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Research article

Policy mixes for just transitions: A holistic evaluation framework

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ABSTRACT

In this paper, we develop a holistic policy evaluation framework that aims to harness a fuller potential of just transitions. Although appeals for broader understanding of just transitions are becoming louder, applicable frameworks supporting consideration of justice in the planning and evaluation of transition policies are still lacking. The evaluation framework developed integrates the multidimensional understanding of justice more consistently into the consideration of policy intervention points for sustainability transitions. We test and apply the framework to the discussions concerning just food system transitions in Finland. The results show that justice issues deserve attention across all the policy intervention points, but their relative importance differ. A better understanding of the relative importance of justice concerns is critical when designing policy mixes for more active and emancipatory just transitions governance. We close the paper by explicating further avenues for the application and development of the framework.

1. Introduction

Just transitions are gaining increasing scholarly and political interest that has arisen from the need to consider social and environmental justice as intertwined components of sustainability transitions (Jenkins et al., 2020; Kaljonen et al., 2021a,b; McCauley and Heffron, 2018). The idea of a just transition was first introduced by labour unions in North America during the 1970s in response to concerns about the impacts of environmental policies on jobs and employment (Stavis and Felli, 2015). It was later pushed more forcefully to the centre of climate policies, for example by the International Labour Organization (Poschen, 2015), the Paris Climate Agreement (UNFCCC, 2016), the Silesia Declaration on Solidarity and Just Transition (Council of the European Union, 2018) and the Green Deal of the European Union (EC, 2019).

Faithful to the initial interests of the labour unions, the policies supporting just transitions most often target the mitigation of harmful distributive impacts on work, employment, and livelihoods. For example, the Paris Agreement reminds that climate mitigation efforts need to take into account “the imperative of a Just Transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities” (UNFCCC, 2016, p. 2). Similarly, the key principle “leave no one behind” of the European Green Deal calls attention to the workforce, sectors, and regions most affected by transitions (EC, 2019; Skjærseth, 2021). The EU has introduced a specific Just Transition Mechanism and Fund to support the most affected regions in mitigating socio-economic repercussions and in re-employment and retraining (Moodie et al., 2021; Nowakowska et al., 2021; Sarkki et al., 2022).

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Such emphasis on the distributive effects of the sustainability transitions is far too narrow considering the broad spectrum of changes needed to make societies more sustainable in a just way (Abram et al., 2022; Ciplet, 2022; Kaljonen et al., 2023; McCauley and Heffron, 2018; Pianta and Lucchese, 2020; Stevis and Felli, 2020; Williams and Doyon, 2019). In addition to the distributive effects of climate policies, it is important to consider how the existing injustices in societies affect the possibilities of different groups to get their voices heard and recognized in transition processes and decision-making. Consideration of existing injustices entails acknowledging power relations and various positions of actors in taking part in transitions (e.g. Ciplet, 2022; van Oers et al., 2021). Recognizing how such socio-political positions link with the distributive impacts of transition policies may call upon procedural solutions that cannot be met with redistributive measures alone. Building capacities for change, furthermore, requires a much broader scope of policy mixes than just stimulating and accelerating niches, which has been the conventional focus of sustainability transition studies.

In this paper, we develop a holistic policy evaluation framework that aims to harness the fuller potential of just transitions. Although appeals for broader understanding of just transitions are becoming numerous, they still lack applicable frameworks to support the consideration of multiple dimensions of justice in the planning, implementation and evaluation of transition policies (see, however, Juhola et al., 2022; Kivimaa et al., 2023). As just transitions are gaining political momentum, such frameworks are critically needed to keep on track with its multiplying interpretations and policy (Ciplet and Harrison, 2020; Heffron and McCauley, 2022; Huttunen et al., 2024; Jenkins et al., 2020; Moodie et al., 2021).

Sustainability transitions research has for long emphasized the importance of policy mixes in boosting transitions (Kern et al., 2019; Rogge and Reichardt, 2016). Recently, transitions scholars have directed attention to how policy mixes should be designed to trigger the twin dynamics of sustainability transition, i.e. actively supporting the emergence and acceleration of niche innovations, whilst simultaneously destabilizing the existing regimes and phasing out unsustainable practices (Hebinck et al., 2022; Kivimaa and Kern, 2016; Loorbach, 2014; Turnheim, 2022). Kanger et al. (2020) have drawn attention to specific policy intervention points required to stimulate and accelerate niches, destabilize the regime and mitigate its broader repercussions, and coordinate multi-sectoral interaction and directionality in sustainability transition. Kanger et al. consider just transition mostly in relation to distributive impacts caused by regime destabilization.

In this paper, we develop the understanding of the intervention points further to allow a more holistic approach to just transition policies. We do that by integrating the multidimensional understanding of justice (Schlosberg, 2007; Tribaldos and Kortetmäki, 2022; Williams and Doyon, 2019) more consistently to the consideration of the policy intervention points. We argue that such a holistic understanding is important for developing policy mixes that support active and emancipatory policies for just transitions, instead of only reactive responses to repercussions. The distinction between reactive, active and emancipatory policies has been proposed by Turnheim (2022, p. 58–59) for evaluating the different motives for governing destabilization. The reactive motives orient towards mitigating the direct repercussions of destabilization by transition periods, financial assistance or regional social and education policy. Active motives associate with the discontinuation of undesirable systems with actions such as technology or product phase-outs, but also the anticipation of future transformations through retraining strategies or territorial reorientation. Emancipatory motives go the furthest in transforming the existing social injustices by challenging structural forms of power, oppression and neglected interests, and empowering alternative development pathways. Turnheim underlines that these “motives may present a scope for complementarity as well as significant points of tension and contradiction” (Turnheim, 2022, p. 58). The different motives lead also to a quite different set

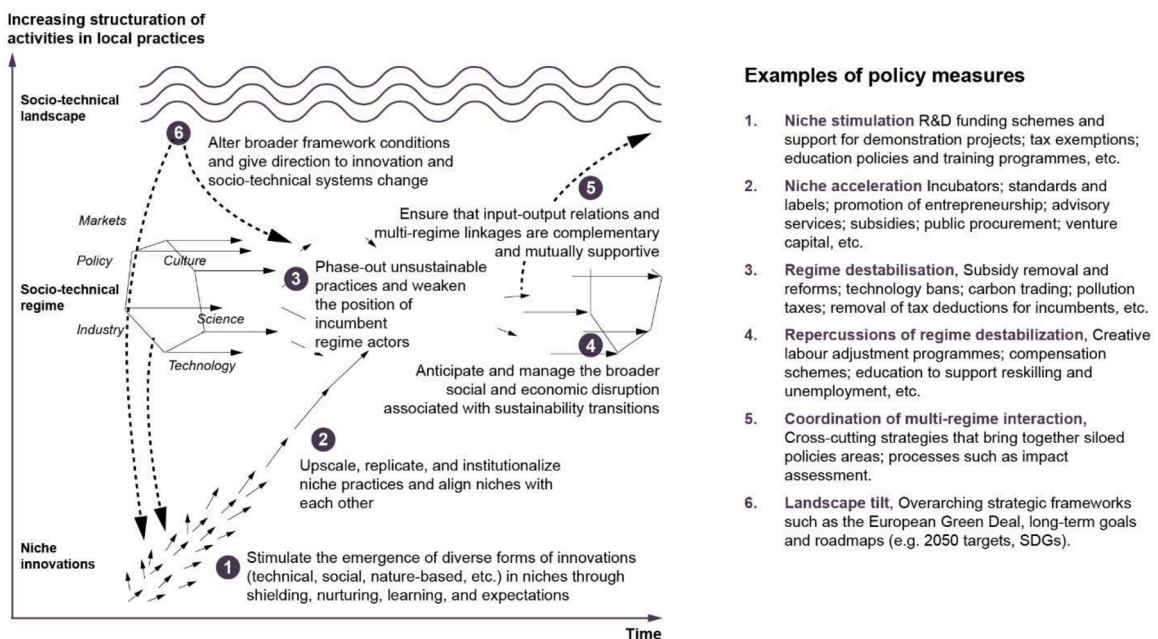


Fig. 1. Policy intervention points for sustainability transitions (modified from Kanger et al., 2020).

of policy mixes. Whereas the reactive motives mostly aim to mitigate the distributive impacts of destabilization, emancipatory motives seek ways to interlink the destabilization with active innovation policy.

