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Justice in transitions: Widening considerations of justice in dietary transition

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ABSTRACT

Just transition is gaining increasing attention. The need to consider social justice in sustainability transitions is finally being acknowledged. Research on this issue has, to date, mainly concentrated on energy systems. In this paper, we examine how the elaboration of dietary transition widens the spectrum of justice questions in sustainability transitions research. We explicate the arising normative questions along the dimensions of distributive, procedural and recognitive justice; widening the considerations further to restorative and cosmopolitan justice. Dietary transition widens the justice considerations to basic needs, food security and nutrition. By doing so, it evokes socio-cultural tensions that require recognition and procedural solutions. The uneven distribution of capacities to innovate and adapt require scrutiny from the just transition scholarship. Likewise, the recognition of non-human animals and integrity of agro-ecological systems. The relational three-dimensional understanding of justice can advance inter- and trans-disciplinary research across various systems.

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1. Introduction

Just transition is gaining increasing scholarly and political interest, which has arisen from the need to consider and reflect upon the issues of social justice in the context of climate mitigation (Jenkins et al., 2018; McCauley and Heffron, 2018; Morena et al., 2020). Rather than seeing transition plainly as a socio-technical process with fixed climate goals, more attention should be devoted to the social inequalities and tensions that emerge and need to be tackled on the way.

In the political realm, the labour unions initially raised the discussion on just transition, emphasising the importance of retaining jobs and smoothing the transition to a low-carbon society (Morena et al., 2020; Stevis and Felli, 2015), whilst also acknowledging the need to adopt environmentally benign solutions (Newell and Mulvaney, 2013). These issues are receiving more attention in policy debates, for example, in the European Union (EC, 2019), as well as nationally. In research, justice questions related to transition to fossil-free energy systems have, to date, gained the most attention (Jenkins et al., 2018; McCauley et al., 2019). The interlinked elaborations of housing and mobility practices have widened the consideration of energy poverty and vulnerability in energy transitions (Martiskainen et al., 2021).

In this paper, we examine how research on food system change can widen the understanding of justice issues in sustainability transitions. There is growing evidence that climate change mitigation and adaptation in food systems not only requires the development of more sustainable and resource-efficient production methods and technologies, but also the tackling of food waste and changing of diets (Foley et al., 2011; IPCC, 2019). Especially in Western diets, enabled and maintained by industrialised food systems, major reductions in the consumption of food from animals are required (Springmann et al., 2018; Willett et al., 2019). Transition to more sustainable, low-carbon food systems cannot thus be achieved by applying technological solutions in production alone. Other food system activities need to be considered as well, including processing, distribution and consumption of foods.

Research on food justice has painstakingly shown how the current food systems suffer from deep injustices (e.g. Gilson and Kenehan, 2019; Glennie and Alkon, 2018; Gottlieb and Joshi 2010). Unequal distribution of income, wealth and power have been recognised as key inequalities characterising the global food chains and systems (Clapp and Fuchs, 2009; Gottlieb and Joshi, 2010). The global food system has not been able to secure good nutrition for all. According to FAO (2020), the triple burden of malnutrition (including undernutrition, micronutrient deficiencies, overweight and obesity) concerns approximately 3 billion people around the world.

In dietary transition, these inequalities in the current functioning of the food system cannot be overlooked (see also Clapp et al., 2018). Rather, they should be given specific attention in the mitigation attempts. In this paper, we apply the classical conceptualisation of environmental justice (Schlosberg, 2007) to identify the issues that deserve extra attention in the dietary transition. We base our examination on the distinction between distributive, procedural and recognitive justice, which is also commonly applied in sustainability transition research (Jenkins et al., 2018; McCauley and Heffron, 2018; Williams and Doyon, 2019). We work with these interlinked dimensions of justice and scrutinise what kind of research questions dietary transition poses for just transition. The elaboration of questions highlights the need to give a better account for restorative and cosmopolitan justice in just transition research as well.

We have chosen the dietary transition for the context of our exploration for two reasons. First, it is considered as a necessary transformative constituent of low-carbon food system transitions in the industrial food systems, which will imply great changes in supply chains and cultivated crops, consequently affecting the employment and work within agriculture and food industry. In the meantime, dietary transition broadens the question of distributive justice also to food security and nutrition. Any attempt to shift diets should take into account the existing inequalities in food security, and also the different cultural values and social practices related to food. This poses new questions for recognitive and procedural justice in transitions. Neither the impacts of dietary transition nor the other side of the phenomenon, animal-based agriculture, have been at the core of food justice research to date (Glennie and Alkon, 2018). Attention to dietary transition can, hence, bring forth novel research questions both for food justice and just transition research.

We base our elaboration on an interdisciplinary scoping of research questions and a targeted literature review. We regard such interdisciplinary scoping as being pivotal for the further development of a research field (see also Hebinck, et al., 2021; Köhler et al., 2019; Morris et al., 2021). It can assist in identifying the current research gaps and in opening future research avenues. In the next chapter, we present the food system approach for identifying and mapping the multiple justice questions and tensions raised by dietary transition. We then move on to explicate the research questions along the different dimensions of justice. We close the article by discussing how the identified research questions help to further develop the broader just transition research agenda.

2. Applying a relational understanding of justice in food system transition

The purpose of a system is a decisive factor for evaluating its justness (Sandel, 2010). *Food security* is, in both functional and normative terms, the primary purpose and outcome of any food system, whatever way defined or operationalised (Erickson, 2008; FAO, 2018; Ingram, 2011; IPCC, 2019). At minimum, food security should incorporate the availability of, access to, utilisation, and the stability of supply of nutritious food (FAO, 2009). In addition to food and nutrition security, food systems should also deliver *welfare and livelihoods* to people who make a living from food system activities and operate within the *boundaries of environmental sustainability*.

When elaborating justice questions raised by dietary transition, it is important to keep these purposes of the food system in focus. In her seminal piece, Erickson (2008) underlines the benefits of such an outcome centred framework in studying the multiple interactions of food systems with global environmental change. Focus on system outcomes underlines the understanding of the dynamic feedback loops between socio-economic and environmental drivers and outcomes in safeguarding food security under global environmental change. Erickson (2008) stresses further the normativity of the outcomes, while reminding that the food system outcomes may also be

indirect, unintentional, and in tension with each other. Tensions may arise, for example, in the intersection between climate action and livelihoods, culturally appropriate ways of eating and good nutrition, or different understandings of sustainability. Clarifying and mapping these struggles remains a task for rigorous just transition research (Ciplet and Harrison, 2019). Here, the classical social and environmental justice literature can assist the transitions studies forward.

The widely utilised, relational and multidimensional approaches to social justice (e.g., Fraser, 2009) and environmental justice (e.g., Schlosberg, 2007) highlight three interlinked dimensions of justice: distributive, procedural and recognitive. These dimensions are also actively used in sustainability transition (Jenkins et al., 2018; McCauley et al., 2019; Williams and Doyon, 2019) and food justice (e.g., Gilson and Kenehan, 2019) research. The *distributive dimension* focuses on how material and immaterial resources, harms, and benefits – be they related to nutrition, livelihoods or to the environment – are distributed. In dietary transition, this means examining who benefits and who suffers from the transition, and in what ways (Newell and Mulvaney, 2013), as well as clarifying which disparities in distribution matter for justice. *Procedural justice* draws attention to fairness and participation in decision-making and policy processes (Williams and Doyon, 2019). It necessitates formal equal participation rights that do not, however, alone guarantee equal opportunities to participate (Loo, 2019; Schlosberg, 2007).

Relational approaches underline that injustices are not reducible only to distributional and procedural inequalities (Fraser and Honneth, 2003). Attention to justice should also be sensitive to how socio-cultural value hierarchies maintain or produce oppressive relations and hamper the participatory parity of certain social groups. *Recognitive justice* implies that different socio-cultural values should be appropriately respected in societal discussion and that institutionalised regulation and communication should demonstrate equal respect for a plurality of values, cultures, and related practices. Recognition also highlights the understanding of the historical injustices that influence the status of minorities and vulnerable groups (Fraser and Honneth, 2003; Hobson, 2003), which is crucial for understanding that not all actors are in the same starting position with respect to adapting to transitions.

Furthermore, *restorative justice* has been proposed to be an important additional dimension to just transition (McCauley and Heffron, 2018). It has, however, not yet become established as an independent dimension in the frameworks of just transition. Restorative justice rectifies previous wrongdoing and has presently been used in crime reconciliation (Liebmann, 2007; Galaway, 1996). In the transition policy debate, restoration is manifested in the labour unions demands for compensation of the jobs lost due to low-carbon transitions (Stevis and Felli, 2015).

