilling and Binz (2018, p. 739) recognise that regimes are not a "monolithic and deterministic phenomenon", it is less clear what constitutes the destabilisation of a decidedly polycentric regime, and what the alignment within one configuration and that between several configurations contribute respectively to regime stability. Deinstitutionalisation can occur both at the field and configuration levels. As a theoretical problem, this remains to be fully explored. In our case, we observe that the degree of institutionalisation declines both within and between the three socio-technical configurations, while some previously strongly institutionalised concepts remain important and the relative importance of a multifunctional logic even increases. We argue that this constitutes partial regime destabilisation.

We show that in 2013, the multifunctional field logic was integrated in a well-aligned, hybrid configuration in which productivism and neoliberalism were equally prominent – well over a decade after high-profile discussions of a post-productivist transition in agricultural policy research (see e.g. Wilson 2001; Feindt 2018). Thus, while our results confirm that a partial transition away from productivism and neoliberal agricultural policy has indeed occurred since then (Wilson 2007), established field logics continued to guide agricultural policy making in 2013 and beyond. The increasing institutionalisation of multifunctionalism constitutes a partial change in the agricultural policy goal order; policy design, however, has not been reoriented accordingly. Instead, in a case of institutional conversion (Streeck and Thelen 2005), the multifunctional logic now provides new reasons for which agriculture is to be

subsidised: the 2020 Agriculture Act contains a list of purposes that can be given financial support, notably including environmental goals (Hill 2022). This continues the exceptionalist legacy of previous phases in agricultural policy (Feindt et al., 2022; Daugbjerg and Feindt 2017). In part and ad hoc, we can explain these changes through Brexit politics itself: Farmers were promised a range of benefits, from more support for domestic protection and a shift away from direct payments widely perceived as illegitimate, to a "Green Brexit", export market access and high environmental and social standards for food production and imports (Gove 2019; DEFRA 2018). These policy goals are partially conflictive, and therefore favour the more inclusive logic of multifunctionalism, but would be incompatible with its hegemony. Moreover, this very breadth of policy goals shows that Brexit was not linked to one particular agricultural policy project. This explains the much more modest shift in the configuration of policy instruments and technological/practice-oriented concepts: while the principle of public money for public goods has widespread support, it is linked to both multifunctional and productivist ideas (Coe and Finlay 2020).

The UK's exit from the European Union therefore does not mark a complete rupture with previous regime development pathways, but rather enhances evolution along pre-existing logics. In our case, even a major external shock coinciding with political will for reform was not sufficient to open up a pathway of substantial de- and re-alignment; instead, it fed into a process of regime reconfiguration (Geels et al., 2016). This result has implications for deliberate destabilisation governance: while the implications from one case should not be overstated, it draws into question common claims of external disruptions as windows of opportunity (Oliver et al., 2018; Herrfahrdt-Pähle et al., 2020; Turnheim 2023). If even a major external shock such as Brexit does not induce substantial regime destabilisation, the importance of available and established discursive alternatives to influence further regime development becomes even larger. Strengthening alternative field logics cannot only happen in critical moments, but may be necessary before in order to seed change (cf. Roberts 2017). Similarly, other recent large-scale socio-political shocks, including the 2007 financial crisis or the Covid-19 pandemic have not, despite initial hopes, served as windows of opportunity for transformative change (Feindt et al., 2022). This underscores the need to look beyond punctuated equilibrium understandings of change (Streeck and Thelen 2005).