In what follows, we present a holistic framework for evaluating policy mixes for just transitions. We test and apply the framework to the discussion over just food system transitions in Finland. We analyse how the framework can assist in contextualization of justice issues across the policy intervention points and assist in moving away from reactive to more active and emancipatory just transitions governance. We close the article by discussing further avenues for the application and development of the framework in the support of just transitions.

2. Framework for evaluating policy mixes for just transition

During the past decades, sustainability transitions research has developed several frameworks to assist in evaluating and designing policy mixes for boosting transitions (Kern et al., 2019; Rogge and Reichardt, 2016; Rogge and Stadler, 2023). In this research tradition, the conceptualization of policy mixes extends the ideal combinations of policy instruments to the policy processes by which the combinations of policy instruments emerge, interact, and are implemented (Edmondson et al., 2019; Flanagan et al., 2011; Kaljonen et al., 2021a,b; Mavrot et al., 2019; Rogge and Reichardt, 2016). The framework developed by Kanger et al. (2020) is useful in clarifying the role of policies in triggering the twin dynamics of sustainability transitions. They identify six policy intervention points, i. e. “particular areas in the socio-technical system or its environment where the application of appropriate policy instruments would likely facilitate transformative change in the system’s directionality” (Kanger et al., 2020, p. 2). In accordance with the multi-level perspective to sustainability transitions (Geels, 2002; 2011), the policy intervention points address innovation (niche stimulation and acceleration), phase-out (regime destabilization and its broader socio-economic repercussions), and coordination and directionality of policies (multi-regime interaction and landscape tilt) (Fig. 1).

The framework shows explicitly how the policy instruments vary for each of the intervention points. Research and development funding schemes, support for experimentation and demonstration projects, tax exemptions, education and training all aim to stimulate, shield and nurture innovations triggering new ways of production and consumption. However, to accelerate innovations additional policy measures of finance, advisory services, standards and labels and public procurement are needed. The destabilization of unsustainable practices may include phasing out environmentally harmful subsidies, introducing pollution taxes or carbon trading for correcting market failures and fixing prices. Such measures will hit certain economic actors and consumers directly, calling attention to policy means that help mitigating such repercussions. Kanger et al. also underline multi-regime coordination and landscape tilt as key policy intervention points. Cross-cutting strategies, long-term goals and impact assessments are needed to direct systemic change across the sectoral policies. The European Green Deal can be seen as a landscape-level strategy that aims to set direction in sectoral policies (Skjærseth, 2021).

The framework of Kanger et al. has been utilized increasingly in the search for transformative policy mixes (e.g. Asquith et al., 2022; Lazarevic et al., 2022). The framework, however, considers justice perspectives largely only in relation to repercussions of regime destabilization. In such understanding, justice becomes understood almost solely as a matter of distributive impacts. The

Table 1
Dimensions and principles of justice and examples of issues to be considered in just transition policies.

Dimensions and principles of justice	Issues to be considered by just transition policies
Distributive justice Fair distribution of benefits and burdens	<ul style="list-style-type: none"> • Right to food, water, energy, housing, mobility needed for meeting basic needs and well-being. • Impacts on employment and livelihoods. • Distribution of profits and other benefits across the value chains. • Cumulative, intersectional, and spatial impacts of the above. • Alleviation or compensation of unfair burdens, restoration of harms.
Recognition justice Socio-cultural dignity and respect for differences	<ul style="list-style-type: none"> • Recognition of different socio-cultural values, knowledge and societal positions of relevant stakeholders in policy preparation, decision-making, implementation and communication with particular attention to the cultural representation of marginalized and vulnerable groups. • Non-discrimination based on ethnicity, gender, age, religion, language, state of health, opinion or other personal reasons.
Capacity justice Equal capacity of actors to respond to transition demands	<ul style="list-style-type: none"> • Capacities of individuals to engage in and adapt to transitions, especially those in a vulnerable position. • Capacities of people to partake in collective action and decision-making, especially those in a vulnerable position. • The availability of innovations to interested actors, especially least-advantaged groups.
Ecological integrity and animal justice Ecological integrity and justice for nonhuman animals	<ul style="list-style-type: none"> • Recognition of nature and nonhuman animals, including respectful treatment of all sentient animals. • Impacts on ecosystems and biodiversity.
Cosmopolitan justice Global fairness and intergenerational justice	<ul style="list-style-type: none"> • Global distribution of benefits and burdens. • Protection of future generations’ opportunities to achieve well-being, including their right to vital goods for basic needs.
Procedural justice Participatory fairness in decision-making processes	<ul style="list-style-type: none"> • Transparent, inclusive decision-making processes that provide a fair opportunity for different actors to participate. • Inclusive policy implementation. • Impacts on power relations and disparities. • The availability of reliable information to all participating in the planning, decision-making and implementation of policy.

reactive and active measures mitigating distributive impacts may include compensation schemes, labour adjustment programmes, education to support retraining and employment, etc. (Kanger et al., 2020). Similar measures are emphasized in the Just Transition Mechanism and Fund of the European Green Deal (European Commission, 2021; see also Moodie et al., 2021; Nowakowska et al., 2021; Sarkki et al., 2022).

In this paper we develop the framework of policy intervention points further to allow a more holistic understanding of just transitions governance. We do that by operationalizing the multidimensional understanding of environmental justice (Schlosberg, 2007) – much applied in just transitions research (McCauley and Heffron, 2018; Williams and Doyon, 2019) – into specific principles that deserve attention in the planning, evaluation and implementation of just transition policies. In building the principles, we take stock of the existing evaluation frameworks that have been developed to assess justice in a holistic and multidimensional manner (Atteridge and Strambo, 2020; European Environment Agency, 2024; Kivimaa et al., 2023; Tribaldos and Kortetmäki, 2022). By holistic we mean frameworks that (i) focus on evaluative principles for just transitions in overall terms, and (ii) broaden just transition beyond labour-focused approaches. These frameworks provide a general outlook for the vulnerability, inclusion, and equality considerations in sustainability transitions (Atteridge and Strambo, 2020; European Environment Agency, 2024); philosophically justified principles for just transitions (Tribaldos and Kortetmäki, 2022); and questions for evaluating justice in climate policies (Kivimaa et al., 2023).

These works complement one another highlighting three perspectives critical for policy evaluation and planning: (i) the multidimensional understanding of environmental justice as prerequisite for just transitions, (ii) capacity building as necessary for proactive just transition approaches, and (iii) attention to vulnerable and marginalized groups who are often dismissed by transition policies. In the holistic policy evaluation framework, we have devoted specific principles for these notions (Table 1). In addition, the framework gives specific attention to ecological integrity and animal justice as well as cosmopolitan justice to underline their importance in just sustainability transitions (Celermajer et al., 2021; Pianta and Lucchese, 2020; Stevis and Felli, 2020; Tribaldos and Kortetmäki, 2022). We discuss each of the principles in detail below. At this point it is, however, important to underline that while separating justice dimensions and principles is useful for analytical purposes, they are highly interconnected in reality (European Environment Agency, 2024; Kivimaa et al., 2023; Schlosberg, 2007). The issues to be considered under each of the dimensions require contextual interpretation and intersectional impact assessments.