In dietary transition, special attention also needs to be placed on relational injustices produced and performed across various spatial and temporal scales. In food justice, the spatial injustices of global food system's functioning have received a lot of attention, underlining how the complex translocal power relations that shape the food systems are always experienced in situated contexts by the affected communities (Slocum et al., 2016). Hence, the “scales of spatial justice are not separate and distinct; they interact and interweave in complex patterns” (Soja, 2013: 46). Justice extends also across time in relation to past injustices and future generations (e.g., Gilson and Kenehan, 2019). The incorporation of spatial aspects into the just transition framework is, hence, crucial for *cosmopolitan justice* (McCauley et al., 2019).

Collectively, these diverse dimensions of justice provide a dynamic and evolving set of questions that assist in identifying inequalities involved in dietary transition. These interlinked dimensions foster an understanding of justice that does not rely upon some abstract ideal of justice, but rather allows developing a lens of justice that is attuned and refined to unpack and address the multiple forms of inequality as they are or become manifested in the attempts to make diets more sustainable. Such an understanding stresses the remedial injustices that we see as important in finding pragmatic solutions to the ongoing efforts in building more sustainable food systems, and societies (see also Coulson and Milbourne, 2021; DuPuis et al., 2011; Sen 2009).

In what follows, we apply this relational understanding of justice to dietary transition. The scoping of research questions is based on a targeted literature review and iterative clarification of research questions by the interdisciplinary group of authors of this paper. We have reviewed both food justice and just transition literatures in order to develop the framework for the identification of justice questions. We utilise the framework in identifying and mapping the more specific questions related to dietary transition in current Western industrialised food systems. The scoping has been carried out by the interdisciplinary group of authors, with expertise in food and environmental justice, sustainability transitions, food systems, environmental science, agricultural economics, nutrition, socio-economic inequalities and environmental and food policy. All the authors have identified and clarified the research questions relevant to their own field of expertise. The scoping of research questions and further development of the justice framework has been conducted in several iterative rounds, giving every author the opportunity to comment on and amend the research questions identified by others. The framework and the identified scope of justice questions is, hence, an outcome of interdisciplinary intellectual effort.

3. Research questions for just dietary transition

3.1. How do the benefits and burdens of dietary transition affect food security and livelihoods?

The equal access and right to adequate, healthy, and nutritious food has been a key research topic in food justice research (e.g. Alkon and Agyeman, 2011; Cadieux and Slocum, 2015). The pressure for dietary transition and necessitated reductions in animal-based foods, however, raise new questions for food security, nutrition, and livelihoods.

Dietary patterns vary across socio-economic groups (Rippin et al., 2020), genders (Masella and Malorni, 2017), and cultures (Fourat and Lepiller, 2017). Policies aimed at dietary transition will most likely affect the different socio-economic groups in varying degrees in terms of access to and affordability of food. For example, the climate-friendly ‘EAT-Lancet planetary health reference diet’ (Willett et al., 2019) was recently described as unaffordable for much of the world's low-income population (Hirvonen et al., 2020). Rising food prices resulting from energy or carbon taxation may also pose a greater burden on people with low incomes who spend a

higher proportion of their income on essentials such as food and energy (Gough, 2017; Tiffin and Salois, 2012). In just transition, hence, there is a need to understand better the interlinkages between food and energy poverty as well. Insecure financial circumstances may lessen the capacity and interest of people to even think about the nutritional adequacy or sustainability of their diets (Raijas, 2017). Research on nutritional impacts is required to identify the most vulnerable groups to ensure that their position does not deteriorate in transition. Detailed contextual understanding of dietary patterns is also required, when designing accessible and affordable sustainable diets for specific countries or regions (Gazan et al., 2018; Vieux et al., 2018).

Just transition needs to consider the distributive effects of dietary transition on agricultural production as well (Huan-Niemi et al., 2020). Dietary transition directly challenges the current structures of animal-based production. Existing food justice scholarship has underlined the weak position of farmers and other food workers in the food system (Gottlieb and Joshi, 2010; Glennie and Alkon, 2018). The low profitability of primary production warrants particular attention in dietary transition as it crucially affects the adaptive capacity of farmers (e.g., Puupponen et al., 2017). The long-term investments carried out at farms tie farmers to specific production paths and sectors and place them at a disproportionate disadvantage to change their production (Nikkanen, 2021). Given that in the industrialised countries, the production of food from animals and related economic activities comprise approximately half of the agricultural GDP (World Bank, 2009), path-dependencies are significant. The interlinkages between dietary transition and agricultural production require much more research efforts from a systemic perspective, to understand the path-dependencies and innovation capacities.

In Europe and North America, the established food industry has taken a lead in introducing novel plant-based meat and dairy alternatives (Sexton et al., 2019; Tziva et al., 2020). Major meat industry actors regard animal-free foods as a market opportunity that complements their existing product portfolio. Many of these innovations also require big investments in product development and processing facilities, which may exclude small actors from entering the market. The distribution of benefits across food chain actors, including profits and immaterial rights, needs further scrutiny from the perspective of distributive justice. A key question for justice is whether new value chains benefit farmers, smaller food system actors, and regional or local actors or whether they entrench power disparities (Lonkila and Kaljonen, 2021; Kortetmäki, 2019a).

The question of innovation capacity and returns is, hence, a significant one for distributive justice in dietary transition. While innovations help achieve decarbonisation and create opportunities for economic activity (Klerkx and Begemann, 2020), they may also perpetuate injustices. Agricultural innovations have been suggested to raise several distributive issues of justice that relate to exchange (access to innovations and rewards for innovating), distribution of benefits, and the ways in which innovations promote or hamper intergenerational justice (Timmermann, 2020). Disparities between the Global South and North in the economic and livelihood impacts of agri-food innovations are also of relevance here.

Questions over innovations underline the need to widen the perspective of distributive justice to that of capabilities, the actual opportunities of doing and being to realise personal agency and dignified human life (Nussbaum, 2006). Capacity-developing activities for farmers and other workers in food chains promote justice more than fixed distributive arrangements. The latter tend to neglect the fact that different actors get very different benefits out of the same resource (Nussbaum, 2006; Sen, 1999).

Capacity development is important also with respect to nutritional equality. People and different socio-economic groups differ significantly in their ability to utilise and prepare nutritious or environmentally sustainable food, which is the third pillar of food security. Research is required on plausible and effective ways of securing and promoting capacities to eat well. School meal programmes provide an example of how policies can alleviate or minimise nutritional disparities amongst different socio-economic groups (Sidaner et al., 2013). Such programmes can also be harnessed to support low-carbon transitions (Kaljonen et al., 2019).

3.2. How to give recognition to diverse values of eating and farming in different contexts?

The urgency of low-carbon transition may increase recognitive injustices. The need to ensure the pluralistic recognition of values and rights on the one hand, and to create standardised, effective and comparable measures for a low-carbon transition on the other hand, creates a tension in which certain groups or values may become disregarded as they do not fit neatly in the standardised view or are not commensurable with, for example, monetary valuation (Ciplet and Harrison, 2019). The existing value hierarchies and dominant cultural norms may also support transition measures that disregard pluralism in food culture and values. Dietary transition raises recognition questions at the forefront by urging changes in what people eat and how they perceive good diets: this challenges the present lifeways and values associated with them (see also Healy and Barry, 2017).

Food justice literature has called for respect for diverse food values (e.g. Mares and Peña, 2011). Food values are always relational, reflecting and shaping our relations with other humans and cultures, environment and non-human animals (Rawlinson, 2019; DuPuis et al., 2011). While justice in transition requires recognition of diverse conceptions of eating well, the pressure for dietary transition forces communities also to re-evaluate their food values and practices. This creates unavoidable socio-cultural tensions (Peltola et al., 2020). Further research is needed to better understand and clarify the values and claims for recognition that emerge in the debates regarding dietary transition and how these conflicts are to be resolved. Values that assume or justify oppressive relations or inequalities cannot be justified (Fraser and Honneth, 2003: 41). Yet, identifying and acknowledging the oppressive socio-cultural value patterns may be difficult when injustices are perpetuated through normalised, mundane activities (Kortetmäki, 2019a). This also concerns the crux of a dietary transition, meat consumption, where the cultural patterns of normalisation associate masculinity with meat eating and narrow the dietary options within the conceptions of normal (and proper) masculine behaviour (Williams, 2015).

