EXPLORING THE 'SUSTAINABILITY' OF AGRIFOOD 'SUSTAINABILITY TRANSITIONS' FROM CASE STUDIES[1]

GT 05 – Aspectos críticos, oportunidades e desafios para o enfrentamento da crise climática

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ABSTRACT: In face of multiple and persistent social and environmental crises, it has become widely accepted that transitions to sustainability "are needed". For sustainability transitions research, institutional dynamics, e.g., in rules, collective values and perceptions, are fundamental to shift complex systems (energy, agrifood, mobility), from persistent unsustainable trajectories into more sustainable ones. The field's literature has focused on "*how"* institutions influence on transition. Such tendency is intensified with emphases on *how to* 'accelerate' and 'scale up' transitions. However, concerns over "*which*" sustainabilities and "*whose*" representations are acknowledged, tends to be overshadowed. Hence, aiming to explore the nuances, tensions and ambivalences of the 'sustainability' in sustainability transitions, this study conducted a systematic review of 32 case studies (secondary source) in agrifood systems transitions. To account for interpretive plurality and complexity articulation, Reflexive Methodology was considered to encompass the review.

Keywords: Sustainability transitions; institutional change; agrifood systems; reflexive methodology

Highlights

- Accounting for sustainability ambivalences and tensions in sustainability transitions.
- Exploring the distinction between 'actual' and 'perceived' (un)sustainabilities.
- Nuancing the role of 'criteria', as an institution, in sustainability transitions directionality.
- Presenting niche, regime and sustainability criteria tensions.

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INTRODUCTION

Sustainability Transitions can be considered as multi-actor processes of non-linear change, in complex societal systems, from a state of persistent (perceived) unsustainability into a more sustainable one (Loorbach et al., 2017, p. 605). This framing of sustainability transitions comes also in association with the academic community of Sustainability Transitions Research Network (Köhler et al., 2019; Loorbach et al., 2017). The field originated as an inter- and transdisciplinary field in Western Europe in the late 1990's and in the early 2000's, that built upon studies in innovation studies, systems complexity, and governance (Grin, 2016; Rip & Kemp, 1998; Rotmans, 2005).

Historically constructed (socio-technical) systems configurations would reproduce persistent unsustainabilities through "regimes". These can be considered as dominant and stable modes of organization that maintains and reproduces the provision of a societal function (Smith et al., 2010). In agriculture and food systems, for example, (the persistence of) unsustainabilities can be perceived and experienced in various forms. In the dominance of large retailers and distanced producers and consumers that reproduces and aggravates the concentration of wealth in more powerful actors within the system. The dependence of agrochemicals spread worldwide by the Green Revolution, but which inequities and inequalities are suffered regionally and locally, such as inequalities in food availability and hunger (Darnhofer et al., 2012).

The regime, analytically associated to system's stability and reproduction, has been conceptualized in close relation to institutions and institutional dynamics (Geels, 2004; Rip & Kemp, 1998). Following sustainability transitions research, institutions are interpreted in this study as "regulative, normative, and cultural-cognitive elements that, together with associated activities and resources, provide stability and meaning to social life" (Scott, 2014, p. 56), taking part in the coordination (Geels, 2004) and in the constitution (Rip & Kemp, 1998) of systems in sustainability transitions. For example, policies and regulations relate to regulative institutions. The construction of values, social norms and shared notions of "good" and "bad", associate to normative institutions. Lastly, framings, forms of thinking, and beliefs are close to cultural-cognitive institutions (Geels, 2004; Scott, 2014).

In "response" to the persistence of regime's unsustainabilities, sustainability can be represented in varied forms. Some perspectives considered possibilities where both producers and consumers turn into stake-holders, rather than keeping distant (unrelated) relations.