Distributive justice is the most commonly identified and discussed dimension in the context of just transition (Bessa and Gouveia, 2022; García-García et al., 2020; Lehtonen et al., 2022). The underlying principle of distributive justice is a fair distribution of benefits and burdens in transition. This concerns the impacts of transition on livelihoods and well-being of individuals. If livelihood losses occur, restorative measures may be in place to alleviate harms and to redistribute impacts (Green and Gambhir, 2020; Sanz-Hernández et al., 2020). These measures usually fall under reactive just transition policy measures. More emancipatory measures, however, would pay attention also to the distribution of profits along value chains making sure that innovations do not strengthen current injustices in power distribution. In terms of well-being, it is essential to be attentive to vulnerable groups in transitions and consider how burdens may intersect or cumulate. For instance, simultaneously rising energy, food, and mobility prices may hit hardest those who are already in a disadvantaged position in society, which implies the need for coupling climate policies with social policy measures (Gough, 2017).

Recognition justice calls attention to existing socio-cultural and power-related disparities and socio-cultural differences due to which policy impacts may vary. Recognition implies sensitivity to differences in socio-cultural values, identities and positions in society and specific vulnerabilities arising from their intersection (Fraser, 2009). These can concern both work and private life. For example, shifting to sustainable diets and modes of agricultural production will challenge the values and identities of some consumer groups and farmers much more than others (Burton and Farstad, 2020; de Boer et al., 2013; Janssen et al., 2022; Puupponen et al., 2022). Similar challenges arise with the normative patterns of daily energy use (Laakso et al., 2022), car driving (Zijlstra and Avelino, 2012) or communities built around coal or peat (Cha, 2020; Johnstone and Hielscher, 2017). Recognition means giving due concern to the multiplicity of socio-cultural values and patterns of life as part of just transitions policy designs; however, this does not mean non-interference with unjust value hierarchies (Fraser, 2009).

The recognition of plural values and worldviews while ensuring the effectiveness of climate measures requires balancing (Ciplet and Harrison, 2020). Recognition can assist in being attentive to the cumulating intersectional policy impacts and designing policies that support different socio-cultural groups in responding to transition demands in their own terms. Problem framing and public communication are also matters of recognition. Polarized climate policy debates between opposite value positions can lead to simplistic blaming or the feeling of being blamed by others (Puupponen et al., 2022). Diversifying problem frames and giving voice to less heard groups in society strengthen recognition justice in transitions (Kivimaa et al., 2023).

Capacity justice is related to both distribution and recognition but warrants a separate principle due to its distinct and proactive character as part of just transitions. Increasing actors' transformative capacities, especially among less well-off and the most vulnerable actors reduces their vulnerability to transitions. Just transition require acknowledging how different groups and communities differ in their material (resources) and immaterial (knowledge, attitudes) capacities to respond to transition demands. Capacity building may mean securing the availability of innovations also for less advantaged groups. Active support for lifelong learning and education, including support for occupational and further training, can reduce social vulnerability and promote social justice (Kortetmäki and Järvelä, 2021; McGrath and Deneulin, 2021). More emancipatory measures support individuals' or communities' capacities to partake in collective action and decision-making. Unlearning from unsustainable practices is one important form of capacity building, which has gained increasing interest among transition scholars lately (e.g. Ghosh et al., 2021; van Oers et al., 2023). Capacity building helps to reduce the amount and severity of cases where compensation or restorative justice is needed (Atteridge and Strambo, 2020).

Ecological integrity and justice for animals have a separate principle in the evaluation framework to give due account to the environmental and nonhuman concerns (Ciplet and Harrison, 2020; Huttunen et al., 2024). Transitions focusing on climate impacts

should also consider the impacts on ecosystems and biodiversity more broadly, but also for nonhuman animals (Tribaldos and Kortetmäki, 2022). The recognition of the moral status of nonhuman nature, either as moral considerability or as broadening the sphere of justice beyond humans, can be understood involving recognition justice (Celermajer et al., 2021; Schlosberg, 2013). Because of the initially local and regional orientations in just transitions, it is also important to pay attention to cosmopolitan justice as a separate principle for just transitions (Kivimaa et al., 2023; Sovacool et al., 2019; Tribaldos and Kortetmäki, 2022). This includes both global and intergenerational justice to ensure the prospects of future generations to achieve well-being. Ecological, nonhuman, and cosmopolitan justice principles overarch the other principles: it is possible to speak of, for example, distributive and recognitive cosmopolitan justice.

Procedural justice concerns the actual (not only formal) equality of participatory opportunities, the transparency and impartiality of public decision-making, and the accountability of decision-makers to citizens (Schlosberg, 2007). As transition policies often take place in a multi-regime and multi-level environment, ensuring participation and coherence in these complex decision-making processes poses an extra challenge for just transitions governance (Kivimaa et al., 2023). The availability and access to reliable information, and capacity to utilize it, are also key ingredients of procedural justice. This is often referred to as epistemic justice (Fricker, 2007).

The just transition principles help 1) to explicate the justice issues relevant for different policy intervention points and 2) to identify comprehensive policy mixes in support of just transitions (Fig. 2). Assessing justice issues across all the policy intervention points is critical for broadening the spread of just transition policies from reactive to more active and emancipatory motives. Whereas the reactive motives mostly aim to mitigate distributive impacts, emancipatory motives give more attention to recognition and procedural justice in the development of policy mixes. Similarly, capacity justice is seen very differently by the reactive, active and emancipatory policies, especially with respect to agency given to the actors. The framework is developed explicitly to identify and evaluate policy mixes that can address these multiple dimensions of justice in a more holistic manner.

In what follows, we analyse how the framework can assist in identifying the key justice issues relevant for different policy intervention points and spotting the direction for policy mixes in the support of just food system transitions in Finland. The testing is meant to explicate the utilisation of the framework in practice. The Finnish case concerns discussion on future policy development needs, but the framework is developed to support concrete policy planning and evaluation as well. We come back the further application and development needs in the discussion when we synthesise the learnings from the Finnish test case.

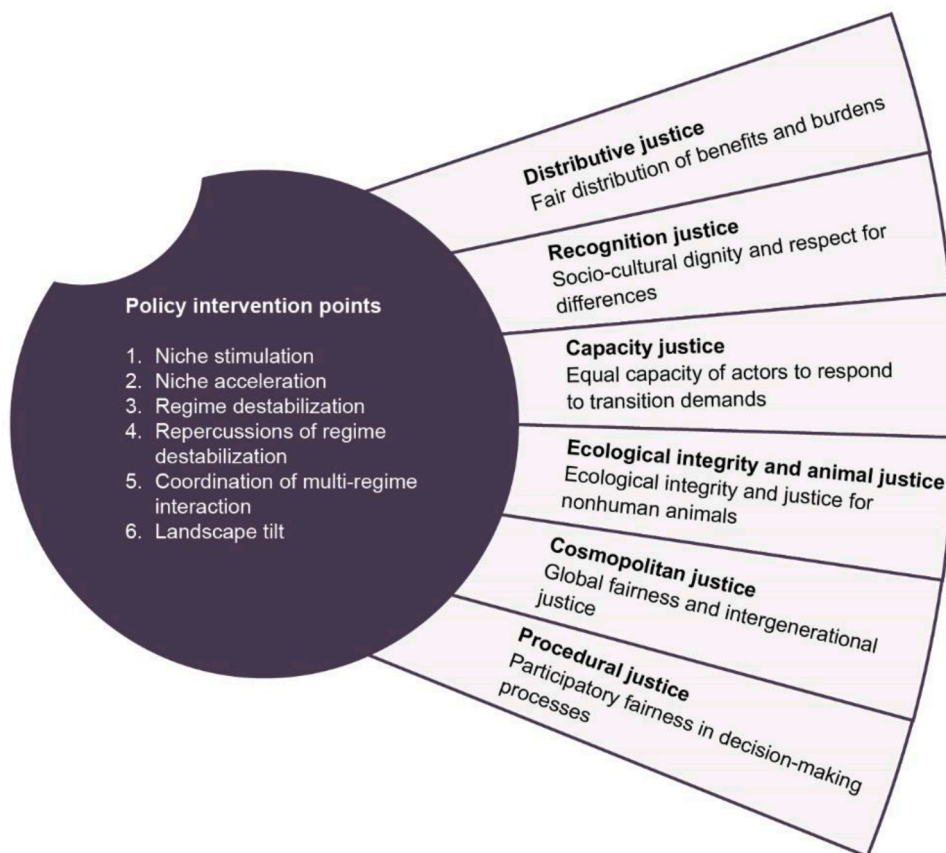


Fig. 2. A holistic framework for evaluating policy mixes for just transition.