On the other hand, some decarbonisation pathways may also be unjust by normalising non-inclusive conceptions of justice or sustainability. For example, approaches that frame transition as a matter of responsible consumerism may reproduce elitist value patterns by dismissing the fact that, in many societies, the responsible food basket is the privilege of the well-off (Hirvonen et al., 2020;

Coulson and Milbourne, 2021) and downplaying the economic power of food industries and retail in shaping the demand (Mason and Lang, 2017). Hence, recognitive justice in dietary transition raises new questions such as: How do the dominant narratives produce or normalise unsustainable diets and ways of eating and, consequently, identify the benefits and costs of dietary transition? How do these dynamics hide or reveal inequalities? Are the narratives open to different food futures and values? Are some voices marginalised, inappropriately stereotyped, or even depreciated in the public debate on dietary transition and, if so, how could this be overcome?

The tension between pluralistic values and the urge to promote effective climate actions has been witnessed also in debates in which farmers assert that their position, knowledge, and views have been neglected and misrecognised in climate debate (Clifford and Travis, 2018). Studies on agri-environmental policies have articulated farmers' claims for the recognition of their situated knowledge in making decisions on environmental management (Burton and Farstad, 2020; Kaljonen, 2006; Puupponen et al., 2015; see also Timmermann, 2020). The protection of agricultural diversity against the dominion of monocultural practices is highlighted also by agro-ecological approaches, which highlight the value of farming practices adapted to local socio-ecological contexts (IPES-Food, 2016; see also Mares and Peña, 2011; Millner, 2017).

The marginalisation, devaluation, and invisibility of farmers and farm labour in political economies is a long-standing case of food injustice (Brown and Getz, 2011) that may, however, strengthen in the course of low-carbon transitions that put extra pressure on transformations at the farm level. Also in this case, it is important to ask how the claims for local and situated knowledge can be recognised (Loo, 2019; Ciplet and Harrison, 2019: 10) yet combined with transformational changes. It is essential to understand how to mediate the recognition of the equal dignity of farmers and their contribution to common good when they are also demanded to significantly change their practices.

A related notion that also links recognition and participation is the idea of contributive justice. It draws attention to the equal opportunity, as well as duty, of people to participate, develop capacities, and use those capacities to contribute to the common good (Timmermann and Félix, 2015; Timmermann, 2020). While the elements of contributive justice are included in the three-dimensional view of justice, this notion is useful for discussing what kind of work is valued and how. For example, labour intensity is not always something that should be reduced but may be even welcomed if it also implies more meaningful work opportunities or fairer distribution of tasks (Timmermann and Félix, 2015). From this perspective, dietary transition could even raise e.g. the value and meaning of care work given by public catering services at schools and in day care (Kaljonen et al., 2019).

3.3. The recognition of nonhuman animals and nature in dietary transition

Recognitive justice has conventionally emphasised the due recognition of pluralistic social and cultural values in policy making and, thereby, focused on humans (Fraser and Honneth, 2003). Dietary transition, however, raises the recognition of non-human animals and nature to the centre of justice considerations.

Animal ethics was the first field to claim the need for dietary changes on ethical grounds (Regan, 1988; Singer, 1980). This position stressed the moral consideration of non-human animals, as subjects-of-life (Regan, 1988) and as beings who can feel pain and pleasure (Singer, 1980). In mainstream climate policy debate, the ethical reasoning has, however, taken decisively another turn and made animals – as well as human-nonhuman relations in agriculture – largely invisible. In climate debate reductions in the consumption of animal-based foods are rather demanded for the sake of global food security and human health (Mason and Lang, 2017; Springmann et al., 2018; Willett et al., 2019). Such invisibility is misrecognition (Bos et al., 2018; Schlosberg, 2007). The question of ethical recognition of non-human animals in dietary transition, hence, remains open (Morris et al., 2021).

The visibility of animals in dietary transition can be promoted, for example, with the central capabilities approach to justice, where animals are acknowledged as recipients of justice and as having needs for a dignified and flourishing life (Nussbaum, 2006), or by expanding the idea of recognition beyond humans to the nonhuman world (Schlosberg, 2007). Recognition acknowledges the agency and integrity of nonhuman beings, calling for their visibility and adequate consideration of their differentiated needs and vulnerabilities and aiming to alleviate the interconnected injustices in ecological relations, which impede the basic capabilities and functioning of animal and plant life.

The visibility of animals and related changes in the whole food chain, not just on plates, is crucial for just dietary transition. For example, the lowest-carbon meat sources, chickens, usually suffer from the worst possible production conditions, whereas the ethically highest standards can be found in some forms of beef production that also has the highest carbon footprint. Increasing the resource efficiency of production (and its carbon footprint) also, in many cases, encourages increased confinement of animals, implying that the climate mitigation and animal ethical objectives may be in tension (see also Spijker et al., 2019). However, there are also options for ethically sounder and carbon-sequestering production systems such as intensive silvo-pastoral systems, which need to be considered in the discussion (Naranjo et al., 2012). If the animal question is dealt with only as a quantitative issue of how much people consume animal-based foods or of the carbon footprint per meat kilograms, qualitative aspects that are of utmost ethical relevance easily become neglected.

Methodologically and conceptually best ways to incorporate the recognition of animals in just transition research calls for further work. Bringing just transition studies into conversation with critical animal studies can provide one terrain to unpack more-than-human forms of injustices embedded in the “animal-industrial complex” (Twine, 2012). Coulson and Milbourne (2021) also argue, in line with ecological justice literature, that taking the agency or vitality of nonhumans seriously is crucial in fostering more just and sustainable socio-ecological relations in food system activities. For just transition, this means paying attention to the broader ecological integrity, such as biodiversity, soil health and water use, when planning the climate mitigation measures (Vermunt et al., 2020).

3.4. How to widen participation for just dietary transition?

Procedural justice draws attention to the forms and premises of participation in designing and realising low-carbon transitions and tensions arising in the process. Key tensions lie between the urgency of climate action and the demand of inclusiveness that may slow down policy making (Ciplet and Harrison, 2019). The existing power disparities and food injustices (Gottlieb and Joshi, 2010; Herman et al., 2018) highlight the importance of reassembling power relations as a part of a just food system transition (Lamine et al., 2019). Recognition and procedural justice are closely linked. While procedural rules may ensure that someone can speak in decision-making, recognition is required to ensure that the views of different actors are taken seriously (Schlosberg, 2007: 59–63). Because different aspects of injustices reinforce each other, power disparities tend to create feedback loops that need particular attention in securing procedural justice.

Dietary transition adds complexity to procedural questions but also generates an impactful contribution to the understanding of just transition. First, it concerns dietary choices and practices that have become largely depoliticised in liberal political economies (Kenehan, 2019). While bringing dietary choices back to public political agendas might be necessary for making a dietary transition just (Kortetmäki, 2019b), the shift also raises new questions for just transition and the equal participatory capacities. Second, decision-making comprises the arena for negotiating the socio-cultural tensions and conflicting claims of justice regarding dietary transition, which directs attention to the processes for inclusive and respectful decision-making on issues that tend to heat up the conversation and create juxtapositions.

Markets play a vital role in dietary transition. In many Western countries, food industries have been agile in developing new plant-based products for the growing markets (Lonkila and Kaljonen, 2021; Tziva et al., 2020) or launching carbon-neutral programmes; whilst, at the same time, public policies have proven tardy to change. This has been the case, for example, with the European Union agricultural policy. How procedural justice can be guaranteed in such a market-led transition is a key question for just transition research. Relationships between public and private governance also calls for expanded theoretical scrutiny. Justice theorising often assumes that states and public authorities are the justice delivering agents, while also research on the roles and responsibilities of non-state actors in just transition is needed. Better understanding of the political economies of the development would advance just transition as a whole (cf. Newell and Mulvaney, 2013).

The procedural role given for citizens in market transition is that of an ethical consumer (Barnett et al., 2017). It is important to diversify the understanding of ethical, healthy, and sustainable consumption in the support of dietary transition. Food justice research has increased the understanding of the role of alternative short supply chains in fostering food democracy and more equal participation of both farmers and consumers in building more sustainable food systems (Alkon and Agyeman, 2011; Renting et al., 2012). The alternative food movements have brought to public deliberation the multiple values and meanings related to food that tend to get overlooked by the current food policies and markets (Sonnino 2019). However, at the same time, the alternative local food initiatives carry along the risk of structural exclusion (Allen, 2008; Herman et al., 2018; Coulson and Milbourne, 2021) and procedural marginalisation (Moragues-Faus and Morgan, 2015). The existing inequalities in eating underline the need to develop more inclusive food democracies to support dietary transition. Just transition research needs to ask: how can food democracy be fostered so that inequalities in food security and nutrition are considered? How can sustainability issues be integrated into existing food security initiatives at the community level? Engaging children in dietary transition via publicly governed school meal or gardening programmes have, for example, shown promise in pairing participatory inclusiveness with equal food and nutrition security objectives, thereby promoting capabilities as well (Hayes-Conroy and Hayes-Conroy, 2013; Peltola et al., 2020).

