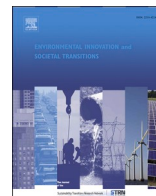


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## The politics of deliberate destabilisation for sustainability transitions

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### ABSTRACT

This paper advances scholarship on deliberate destabilisation for sustainability transitions. To understand how deliberate destabilisation plays out in practice, the politics of such processes must be confronted. To this end, we bridge research on the political economy of sustainability transitions with recent theorisations of the deliberate destabilisation of unsustainable socio-technical regimes and propose a set of analytical dimensions and guiding questions for the study of the latter. The added value of a political economy perspective to understand the politics of deliberate destabilisation in capitalist economies is demonstrated through the historical example of the phase-out of hen battery cages in the Netherlands. The poultry sector in the Netherlands embodies an industrial approach to food and farming, orientated towards producing large amounts of standardised and cheap food. We foster new insights on the influence of intertwined political and economic interests for deliberate destabilisation processes, which may reproduce, rather than transform, unsustainable and unjust socio-technical regimes.

### 1. Introduction

This paper introduces a framework that unites research on the political economy of sustainability transitions with recent theorisations of the deliberate destabilisation of unsustainable socio-technical regimes. We propose a set of analytical dimensions and guiding questions for understanding the politics of deliberate destabilisation in capitalist economies. By employing this theoretical lens to one example, we also illustrate how intertwined political and economic interests influence the rationale, process and outcome of deliberate destabilisation for sustainability transitions.

Sustainability transition researchers have recently been urged to more explicitly discuss the capitalist political economy in which transitions towards more sustainable futures are embedded (Newell, 2019; Feola, 2020). In this context, a political economy perspective can make two important contributions to the debate on sustainability transitions. First, contextualising sustainability transitions within the wider political economy enables one to examine how the systemic interplay of capitalist economic and political conditions influence whether and how sustainability transitions happen (Lawhon and Murphy, 2012; Newell and Phillips, 2016; Wilhite, 2016; Gorg et al., 2017). Such an approach requires asking fundamental questions about what interests are addressed and supported through transition initiatives and what alternatives are being obscured. For example, the dominant green growth movement demonstrates how the capitalist logic of economic growth and competitive markets shape certain transition pathways and prioritise technological innovation while side-lining and excluding those that might entail a fundamental change of the capitalist political

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economy (Liodakis, 2010; Newell and Phillips, 2016; Newell, 2019; Vandeventer et al., 2019; Feola, 2020).<sup>1</sup> Sustainability transitions are inherently political (Scoones et al., 2015); they reflect a particular diagnosis of persistent social problems and a vision of how to deal with them (Geels, 2014; Avelino et al., 2016). To this end, ‘by who and for whom’ questions help explain the nature and direction of sustainability transitions (Meadowcroft, 2007; Bush and Marschke, 2014)

Second, accounting for the political economy in sustainability transitions opens the door to questioning the actual sustainability and justice of transitions achieved under capitalism (Lawhon and Murphy, 2012; Swilling and Annecke, 2012; Newell and Mulvaney, 2013; Feola, 2020). The structural causes of multiple inequality and sustainability crises lie at the core of capitalist societies and should therefore be central to inquiries into ‘the sustainability of sustainability transitions’ (Feola, 2020:244; Velicu and Barca, 2020). Many popular sustainability innovations, such as electric vehicles and solar panels, promise to sustain present ways of life with much lower carbon emissions; however, they may do so at the cost of bypassing imperatives of justice and democracy (Jackson, 2016; Healy and Barry, 2017; Hickel and Kallis, 2020). As people and places unequally experience environmental change and socio-technical progress, a truly *sustainable* sustainability transition calls for a just transition whereby the political economy in which such transitions are embedded can be debated and contested (Swilling and Annecke, 2012; Newell and Mulvaney, 2013). Furthermore, a critical evaluation of the environmental sustainability of sustainable alternatives requires a political economy perspective. For example, the relationship between economic growth and sustainability in capitalist contexts may offset expected environmental gains from efficient resource use because these gains are likely to be spent on enhancing consumption and production capacity - a phenomenon known as the ‘rebound effect’ (Antal and Van den Bergh, 2016; Shove, 2018; Hickel and Kallis, 2020; Feola, 2020). Moreover, environmental problems may not be solved but rather shifted along value-chains and spatially distant, but functionally interconnected under capitalism (Feola, 2020). Efforts to relieve one source of environmental pressure may create or aggravate others, often at the expense of other, less powerful regions (Antal and Van Den Bergh, 2016; Gorg et al., 2017).

Thus, the literature on sustainability transitions risks omitting essential parts of the picture if economic and political forces are not taken into account (Lawhon and Murphy, 2012; Newell and Mulvaney, 2013; Newell and Phillips, 2016; Power et al., 2016; Newell, 2019). However, while a growing number of researchers have called for and adopted a political economy approach to examine sustainability transitions, such a perspective and its associated concerns have not yet been discussed in relation to recent debates on deliberate destabilisation as a crucial element of sustainability transitions.

The destabilisation and decline of socio-technical regimes has always been important for transitions studies to make space for niches to emerge (Turnheim and Geels, 2012). However, researchers have gradually begun to consider destabilisation not merely as a background process of innovation, but rather have made destabilisation and its governance a focal object of study (Stegmaier et al., 2014; Kivimaa and Kern, 2016; Heyen et al., 2017; Normann 2019). Deliberate destabilisation as a governance strategy carries the assumption that the managed decline of unsustainable systems provides opportunities for alternatives to emerge (Rosenbloom and Rinscheid 2020). In so doing, it recognises unequal power distributions between niches and regimes in sustainability transitions and the complexities of redirecting resources committed to supporting incumbent technologies, ideas and practices (Geels, 2014; Avelino and Wittmayer, 2016).

While the destabilisation of socio-technical regimes is a process that entails multiple dynamics, involving environmental or economic policies, societal crises and shifts in public opinion, it is increasingly accepted that to orientate regimes towards sustainability requires interventions that weaken prevailing socio-technical configurations (Koretsky and van Lente 2020). Phase-out (Kivimaa and Kern, 2016; Rogge and Johnstone, 2017; Brauers et al., 2020) and ‘exnovation’ (Heyen et al., 2017; David, 2017; Davidson, 2019) are two such interventions that ‘actively seek the termination of a specific technology, substance or process that causes negative externalities’ (Rosenbloom and Rinscheid, 2020: 11). Deliberate destabilisation is also finding its way into a variety of mission statements and policy objectives in which it is presented as an important catalyst for accelerated change, such as the coal phase-out agenda aiming to transition to fossil-free energy systems (David, 2017; Brauers et al., 2020).