3. Case study on just food system transitions in Finland

3.1. Policy dialogue on just food system transition pathways

We test the framework in relation to the discussion over just food system transitions in Finland. We rely upon extensive policy dialogue we have organized amongst food system actors in Finland. In the dialogue, the food system actors deliberated justice issues related to four different pathways that describe actions needed to reduce greenhouse gas emissions in the Finnish food system by 33 per cent by 2035, and by 70 per cent by 2050 without jeopardizing food security. The pathways have been developed by an interdisciplinary group of scientists, and they concentrate upon changes in 1) land-use, 2) diets, 3) agricultural technologies and 4) novel food production and processing technologies (Kaljonen et al., 2022).

In the land-use pathway, the cultivation of peatlands would need to be reduced since now more than half of the greenhouse gas emissions from the Finnish agriculture come from cultivated peatlands despite their relatively small share (circa 11%) of cultivated land (Statistics Finland, 2023). The land-use pathway would effectively reduce greenhouse gas emissions, but entails distributive concerns since most of the peatlands occur in the western and northern parts of Finland (Huan-Niemi et al., 2021; Kekkonen et al., 2019; Lehtonen et al., 2022). In the dietary change pathway, the consumption of meat and dairy products would be lowered by one- or two-thirds, implying major changes in both production and consumption of foods. Currently, almost half of the turnover of the Finnish food industry comes from meat and dairy (Kaljonen et al., 2022). The dietary pathway appears challenging also culturally since Finns, especially men, consume much more red and processed meat than is recommended by national nutrition recommendations (Kaljonen et al., 2022), let alone by the dietary transition pathway. The agricultural technology pathway presents a more technology-oriented pathway in the use of renewable energy and climate-smart agriculture. The food technology pathway aims to disrupt current animal-based food production with novel food technologies from cellular agriculture and bioreactors to fermentation and protein fractioning.

These four different transition pathways offer a broad perspective on the diverse changes needed for the reduction of climate

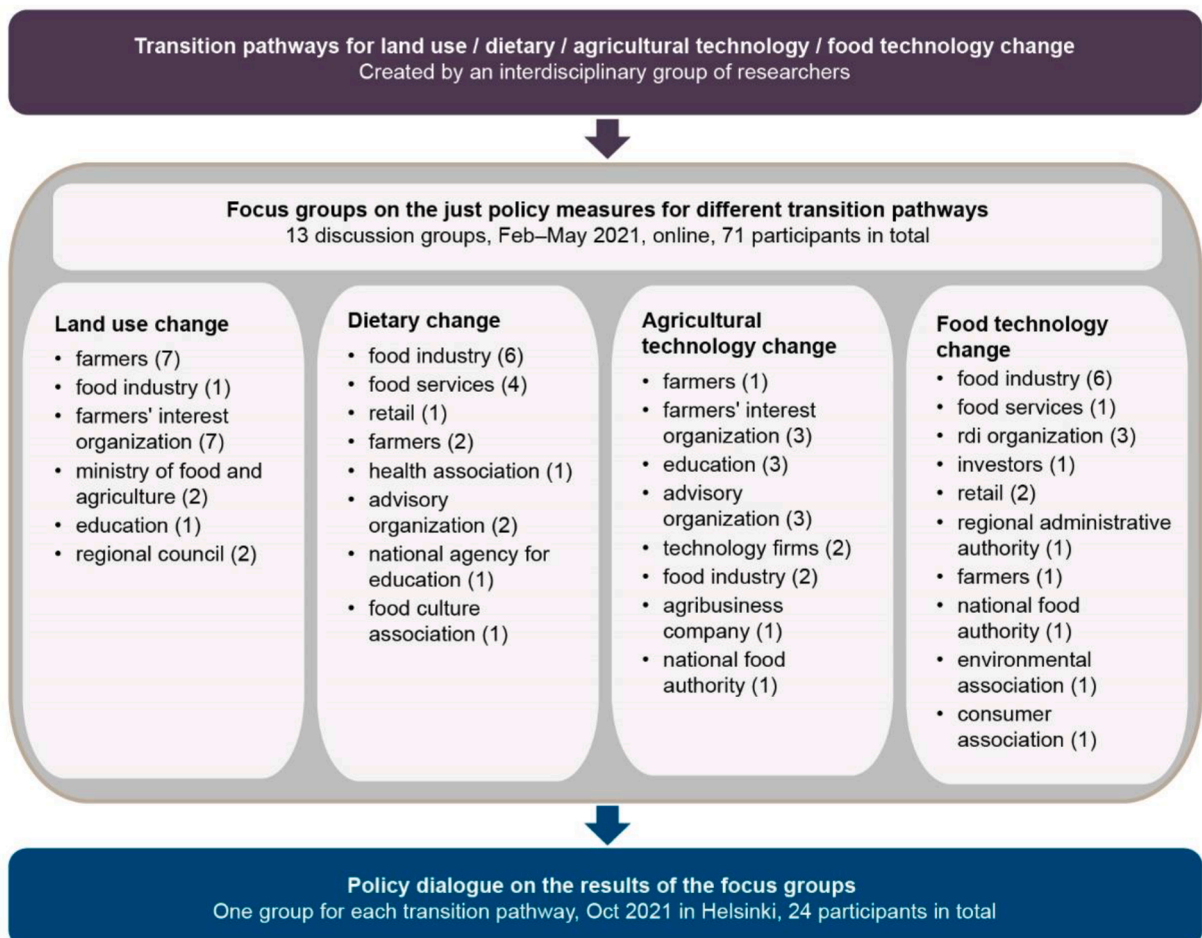


Fig. 3. Different phases of the policy dialogue and the participating actors.

emissions in the Finnish food system. It is important to underline that the pathways have been developed as archetypes; in reality, they would interlink in dynamic ways. In the policy dialogue we utilized these pathways to prompt discussion on justice issues faced and the respective policy mixes needed. The dialogues were organized in 2021 and consisted of several focus groups, discussing specific pathways, and a larger policy dialogue event developing the results of the focus groups further (Fig. 3).

Altogether 71 participants joined the focus group discussions and 24 joined the larger policy dialogue event. The participants represented food system actors from the input industry to primary production, food industry, retail, food services and restaurants as well as environmental and food non-governmental organizations. Representatives from ministries, regional administration, interest groups, advisory services and education also participated in the dialogues. The main criterion for inviting the participants to the policy dialogues was their participation in food system activities and their role as an enactor or recipient of justice in the food system transitions. The focus groups were organized online, which allowed wide participation across the whole country. The larger policy dialogue event was organized in-person and consisted more of the national level actors, e.g. from the ministries and interest organizations.

In the focus groups the participants deliberated policy measures in each of the transition pathways with the following general question: How can public and/or private sector actors advance the transition to climate-friendly and healthy food systems in the different pathways so that the transition is just? The participants were provided with a set of just food transition principles to facilitate the discussion (Kaljonen et al., 2022). The researchers summarized the policy measures raised in the focus group discussions and presented them to the larger policy dialogue participants, who iterated and developed the identified policy measures and mixes further.

3.2. Empirical analysis and iterative testing of the framework

In the empirical analysis we tested and developed the holistic framework in an iterative manner.

In the first step, we analysed the justice issues raised by the dialogue participants and categorized them under six principles (Table 1). In the analysis, we tested how the principles of justice help in identifying justice issues relevant in each of the transition pathways. This first step in the analysis helped us to refine the list of issues to be considered in the holistic framework. The initial coding was conducted by one of the authors, but the accuracy of the coding was validated by the discussions between all the authors. The software Atlas.ti was used for the coding process.