Dietary transition, hence, raises up new actors, groups, values and matters that should be recognised in food policy and decision-making. Giving due recognition to these requires also novel procedures in place. Procedures should assist in navigating tensions arising from dietary transition. Research on the participatory avenues that can promote effective climate action while supporting justice (and other sustainability) objectives becomes important. Further efforts and inquiries are required to integrate the capability perspective into food democracy. Food justice research that addresses how participatory action can support transforming structures will contribute to this enquiry (Moragues-Faus and Morgan, 2015; Herman et al., 2018).

3.5. What needs to be restored and compensated for achieving just transition?

As the previous sections demonstrate, the impacts of dietary transition cannot always be justly distributed as such because of the highly differentiated exposure and vulnerability of affected actors. Consequently, restorative policy measures are key to just transition (McCauley and Heffron, 2018). Restorative justice aims at restoring social cohesion and trustful relationships by confronting the wrongdoings and trying to find solutions that enable cooperation in future and correct the harm for those who have been wronged or suffer a systematic disadvantage (Timmermann, 2020: 197–220). Restoration for job losses and livelihood insecurity has been the argument of labour unions, in particular (Morena et al., 2020).

In food systems, dietary transition will imply changes in supply chains, species and crops, jobs and, consequently, potential job losses. Dietary transition will particularly affect primary production and the food industry. The food industry has, however, appeared relatively agile in incorporating new production lines alongside its current ones. In contrast, farmers face greater difficulties in changing their mode of production and their opportunities for change also depend on the local climatic conditions, some of which are less suitable for certain types of crops.

When transition-induced harms are unavoidable and significant, restorative measures are needed for making the transition just. Energy transitions already witness restorative policy responses in, for example, Canada and Germany (Government of Canada, 2018; Harrahill and Douglas, 2019). These include bridging grants to re-employment or retirement, reimbursement for those moving to a

new job, retraining vouchers, career counselling, and tailored transition counselling at individual worksites. Restorative food justice measures may involve e.g. transition periods, land reforms, re-empowerment of oppressed communities through grassroots initiatives (Alkon and Agyeman, 2011). Many companies are already paying compensation for carbon emissions.

Conceptual clarifications about the meaning and role of restorative justice in just transition are urgent since restorative measures are now being translated into guiding legislation in many countries and federal systems, such as the EU, as part of climate action packages (EC, 2019). So far, restorative justice has, however, not become a theoretically elaborated concept in just transition research. Restorative justice, per definition, rectifies previous wrongdoing and is used especially in crime reconciliation (Liebmann, 2007; Galaway, 1996) aiming to restore the well-being of victims instead of solely punishing the offenders (Liebmann, 2007: 25). Environmental and climate justice also sometimes speak of the restoration of harm and injustices caused by environmental pollution and crimes (McCauley and Heffron, 2018: 4–5). Further conceptual investigation is needed to clarify whether restorative justice is a separate dimension of justice or a key element for achieving distributive, recognitive and procedural justice in transition, something that comes ‘after’ other aspects of justice fail.

The community emphasis on restorative justice underlines that the affected communities are to be engaged in the planning of restorative measures. This conjoins restoration with participatory and recognition justice. The key issue is *for what and for whom* restorative justice is needed (Timmermann, 2020: 215), which gives rise to specific challenges in the food systems. For example, when should the negative job and livelihood impacts on distant communities be compensated and when are those impacts a part of ordinary

Table 1
Summary of research questions for just dietary transition.

	Food security and nutrition	Livelihoods and social wellbeing	Nature and non-human animals
Distributive justice	<p>What are the nutritional impacts of dietary transition across various socio-economic groups? Who are the most vulnerable in various countries or regions and why?</p> <p>How does dietary transition affect the different socio-economic groups in terms of access to and affordability of food?</p> <p>How to design accessible and affordable sustainable diets in specific countries and regions?</p> <p>How do vulnerabilities in food security intersect with other social and economic disadvantages and transition-induced vulnerabilities?</p> <p>How to promote nutritional equity and capabilities to eat well in dietary transition?</p>	<p>What are the effects of a dietary transition to the livelihoods of farmers and other workers in the food chain? How do these distribute between regions and production sectors?</p> <p>How does dietary transition redistribute innovation capacity and value creation across food chain actors and activities?</p> <p>What are the path-dependencies and lock-ins that affect the adaptive capacities of different food system actors?</p> <p>How to develop the capabilities of farmers and those employed by food chain activities to meet the new challenges and avoid unemployment?</p>	<p>How to plan and implement dietary transition hand in hand with biodiversity protection and securing of water resources?</p>
Recognitive justice	<p>How does dietary transition challenge the present lifeways and values associated with eating well?</p> <p>Which of the diverse food values deserve recognition and which re-evaluation?</p> <p>How do the dominant narratives frame unsustainable diets and hide or reveal transition related burdens, benefits, and inequalities? Are they open to different food futures?</p>	<p>How to recognise and make visible the knowledge and work of farmers and other food system workers to support agency and esteem for their work as part of dietary transition?</p>	<p>How to give due recognition to nonhumans in just transition research and policy?</p> <p>How to ensure the recognition of the integrity of local and diverse agro-ecological systems in climate change mitigation and adaptation?</p>
Restorative justice	<p>What limitations does the non-negotiability of basic rights (right to food / food security) pose for just transition policies?</p>	<p>What kinds of economic losses from dietary transition should be compensated and to whom? What are the justice principles guiding these decisions?</p> <p>What kind of public and private policy measures can be used for restoration or compensation? What is the role of the third sector in alleviating the harms?</p> <p>What are the cross-sectoral policy mixes in the support of just transition?</p>	<p>How to compensate for the environmental losses caused?</p> <p>What is the role of public and private measures in the compensation of environmental losses and their regulation?</p>
Procedural justice	<p>How food democracy can be fostered so that inequalities in food security and nutrition are taken into account?</p> <p>How to support the equal participatory capabilities of different groups, especially those who are presently marginalised and vulnerable or suffer from power disparities? How to engage the affected communities in the planning of restorative measures?</p> <p>How can procedural justice be guaranteed in evolving forms of private and public governance?</p> <p>What kinds of decision-making procedures support the fair consideration and deliberation of conflicting food values and justice claims with respect to transition?</p>		
Cosmopolitan justice	<p>How to respect and protect the right to food and the livelihood opportunities of distant communities and future generations as part of dietary transition and global food systems? How to balance between local and global demands when they are in tension?</p> <p>How can global trade be governed in a way that gives vulnerable and, from the global North viewpoint ‘distant’, food system actors a say in the shaping of trade relations and distribution of goods and bads?</p> <p>How to improve the research capacity in the Global South as a part of enacting just transition globally?</p>		

global market dynamics that constantly produce winners and losers even in the business as usual? How to engage local communities in the planning of the restoration measures? How to bridge between social and environmental justice?

The questions that remain unresolved are multiple and complex. The food security viewpoint in dietary transition reveals, however, an absolute boundary where just transition is not a matter of negotiating trade-offs or restoration. It also needs to be emphasised that restoration is the last resort: the prior objective should be to reduce the overall vulnerability of those groups who are prone to transition-inflicted harms. Because these vulnerabilities result from a complex set of social processes instead of single wrongdoings (Kortetmäki, 2019a), elaboration is needed to understand the respective role of public and private actors, as well as that of the third sector, in reducing the highly differentiated vulnerabilities, and in fostering adaptive capacities. Further elaboration of restorative justice as part of policy mixes for sustainability transitions (Rogge and Reichardt, 2016) could, hence, guide a fruitful path for future research.

3.6. How to evaluate spatial relations and cosmopolitan justice in dietary transition?

Lastly, we want to highlight the questions related to cosmopolitan justice in dietary transition. Cosmopolitan justice means respecting and protecting the right to food and the livelihood opportunities for distant communities and future generations, with a particular attention to those communities who are the most vulnerable to climate change and food insecurity (Gilson and Kenehan, 2019: 9). This is relevant for global food trade where economic goods and environmental bads are currently very unequally distributed. Even alternative governance models that increase transparency and traceability (Garrett and Rueda, 2019) do not guarantee the inclusion of vulnerable or marginalised people (Thorpe, 2018). Because global supply chains play a central role in the present system that has enabled the industrial production of cheap animal protein (and feed for it), dietary transition will have significant trade impacts on the global scale.