Consumer-producer distances can be shortened, and power relations be transformed. Sustainability manifestations are diversely named, such as organic farming, agroecology, circular economy, community-supported agriculture, biodynamic agriculture systems, consumer groups, and many other examples (Melchior & Newig, 2021). In STR, the emergence of sustainabilities, such as the above mentioned, are associated to the concept of "niches" (Rip & Kemp, 1998). These are early and peripheral forms of organization that, imbued with alternative institutions in relation to the regime, might scale up (e.g., self-organization) and may be deliberately supported (e.g., policy, projects) (Geels, 2004; Grin, 2016; Rip & Kemp, 1998)

According to Smith and Raven (2012), however, niche empowerment might 'fit-and-conform' or 'stretch-and-transform'. The former regards to legitimising niches into broader society as being competitive within what authors considered as '*regime criteria*' (Smith; Raven, 2012, p. 1030). These criteria are in line with, pressured from "the economic, technological, organizational and other criteria of existing markets" (*ibid.*), e.g., intensification, optimization, and novelty that brings an alternative innovation. However, without changing the dominant institutions, networks of actors and resource flows, and power relations, ultimately leaving the regime unchallenged (Smith & Raven, 2012). The latter, stretching-and-transforming, stands to bring about new institutions, by which niches are legitimised and judged according to '*sustainability criteria*' (Smith & Raven, 2012, p. 1030). Notwithstanding, this raises questions over 'what defines these sustainability criteria?', 'how is it defined, and held accountable?' and 'who (can) defines it?' (Shove & Walker, 2007; Walker & Shove, 2007).

The perception and the experience of what is or should be 'the sustainable' or 'the unsustainable' in transitions are bound to diversity, and also to ambivalences (Walker & Shove, 2007). Defining "sustainability" is bound to diverse normative categories of "*which*" transition is 'desirable' (Walker & Shove, 2007, p. 216). Meanwhile, however, this is reflecting "*whose*" representations of 'sustainability transitions' are (not) acknowledged (nor) and prioritized (Pel & Stirling, 2024). It is not excluding (the importance of), e.g., understanding transition mechanisms and how can it be accelerated, yet it does aim to bring attention that beyond 'how to transition', stands also the possibility of opening up interpretations for questioning the (often taken for granted) 'sustainability' in sustainability transitions (Pel & Stirling, 2024; Shove & Walker, 2007; Stirling, 2011; Walker & Shove, 2007).

METHODOLOGY

The number of studies in STR has been exponentially increasing. Most of which are qualitative and empirical case studies, which articulate in-depth and contextual complexities. Case studies provide concrete manifestations of (un)sustainabilities, and also system dynamics through authors narratives (Köhler et al., 2019). Those may be important to shed a light on nuances and plural accounts within transitions research, about which are the unsustainabilities and sustainabilities that is being framed as transitions (Köhler et al., 2019; Newig & Rose, 2020). In this sense, however, Köhler *et al.* (2019, p. 20) considers a methodological dilemma: between generalizing insights and theory refinement based on systematic literature reviews, on the one hand, and the reduction of complexity from the in-depth empirical cases, on the other. Newig and Rose (2020) also considered this a challenge, in terms of cumulating evidence from inter- and transdisciplinary research fields, while accounting for interpretive diversity. This would implicate for the study as systematically bending the review into disclosing results as describing sustainability as potential "pathway options" (Stirling, 2011), and institutions as synthetizing transition 'mechanisms' (i.e., inclining towards how to transition) (Pel & Stirling, 2024).