In the second step we introduced the six policy intervention points to the analysis (Fig. 1). We grouped the justice perceptions under six policy intervention points in each transition pathway. The analysis revealed a close interrelatedness of the intervention points related to 1) stimulating and accelerating innovations; 2) regime destabilization and mitigation of repercussions and 3) multi-regime coordination and landscape tilt. The analysis highlighted how justice deserves attention across all the intervention points, but with different weights. In this sense, the framework allowed us to distinguish the key differences in the policy focus. At this point, we also distilled the specific policy measures suggested for each of the intervention points in the support of just transitions.

In the future application of the framework, we recommend carrying out steps 1–2 in reverse order. Concentrating first on the policy intervention points would allow a more thorough concentration on finding policy mixes to support of just transitions. The discussion around justice tends to stay on a fairly general level, and the focus on intervention points helps to focus the analysis on concrete policy proposals.

It needs to be noted here as well, that we tested the framework to the discussion over policy development needs. The discussion was not linked to any actual policy preparation, although policy planners and interest groups pushed forward their agendas as part of the policy dialogue. According to our experience the framework worked especially well in analysing such free-floating discussion, whilst bringing to it structure and a transitions perspective. In general, the participants saw discussion on justice issues important, whilst also somewhat difficult. Many participants had difficulties in considering long-term justice consequences in comparison to the immediate effects of current injustices. Participants representing the current incumbent regime often took a more defensive approach, while participants representing niche businesses or activities argued for a more forward-looking transitional approach. Few participants even opposed the transition pathways and were initially unwilling to discuss policy measures to promote such transitions. Thinking across all intervention points was especially difficult, and here the framework showed its power, highlighting the transition perspective to the required policy mixes. In this manner, it offered a welcomed addition to the more conventional discourse policy analysis (Ciplet and Harrison, 2020; Fischer et al., 2023; Huttunen et al., 2024). The principles of justice give normative guidance to the design and analysis of policy mixes; whilst intervention points bring in the transitions perspective. In this manner, the framework functioned especially well in identifying gaps in the discussion.

In the testing of the framework, we concentrate upon general discussion around the intervention points, and do not go into too much detail distinguishing perceptions between different actors. Such analysis should be fostered in the future applications of the framework. As said, the participants in the policy dialogue were mostly actors actively involved in food system activities. This restriction needs to be kept in mind when interpreting the results of the discussions.

The timing of the policy dialogue needs to be considered also in the interpretation of the results. The empirical data was collected during the Covid-19 pandemic, which forced selection of the online discussion forum in Teams. Only the final policy dialogue was arranged as a face-to-face meeting. While online meeting clearly affected the interaction among participants, it also enabled a wider participation of people living in rural areas, i.e. farmers and rural entrepreneurs. The empirical data was also collected before Russian invasion of Ukraine and the related security concerns. The current shifts in the public debate from climate crisis to security crisis most probably have influenced the participants' perceptions on just food system transitions.

4. Justice issues contextualized for food system transitions in Finland

Testing of the holistic framework to the discussion on the just food system transition in Finland shows that justice issues deserve attention in all policy intervention points from niche stimulation and acceleration to regime destabilization and repercussions. While the food system actors emphasized distributive issues in relation to niche stimulation and acceleration, in the context of regime destabilization they stressed the importance of recognition and capacity justice. All in all, multi-regime interaction and landscape tilt were more difficult to address as tangible policy measures. Issues related to cosmopolitan justice or ecological integrity and animal justice were only rarely considered by the Finnish food system actors.

4.1. Policy mixes to support justice in niche stimulation and acceleration

According to our analysis of the Finnish policy dialogue, the fair distribution of profits across and between the value chains require specific attention in designing policy measures for niche stimulation and acceleration (Fig. 4). In the food system transition, this concerns not only stimulation and acceleration of sustainable production technologies and farming practices, but also novel products, processing techniques, and value chains. The participants in the policy dialogue reminded that support (or the lack of it) for innovations is by no means a value-neutral exercise. New technologies or products, such as novel plant-based foods, may either strengthen or reshuffle the existing economic structures affecting the distribution of profits and risks among the actors in the value chains.

Participants widely agreed that technological development and innovations should benefit society at large, not just a few profit-making entities. In this respect, distributive justice calls attention to safeguarding the fair opportunity for differently resourced actors to engage in the development of novel technologies and products, and benefit from them. Policy support for start-ups in legal processes and in access to markets are crucial for tackling the existing disparities in resources and know-how. Collective risk-sharing supports distributive justice in the niche stimulation phase. A multi-actor approach is important for research, development, and innovation support. Co-design widens the applicability of innovations. In the innovation acceleration phase, subsidy systems and extension programmes are important for spreading sustainable innovations and ensuring more equitable access to their benefits. Many policy dialogue participants were critical of the current Common Agricultural Policy of the EU in this regard, yet also differed in their views on what should be done. Some wanted to restrict subsidies to food production only; whilst others called for more stringent sustainability criteria for subsidies or stronger mechanisms to support farm-level investments.

Dialogue participants stressed that niche stimulation policies should recognize the plurality of actors and keep possibilities open for multiple technologies. Focusing on a single highly cherished option represents misrecognitive socio-technological hegemony. Developing old technologies is important also from this perspective. Otherwise, farmers burdened by older investments are systematically disadvantaged, while the more economically resourced parties can invest in new technologies and accumulate benefits. According to the participants, investment support requirements should be tailored so that different (also smaller) farms and companies have access to them. Thus, different technologies, plant varieties, and products should be seen as complementing one another. This also fosters the recognition of the differentiated ways of engaging in innovation acceleration. Low-tech solutions may also be essential in improving ecological sustainability, as is the case with regenerative farming or crop rotation.

Furthermore, beyond single technologies, attention needs to be directed to the building of just and sustainable value chains. Currently, the plant-based value chains (for legumes, for example) do not function well and are very weak in comparison to animal-based value chains in Finland. Strengthening novel plant-based value chains would require private-public investments in plant breeding and processing facilities. Public procurement can assist in the acceleration of new products and eating habits (see more Ch. 4.2), whilst contract-farming or co-operative business models can assist in making the production of legumes for food more viable for farmers.

Standards and labels were raised as important means to create value and deliver product information to consumers in niche acceleration. At the moment, there are no collectively binding rules for carbon footprint information on products. Participants called for public regulation and third-party certification to ensure that reliable information is available to consumers. In this respect, the right to knowledge was also seen as a matter of procedural and capacity justice. As data and information become available and open to all, it is important to ensure that also the provider of the information benefits from it.

4.2. Policy mixes to support justice in regime destabilization and repercussions

Regime destabilization was difficult to address for the Finnish food system actors. Participants presented critical views on the fairness of regime destabilization especially regarding dietary and land-use transition pathways. This made it also difficult for them to envision potential destabilization measures; pointing out the need to anticipate and alleviate the broader repercussions of regime destabilization.

Concerning the dietary transition, attention was directed to its impacts on agriculture. The participants stressed how especially Central, Eastern and Northern Finland would be hit by decreased demand for meat and dairy products yet also have less favourable natural conditions for plant production (Fig. 5). The participants reminded that currently the self-sufficiency of food in Finland is highest for dairy and meat (> 80%) and stressed that dietary transition might entail a major risk for the security of the food supply. In terms of recognition, they saw the dietary transition as touching upon deep socio-cultural values, identities and routinized practices. Indeed, they saw the transition itself cause so many distributive injustices and recognition issues that they were reluctant to propose any means to support the reduction of dairy and meat production.