The attention to global solidarity and trans-local processes for justice has received less attention in the food justice movement. While research and activism has noted the inequalities in global trade, the analysis has mainly criticised the concentration of wealth and power in global supply chains and proposed re-localised food systems as a solution (e.g., Gottlieb and Joshi, 2010; Alkon and Agyeman, 2011). Further research is needed on how global trade can be organised and governed in a way that gives vulnerable and, from the global North viewpoint distant, food system actors a say in shaping trade relations and the equitable distribution of related goods and bads in supply chains (Bürge Bonanomi et al., 2018).

Cosmopolitan justice highlights the consideration of spatial scales. Planning of climate actions at the national scale entail a risk that the needs, vulnerabilities and values of distant producers and food workers – who often suffer already from injustices in their own countries and face further problems due to climate change – are neglected and remain invisible. Dietary transition will have significant impacts on global trade of feed, for example. Currently, relatively few countries respond for the majority of global feed exports. The reduced need for feed would transform their food system functioning significantly. Identifying justice impacts in global trade relations is a task for both research and collaborative assessment that engages the affected communities in thinking about alternative futures. Improving research capacity in the Global South is a part of enacting just transition globally: it would increase understanding of the position of vulnerable groups in climate action and promote the autonomy of multiple food system actors, respecting their cultural and epistemic standpoints (Loo, 2019; Makondo and Thomas, 2018; UN, 2019), to have a say of their potential contribution to the construction of low-carbon future food systems around the world.

4. Discussion

The scoping of justice questions posed by dietary transition enriches the just transition research agenda significantly. It explicates how sustainability transition affects all citizens and their satisfaction of basic needs, namely food security and nutrition. By doing so it evokes socio-cultural tensions that require recognition and procedural solutions. Dietary transition highlights also the wider recognition of non-human animals and diversity in agroecological systems. Quite similarly to energy transitions, dietary transition will also have impacts on livelihoods, however, highlighting the uneven distribution of resources and capacities to innovate and adapt. Table 1 summarises the research questions posed by dietary transition for just transition. While some of the questions are the same as those identified by for example Williams and Doyon (2019) regarding energy transitions, many are new and relevant beyond food systems for studying energy, mobility, and cross-sectoral sustainability transitions. In what follows we discuss these cross-sectoral questions in more detail.

While just transition research has thus far largely focused on employment and livelihoods, future research on other distributive impacts of transitions is needed. The same socio-economic groups are often vulnerable to both energy and food poverty and less resourced to participate in decision-making. These linkages obviously point to the need for greater interaction between different domains of transition research to identify how to prevent social and cultural disparities from creating exclusion and social segregation in sustainability transitions. Our scoping of research questions also highlights that, alongside livelihood impacts, just transition research should examine how economic benefits and capacities to innovate and adapt to change distribute across the supply chains. The broader identification of vulnerabilities and disparities also calls for stronger integration of cognitive justice in sustainability transition research. Single focus on the socio-technical and economic aspects of transitions may perpetuate the invisibility of vulnerable groups and fail attending to the capabilities of less resourced actors. These actors may play a key role in innovating locally adapted solutions to climate change (see also Chilvers and Longhurst, 2016; Smith et al., 2016). For the same reasons, it is also important to pay attention not just to quantitative (and aggregated) but also to qualitative employment impacts of the transition to understand whether those whose jobs are at risk are able to move to the new jobs created by the transition (Harrahill and Douglas,

2019).

Regarding recognition, the dietary transition highlights socio-cultural differences and how the dominant narratives and values in societies may prevent transitions or produce unjust transitions. The potential domination of certain narratives or discourses – nationally and internationally – and their relationship to epistemic asymmetries and misrecognitive practices, warrants critical social scientific research. This also concerns the recognition of non-human animals in just transition, which has not played a prominent role in the prior, energy-orientated research. Food systems can provide a vital lens to examine how humans do, can, and ought to live responsibly in the multispecies world (Coulson and Milbourne, 2021) and enact multispecies justice (Celermajer et al., 2020).

Recognition is intimately linked to procedural justice because the latter provides the arena where value tensions and trade-offs in transitions are to be negotiated. The procedural aspect of just transition stipulates research questions regarding both formal inclusion and participatory capacities. The scoping of research questions underlines the need for further research on how procedural justice can be enacted in the hybrid forms of public and private governance. This challenge is also apparent in the political discourse of just transition where the private sector has been active in defining the agenda in ways that suit a reformist, less transformative, corporate environmentalism (Moussu, 2020). The interplay between public and private measures, as well as the third sector initiatives, in framing, guiding, fostering or limiting the transition has significant justice implications and requires systems-orientated political research and policy analysis. The recognition of different knowledges in decision-making is required to ensure a just, yet effective, transition, and to measure progress in verifiable and commensurable ways while enacting change through diverse and context-sensitive solutions.

The mapping of research questions calls for deeper scholarly attention to restoration and compensation as part of just transition. Since some distributive injustices are likely to be unavoidable in transition, research should identify and compare appropriate policies and policy mixes for alleviating or compensating for such harm. On the other hand, some of the losses caused by decarbonisation target the advantages achieved, which implies a need to consider the proper scope and criteria for applying restorative principles in climate mitigation. As part of conceptual clarifications, it should also be examined whether restorative justice is a separate dimension of justice or a key instrument for achieving justice in other terms. Comparative analyses across food, energy and mobility systems can help to unify principles for restorative justice.

Lastly, we want to highlight the global challenge of low-carbon transition and related responsibilities for cosmopolitan justice. Just transition research should strive to reach beyond its currently strong North American and Eurocentric orientation. This highlights the importance of considering the transition impacts at different spatial scales and studying narratives both in the light of different socio-cultural aspects and with regard to diverse worldviews and discourses internationally. Cosmopolitan justice cannot be dealt with by legislative and regulatory means alone but necessitates changes also in scientific cultures and practices (Timmermann, 2020; UN, 2019). Research capacities in the Global South should be also supported for the sake of just transition.

5. Conclusions

Just transition research is an important addition to the sustainability transitions research that has, for quite a long time, sidelined justice considerations. Our investigation opens a new domain, food systems, to just transition research. The justice questions posed by dietary transition underline the importance of relational, three-dimensional view on social and environmental justice. The questions concerning the distributive, recognitive and procedural justice are essentially interlinked and require careful context-specific analysis and empirical rigour to be addressed as part of just transition analysis. In this paper, we have further shown how the perspective on food system outcomes can assist just transition studies in identifying system-specific justice questions. In food system context this means elaborating justice questions from the perspectives of food security and nutrition, livelihoods and environment, in a balanced manner. A similar kind of outcome-based approach can be applied to other system transitions as well.

The food system orientated investigation highlights how the operationalisation of a multidimensional view on justice calls for rigorous inter- and transdisciplinary research. The integration of various modelling approaches to the distribution of nutritional, economic and environmental impacts requires a strong and clear framework and common pathways to be scrutinised by various disciplines. When accomplished, the analysis can provide insightful policy advice, also with regards to restorative justice. In turn, the questions concerning recognition and procedural justice call for interpretative, deliberative and action-based research. Moreover, in line with environmental and relational approaches to social justice, it is important to analyse further how the capabilities of various actors can be supported in transition. This necessitates both policy innovation and procedural development. Normative theorising is required to distinguish between different, sometimes conflicting claims and priorities and to provide helpful principles for resolving trade-offs. While the minimum principle for just transition is that it does not make the most vulnerable groups worse off, the real processes aiming at just transition reveal an abundance of much more complex questions that call for integration and tailoring of research methods. In this respect, just transition widens again the interdisciplinary nature of sustainability transition studies.