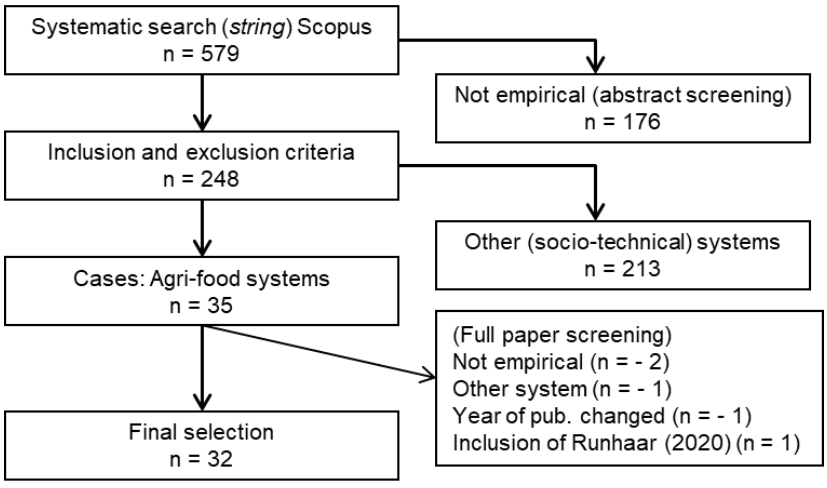
Acknowledging this dilemma, Reflexive Methodology (Alvesson & Sköldberg, 2017) was considered to base the systematic literature review carried out in this study. According to authors (Alvesson & Sköldberg, 2017, p. 11), this methodology is intended to draw more attention to the relationship between knowledge production and who produces knowledge, while also mindful of the context whence it is produced. As such, the analysis of case studies were based upon three principles. First, (1) cases were considered as already interpreted material by author's perspectives, rather than objective data (Alvesson & Sköldberg, 2017; Tranfield et al., 2003). The second principle (2) applied to the review was the contrast among: (a) STR mainstream interpretations (i.e., represented by seminal studies and frameworks (see Grin, 2016; Köhler et al., 2019)); (b) the multiple perspectives stemming from case studies; and, (c) critical perspectives in STR studies (e.g., Pel & Stirling, 2024; Shove & Walker, 2007; Stirling, 2011; Walker & Shove, 2007). The third principle (3) regarded prioritizing nuances, tensions and ambivalences as research outputs, instead of focusing on synthetizing or integrating knowledge into overarching interpretations.

The Systematic Review Protocol was based on Newig & Fritsch (2009) and Tranfield

et al. (2003). The protocol was conducted as follows. *Step 1*: research questions and the scope of the review was established. *Step 2*: decide on the methodology (for Reflexive Methodology). *Step 3*: systematic search strategy was elaborated and conducted. *Step 4*: filtering by excluding and including criteria. *Step 5*: analysis. The analysis step was subdivided into 'identification' (readily available information), 'interpretation' (Principle 1) and 'reflection' (Principle 2), based on Alvesson & Sköldberg (2017). *Step 6*: reporting the study. This imbued Reflexive Methodology Principle 3.

For carrying out the selection of studies, all the searches were made on the Scopus database, and within the domain of "title-abstract-keywords" (TITLE-ABS-KEY)[2]. Concerning exclusion criteria: studies that were not empirical (e.g., conceptual, or systematic reviews); not accessible (i.e., technically or financially); non-English or not peer-reviewed; and, studies that did not mobilize sustainability transitions research. Inclusion criteria: empirical study with one or more cases that also consider its (their) geographical localization; and that mobilized sustainability transitions research (Grin, 2016; Köhler et al., 2019). Figure 1 illustrates this process and summarizes the reasons cases were excluded or included.

Figure 1 – Procedure of selecting the final case studies in agrifood systems transitions for review



Source: Own elaboration. Studies retrieved from January 2010 to December 2022. Last access to Scopus on January 2023.

[2](TITLE-ABS-KEY (((sustainability OR socio-technical OR manag*) W/3 (transit* OR change OR innovation)) AND (institut* OR governance OR agen* OR structur* OR polit* OR power) AND ((institut* OR polit* OR power OR polic* OR practice OR social OR system) W/3 (stability OR change OR *evolution* OR dynamic* OR innovat*)))).