Building on extant debates on the political economy of sustainability transitions, this paper focuses on deliberate destabilisation as a governance strategy in sustainability transitions. Transition scholars tend to recognise deliberate destabilisation as a policy strategy to unsettle incumbent interests, authority and power relations (e.g. Geels (2014)), whereas this paper shows how processes of deliberate destabilisation are affected by capitalist political economies that reflect, among others, particular diagnoses of persistent social problems, extant configurations of actors and their value-structures, and notions and visions of socio-economic development. Specifically, we argue that the i) rationale, ii) process and iii) outcomes of destabilisation processes are influenced by intertwined political and economic interests, and we propose a set of questions that researchers and analysts should be asking to understand the politics of deliberate destabilisation in capitalist economies. As an empirical illustration of our approach, we examine the phase-out and ultimate ban on battery cages as housing systems for laying hens in the Netherlands (Mollenhorst and de Boer, 2004; de Olde et al., 2020). In doing so, we also thematically expand the literature on deliberate destabilisation, in which case studies from the energy sector and more specifically fossil fuel technologies are overrepresented. The poultry sector and egg production in the Netherlands embodies an industrial approach to food and farming, geared towards producing large amount of standardised and cheap food. By examining this historical example through three dimensions of political economy, we foster new insights on the influence of the political economy for deliberate destabilisation processes, which may reproduce, rather than transform unsustainable and unjust socio-technical regimes.

<sup>1</sup> Green growth defends the viability of a continuously growing economy through the assumption of a fast decoupling of gross domestic product from critical environmental challenges (OECD, 2019).

## 2. Theoretical background

### 2.1. Sustainability transitions and destabilisation

Sustainability transitions are commonly defined as entailing a fundamental shift to new and more sustainable socio-technical systems (Geels and Schot, 2007; Smith et al., 2010; Köhler et al., 2019), which implies a ‘major technological transformation in the way societal functions such as transportation, communication, housing, feeding are fulfilled’ (Geels, 2002: 1257). Transition scholars assign a pivotal role to *niches* (Kemp et al., 1998; Geels and Schot, 2007; Loorbach and Rotmans, 2010; Grin et al., 2010), which provide the protective space for alternatives to incumbent realisations of societal functions (Smith and Raven, 2012). Transition processes are set in motion as sustainable niche innovations spread, scale-up and are adopted in more commercial and market settings. However, they are likely to encounter resistance from the incumbent *regime* of existing actors and interests that benefit from ongoing reliance on current socio-technical configurations and therefore tend to prioritise incremental improvements. Resistance to change can be vigorous due to vested interests, organisational commitments and cognitive lock-ins (Geels, 2014). However, exogenous pressures or *landscape* developments create destabilising pressures that may open up incumbent regimes and create a window of opportunity for alternatives to gather momentum (Geels, 2002; Smith et al., 2010). This multi-level conceptualisation of niche-regime-landscape dynamics in transition processes is an influential heuristic to understand sustainability transitions occurring through socio-technical change (Smith et al., 2010; Köhler et al., 2019).

Regime destabilisation that is influenced by both higher and lower societal levels is thus essential for the occurrence of sustainability transitions. Transition research and practice typically focus on how to facilitate the emergence, development and diffusion of niche technologies that may create new and more sustainable regimes (Geels and Schot, 2007; Hekkert et al., 2007; Fuenfschilling, 2019). The destabilisation of socio-technical regimes that have developed around incumbent technologies has long been assumed to happen ‘along the way’, i.e. in the form of automatic displacement caused by destructive innovations, and has hitherto received limited analytical and empirical attention (Shove, 2012). More recently, researchers have begun to consider destabilisation not merely as a background process of innovation and have rather made destabilisation and its governance a focal object of study.

Broadly speaking, two distinct lines of research are stimulating a more specific debate on destabilisation. One of these lines explores destabilisation as the ‘flipside’ of innovation processes (Turnheim and Geels, 2012; Isoaho and Markard, 2020). These scholars take a historical perspective to identify and examine patterns in the process by which incumbent industries lose their grip and socio-technical regimes become destabilised. In their seminal work, Turnheim and Geels (2012, 2013) conducted a historical case study of the British coal sector to illustrate how once powerful industries decline. The authors defined destabilisation as ‘the process of weakening reproduction of core regime elements’ (Turnheim and Geels, 2012:35).

Another line of research, which we explore in this paper, perceives destabilisation as an object of governance. The continued prevalence of unsustainable socio-technical regimes evinces the limits of innovation and Schumpeterian notions of ‘creative destruction’ (e.g. Turnheim and Geels, 2013; Stegmaier et al., 2014; Kivimaa and Kern, 2016; Heyen et al., 2017). In addition to understanding regime resistance and how incumbent interests hinder the progress of sustainability transitions (e.g., Geels, 2014), transition researchers are increasingly focussing on intentional actions that may unsettle the stability of regimes. According to this perspective of destabilisation, the prevalent ‘innovation bias’ should be overcome by complementing innovation policy and research with a phase-out agenda (Kivimaa and Kern, 2016; Rogge and Johnstone, 2017). Thus, sustainability transitions not only rely on the development of alternative technologies or practices in niches but also require the active destabilisation of regimes to make space for such alternatives, which would otherwise be constrained by extant regimes (Davidson, 2019; Normann, 2019).

Various scholars have begun to explore how policy might facilitate active destabilisation processes. The phase-out policy approach has been successful in moving away from resistant regimes by accelerating the retirement of, among others: inefficient light bulbs (Stegmaier et al., 2014), the use of DDT (Levain et al., 2015), nuclear energy (David and Gross, 2019), and private passenger cars with internal combustion engine (Hoffman et al., 2017). While such strategies have alternately been referred to as exnovation (Heyen et al., 2017; David, 2017; Davidson, 2019), destruction policies or policy-mixes (Kivimaa and Kern, 2016), or discontinuation (Stegmaier et al., 2014; Hoffman et al., 2017), they coincide on identifying a governance approach that actively seeks to discourage, restrict or reduce the production and use of specific infrastructures, technologies, products or practices that cause negative externalities (Rosenbloom and Rinscheid, 2020).