Third, and highlighting this interplay between path dependent regime development and external pressures (cf. Leipprand and Flachsland 2018), the results nuance our theoretical expectation that reduced competition between field logics is a sign of a strengthened regime. During the three successive reform processes, the overall alignment of concepts in the socio-technical configuration is reduced while the mixed policy goal order declines and multifunctionalism becomes more central. Thus, despite there being one central field logic in 2020, no new, commonly accepted regime is yet institutionalised. Although questions of regime formation are not definitively answerable during our study period, this collides with the assumption that a configuration is most stable when it revolves around one strongly institutionalised logic, and highlights the importance of discourse hybridisation (Runhaar et al., 2020; Feindt 2018). For our case study, we interpret this finding against the backdrop of two opposing developments: the growing institutionalisation of a multifunctional logic and surrounding concepts is an expression of path dependent development, and thus indicates dynamic regime stability in a sector that has been undergoing slow, but dramatic changes for decades (Almås 1994; Wilson 2007). On the other hand, the secession from the CAP's unifying frame marks a strong, external shock to the regime and allows for more degrees of freedom for competing agendas, with destabilising effects on the socio-technical regime. Since the possibilities for divergence between EU member states (and between devolved nations within the UK) have gradually increased since 2013 (Henke et al., 2018), it is therefore fitting that this deviation is stronger still in the subsequent, post-Brexit period. This enlarged space of policy design options acts as an obstacle to regime formation.

Both developments correspond to theoretically and empirically well-established mechanisms of policy change, which Feindt (2010, p. 300) describes as "external perturbations" and "policy-oriented learning, [which] occurs from the gradual accumulation of information, usually over a decade or more". While Brexit undoubtably marks a major shift in the "socio-economic framework conditions" (ibid.), the latter mechanism can be used to explain the increasing importance of environmental issues in agriculture. Both climate change and biodiversity loss related to agricultural production have become topics of public debate and research, such that much more available information can be brought to bear on agricultural policy (see e.g. Pe'er et al., 2019). Over the course of our study period, policy discourse increasingly mirrors these developments.

7. Conclusion

In this article, we have employed recent conceptual developments in the institutional perspective on sustainability transitions to assess processes of socio-technical regime destabilisation through policy change iteratively and with high granularity. Conceptually, we have shown that changes in the institutionalisation of field logics and associated policy goals, instruments and related traits of sectoral governance provide a yardstick by which processes of regime destabilisation can be empirically assessed. In addressing our empirical research questions, we have described the socio-technical regime structuring UK agriculture in terms of productivist, neoliberal and multifunctional field logics, and their associations with policy goals and instruments. This regime, however, is only partially destabilised during Brexit. Brexit presented an external shock to the existing regime and removed factors of path dependence, which facilitated alignment of the configuration around a multifunctional field logic. However, these new degrees of freedom did not entirely unsettle the regime, or lead to the appearance of entirely new socio-technical configurations. Instead, they accentuated unfolding trends, strengthening pre-existing field logics. Our analysis thus opens up questions about the importance of external shocks as windows of opportunity for regime change, as well as patterns of destabilisation of polycentric regimes.

By its very nature, an assessment of ongoing destabilisation processes can only yield preliminary results. However, the analytical approach presented in this paper permits fine-grained analyses of regime destabilisation, and is highly applicable to other cases. Moreover, by enabling cross-sectional research designs, it also lends itself to comparative analyses of regime destabilisation across cases, as Heiberg et al. (2022) suggested in their original application of STCA. Applying our approach for assessing regime

destabilisation is not limited to a specific sector such as agriculture. However, it requires highly commensurable materials which permit inference on clearly distinguishable field logics and a study period during which substantial change in socio-technical configurations could reasonably be expected to occur, based on sufficient length or the appearance of critical moments. Parliamentary hearing transcripts as we have used them in our study are ideally suited for this purpose, but focus the analysis clearly on policy changes and are limited to parliamentary policymaking processes. A corpus of materials permitting stronger inference on technological system elements, such as public consultations or even interview transcripts (Heiberg and Truffer 2022), would strengthen the analysis of regime destabilisation further. Future research should elaborate the conceptual tools developed here to arrive at a fuller understanding of socio-technical regime decline and identify patterns and phases of decline – further narrowing the gap between historical analysis of regime destabilisation and future-oriented studies of destabilisation governance. Moreover, combining our approach with an in-depth analysis of the drivers and/or outcomes of policy change would allow a more explicitly explanatory stance than we have adopted here. Both aims would be greatly aided by an increased standardisation of the methodology across applications of STCA. Lastly, we hope that the development of detailed understandings of particular destabilisation processes in agri-food systems and beyond may be leveraged to support future sustainability transitions.