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References

- Alkon, A., Agyeman, J., 2011. *Cultivating Food Justice: Race, Class, and Sustainability*. MIT Press, Cambridge MA, London.
- Allen, P., 2008. Mining for justice in the food system: perceptions, practices, and possibilities. *Agric. Hum. Values* 25, 157–161. <https://doi.org/10.1007/s10460-008-9120-6>.
- Barnett, C., Clarke, N., Cloke, P., 2017. Whatever happened to ethical consumption? *J. Consumer Ethics* 1, 5–11.
- Bos, J.M., Bovenkerk, B., Feindt, P.H., Van Dam, Y.K., 2018. The quantified animal: precision livestock farming and the ethical implications of objectification. *Food Ethics* 2 (1), 77–92. <https://doi.org/10.1007/s41055-018-00029-x>.
- Brown, S., Getz, C., 2011. Farmworker Food Insecurity and the Production of Hunger in California, in: Alkon, A., Agyeman, J. (Eds.), *Cultivating Food Justice: Race, Class, and Sustainability*. MIT Press, Cambridge MA, London, pp. 121–146.
- Burton, R.J.F., Farstad, M., 2020. Cultural Lock-in and Mitigating Greenhouse Gas Emissions: the Case of Dairy/Beef Farmers in Norway. *Sociol. Ruralis* 60, 20–39. <https://doi.org/10.1111/soru.12277>.
- Bürgi Bonanomi, E., Jacobi, J., Scharrer, B., 2018. Food Sustainability in Bolivia Through Fair Food in Switzerland? How to Improve Food Sustainability in Both the North and the South Through Sustainable Trade Relations. *Revista Latinoamericana de Derecho Comercial Internacional* 6 (2), 27–65.
- Cadioux, K.V., Slocum, R., 2015. What does it mean to do food justice? *J. Polit. Ecol.* 22 (1), 1–26.
- Celermajer, D., Schlosberg, D., Rickards, L., Stewart-Harawira, M., Thaler, M., Tschakert, P., Verlie, B., Winter, C., 2020. Multispecies justice: theories, challenges, and a research agenda for environmental politics. *Env. Polit.* 30 (1–2), 119–140. <https://doi.org/10.1080/09644016.2020.1827608>.
- Chilvers, J., Longhurst, N., 2016. Participation in Transition(s): reconceiving Public Engagements in Energy Transitions as Co-Produced, Emergent and Diverse. *J. Environ. Policy Plan.* 18 (5), 585–670. <https://doi.org/10.1080/1523908X.2015.1110483>.
- Ciplet, D., Harrison, J.L., 2019. Transition tensions: mapping conflicts in movements for a just and sustainable transition. *Env. Polit.* 29 (3), 435–456. <https://doi.org/10.1080/09644016.2019.1595883>.
- Clapp, J., Fuchs, D., 2009. *Corporate Power in Global Agrifood Governance*. MIT Press, Cambridge MA, London.
- Clapp, J., Newell, P., Brent, Z.W., 2018. The global political economy of climate change, agriculture and food systems. *J. Peasant Stud.* 45, 80–88. <https://doi.org/10.1080/03066150.2017.1381602>.
- Clifford, K.R., Travis, W.R., 2018. Knowing Climate as a Social-Ecological-Atmospheric Construct. *Global Environ. Change* 49, 1–9. [10.1016/j.gloenvcha.2017.12.007](https://doi.org/10.1016/j.gloenvcha.2017.12.007).
- Coulson, H., Milbourne, P., 2021. Food justice for all?: searching for the ‘justice multiple’ in UK food movements. *Agric. Hum. Values* 38, 43–58. <https://doi.org/10.1007/s10460-020-10142-5>.
- DuPuis, M.E., J.L.Harrison, J.L., Goodman, D., 2011. Just Food?, in: Alkon, A.H., Agyeman, J. (Eds.), *Cultivating Food Justice*. MIT Press, Cambridge MA, London, pp. 283–308.
- EC, European Commission, 2019. The European Green Deal COM(2019) 640 final. https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf (accessed 15 April 2021).
- Ericksen, P.J., 2008. Conceptualizing food systems for global environmental change research. *Glob. Environ. Change* 18 (1), 234–245. <https://doi.org/10.1016/j.gloenvcha.2007.09.002>.
- FAO, Food, Organization, Agriculture, 2009. *Declaration of the World Food Summit on Food Security*. Food and Agriculture Organization of the United Nations, Rome.
- FAO, 2018. Sustainable Food Systems – Concept and Framework. Briefs. <http://www.fao.org/3/ca2079en/CA2079EN.pdf>. accessed 15 April 2021.
- FAO, 2020. The State of the World’s Food Security and Nutrition. <http://www.fao.org/3/ca9692en/online/ca9692en.html> (accessed 15 April 2021).
- Foley, J.A., Ramankutty, N., Brauman, K.A., Cassidy, E.S., Gerber, J.S., Johnston, M., Mueller, N.D., O’Connell, C., Ray, D.K., West, P.C., Balzer, C., Bennett, E.M., Carpenter, S.R., Hill, J., Monfreda, C., Polasky, S., Rockström, J., Sheehan, J., Siebert, S., Tilman, D., Zaks, D.P.M., 2011. Solutions for a cultivated planet. *Nature* 478, 337–342. <https://doi.org/10.1038/nature10452>.
- Fourat, E., Lepiller, O., 2017. Forms of Food Transition: sociocultural Factors Limiting the Diets’ Animalisation in France and India. *Sociol. Ruralis* 57 (1), 41–63. <https://doi.org/10.1111/soru.12114>.
- Fraser, N., Honneth, A., 2003. *Redistribution Or recognition?: a Political-Philosophical Exchange*. Verso, London, New York.
- Fraser, N., 2009. *Scales of justice: Reimagining political Space in a Globalizing World*. Columbia University Press, New York.
- Galaway, B., Hudson, J. (Eds.), 1996. *Restorative justice: International perspectives*, Criminal Justice Press, Monsey NY.
- Garrett, R., Rueda, X., 2019. Telecoupling and Consumption in Agri-Food Systems, in: Friis, C., Nielsen, J.Ø. (Eds.), *Telecoupling: Exploring Land-Use Change in a Globalised World*. Springer International Publishing, Cham, pp. 115–13.
- Gazan, R., Brouzes, C., Vieux, F., Maillot, M., Lluch, A., Darmon, N., 2018. Mathematical Optimization to Explore Tomorrow’s Sustainable Diets: a Narrative Review. *Adv. Nutr.* 9, 602–616. <https://doi.org/10.1093/advances/nmy049>.
- Gilson, E., Kenehan, S. (Eds.), 2019. *Food, Environment, and Climate Change: Justice at the Intersections*, Rowman & Littlefield International, London.
- Glennie, C., Alkon, A.H., 2018. Food justice: cultivating the field. *Environ. Res. Lett.* 13 (7), 073003 <https://doi.org/10.1088/1748-9326/aac4b2>.
- Gottlieb, R., Joshi, A., 2010. *Food Justice*. MIT Press, Cambridge MA, London.
- Gough, I., 2017. *Heat, Greed and Human need: Climate change, Capitalism and Sustainable Wellbeing*. Edward Elgar Publishing, Cheltenham.
- Government of Canada, Public Services and Procurement Canada, 2018. A Just and Fair Transition for Canadian Coal Power Workers and Communities /Task Force on Just Transition for Canadian Coal Power Workers and Communities. <http://publications.gc.ca/site/eng/9.867000/publication.html> (accessed 15 April 2021).
- Harrahill, K., Douglas, O., 2019. Framework development for ‘just transition’ in coal producing jurisdictions. *Energy Policy* 134, 110990. <https://doi.org/10.1016/j.enpol.2019.110990>.
- Hayes-Conroy, J., Hayes-Conroy, A., 2013. Veggies and Visceralities: a Political Ecology of Food and Feeling. *Emot. Space Soc.* 6, 81–90. <https://doi.org/10.1016/j.emospa.2011.11.003>.
- Healy, N., Barry, J., 2017. Politicizing energy justice and energy system transitions: fossil fuel divestment and a “just transition. *Energy Policy* 108, 451–459. <https://doi.org/10.1016/j.enpol.2017.06.014>.
- Hebinck, A., Klerck, L., Kok, K., König, B., Schiller, K., Tschersich, J., van Mierlo, B., von Wirth, T., 2021. Beyond food for thought – Directing sustainability transitions research to address fundamental change in agri-food systems. *Environmental Innovation and Societal Transitions*. <https://doi.org/10.1016/j.eist.2021.10.003>.
- Herman, A., Goodman, M.K., Sage, C., 2018. Six questions for food justice. *Local Environ.* 23 (11), 1075–1089. <https://doi.org/10.1080/13549839.2018.1532401>.
- Hirvonen, K., Bai, Y., Headey, D., Masters, W.A., 2020. Affordability of the EAT–Lancet Reference Diet: a Global Analysis. *Lancet Global Health* 8 (1), e59–e66. [https://doi.org/10.1016/S2214-109X\(19\)30447-4](https://doi.org/10.1016/S2214-109X(19)30447-4).
- Hobson, B., 2003. *Recognition Struggles and Social movements: Contested identities, Agency and Power*, Ed. Cambridge University Press, Cambridge UK.
- Huan-Niemi, E., Kaljonen, M., Knuutila, M., Niemi, J., Saarinen, M., 2020. The impacts of dietary change in Finland: food system approach. *Agric. Food Sci.* 29 (4), 372–382. <https://doi.org/10.23986/afsci.95282>.
- Ingram, J., 2011. A Food Systems Approach to Researching Food Security and Its Interactions with. *Glob. Environ. Change. Food Secur.* 3, 417–431. <https://doi.org/10.1007/s12571-011-0149-9>.
- IPCC, Intergovernmental Panel on Climate Change, 2019. *Climate Change and Land. Summary for Policymakers*. <https://www.ipcc.ch/report/srcc/> (accessed 2 July 2020).
- IPES-Food, International Panel of Experts on Sustainable Food Systems, 2016. From uniformity to diversity: a paradigm shift from industrial agriculture to diversified agroecological systems. http://www.ipes-food.org/_img/upload/files/UniformityToDiversity_FULL.pdf (accessed 2 July 2020).