Phase-out policies may directly target unsustainability through hard and abrupt bans that prohibit use or production, or they may restrict usage in certain contexts-e.g. low-emission zones to restrict car usage in city centres (Hofmann et al., 2017). In contrast, indirect measures make the production and use of unsustainable products or services less feasible or less attractive. Such approaches may include stringent production and performance standards, the removal of subsidies, changes in market rules such as carbon taxes or pollution limits, or policies that affect institutional rules or social norms (Heyen et al., 2017; Rosenbloom and Rinscheid, 2020). Indirect measures can also be a precursor of an actual ban. For example, when discussing the EU’s ban of incandescent light bulbs (ILB), Stegmaier et al. (2014):11 explained that ‘the step-by-step reduction of wattage was necessary in order to allow time for the new, not yet fully functioning and marketable replacement products to mature, and to make users aware of the advantages of efficient lighting’. Typically, phase-out is a response to growing concerns voiced by social movements or interest groups that question the legitimacy of persisting regimes (Turnheim and Geels, 2012). Examples of Greenpeace campaigning for the phase-out of chlorofluorocarbon (CFC)

in refrigerators or Fossil Free Germany convincing investors to divest from fossil fuel industries (David, 2017; Heyen et al., 2017) illustrate the importance of social movements in advocating change.

The social and economic acceptance of policy strategies for destabilisation are likely influenced by the time span in which it takes place. According to Heyen et al. (2017), short-term processes can trigger strong socio-economic friction, and more extended phase-outs may therefore be essential for several reasons. First, they are less likely to meet strong resistance because they lessen social and economic hardship for affected companies and the individuals employed in those industries. For example, the emission standards for cars in the European Union (EU) were gradually imposed to enhance consumers' and manufacturers' acceptance and willingness to transition to alternatives. Second, a longer time span allows time to grasp the societal impacts of regime destabilisation and for support systems such as conditional compensations or re-education strategies to be put in place (Heyen et al., 2017; Davidson, 2019). Finally, longer time spans may be considered necessary in the absence of readily available alternatives (Stegmaier et al., 2014). For example, David (2017) concluded that 'if old energy-providing structures become exnovated, new alternatives must be waiting in the wings in order to prevent blackouts' (p. 139).

Emerging debates on destabilisation as an object of governance for sustainability transitions evince the potential and necessity of policy strategies to weaken resistant regimes. However, such debate has neglected to reflect on how these strategies are designed and has thereby overlooked pertinent questions regarding their political nature, such as by whom and for whom they are proposed. Literature on the political economy of sustainability transitions provides guidance for opening-up this black box and directs attention to how intertwined political and economic interests influence the governance sustainability transitions and deliberate destabilisation.

## 2.2. The political economy of sustainability transitions

In this paper, we draw on literature on the political economy of sustainability transitions to approach the politics that influence deliberate destabilisation. Specifically, we use the notion of political economy to illuminate how deliberate destabilisation in capitalist economies is shaped by existing constellations of interests and power relations that dictate which interests are prioritised, whose voices count, and which social groups are poised to benefit. Following Scoones (2016):306, we recognise that political processes that are articulated through regimes of accumulation have implications for the governance of sustainability transitions, and that, specifically, in capitalist economies 'the political complexion of interests that maintain the status quo [...] is inevitably influenced by the possibilities of profit and accumulation, whether by private companies, states or individual elites.'

The importance of acknowledging capitalism in understanding whether and how sustainability transition unfold has previously been put on the transitions agenda by various scholars (e.g. Meadowcroft, 2011; Lawhon and Murphy, 2012; Newell and Phillips, 2016; Feola, 2020; Johnstone and Newell, 2018; Power et al., 2016; Newell, 2019). Their critique on the present-day sustainability transitions debate is largely twofold: they posit that the sustainability transitions literature should on the one hand more explicitly consider how transitions are influenced and constrained by the capitalist political economy and on the other hand more critically examine whether and how fundamental ideas of how our economy should work could change as a result of sustainability transitions (Weingast and Wittman, 2008; Newell, 2019; Feola, 2020; Scoones et al., 2020). Thus, it is commonly accepted that a political economy lens better equips sustainability transition scholars to explain how and why societies transition to more or less sustainable outcomes

Researchers studying sustainability transitions from a political economy perspective illuminate how the structure and systemic interplay of polity and economy serve to perpetuate dominant interests without contestation (Scoones et al., 2020). This perspective is useful for understanding how the socio-political foundations of the economy favour specific accounts of sustainability and transitions and what alternatives they repress (Gorg et al., 2017; Newell, 2019). Moreover, this literature centres questions on justice and equality and emphasises sustainability transitions as 'uneven social and spatial processes [...] in which people and places unevenly experience the costs and benefits' of socio-technical change (Newell and Phillips, 2016:40) also see Newell and Mulvaney (2013) and Swilling and Annecke (2012). In this sense, political economy contributions to the sustainability transitions literature facilitate recognition of the ecological and justice-related impacts of such transitions as being inherently political.

The central argument of this paper is that deliberate destabilisation relies upon, and is shaped by political and economic interests, which should therefore be accounted for in our analysis. To this end, we mobilised key political economy questions and grouped them into three categories that serve as the basis for our illustration in Section 3. Scholars who critique the capitalist political economy of sustainability transitions (e.g. Newell and Phillips, 2016; Power et al., 2016; Brand et al., 2020; Scoones et al., 2020) have asked questions that involve issues of (a) truth and validity, (b) participation and influence and c) distribution of impacts. Questions on truth and validity are particularly relevant when exploring the *rationale* (i) or motivation behind deliberate destabilisation. Questions on participation and influence predominantly zoom in on the *process* (ii), exploring who is part of or influences deliberate destabilisation. Finally, questions on distribution are crucial for the discussion of *outcomes* (iii) of deliberate destabilisation. In particular, they elucidate distributive inequalities of who benefits from and who carries the burden of destabilisation.