RESULTS AND DISCUSSION

Table 1 summarizes highlights in terms of regulative, normative and cultural-cognitive institutions (bold) intertwined with niche processes. The first two rows emphasised on more deliberate action towards niche building, e.g., policies, project implementation, and strategic action (e.g., Essegbey et al., 2017; Kok et al., 2022; Quist et al., 2011; Tziva et al., 2020, 2021). The third and fourth rows focused on actor's self-organization and the absence of a clear, common, directionality towards sustainability (e.g., Audet *et al.*, 2017; Bui, 2021; Chebrolu; Dutta, 2021; Signori; Forno, 2019). As Chebrolu and Dutta (2021, p. 11), much as a "bricolage approach" to institutional change. Owing to space limitations, a detailed scrutiny of 32 case studies and each Table 2's topics are inviable. Among those topics, three are standing out and will be disclosed further: multi-actor's (un)sustainability **perceptions** (cultural-cognitive), sustainability evaluation and **criteria** (normative), and **certifications** (regulative).

Table 1 – Highlights about regulative, normative and cultural-cognitive institutional elements and dynamics identified in agrifood sustainability transitions case studies

	Regulative	**Normative**	**Cultural-cognitive**
Navigating niche 'steering' tensions	- Project **contract's** short-termed duration	- Local **relevance** vs. program or policy **ambitions**	- Reframing (un)sustainability **perceptions** - **Acknowledging** "the others"
Deliberate institutionalizing "sustainability"?	- **Contracts** established among actors - Performance **evaluation tools**	- Reaching a **common vision** - **Agenda** setting	- Reframing and embedding **sustainability (criteria)**
Self-organisation and 'emergence'	- **Certification** and **standards**	- Initiative's guiding **principles** and **values** - Performance **evaluation criteria**	- Feeling of ownership - New **shared meanings** - Alternative **forms of thinking**
Niche empowering tensions	- Regulative tensions (**permits**, **authorisations**, **norms**)	- Tensions in guiding **principles**, **values** and "survivability"	- Tensions between niche **identity** and aspired sustainabilities

Source: Research results.

Whose sustainability is being acknowledged? Kok et al. (2022), considering the implementation of an European Union-wide project aiming for more sustainable food systems, reflected that one of the tensions was to balance between responding to local needs and expectations, and the overarching project directives at the Program's level. These authors were

not alone in this concern (Kok et al., 2022; Quist et al., 2011; Sixt et al., 2018). In a case from Israel, Teschner and Orenstein (2022) reported a situation concerning the relevance of benefit-cost criterion in a transition towards a more sustainable viticulture. On one side, the group intending to implement the changes assumed that farmers would be convinced if the benefits would surpass the costs and the risks of changing practices. However, from farmer's perspective, instead of attaching value to benefit-cost relation, they considered "the right thing to do", yet their concern was to changing a lifetime mode of cultivating grapes (Teschner and Orenstein, 2022, p. 40).

In the study of Hundscheid et al. (2022), authors considered narratives for understanding patterns of meat consumption and substitution in Austria, from 2000 and 2019. Perceptions are not shifting abruptly, but had been gradually de-constructing and constructing. These changes encompassed distinct normative orientations that emerged in different periods, and also distinctively influenced multiple social groups, such as animal welfare concerns, perceptions about (un)healthy diets, and environmental impact awareness. In the study of Runhaar et al. (2020), a group of actors defended outdoors cattle grazing as a symbol that catalysed a perception of sustainability, associated to the aesthetics of preserving a 'traditional Dutch landscape', better animal welfare, and countering agriculture production intensification. What authors disclosed was that it related to perceived sustainability (Runhaar et al., 2020, p. 146), and not only actual (un)sustainability, as, e.g., it still increases nitrogen losses and nitrate leaching, denitrification, and higher nitrous oxide emissions, compared indoors raising (Runhaar et al., 2020, p. 141).