- Jenkins, K., Sovacool, B., McCauley, D., 2018. Humanizing Sociotechnical Transitions through Energy Justice: an Ethical Framework for Global Transformative Change. *Energy Policy* 117, 66–74. <https://doi.org/10.1016/j.enpol.2018.02.036>.
- Kaljonen, M., 2006. Co-Construction of Agency and Environmental Management. The Case of Agri-Environmental Policy Implementation at Finnish Farms. *J. Rural Stud.* 22 (2), 205–216. <https://doi.org/10.1016/j.jrurstud.2005.08.010>.
- Kaljonen, M., Peltola, T., Salo, M., Furman, E., 2019. Attentive, Speculative Experimental Research for Sustainability Transitions: an Exploration in Sustainable Eating. *J. Clean. Prod.* 206, 365–373. <https://doi.org/10.1016/j.jclepro.2018.09.206>.
- Kenehan, S., 2019. Liberal Political Justice, Food Choice, and Environmental Harm, in: Gilson, E., Kenehan, S. (Eds.), *Food, Environment, and Climate change: Justice at the Intersections*. Rowman & Littlefield, London, pp. 231–248.
- Klerkx, L., Begemann, S., 2020. Supporting food systems transformation: the what, why, who, where and how of mission-oriented agricultural innovation systems. *Agric. Syst.* 184, 102901 <https://doi.org/10.1016/j.agsy.2020.102901>.
- Kortetmäki, T., 2019a. Nobody's Fault? Structural Injustice, Food, and Climate Change, in: Gilson, E., Kenehan, S. (Eds.), *Food, Environment, and Climate change: Justice at the Intersections*. Rowman & Littlefield, London, pp. 47–61.
- Kortetmäki, T., 2019b. Tensions between food justice and climate change mitigation, in: Vinnari, E., Vinnari, M. (Eds.), *Sustainable Governance and Management of Food systems: Ethical perspectives*. Wageningen Academic Publishers, Wageningen, pp. 3508–3513.
- Köhler, J., Geels, F.W., Kern, F., et al., 2019. An Agenda for Sustainability Transitions Research: state of the Art and Future Directions. *Environ. Innov. Societ. Transit.* 31, 1–32. <https://doi.org/10.1016/j.eist.2019.01.004>.
- Lamine, C., Darnhofer, I., Marsden, T.K., 2019. What enables just sustainability transitions in agrifood systems? An exploration of conceptual approaches using international comparative case studies. *J. Rural Stud.* 68, 144–146. <https://doi.org/10.1016/j.jrurstud.2019.03.010>.
- Liebmann, M., 2007. *Restorative justice: How it Works*. Jessica Kingsley Publishers, London.
- Lonkila, A., Kaljonen, M., 2021. Promises of meat and milk alternatives – integrative literature review on emergent research themes. *Agric. Hum. Values* (2021). <https://doi.org/10.1007/s10460-020-10184-9>.
- Loo, C., 2019. Participation and Food Justice in Light of Global Climate Change, in: Gilson, E., Kenehan, S. (Eds.), *Food, Environment, and Climate change: Justice at the Intersections*. Rowman & Littlefield, London, pp. 63–75.
- Makondo, C.C., Thomas, D.S.G., 2018. Climate change adaptation: linking indigenous knowledge with western science for effective adaptation. *Environ. Sci. Policy* 88, 83–91. <https://doi.org/10.1016/j.envsci.2018.06.014>.
- Mares, T.M., Peña, D.G., 2011. Environmental and food justice: toward local, slow and deep food systems, in: Alkon A.H., Agyeman, J. (Eds.), *Cultivating Food justice: Race, class, and Sustainability*. MIT Press, Cambridge, MA, pp. 197–219.
- Martiskainen, M., Sovacool, B.K., Lacey-Barnacle, M., Hopkins, D., Jenkins, K.E.H., Simcock, N., Mattioli, G., Bouzarovski, S., 2021. New Dimensions of Vulnerability to Energy and Transport Poverty. *Joule* 5, 3–7. <https://doi.org/10.1016/j.joule.2020.11.016>.
- Masella, R., Malorni, W., 2017. Gender-Related Differences in Dietary Habits. *Clin. Manag. Issues* 11 (2), 59–62. <https://doi.org/10.7175/cmi.v11i2.1313>.
- Mason, P.J., Lang, T., 2017. *Sustainable diets: How ecological Nutrition Can Transform Consumption and the Food System*. Taylor & Francis Group, London, New York.
- McCauley, D., Heffron, R.J., 2018. Just transition: integrating climate, energy and environmental justice. *Energy Policy* 119, 1–7. <https://doi.org/10.1016/j.enpol.2018.04.014>.
- McCauley, D., Ramasar, V., Heffron, R.J., Sovacool, B.K., Mebratu, D., Mundaca, L., 2019. Energy Justice in the Transition to Low Carbon Energy Systems: exploring Key Themes in Interdisciplinary Research. *Appl. Energy* 233–234, 916–921. <https://doi.org/10.1016/j.apenergy.2018.10.005>.
- Millner, N., 2017. The right to food is nature too: food justice and everyday environmental expertise in the Salvadoran permaculture movement. *Local Environ.* 22 (6), 764–783. <https://doi.org/10.1080/13549839.2016.1272560>.
- Moragues-Faus, A., Morgan, K., 2015. Reframing the foodscape: the emergent world of urban food policy. *Environ. Plan. A* 47 (7), 1558–1573. <https://doi.org/10.1177/0308518X15595754>.
- Morena, E., Krause, D., Stevis, D. (Eds.), 2020. *Just Transitions: Social Justice in the Shift Towards a Low-Carbon World*, Pluto Press, London.
- Morris, C., Kaljonen, M., Aavik, K., et al., 2021. *Priorities for social science and humanities research on the challenges of moving beyond animal-based food systems*. *Hum. Soc. Sci. Commun.* 8, 38, [10.1057/s41599-021-00714-z](https://doi.org/10.1057/s41599-021-00714-z).
- Moussu, N., 2020. Business in just transition: the never-ending story of corporate sustainability, in: Morena, E., Krause, D. & Stevis, D. (Eds.), *Just Transitions: Social Justice in the Shift Towards a Low-Carbon World*. Pluto Press, London, pp. 56–75.
- Naranjo, J.F., Cuartas, C.A., Murguieito, E., Chará, J., Barahona, R., 2012. Balance De Gases De Efecto Invernadero En Sistemas Silvopastoriles Intensivos Con Leucaena leucocephala En Colombia. *Livestock Research for Rural Development*, 24, Article #150. <http://www.lrrd.org/lrrd24/8/nara24150.htm> (Accessed 15 April 2021).
- Newell, P., Mulvaney, D., 2013. The political economy of the 'just transition'. *Geogr. J.* 179 (2), 132–140. <https://doi.org/10.1111/geoj.12008>.
- Nikkanen, H., 2021. A wealth of soil : Social-ecological traps, economy and agency on Finnish farms.. Stockholm University, Faculty of Science, Stockholm Resilience Centre., Stockholm. <https://su.diva-portal.org/smash/record.jsf?pid=diva2%3A1568941&dsid=7550>.
- Nussbaum, M.C., 2006. *Frontiers of justice: Disability, nationality, Species Membership*. Belknap Press, Cambridge, MA, pp. 76–78.
- Peltola, T., Kaljonen, M., Kettunen, M., 2020. Public, Embodied Experiments in Dietary transition: Demonstrating Alternative Proteins At Finnish schools. *Sustainability: Science, 16. Policy and Practice*, pp. 184–196. <https://doi.org/10.1080/15487733.2020.1789268>.
- Puupponen, A., Kortetmäki, T., Paloviita, A., Järvelä, M., 2015. Social acceptance of climate change adaptation in farms and food enterprises: a case study in Finland. *Int. J. Sociol. Agric. Food* 22 (2), 105–123. <https://doi.org/10.48416/ijfsaf.v22i2.131>.
- Puupponen, A., Paloviita, A., Kortetmäki, T., Silvasti, T., 2017. *Suomalaisten maatilojen resilienssi osana tulevaisuuden ruokaturvaa. Maaseudun uusi aika* 25 (2), 23–37.
- Raijas, A., 2017. Onko kaikilla varaa syödä terveellisesti ja vastuullisesti. *Yhteiskuntapolitiikka* 82 (4), 468–471.
- Rawlinson, M.C., 2019. The Climate of Food: justice, Truth, and Structural Change, in: Gilson, E., Kenehan, S. (Eds.), *Food, Environment, and Climate change: Justice at the Intersections*. Rowman & Littlefield, London, pp. 91–118.
- Regan, T., 1988. *The Case for Animal Rights*. Routledge, London.
- Renting, H., Schermer, M., Rossi, A., 2012. Building food democracy: exploring civic food networks and newly emerging forms of food citizenship. *Int. J. Sociol. Agric. Food* 19 (3), 289–307. <https://doi.org/10.48416/ijfsaf.v19i3.206>.
- Rippin, H.L., Hutchinson, J., Greenwood, D.C., Jewel, I J., Breda, J.J., Martin, A., Rippen, D.M., Schindler, K., Rust, P., Fagt, S., Matthiessen, J., Nurk, E., Nelis, K., Kuk, M., Tapanainen, H., Valsta, L., Heuer, T., Sarkadi-Nagy, E., Bakacs, M., Tazhibayev, S., Spiroski, I., Beukers, M., van Rossum, C., Ocke, C., Lindross, A.K., Warensjö Lemming, E., Cade, J.E., 2020. Inequalities in education and national income are associated with poorer diet: pooled analysis of individual participant data across 12 European countries. *PLoS ONE* 15 (5), e0232447. <https://doi.org/10.1371/journal.pone.0232447>.
- Rogge, K.S., Reichardt, K., 2016. Policy mixes for sustainability transitions: an extended concept and framework for analysis. *Policy Res.* 45 (8), 120–1635. <https://doi.org/10.1016/j.respol.2016.04.004>.
- Sandel, M., 2010. *Justice: What's the Right Thing To Do?* Farrar, Straus, and Giroux, New York.
- Schlosberg, D., 2007. *Defining Environmental Justice*. Oxford University Press, Oxford.
- Sen, A., 1999. *Commodities and Capabilities*. Oxford University Press, Oxford.
- Sen, A., 2009. *The Idea of Justice*. Allen Lane, London.
- Sexton, A., Garnett, T., Lorimer, J., 2019. Framing the future of food: the contested promises of alternative proteins. *Environ. Plan. E* 2 (1), 47–72. <https://doi.org/10.1177/2514848619827009>.
- Sidaner, E., Balaban, D., Burlandy, L., 2013. The Brazilian school feeding programme: an example of an integrated programme in support of food and nutrition security. *Public Health Nutr.* 16 (6), 989–994. <https://doi.org/10.1017/S1368980012005101>.
- Singer, P., 1980. *Utilitarianism and vegetarianism*. *Philos. Public Aff.* 9 (4), 325–337.