**Rationale:** Firstly, a political economy analysis entails questioning what framings of sustainability problems and solutions count and how they govern what kind of transformation occurs, which foregrounds questions on 'truth' or the recognition of 'validity' and how these framings affect why sustainability transitions take shape (Newell and Mulvaney, 2013; Scoones, 2016). Capitalism

prioritises and privileges green growth as a compromise between economic growth and sustainability while excluding non- or post-capitalist framings of sustainability problems (Grundmann, 2007; Liodakis, 2010; Baker et al., 2014), thereby influencing the definition of such problems and the understanding of acceptable solution spaces (Meadowcroft, 2011). Questioning the rationale for sustainability transitions uncovers often hidden assumptions held by different actors as to how our economy and society should work (Feola, 2020). Moreover, such questions also direct attention to the choice of *sustainability* itself; as Stirling (2014) noted, ‘the complex breadth of “Sustainability”-canonically highlighted by the Brundtland Commission around social equity, human and wider ecological integrity-tends to contract to a single ‘low carbon transition’ alone’ (p. 89). With the environmental framing dominating mainstream discourses on sustainability transitions, important questions on redistribution, justice and equality risk being overlooked.

An associated concern often discussed by researchers studying sustainability transitions from a political economy perspective relates to what is regarded as reliable or justifiable knowledge about possible sustainability pathways (Lawhon and Murphy, 2012; Stirling, 2014; Scoones, 2016; Patterson et al., 2017). Knowledge is not a neutral entity, and its construction inevitably requires making disputable choices (Jasanoff, 2004). The politics of knowledge connotes that we should be asking important questions such as what type of knowledge (e.g. from specific disciplines or institutes and obtained through particular data collection methods) and whose knowledge counts in the development of sustainable alternatives-and whose does not (Grundmann, 2007).

The above applies to research on the politics of deliberate destabilisation in at least three ways. First, it requires an understanding of what type of ‘sustainability’ is progressed through deliberate destabilisation. In recognising contrasting and plural visions for sustainability transitions, deliberate destabilisation may have different purposes for different actor groups. Second, it requires asking what motivates deliberate destabilisation and when, and for which sustainability problems it is perceived as a valid solution. Thus, we see value in a close examination of what (and whose) framing of sustainability problems and solutions count in deliberate destabilisation. Third, in order to understand the motivation behind deliberate destabilisation as a governance strategy one should pay close attention to the type of knowledge deemed relevant for understanding and designing deliberate destabilisation.

**Process** In addition to the aforementioned politics of sustainability framings, researchers have also posed questions regarding ‘who influences and participates’ in decision-making processes (Newell and Mulvaney, 2013). Understanding the political nature of such processes includes reviewing who are the more or less powerful actors in prevailing regimes, which directs attention to ‘historical blocks’ of power, as social, political or cultural factors may give actors particular positions in society (Baker et al., 2014; Geels, 2014; Avelino et al., 2016; Scoones, 2016; de Schutter, 2019). Moreover, questions on participation and influence involve the issue of representativeness-i.e. who is or is not represented and included in decisions on sustainability transition (Lawhon and Murphy, 2012).

Questions regarding participation and influence may lay bare the politics of deliberate destabilisation processes. Hitherto, sustainability transition scholars have not engaged with such debates, and the role of powerful actors in designing destabilisation processes is too often left unmentioned. Key are the decision-making procedures that determine which actors ‘are in’ and what space they are given to influence the process. To this end, we propose two types of questions to interrogate the politics of deliberate destabilisation. First, to understand who participates in such processes, we ask who is and who is not invited to discuss and design proposals for deliberate destabilisation. Second, to understand what actors and associated value structures influence the process, we ask on what and whose terms decisions are being made and how trade-offs are resolved.

**Outcome** Finally, understanding the political economy of sustainability transitions requires us to question ‘who wins, who loses, how and why’ (Newell and Mulvaney, 2013:133) also see Newell (2019). Political economy scholars challenge the neutrality of market mechanisms and recognise that resources are allocated on the basis of power dynamics rather than efficiency or merit (Scoones, 2016). The structurally uneven distribution of outcomes across time and space is generally seen as the classic concern of political economy and prioritises questions on who benefits and who experiences the burden of, for example, technological or economic progress (Newell and Phillips, 2016; Scoones, 2016; Patterson et al., 2017). For example, Newell and Mulvaney (2013) underlined that the interests of global elites are often misaligned with the energy needs and environmental vulnerabilities of the world’s poorest people. This insight directs attention to distributions across global supply chains and requires questioning the ecological and justice impacts of technological progress on extractive territories (Gorg et al., 2017).

In the same vein, it is pertinent to understand who does and does not benefit from deliberate destabilisation. Sustainability transition scholars have already alluded to concepts of justice in terms of supporting those who most suffer from unsettling specific regimes, such as workers in the fossil-fuel industry (Heyen et al., 2017). However, a political economy perspective can contribute additional value by directing attention to whether deliberate destabilisation reconfigures whose interests are being both directly and indirectly served through telecoupled systems.

In sum, the politics of deliberate destabilisation in capitalist economies can be examined through a set of analytical political economy questions about the rationale, process and the outcomes of deliberate destabilisation. In the next section, we present an empirical illustration of the politics of deliberate destabilisation.

### 3. The politics of deliberate destabilisation: an empirical illustration

This section further develops the argument that the political economy matters for deliberate destabilisation. Using the historical example of the phase-out of hen battery cages in the Netherlands (Inset 1) we emphasise how political and economic interests reduced a potentially highly challenging critique on farm animal welfare into a very narrow policy: a technology phase-out with limited and



### Inset 1. Battery cages as a technological innovation

Battery cages were introduced on a large scale in the Netherlands in the 1960s (Mollenhorst and de Boer, 2004). Prior to that, laying hens in the Netherlands were kept in small flocks in so-called ‘floor housing systems’ (Blokhuys and Metz, 1992). The demand for cheap food had drastically increased in Europe during the twentieth century, which resulted in a trend towards specialisation, scale-enlargement and intensification in livestock farming (Langeveld et al., 2000; de Boer and Cornelissen, 2002; Claeys et al., 2007). Traditional floor housing systems for laying hens were unsuited for such trends because they were unfit for automation and prone to disease spread (Claeys et al., 2007). Developed as a technological innovation in 1940, the battery cage solved both problems. By keeping hens in cages, egg collection, feed and water supply management and manure removal became easier and required less manual labour (de Lauwere et al., 2006; Claeys et al., 2007). While the battery cage is now banned as a housing method for laying hens, it drastically increased the average flock size from 600 in the 1960s to 14,000 in 1989 (Blokhuys and Metz, 1992). Slightly over a decade later, farms with battery cages housed an average of 60,000 hens (Drost et al., 2002).

controllable effects for the agri-food sector and incumbent actors.