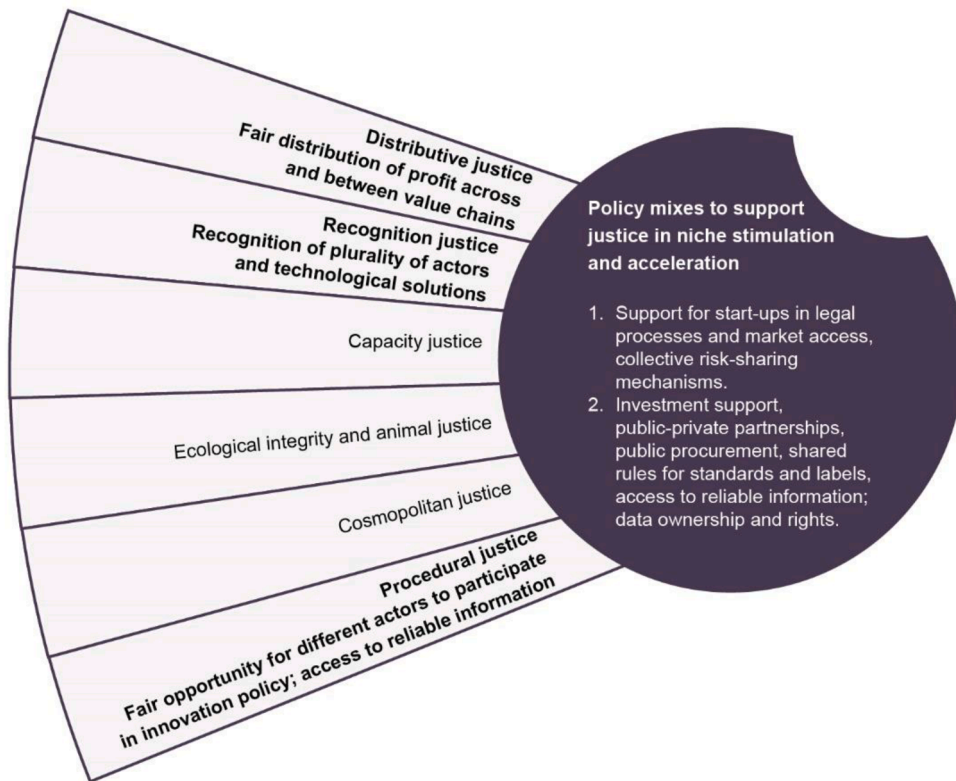


Fig. 4. Policy mixes to support justice in niche stimulation and acceleration.¹

¹ The most important concerns of justice are highlighted in bold.

Similarly, in the context of land-use change, many dialogue participants, and most prominently farmers, were reluctant or found it very difficult to suggest any stringent destabilization measures to lower the emissions from the peatlands justly. Participants stressed that the distributive impacts on farm livelihoods may be too burdensome, especially in the Western and Northern Finland where most of the peatlands are located. They called recognition to the differentiated circumstances of farms and farmers. The participants also stressed that the cost of mitigation actions should be distributed equally amongst the food chain actors, calling for a greater role of the private sector and food industry in financing climate actions and in capacity building. Landowners' rights in decision-making were identified as critical for procedural justice.

The dialogue participants stressed that any measures aiming at destabilization should always be designed together with measures mitigating repercussions. As specific examples, the participants suggested transition periods and compensations for land-use changes to support distributive justice alongside training and advice to improve farmers' capacities to lower peatland emissions. Similarly, in the context of dietary change, the planning of potential health and environmental taxes should consider the possible distributive effects of rising food prices on different socio-economic groups and compensate them with social policy measures when necessary.

With respect to destabilization, policy dialogue participants found it easier to support demand-driven measures. They argued that policy measures should foremost enhance the capacities of different people to participate in the transition. Firstly, healthy and sustainable eating should be accessible to all. The retail food sector, but also public food services, were seen as being in a key position here. Nudging was emphasized by the food system actors as an easy, but often too weak, solution to improving access to healthy and sustainable foods in everyday food environments. Public policies implemented via school meal and day care programmes were seen essential in targeting younger generations and safeguarding the right to good nutrition for all.

Secondly, the participants highlighted the importance of recognizing the differentiated needs and capacities of citizens. Changing dietary habits is not so much a question of money but of know-how, values, and will. The investments in both basic and professional education are essential in building capacities in the long term. Attention also needs to be focused on recognizing different socio-cultural values in communication to eliminate antagonism related especially to dietary changes. Better recognition of individual's capabilities and agency in dietary transition was noted as important, but the participants were unable to pinpoint concrete policy measure for supporting that.

Interestingly, the capacity-building measures suggested by the dialogue participants recognize the need for long-term policy measures in fostering capacities and know-how of people to take part in transition. Otherwise, the dialogue participants were more concerned about the direct short-term impacts of destabilization calling attention to interlinkages between distributive and recognition

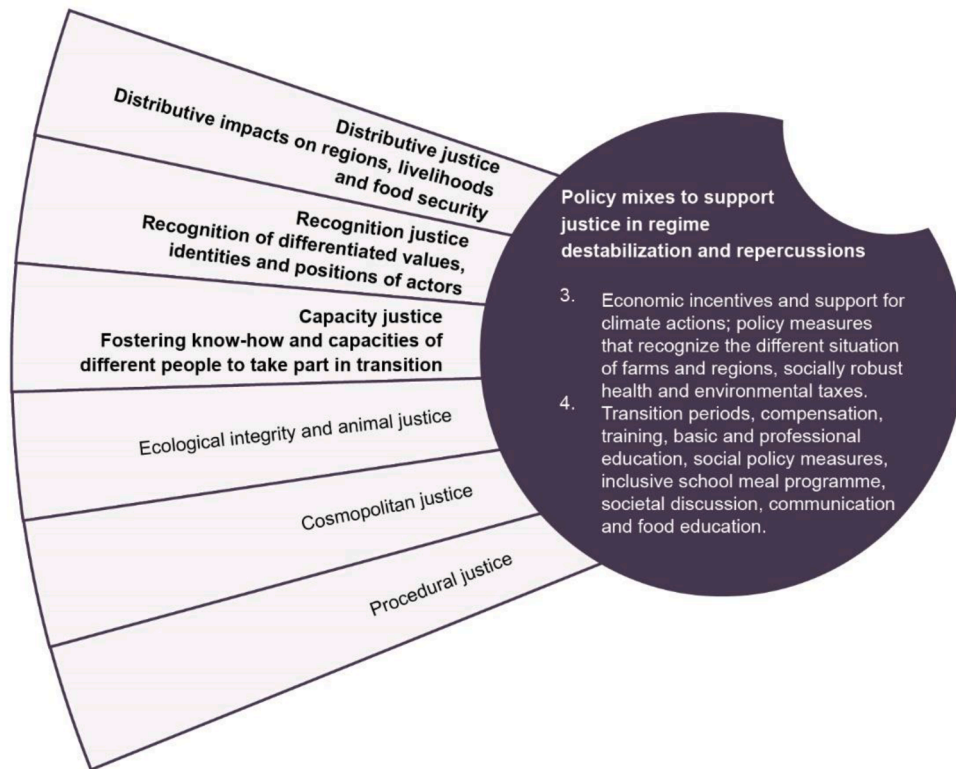


Fig. 5. Policy mixes to support justice in regime destabilization and repercussions.²

² The most important concerns of justice are highlighted in bold.

justice. The principle of ecological integrity received less attention in this respect. Also, discussion on animal justice stayed in the background and was addressed only by a few participants.

4.3. Policy mixes to support justice in multi-regime interaction and landscape tilt

In comparison to the niche- and regime-related policies, justice issues related to multi-regime interaction and landscape tilt were less frequently addressed in the policy dialogue. The absence may be partly due to the dialogue design: different food system-specific transition pathways were discussed separately, giving less room for cross-regime and multi-sectoral considerations. Also, the pre-set pathways narrowed landscape-related thinking by directing the discussion to specific policy measures influencing the twin dynamics between regime destabilization and niche acceleration. Despite these difficulties, the dialogue participants raised several justice-related issues in this context: policy incoherence between regimes as a driver of distributive injustices and the need to develop more strategic food system-level policies with binding landscape-level targets (Fig. 6). The measures targeted at basic education and capacity building can also be read as landscape measures, as they cross the regimes and target the socio-cultural values of all people (see in detail Ch.4.2).