- Slocum, R., Cadieux, K.V., Blumberg, R., 2016. Solidarity, space, and race: toward geographies of agrifood justice. *Justice Spatiale - Spatial Justice* 9, 1–34.
- Smith, A., Hargreaves, T., Hielscher, S., Martiskainen, M., Seyfang, G., 2016. Making the Most of Community Energies: three Perspectives on Grassroots Innovation. *Environ. Plan. A* 48 (2), 407–432. <https://doi.org/10.1177/0308518X15597908>.
- Soja, E.W., 2013. *Seeking Spatial Justice*. University of Minnesota Press.
- Sonnino, R., 2019. The cultural dynamics of urban food governance. *City. Cult. Society* 16, 12–17. <https://doi.org/10.1016/j.ccs.2017.11.001>.
- Spijker, E., Anger-Kraavi, A., Pollitt, H., van de Ven, D., 2019. Evaluating integrated impacts of low-emission transitions in the livestock sector. *Environ. Innov. Societ. Transit.* 35, 482–492. <https://doi.org/10.1016/j.eist.2019.11.003>.
- Springmann, M., Clark, M., Mason-D'Croz, D., Wiebe, K., Bodirsky, B.L., Lassaletta, L., de Vries, W., Vermeulen, S.J., Herrero, M., Carlson, K.M., Jonell, M., Troell, M., DeClerck, F., Gordon, L.J., Zurayk, R., Scarborough, R., Rayner, M., Loken, B., Fanzo, J., Godfray, H.C.J., Tilman, D., Rockström, J., Willett, W., 2018. Options for Keeping the Food System within Environmental Limits. *Nature* 562, 519–525. <https://doi.org/10.1038/s41586-018-0594-0>.
- Stavis, D., Felli, R., 2015. Global labour unions and just transition to a green economy. *Int. Environ. Agreements* 15, 29–43. <https://doi.org/10.1007/s10784-014-9266-1>.
- Thorpe, J., 2018. Procedural Justice in Value Chains Through Public–private Partnerships. *World Dev.* 103, 162–175. <https://doi.org/10.1016/j.worlddev.2017.10.004>.
- Tiffin, R., Salois, M., 2012. Inequalities in diet and nutrition. *Proc. Nutr. Soc.* 71, 105–111. <https://doi.org/10.1017/S0029665111003284>.
- Timmermann, C., 2020. *Social Justice and Agricultural Innovation*. Springer, Cham.
- Timmermann, C., Félix, G.F., 2015. Agroecology as a vehicle for contributive justice. *Agric. Hum. Values* 32 (3), 523–538. <https://doi.org/10.1007/s10460-014-9581-8>.
- Twine, R., 2012. Revealing the ‘animal-industrial complex’ – a concept & method for critical animal studies. *Crit. Anim. Stud.* 10 (1), 12–39.
- Tziva, M., Negro, S.O., Kalfagianni, A., Hekkert, M.P., 2020. Understanding the protein transition: the rise of plant-based meat substitutes. *Environ. Innov. Societ. Transit.* 35, 217–231. <https://doi.org/10.1016/j.eist.2019.09.004>.
- UN, United Nations, 2019. *Global Sustainable Development Report (2019). The future is now. Science for achieving sustainable development.* https://sustainabledevelopment.un.org/content/documents/24797GSDR_report_2019.pdf (accessed 15 April 2021).
- Vermunt, D.A., Negro, S.O., Van Laerhoven, F.S.J., Verweij, P.A., Hekkert, M.P., 2020. Sustainability transitions in the agri-food sector: how ecology affects transition dynamics. *Environ. Innov. Societ. Transit.* 36, 236–249. <https://doi.org/10.1016/j.eist.2020.06.003>.
- Vieux, F., Perignon, M., Gazan, R., Darmon, N., 2018. Dietary changes needed to improve diet sustainability: are they similar across Europe? *Eur. J. Clin. Nutr.* 72, 951–960. <https://doi.org/10.1038/s41430-017-0080-z>.
- Willett, W., Rockström, J., Loken, B., et al., 2019. Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. *Lancet North Am. Ed.* 393 (10170), 447–492. [https://doi.org/10.1016/S0140-6736\(18\)31788-4](https://doi.org/10.1016/S0140-6736(18)31788-4).
- Williams, N., 2015. *Meat Eating and Masculinity: a Foucauldian Analysis*. In: Dieterle, J.M. (Ed.), *Just Food: Philosophy, Justice and Food*, Ed. Rowman & Littlefield, London, New York, pp. 141–159.
- Williams, S., Doyon, A., 2019. Justice in energy transitions. *Environ. Innov. Societ. Transit.* 31, 144–153. <https://doi.org/10.1016/j.eist.2018.12.001>.
- World Bank, 2009. *Minding the stock: Bringing Public Policy to Bear On Livestock Sector Development*. Report no. 44010-GLB. Washington DC.