The remainder of this section is divided in two parts. First, we present a historical overview of the phase-out of hen battery cages in the Netherlands. To construct this narrative, data on the main events were collected by the authors through a review of scientific literature and policy documents (see Appendix). Events were considered ‘main’ if they provided information on farm animal welfare and battery cages in the poultry sector, and their collection gave insights into the public debate and political decisions made on the phase-out of battery cages in the EU and the Netherlands. In addition, we scanned the Nexis Uni online archive for Dutch news items in order to further understand the societal debate on animal welfare and glean sentiments regarding policy interventions. Search terms included a combination of Dutch translations of our key concepts, i.e. ‘hens and animal welfare’ (*legkippen en dierenwelzijn*), ‘battery cage’ (*legbatterij*), ‘ban’ (*verbod*) or ‘regulations’ (*regelgeving*) and ‘the Netherlands’ (*Nederland*). Secondly, in sub-Section 3.2., we examine the politics of the hen battery cage phase-out. In line with our theoretical framework, we concentrate on (i) the rationale, (ii) the process and (iii) outcome.

#### 3.1. Farm animal welfare and the phase-out of hen battery cages

In recent decades, poultry farming in the Netherlands has developed into a strong export-orientated sector with production conditions optimised for global market conditions through the continuous reduction of costs and the guarantee of safe produce. As a result, husbandry systems in the Netherlands are characterised by clinical conditions and high productivity and turnover rates. While housing systems for laying hens have been the subject of social criticism for years, only a small number of poultry farmers have chosen to switch to non-cage, organic systems. Principally, cages as housing systems have survived growing social concerns for farm animal welfare and received continued governmental support to ensure cheap and safe egg production.

Historically, the intensification of the poultry sector spurred debates on farm animal welfare and how hens are kept in the Netherlands. In the 1970s, debates on industrial farming practices began to gain traction (Blokhuys and Metz, 1992). An early and notable event was the 1972 protest at *Flevohof*, a former amusement park dedicated to Dutch agricultural farming and technological innovations such as the battery cage (Verdonk, 2012). The protest led to the foundation of the activist group *Lekker Dier* (‘Tasty Animal’) to contest the agro-industrial complex. In 1973, the Dutch National Council for Agricultural Research (NRLO) established a commission of enquiry (‘Husbandry and Animal Welfare Committee’) into the welfare of farm animals, and the report it published two years later described problems with the treatment of various farm animals in the Netherlands (Blokhuys and Metz, 1992, 1995). With regard to laying hens, the report concluded:

Although the information on laying cages and rearing cages is at the moment still incomplete, and there are both advantages and disadvantages for the animal, the issues with animal wellbeing outweighs the benefits. It is therefore recommended that a further extension of the cage system for laying animals and rearing animals should be rejected, and in any case not encouraged (quoted in Hopster, 2010:88).

Farm animal welfare was also discussed at the level of the EU. In 1976, the Council of Europe (COE) outlined the ‘Convention on the Protection of Animals Kept for Farming Purposes’, which asserted:

The protection guaranteed by the Convention aims to avoid unnecessary suffering or injury, having regard to the condition of housing, food or administered care. To preserve well-being of animals, the Convention imposes on Parties the obligations to inspect the condition and state of health of animals and the technical equipment used in intensive stock-farming systems (COE, 1976).

The EU signed the Convention in 1978 and decided that it should act on the welfare of laying hens (Appleby, 2003). In 1979, the EU Council of Ministers of Agriculture commissioned research on the possibility of a battery cage ban for the first time (Appleby, 2003; Mollenhorst and de Boer, 2004). As a result, formal requirements for laying hen housing systems were introduced stepwise at the European and national levels from 1985 onwards. Enacted in 1986 and taking effect on 1 January 1988, EU directive 88/166/EEC set

minimum standards for all newly built battery cages, including a minimum cage area of 450cm<sup>2</sup> (EEC, 1986; Blokhuis and Metz, 1995; Mollenhorst and de Boer, 2004), which applied to all battery cages as of 1 January 1995. This was amongst the first Europe-wide statutes that actually specified how animals were to be kept (Appleby, 2003). In the Netherlands, *Wet houdende vaststelling van minimumeisen voor het houden van legkippen* ('Law Establishing Minimum Requirements for Keeping Laying Hens'), which ensured a minimum cage area of 425cm<sup>2</sup>, had already come into effect on 1 January 1985 (Rijksoverheid, 1983).

Research funds to stimulate the development of alternative housing systems substantially increased in the 1990s as attention for farm animal welfare issues and associated restrictions on battery cages grew (Blokhuis and Metz, 1992; de Boer and Cornelissen, 2002; Appleby, 2003; Fiks et al., 2003). However, the transition to alternative systems remained slow throughout the 1990s. In 1997, the action group *Wakker Dier* was established. Following in the footsteps of *Lekker Dier*, the group advocated for better conditions for animals in the livestock industry (Savelkoul, 2013). However, the LTO (Agriculture and Horticulture Organisation Netherlands) and PVE (Board for Poultry, Livestock and Eggs) saw no need to ban battery cages; in 1998, they presented their vision for the future of poultry farming (1998–2004) as *Iedereen Kiplekker* (Trouw, 1998; Duindam, 2001). In response, the *Dierenbescherming* (Dutch Society for the Protection of Animals) and *Stichting Natuur & Milieu* (Nature & Environment foundation) joined forces and developed an alternative vision. In the report titled *Samen hokken of samen Scharrelen*, they demanded that 'the entire industry must meet minimum animal welfare and environmental requirements within the foreseeable future' (Brunt, 1998; Duindam, 2001). These NGOs primarily advocated for a complete phase-out of battery cages in the Netherlands by 2003 and a 30% reduction of Dutch poultry stock to meet animal welfare and environmental standards (NRC, 1998; de Jong-Timmerman, 2003). As Marijke Brunt from *Stichting Natuur & Milieu* explained in the Dutch newspaper *Trouw*:

The thirty percent decline can best be controlled by the introduction of poultry rights per chicken. If a farmer wants to expand, he has to buy rights at a fixed price from a governmental agency that has the exclusive right to buy or sell such rights. When a poultry farmer ends his business, he sells the rights at the same fixed price. The total number of available poultry rights should gradually reduce by thirty percent (Brunt, 1998).