CRediT authorship contribution statement

Leonard Frank: Conceptualization, Methodology, Software, Validation, Formal analysis, Investigation, Resources, Data curation, Writing – original draft, Writing – review & editing, Visualization, Project administration, Funding acquisition. **Giuseppe Feola:** Conceptualization, Validation, Resources, Supervision, Writing – review & editing. **Niko Schäpke:** Conceptualization, Validation, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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Appendix

Explanation of STCA network analysis methodology

Calculation of degree centrality	"Degree centrality measures the number of other concepts that a concept is linked to in the discourse [… and] reflects the number of other concepts that have been co-mentioned in a congruent way. A central concept is therefore one which is used congruently with many other concepts" (Heiberg et al., 2022, p. 4).
Calculation of edge weight	Following Heiberg et al. (2022), we operationalise the alignment "by a normalized weight that considers the similarity of two concepts in terms of the actors that have used them congruently. To this end, we calculate each concept pair's jaccard similarity", yielding values between 1 and 0 for each edge, as concepts are always or never used congruently (Heiberg et al., 2022, p. 4). Mathematically, most nodes are weakly linked in the network graphs, making the figures entirely illegible. The network graphs therefore display only edges with a similarity value above 0.4 for the 2018–2020 reforms. For improved legibility, the 2013 network graphs use slightly higher edge filter values of 0.42 and 0.45 because of the higher congruence between concepts in this period. Concept nodes that are not connected to other nodes by edges above the threshold of 0.4 are not displayed in the network graphs.
Calculation of Jaccard similarity	Jaccard similarity (s) is expressed as $s = \frac{a}{a+b+c}$ Where a indicates the number of actors using both concepts congruently, while b and c indicate those actors that have used either one or the other of the two concepts (Heiberg et al., 2022).

(*continued on next page*)

(*continued*)

Inductive attribution of policy goal concepts to field logics.	The first plot for each period represents the configurations of policy goal concepts. Each of these concepts was deductively associated with one of the productivist, neoliberal or multifunctional field logics: food security, for instance, is widely seen as the paramount productivist policy goal (e.g. Wilson 2007), whereas market orientation and environmental goals are associated with the neoliberal and multifunctional logics respectively. For 5 policy goal concepts, the association with a field logic (and thus a top-level code) was unclear. We therefore calculated the respective edge weights of associations with the three field logics, and classified them according to the strongest similarity.
Actor-network graphs	We use the STCA methodology to portray a network of actors based on their congruent use of concepts. To this end, the same two-mode data set (co-occurrence matrix of actor and concept codes) is transformed into a one-mode network of actor codes through the same analytical steps (Leifeld, 2017). These actor network graphs are presented in Figs. 13-15 (Appendix).
Data export and curation	Data curation and export was done based on the steps and resources of the STCA guide, see Heiberg and Miörner (2022). However, coding was carried out in MAXQDA. We produced two-mode coding tables with the code-relations browser function, showing how often an actor refers to a concept for each time period. Coding tables were exported to Excel, and transformed into one-mode matrixes using a jaccard normalisation script in R. Network analyses and graph design were performed in Visone, using a centrality layout. Additional data, including actor sums per concept, were added to the network graphs from MAXQDA export tables.

Aggregate network statistics 2013–2020

Table 1
Aggregate network statistics 2013–2020 concept congruence networks.

		Network density	Average degree	Normalised average sum of actors
2013				
Policy goal network	0,87	40,875		0,377
Policy instruments and governance architecture network	0,779	56,11		0,242
2018				
Policy goal network	0,926	47,231		0,244
Policy instruments and governance architecture network	0,685	53,468		0,19
2020				
Policy goal network	0,82	38,542		0,204
Policy instruments and governance architecture network	0,692	42,783		0,17