From case studies, a difference from 'what **is** (un)sustainability', and 'what is **perceived** as (un)sustainability', was that 'what is', or what 'becomes (un)sustainable', depends not only on *actual* (un)sustainabilities. As institutions, the construction of shared perceptions are also dependent on whether and how these become known and (de-)legitimated across social groups (Hundscheid et al., 2022; Kuokkanen et al., 2017; Runhaar et al., 2020). In Sanon et al. (2021) (Burkina Faso) and in Sixt et al. (2018) (Jordan), conflicts rose as property rights were not acknowledged by some part of civil society, as water bodies were considered sacred and open to anyone who needed it, in the former case (Sanon et al., 2021). On the latter, property rights were a grey area, as communities considered that they had been occupying the land long before the existence of a national State with delimited contours (Sixt et al., 2018). In these cases,

'sustainability', as fisheries social and ecological sustainability, and as water harvesting challenges, were not necessarily acknowledged as such by actors there in case studies (Sanon et al., 2021; Sixt et al., 2018).

Which sustainability (and by whose criteria) is being acknowledged? Here, **criteria** is explored as an institution, especially concerning normative aspects, which stability and meaning are bound to social processes (Scott, 2014). Achieving food sovereignty through agricultural productivity increase was initially appraised as "good", or "priority" (in 1960's, Finland) (Kuokkanen et al., 2017). However, the overuse of fertilisers that came with the increase in productivity become perceived as a problem, e.g., in the eutrophication of Baltic Sea (Kuokkanen et al., 2018), or legitimated as such, e.g., with the enactment and pressures of European Union regulations (Barquet et al., 2020; Hoes & Aramyan, 2022). In these regulations and standards, increased sustainability was based on production (input) optimisation and efficiency increase (as reducing the use of environmentally detrimental inputs, such as fertilisers) (Kuokkanen et al., 2017, 2018; Runhaar et al., 2020). Criteria orienting towards agrochemicals' efficiency or optimization can be considered as fitting into 'regime criteria' (Smith & Raven, 2012), as *more* sustainable. Meanwhile, there was also coexisting, yet distinct, criteria, such as agroecology or biodynamic farming. These represents and enacts *alternative* sustainabilities (Bui, 2021; Dumont et al., 2020; Fielke et al., 2019). As such, instead of defining 'sustainability criteria', the multiplicity of criteria are layering diverse manifestations of representing and evaluating sustainability. These "cuts across previous normative categories of good and bad", multiplying *sustainability ambivalences* (Walker & Shove, 2007, p. 216).

This multiplicity of **criteria** implicated in and manifested through, for example, regulations and **certifications**. Rosin et al. (2017) commented that users of WiSE sustainability tool became more aware of ecosystem biodiversity, when it became considered as a criteria in the assessment. This contrasted with, e.g., a previous emphasis on grape monocultures. From the case about institutional logics behind outdoors and indoors cattle raising in the Dutch dairy farming, the Grazing Foundation established the Weidemelk (Meadow Milk) certification (Runhaar et al., 2020). Moreover, this reflects on whose perceptions becomes **not** acknowledged, or which (un)sustainabilities are **not** 'perceived'. Kuokkanen et al. (2017) showed that the formation of a perception that fertilizer's (over)use was linked to eutrophication

was not recognized by actors, so that in the earlier versions of the Finnish agri-environmental law, this issue was not included. In the case of Hoes & Aramyan (2022), the tension between the feeling of exclusion of sustainability 'pioneering farmers' from policy, and establishing 'sustainability criteria', can be illustratively indicated by farmers inability to 'fill the forms' of key performance indicators, due to their diversity (e.g., different breeding types, circular practices, alternative milk sources).