In 1998, Minister of Agriculture Haijo Apotheker followed suit and announced a stop to the growth of poultry farming in the Netherlands (Vermeulen, 1999; Meij, 2003). Apotheker called the measure a 'necessary time-out' to give the sector the opportunity to restructure according to sustainability principles (Brinkman, 1998). The Dutch Ministry of Agriculture also appointed a steering committee called *Herorientatie Pluimveehouderij* or *Stuurgroep Alders*, ('Reorientation Poultry Farming in the Netherlands, or 'Alders Committee'), which consisted of representatives from the ministry, the poultry sector, egg traders, the Dutch Society for the Protection of Animals and the Nature & Environment Foundation to consider a more sustainable future poultry sector (FD, 1999; Duindam, 2001; Severt, 2003).

In 1999, the EU issued Directive 1999/74/EC mandating the gradual phase-out of battery cages in all member states by 2012 (EC, 1999; Appleby, 2003). The report by the Alders Committee was published in the same year advised the Dutch cabinet to bring forward the European ban on battery cages in the Netherlands by three years. However, the Dutch government decided to follow the European guidelines (Rijksoverheid, 2010). In addition, they ensured a transitional period for farmers who had already invested in enriched battery cages before April 2008. To avoid substantial economic losses, these farmers had until 1 January 2021 to transition to colony cages or another alternative to cage housing systems (Rijksoverheid, 2010).

In 2001, the Wijffels Committee published a report that envisioned livestock farming in 2010, (Moerland, 2001; Meij, 2003). Installed by Laurens Jan Brinkhorst, who had succeeded Haijo Apotheker as the Minister of Agriculture, the committee was comprised of academics, civil servants and business representatives, and its report advocated for 'the end of intensive farming as we know it' (Moerland, 2001; Bentum, 2001). According to the authors, the livestock sector fell short in complying with environmental, animal welfare and food safety requirements. The committee concluded that animals should 'no longer be perceived as means of production nor material, but rather as real, living beings'-more specifically, the report asserted that 'hens should be able to forage' (Moerland, 2001). This suggests that by preference, all cage housing systems for laying hens were to be banned by 2010.

Alternative systems that conform to the 1999/74/EU directive are enriched or *kleingruppenhaltungen*, i.e. colony cages and non-cage housing systems with or without outside range (Leenstra et al., 2012).<sup>2</sup> In 2008, new Minister of Agriculture Gerda Verburg decided to also ban enriched cages; the majority of the Dutch cabinet supported her proposition to support the colony cage as an alternative to battery cages (Pot and Termeer, 2010). In December 2011, the Dutch Ministry of Agriculture reported that nearly all battery cages had been either replaced or removed (Trouw, 2011).

### 3.2. The politics of governing deliberate destabilisation

In this section, we hone in on the politics of governing deliberate destabilisation as a means to better understand the phase-out of hen battery cages and why it unfolded in the way that it did. First, we question what facilitated discussions and actions to phase-out battery cages, what motivations lay behind various policy strategies, and how sustainability problems and subsequent solutions were framed. Next, we direct attention to the different actors and consider who participated in, and influenced the decisions to phase-out battery cages. Finally, we discuss the outcome of set policy interventions, the distribution of their impacts, and their transformative

<sup>2</sup> The colony cage system (*Kleingruppenhaltungen*) was developed in Germany. This system has a minimum surface area of 800cm<sup>2</sup>-which means an average on 12.5 rather than 18 hens per m<sup>2</sup> and provides some environmental enrichments, such as a perch and nest box (Windhorst, 2018).

effects.

**Rationale** As mentioned above, the phase-out of battery cages was primarily supported by growing social concerns for animal welfare. Activist groups and social welfare organisations such as the Nature & Environment Foundation and the Dutch Society for the Protection of Animals successfully mobilised widespread support for their critiques on how hens were kept and how eggs were produced in the country. Initially, research committees such as the one installed by the NRLO in 1973 were directed to study the welfare of farm animals in the Netherlands. However, such inquiries more frequently took a narrower approach by discussing the use of selected technical equipment (e.g. the EU Convention on the Protection of Animals Kept for Farming Purposes and the NRLO report). Eventually, the debate veered towards exploring the potential to gradually phase-out battery cages and imposing minimum requirements for laying hen housing systems. This more specific focus overshadowed fundamental questioning on animal cruelty as inherent to intensive (poultry) farming. Our example shows how such narrowing and the insistence on an extended technology phase-out in policy proposals undercut any discussion of the structural foundations and evolution of poultry farming in the Netherlands, including issues of mass production and consumption, imperatives to grow productivity and export-orientated goals. While these debates did resurface with the publication of the Wijffels report by 2001 and the outbreak of avian influenza in 2003, no concrete steps were taken to restructure the poultry sector-despite the fact that the Alders Committee report provided clear guidance on how to downscale the sector (Severt, 2003). Rather, Ministers of Agriculture at the EU and national levels proposed a single technology phase-out to enhance animal welfare in the poultry sector (1999/74/EC). As such, intensive farming methods that remained economically acceptable were made socially acceptable through animal welfare regulations.

EU Directive 88/166/EEC ventured to specify how farm animals were to be kept; however, it was very specific to a single species (Appleby, 2003). Such a sub-sectoral approach dismisses how the unsustainability and injustice of the poultry sector are tied to undergirding assumptions of how our economy should work, thereby reducing the potential for more substantial systemic change.