Results: changes in networks

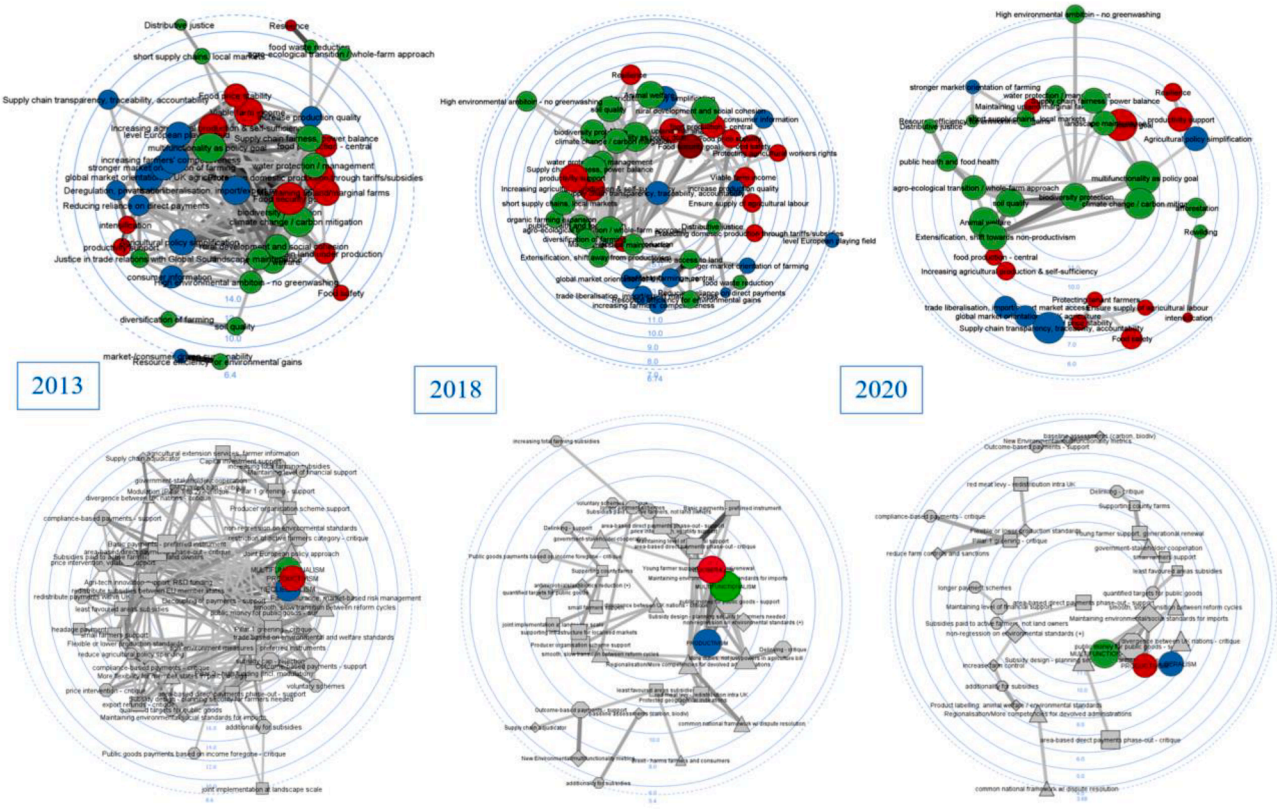

Fig. 12. Development of socio-technical configurations over three reform processes. Edge filter values 0.4 (own work).