Regarding peatlands, participants highlighted the need to have clear and coherent policy incentives. Contradictory incentives may accumulate the vulnerability of farmers as they do not give coherent signals on how to invest and prepare for the future. Currently, for example, the area-based subsidies make it profitable for farmers to keep the peatlands in production, although climate policies would encourage abandoning or restoring them. The contradictory policy messages hamper farmers' capacities to act upon transition.

The participants also underlined the need for greater comprehensiveness across the different policy sectors. The dialogue participants called for the better integration of different policy goals: instead of focusing solely on climate issues, it would be important to include, among others, biodiversity goals, rural and regional development, and the competitiveness of Finnish food companies into a more coherent food systems strategy. The participants shared the view that such procedures were largely missing from the Finnish food policy-making; although, their views on the prioritization of contents varied quite a bit.

Some of the participants in the policy dialogue called for bolder policy renewal. They underlined that the regime path-dependencies, in terms of the past investments and agricultural subsidy demands, are the key mechanism upholding distributive injustices such as the low profitability of farming. However, in practice participants had difficulties in imagining or suggesting concrete measures to break these path-dependencies. They rather referred to the difficulty of changing them, especially with respect to global

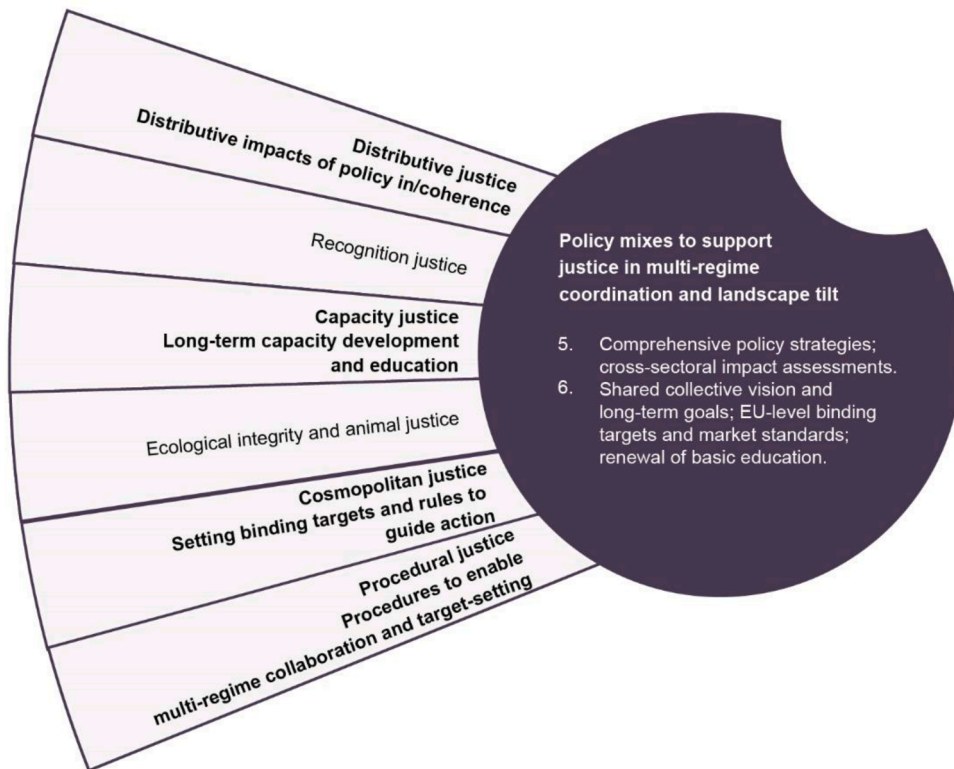


Fig. 6. Policy mixes to support justice in multi-regime interaction and landscape tilt.³

³ The most important concerns of justice are highlighted in bold.

food markets and EU policy-making. The participants shared their views on the importance of international institutions, such as the EU, in agreeing upon common rules and targets at the landscape level.

5. Discussion

5.1. Contextualization of policy mixes with the help of the evaluation framework

The holistic evaluation framework assisted in contextualizing the key justice issues that food system actors perceived important for just food system transitions in Finland. It also allowed pinpointing issues that received only little attention in the discussion. In this manner, the framework showed its breadth and rigour as a normative guidance for the evaluation of policy mixes for just transition. The testing of the framework supports our preliminary suggestion that various justice issues deserve attention across all the policy intervention points. Importantly, as the Finnish case shows, they may, however, get different weights in the various phases and contexts of transitions (Figs. 4-6). By explicating the relative weights of justice issues, the evaluation framework can lead the way in identifying policy mixes for more active and emancipatory just transitions policies. This requires critical attention in how the different policy measures support one another dynamically across the intervention points and between the policy sectors.

In the Finnish policy dialogue, the reactive distributive measures received the most attention. This has been witnessed in other policy contexts as well (Fischer et al., 2023; Heffron and McCauley, 2022). For the people affected by the transition, it is more pressing to think about the direct immediate effects and policy measures for their mitigation. Addressing these concerns makes it important to plan regime destabilization policies alongside repercussion measures. For example, pricing policies and fiscal measures have been proposed as effective for destabilizing the regime, but at the same time opposed due to their socio-economic impacts (Drews and van den Bergh, 2016). Planning of environmental taxes with social policy measures is, hence, of pivotal importance underlining the need for cross-sectoral planning and intersectional impact assessments. The rising costs of basic needs related to housing, food and mobility often hit the same group of people, which calls for recognition.

Redistributive measures, however, remain only reactive, unless other intervention points and principles of justice are considered. The testing of the framework for the discussion over food system change in Finland importantly draws attention to the ways in which distributive and recognitive justice are entangled. The impacts of transition on livelihoods is not only an issue of economic redistribution, but calls for recognition of socio-cultural values, identities and positions as part of just transition policies (Janssen et al., 2022;

Johnstone and Hielscher, 2017; Puupponen et al., 2022). The destabilization may exacerbate existing structural inequalities unless they are recognized. The way in which just transition can recognize existing injustices will evidently affect the course of the transitions. In food system transitions, the position of farmers requires further recognition (van der Ploeg, 2020), which in other contexts may mean coal communities (Mayer, 2018), peat producers (Lempinen and Vainio, 2023), or indigenous people (Hurlbert and Rayner, 2018).

The conventional approach has been to target capacity-building measures, reskilling programmes and active social policy measures to those communities affected by the transitions. Such active measures are supported also by the Just Transition Mechanism of the EU. In addition to regional retraining programmes, basic and vocational education offer means for long-term capacity building (McGrath and Deneulin, 2021). The results from the Finnish policy dialogue highlight how such active landscape-level measures are necessary for supporting recognition and changes in socio-cultural values.

The evaluation framework, however, underlines that a more emancipatory policy would need to pay attention also to procedural justice. Regional or local planning of transition measures have proven one potential way to improve procedural justice, recognizing the contextual understanding of transition pathways and activities (Goddard and Farrelly, 2018; Huttunen et al., 2022; Nowakowska et al., 2021; Sanz-Hernández et al., 2020). In such a case, the activities strengthening cognitive and procedural justice also support the capacities of people to respond to the transition whilst identifying regional pathways forward, not only for phase-out (Kuhmonen and Siltaoja, 2022). In moving towards more emancipatory just transition policies, it is therefore important to see the policy intervention points of innovation stimulation and regime destabilization as closely interlinked.

The Finnish policy dialogue also identified many other ways by which the justice of innovation stimulation and acceleration could be enhanced. Attention to distributive justice in niche stimulation and acceleration allows ensuring that innovations do not strengthen the existing economic structures but open avenues also for novel actors and structural renewal (Lonkila and Kaljonen, 2021; Smith et al., 2016, 2023). The notion of capacity justice further underlines the responsibilities of public policy and legislation in safeguarding fair opportunity for differently sized actors to engage in technological development. At the level of policy planning, procedural and recognition justice would require inclusive involvement in the planning of innovation policies to avoid misrecognitive hegemonies and the reproduction of unjust relations of power and privilege. Making innovations inclusive also concerns better recognition of the needs of different users (Smith et al., 2023). Research on user-driven and inclusive innovation is essential in developing just innovation policies (ibid.). Low-tech solutions may, in many cases, function better for justice (Lonkila and Kaljonen, 2021).