Furthermore, in determining the time span of the phase-out, the Dutch Government chose to follow European guidelines and ban battery cages as of January 2012 rather than the three-year timeframe recommended by the Alders Committee in 1998. The extended time span and the logic to focus on a single technology phase-out shows how animal welfare remained subordinate to defending incumbent economic interests.

**Process** The example of the battery cage reveals how producers and their distinctive value-structures gained prominence over other interest groups in decision-making processes. In particular, their argument that a unilateral ban on battery cages would harm the productivity and thus the economic health of the poultry sector in the Netherlands was influential on the design of policy interventions, and their concerns about the high costs of technological change and negative impacts on international competitiveness were shared by the Dutch cabinet. In 1998, when proposals for a progressive ban in the Netherlands were first raised (e.g. *Samen hokken of Samen Scharrelen* and *Stuurgroep Alders*), industry representatives remained defensive and although they took part in the Alders Committee's work on restructuring the poultry sector, they disagreed with the recommendation to bring forward the phase-out date to 2009. For example, feed producer Nutreco urged, 'society should give the sector more time, the poultry sector in the Netherlands can only survive with larger and more efficient companies. Without the battery cage, egg production will disappear in the Netherlands' (Brinkman, 1998).

In addition to economic arguments, poultry farmers mobilised environmental studies, for example in their own report (*Iedereen Kiplekker*), to support battery cages as a housing method for laying hens. The poultry farmers' report applauded battery cages for drastically reducing ammonia emissions and concluded that 'abolishing battery cages, such as in Denmark, is not an option for the time being', as 'an appropriate alternative, that does justice to animal welfare and manages ammonia emissions does not exist' (Trouw, 1998). Similar framings of a 'lack of readily available and effective alternatives' were continuously presented by poultry farmers as a justification for postponing the phase-out of battery cages; the alternatives that were being developed were perceived as being untenable in the context of prevailing economic structures.

Rather than a strict and immediate ban, the Dutch government provided incumbent farmers with substantial guidance for transitioning to alternative housing methods. Moreover, while the government financially supported the research and development of animal welfare innovations in the poultry sector,<sup>3</sup> compensation strategies or economic incentives to actively foster and accelerate the phase-out of hen battery cages were absent (Fiks et al., 2003). In contrast to the state's prioritisation of innovations, organisations such as *Wakker Dier*, the Dutch Society for the Protection of Animals and the Nature & Environment Foundation repeatedly stressed the need to fundamentally restructure the poultry sector and foremost integrate environmental and animal welfare requirements as pre-conditions for poultry farming. However, although two specific committees (Alders and Wijffels) were installed to explore means to develop a more sustainable poultry sector, their recommendations were not at all influential in policy design.

**Outcomes** In our example of the hen battery cage, destabilisation processes were prolonged by the Dutch government to secure the poultry sector's political and economic interests. Growing societal concerns around farm animal welfare and its association with industrial production had put the Dutch government in a difficult position: the battery cage had become a symbol of animal cruelty; however, the technical equipment generated considerable economic rents (Brinkman, 1998). Over time, societal concerns for farm animal welfare were constricted into a policy intervention with limited, largely controllable effects for incumbent actors. In particular, the lengthy time span and focus on a specific technology phase-out in the poultry sector created leeway for incumbent farmers to reposition themselves in a changing industry. As such, the decision to phase-out the battery cage as a housing method for laying hens

<sup>3</sup> In response to the upcoming ban, new and more sustainable animal husbandry systems were developed and implemented. One such example is the 'Roundel system' that resulted from the national programme *Houden van Hennen* (Caring for Hens). For more information on this and other system innovations see Klerkx et al. (2010), Zwartkruis et al. (2012) or Elzen and Bos (2019).



did not undermine the power and authority of an established actors, nor did it invalidate certain modes of production. This situation may be observed in the debate in 2008 around the *kleingrupeenhaltungen* or colony cages as an alternative to battery cages in the Netherlands. Whereas the majority of the cabinet at the time agreed with Minister Verburg that the colony cage housing system would be an optimal replacement for battery cages, other actor groups such as the Party for the Animals (PvdD), the Christian Union (CU) and Compassion in World Farming (CIWF) lamented that the Dutch government was essentially merely investing in another cage system rather than implementing any substantive change (CIWF, 2018; Deligt, 2008). In 1999, the CIWF had already critiqued political support for enriched cages to tackle animal welfare issues and questioned whether hens would actually be better off in a sector without the battery cage (Laugs, 1999).<sup>4</sup> As of 2021, the colony cage remains the legally permitted minimum standard in the Netherlands; a total ban on cages as housing systems in the Netherlands is still being debated (BNNVARA, 2020).

The impact of the two main reports on the future of poultry farming in the Netherlands from the *Alders* and *Wijffels* committees also appears to have been very limited, and the Dutch government's refusal to take their recommendations into consideration for restructuring the poultry sector resurfaced various times. In 2003, the Dutch poultry sector was heavily impacted by the outbreak of the avian influenza. Then-Minister of Agriculture Cees Veerman supported the Dutch Society for the Protection of Animals' claim that downsizing or restructuring in the face of crises could have been averted if recommendations by earlier committees such as *Alders* had been taken seriously (Severt, 2003). The Minister acclaimed that the money used for crisis response would have been better used on prior remediation. However, a debate on fundamentally transforming the poultry sector from a high productivity and efficiency model were again averted by poultry farmers and for example, the Board for Livestock, Meat and Eggs (PVE) argued against Minister Veerman's suggested linkage between the avian influenza outbreak and structural issues in the poultry sector (Severt, 2003). In the 2010s, various actors continued to denounce intensive farming systems in publications such as the *Manifesto for Sustainable Livestock* published in 2010 (Beukema, 2010). The manifesto's authors criticised the Dutch Government for ignoring *Wijffels*' recommendations to radically restructure intensive livestock farming. Similarly, a 2011 publication by CDON, a coalition of 23 animal welfare organisations, and a CIWF's report in 2018, both advocated for a ban on all cages and the elimination of so-called 'mega stables' (CDON, 2011; CIWF, 2018). The above are but a few examples of the ongoing efforts by nongovernmental organisations to entice political action in favour of animal welfare, dating to the 1970s.