Actor network graphs

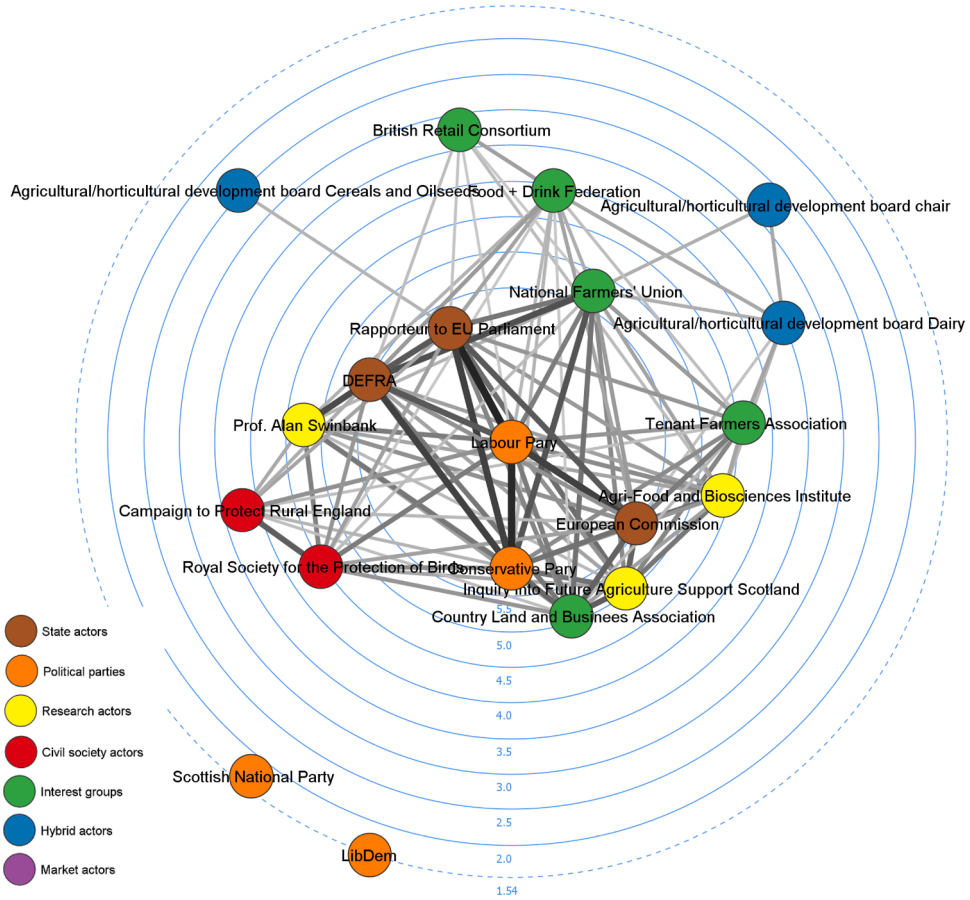

Fig. 13. 2013 reform - actor congruence network. Colours indicate different actor types (own work).