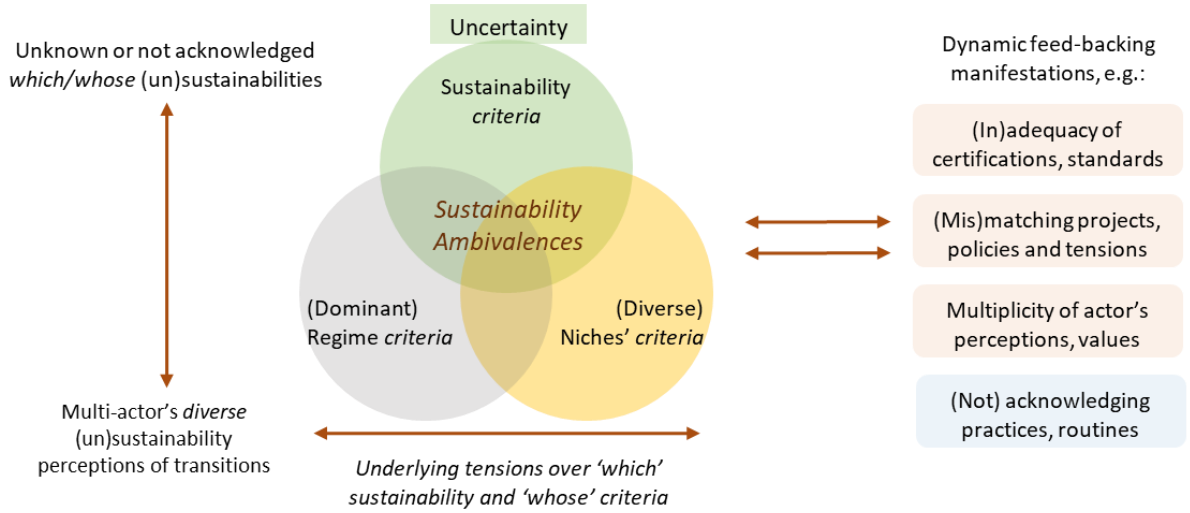
Criteria is not only establishing *how to* become sustainable or *how to* evaluate sustainability, as, e.g., being neutral instruments of **certification** compliance (Rosin et al., 2017). These are also reflecting on *whose* sustainability **perceptions** are (not) acknowledged, and *which* sustainability directionalities are being valued and pursued (even though taken for granted (Fielke et al., 2019; Kompella, 2021)). However, rather than static and abstract imaginaries of sustainability, criteria are dynamic: being contested, shaped, embedded, or changed in multi-actor processes (Hundscheid et al., 2022; Kuokkanen et al., 2018; Rosin et al., 2017). For example, the need for acquiring a sustainability certification might be more straightforward for a niche looking for selling organic products. The very need for acquiring a certification would not be questioned by regime criteria. Conversely, in the case of Chebrolu and Dutta (2021), farmers pursued an alternative way to legitimate organic products, instead of complying with expensive certifications and product exports. That was the Participatory Guarantee System certification mechanism, which focused on local peer accountability, instead of fitting and conforming (Smith & Raven, 2012).

FINAL CONSIDERATIONS

Inquiring about 'which' sustainabilities are being acknowledged, and from 'whose' representations, becomes just an *entry point* for reflecting on the 'sustainability' in sustainability transitions. Embracing sustainability ambivalences and uncertainty in transitions (Rotmans, 2005; Walker & Shove, 2007) require a nuanced approach beyond 'sustainability criteria' and 'regime criteria' (Smith & Raven, 2012). Figure 2 presents a diagram where regime criteria, niche criteria and sustainability criteria are dynamically interacting. Each domain is representing multi-actor's perspectives on 'which transition is needed or desirable' (Smith & Raven, 2012; Walker & Shove, 2007). Concomitantly, part of sustainability criteria departures from uncertainty, contemplating sustainabilities that are **not acknowledged**. Sustainability

ambivalences lie at the heart of sustainability, regime and niche criteria (Walker & Shove, 2007).

Figure 2 – Representation of sustainability ambivalences and tensions (arrows) in embracing criteria multiplicity (representing resonance with niche and regime institutions), multi-actor's diversity, and uncertainty in framing sustainability, as transitions normative orientations



Source: Research results.

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