#### 4. Concluding remarks and suggestions for future research

This paper brought together research on the political economy of sustainability transitions with recent theorisations of the deliberate destabilisation of unsustainable socio-technical regimes. We proposed a set of analytical dimensions and guiding questions to study the politics of deliberate destabilisation. Mobilising these questions, which were derived from the literature on political economy of sustainability transitions, enabled us to understand such politics as inevitably tied to status quo economic structures and interests.

The contribution of our work to the sustainability transitions literature and theorisations of deliberate destabilisation is threefold. First, we provide concrete questions to examine the politics of deliberate destabilisation, including: what and whose framings of sustainability problems and solutions count? What and whose interests are prioritised? Who participates in, and who influences the process? Who benefits and who experiences the burden? Whereas deliberate destabilisation has been posited to be a means to overcome regime resistance (e.g. Geels, 2014; Normann, 2019), this paper illustrated that deliberate destabilisation may actually reproduce rather than overcome incumbency in the political economy. The example of hen battery cages in the Netherlands shows how incumbent political and economic interests steered destabilisation processes towards a prolonged technology phase-out with manageable outcomes. We interpret this as an expression of deep incumbencies and the ability of powerful and organised incumbents to translate their economic dominance into political influence (Stirling, 2019; de Schutter, 2019). In addition to strategies to marginalise or co-opt more radical innovations (e.g. Gaitan-Cremaschi et al., 2019) our empirical illustration shows how powerful incumbents in the food system were able to appropriate the political process of deliberate destabilisation to maintain the status quo. In sum, deliberate destabilisation is a highly political process, even when it ends up in a single technology phase-out.

The inherently political nature of deliberate destabilisation has practical governance implications. To design destabilisation processes that minimize the political hijacking by powerful actors requires better monitoring of the policy trajectory for phase-out or exnovation and consideration of measures that help avoid specific actor groups to appropriate the process for their interests, and policies being trumped by the power of incumbents (Scoones, 2016). In practice, various actor groups evidently benefit from contrasting time horizons (short-term or long-term) and end date (flexible or fixed) of a phase-out strategy (Heyen et al., 2017). As we observed in our case, prolonging the phase-out of the hen battery cage was desirable to incumbent actors as it allowed them to maintain their advantageous position in a highly competitive and international market. In this regard, it remains pertinent to explore what roles governments can take to timely propose and accelerate the phase-out of harmful technologies, without allowing forms of co-optation that reinforce incumbents' advantage or introduce new forms of injustice (Davidson, 2019).

The second contribution of this paper consists in its showing the limitations imposed by a capitalist economy for fostering sustainability transitions. For example, our empirical illustration elucidated how deliberate destabilisation in a capitalist economy is constrained and shaped by unquestioned principles of unlimited economic growth, consumerism, profit generation and international

<sup>4</sup> In another case in the agri-food sector, Levain et al. (2015) similarly asserted that the ban on DDT was situated within a rather unchanged practice of crop-protection in that it did not challenge the regime but rather legitimised the control of pesticide hazards instead of opposing them altogether.

competitiveness. Hitherto, such discussions on the influence of capitalism on the governance of sustainability transitions have remained scarce (Feola, 2020), but are clearly urgently needed as multidimensional crises related to unsustainability and injustice are integral to the functioning of capitalist systems (Lioudakis, 2010; Martin, 2016; Werner et al., 2017).

Therefore, while this paper was concerned with understanding the influence of political economic interests on the governance of destabilisation, a critical direction for future research is to consider how capitalism may itself become the object of deliberate destabilisation. Important research questions include, but are not limited to: to what extent and under which conditions can deliberate destabilisation unsettle capitalist structures and diversify sustainability transitions, to include different notions of sustainability, voices and discourses; to (re)align power relations; and to create more just and sustainable outcomes? (Lawhon and Murphy, 2012; Stirling, 2019; Feola, 2020). For example, considering our empirical illustration, it is commonly accepted that the focus on modernisation and technological progress in agri-food systems has systematically favoured 'large economic actors, the largest farms, and the big transnational agri-food corporations [...] which were best equipped to achieve the economics of scale made possible by the expansion and globalisation of markets' (de Schutter, 2019:18). Thus, in order to make space for alternative and 'more-than-capitalist' configurations (Feola, 2020; Feola et al., 2021), such deeply ingrained and intertwined social, cultural and economic logics that drive the unsustainability of agri-food systems need to be considered. While outside the scope of this paper, broader understandings of deliberate destabilisation which involve strategies to 'challenge [...] and reform [...] capitalist institutions' (Feola, 2020:6) and concurrently 'unseat the ideas associated with maintaining those institutions (Davidson, 2019:225; see also Meadowcroft et al., 2011) are relevant objectives for this scholarship. It is important that researchers explore what such strategies may look like, and which concepts can lead to novel insight for theorisations of deliberate destabilisation for sustainability transitions. For example, future research could take inspiration from institutional work (e.g. Lawrence and Suddaby, 2006; Leca et al., 2009) to consider how to deliberately challenge, undermine or disrupt formal and informal rules and the legitimacy of institutions (Hoogstraaten et al., 2020; Runhaar et al., 2020; Kivimaa et al., 2021) for a discussion of strategies for the destabilization of capitalist institutions in sustainability transitions, see Feola et al. (2021).

The third contribution of this paper is the analytical framework to explore the politics of deliberate destabilisation by accounting for influence of the political economy. By employing this theoretical lens to one empirical illustration, we illuminated how incumbent actors and their associated interests substantially influenced the rationale, process and outcome of deliberate destabilisation. The example of the hen battery cage was useful because it was well-documented in both scientific and non-scientific publications, which referenced the actors involved, their actions and positions. However, the use of historical data inevitably made it more difficult to 'give voice' to those actors who were silenced and whose voices were therefore largely undocumented in the media, in minutes of official debates, or in policy proposals. Hence, the approach proposed in this paper, when applied to historical or present cases alike, also has methodological implications. Researchers should employ methods that enable the elicitation of silenced, subaltern and marginalised voices, as well as the voices of those who deliberately refused to participate in the policy process that is, those voices that might have been overshadowed by the more prominent narrative that is immediately available to the researchers (Feola, 2013; Hoop and Arora, 2020).

## Declaration of Competing Interest

None.

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## Supplementary materials

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