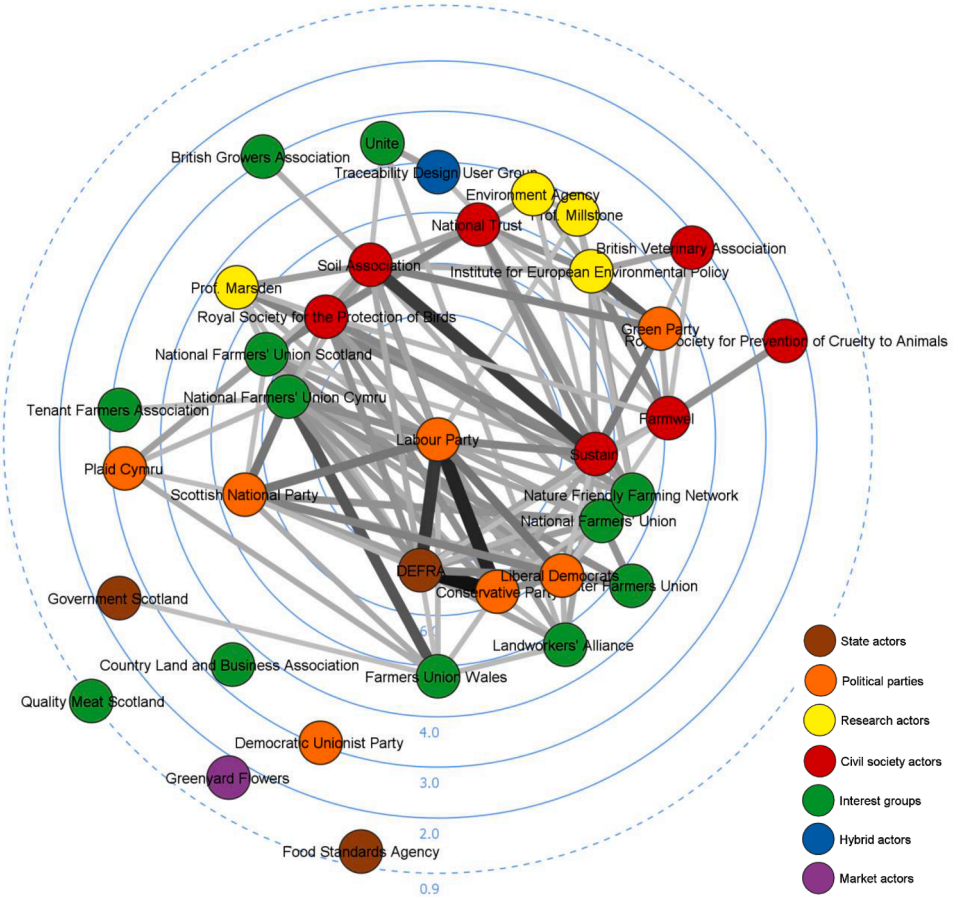

Fig. 14. 2018 reform - actor congruence network. Colours indicate different actor types (own work).

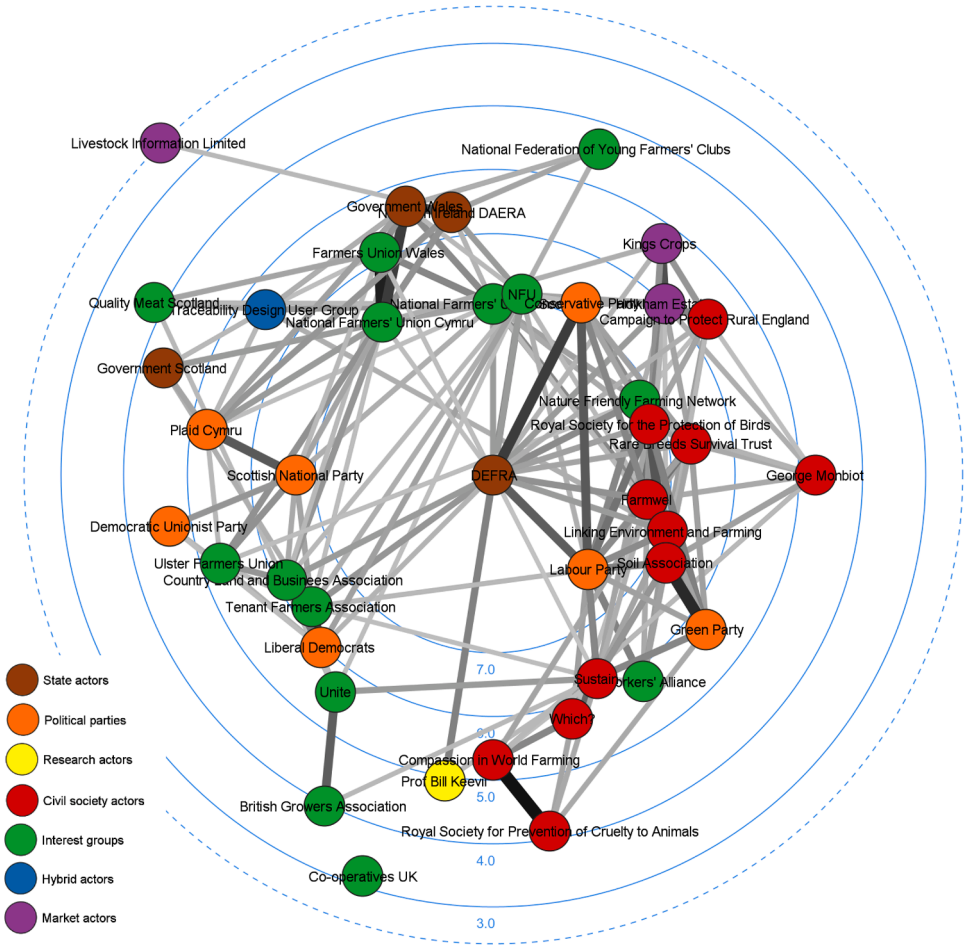

Fig. 15. 2020 reform - actor congruence network. Colours indicate different actor types (own work) .

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