In the Finnish case, the framework also revealed how policy incoherences may lead to distributive injustices. Policy incoherences may work against active and emancipatory motives by not providing coherent signals or an enabling environment for changes (see also Huttunen, 2015). In this respect, it is important to also pay attention to what kind of policy mix underlays new policy measures (Kern et al., 2017). The request for multi-regime policy mixes touches upon the division of work, power, and the motives and coalitions of different sectoral ministries and administration, which will require more attention by just transition policy analysis in the future (Ciplet, 2022; van Oers et al., 2021). The Finnish case adds to evidence, that issues of social justice easily take the primary concern (Ciplet and Harrison, 2020; Fischer et al., 2023; Huttunen et al., 2024), unless environmental and cosmopolitan justice are given their own dedicated principles in the design and evaluation of just transition policies. Furthering the more holistic understanding of justice, especially at the landscape-level, is needed for strengthening the multi-regime interaction and division of work between the various sectors in support of just transitions (Jenkins et al., 2020).

5.2. Future applications and development needs

In the future, the framework should be applied and tested further in concrete policy cases and different transition contexts. This would extend understanding about which justice issues, and their interlinkages, are important in designing comprehensive and context-sensitive policy mixes. The political contestations around the different intervention points and their effectiveness call for further investigation. Many of the destabilization measures are currently being opposed by regime actors due to their direct effects on power constellations. The future applications of the framework should dive deeper into power struggles at play in just transitions (van Oers et al., 2021; Lonkila et al., 2024), whilst seeking practical policy mixes moving forward. Attention needs to be directed to the political possibilities, and good cases of emancipatory policies in support of just transition. Comparative policy analysis is required to lead the way to pursuing *the green and the just* transition together, in practice (Lonkila et al., 2024).

The temporal and spatial dimension in different policy mixes needs also further exploration. In this paper, we were only able to shortly touch upon this issue. Just transition policies take place in a highly multi-level policy context, but also brings the anticipatory element to the tables of policy makers. The tricky dilemma between fast and just solutions cannot be avoided in this policy realm. In the future, spatial and temporal dimension need to be more explicitly weaved into the policy evaluation framework both analytically and empirically. Again, the concrete cases from just transitions in practice are essential in developing the policy-usefulness of the framework. At best the evaluation framework could act as anticipatory tool for identifying emancipatory policy mixes, if applied early enough in the planning stage.

Importantly, the framework should be further tested and utilized for evaluating integrated visions for just sustainability transitions at landscape levels. As the Finnish case shows, these are still largely missing from the current policy discussion. In the future, the framework should be applied to understanding of justice in national and international agreements on *just sustainability* transitions to widen the scope towards more active and emancipatory understanding of justice that also taps into existing inequalities. As Ciplet (2022) has argued, such broad, yet legitimate visions, are inherently difficult to form and sustain. We hope that the holistic framework developed in this paper can offer a critical tool for thinking and acting towards such visions.

6. Conclusions

In this article, we have developed and tested a framework that enables a holistic understanding of justice in the evaluation of policy intervention points for sustainability transitions. We have applied the framework to the analysis of foreseen transition policies. The framework allowed identifying both justice concerns and gaps in relation to the multidimensional understanding of justice. By weaving together the different intervention points and justice principles, the framework provided means to distinguish policy mixes for more active and emancipatory just transition policies.

The future application of the framework should seek to test it against concrete policy cases. The framework is developed to offer normative guidance and analytical rigour for their comparison. The holistic nature of the framework should also assist in understanding the relative weights and different interpretations given to various justice dimensions across the intervention points. The future applications of the framework should, however, not stop at such political discourse analysis, but seek policy mixes that are able to break the current political constellations inhibiting just and green transitions. Such investigations are needed not only at the local, but also at the landscape level in order to strengthen the political understanding and visions for just and green transitions.

CRedit authorship contribution statement

Minna Kaljonen: Conceptualization, Data curation, Formal analysis, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Writing – original draft, Writing – review & editing. **Ari Paloviita:** Data curation, Formal analysis, Investigation, Writing – original draft, Writing – review & editing. **Suvi Huttunen:** Conceptualization, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. **Teea Kortetmäki:** Conceptualization, Investigation, Methodology, Writing – original draft, Writing – review & editing.

Declaration of competing interest

The authors declare no conflict of interest.

Data availability

The data that has been used is confidential.

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References

- Abram, S., Atkins, E., Dietzel, A., Jenkins, K., Kiamba, L., Kirshner, J., Kreienkamp, J., Parkhill, K., Pegram, T., Santos Ayllón, L.M., 2022. Just transition: a whole-systems approach to decarbonisation. *Clim. Policy* 22, 1033–1049. <https://doi.org/10.1080/14693062.2022.2108365>.
- Asquith, M., Dumitru, A., Larsen, H., Maguire, K., Kern, F., Hilescher, S., Diercks, G., Hebinck, A., Kaljonen, M., 2022. Transforming Europe's food System — Assessing the EU Policy Mix. European Environment Agency, Copenhagen.
- Atteridge, A., Strambo, C., 2020. Seven principles to realize a just transition to a low-carbon economy.
- Bessa, S., Gouveia, J.P., 2022. A framework for policy mix analysis: assessing energy poverty policies. *J. Environ. Econ. Policy* 0, 1–17. <https://doi.org/10.1080/21606544.2022.2153744>.
- Burton, R.J.F., Farstad, M., 2020. Cultural lock-in and mitigating greenhouse gas emissions: the case of dairy/beef farmers in Norway. *Soc. Ruralis* 60, 20–39. <https://doi.org/10.1111/soru.12277>.
- Celermajer, D., Schlosberg, D., Rickards, L., Stewart-Harawira, M., Thaler, M., Tschakert, P., Verlie, B., Winter, C., 2021. Multispecies justice: theories, challenges, and a research agenda for environmental politics. *Env. Polit* 30, 119–140. <https://doi.org/10.1080/09644016.2020.1827608>.
- Cha, J.M., 2020. A just transition for whom? Politics, contestation, and social identity in the disruption of coal in the Powder River Basin. *Energy Res. Soc. Sci.* 69, 101657. <https://doi.org/10.1016/j.erss.2020.101657>.
- Ciplet, D., 2022. Transition coalitions: toward a theory of transformative just transitions. *Environ. Sociol.* 8, 315–330. <https://doi.org/10.1080/23251042.2022.2031512>.
- Ciplet, D., Harrison, J.L., 2020. Transition tensions: mapping conflicts in movements for a just and sustainable transition. *Env. Polit* 29, 435–456. <https://doi.org/10.1080/09644016.2019.1595883>.
- Council of the European Union, 2018. Silesia declaration on solidarity and just transition.
- de Boer, J., Schösler, H., Boersema, J.J., 2013. Climate change and meat eating: an inconvenient couple? *J. Environ. Psychol* 33, 1–8. <https://doi.org/10.1016/j.jenvp.2012.09.001>.
- Drews, S., van den Bergh, J.C.J.M., 2016. What explains public support for climate policies? A review of empirical and experimental studies. *Clim. Policy* 16, 855–876. <https://doi.org/10.1080/14693062.2015.1058240>.
- EC, European Commission 2019. The European green deal. COM(2019) 640 final.
- Edmondson, D.L., Kern, F., Rogge, K.S., 2019. The co-evolution of policy mixes and socio-technical systems: towards a conceptual framework of policy mix feedback in sustainability transitions. *Res. Policy, Policy Mixes Sustain.* Trans. 48, 103555. <https://doi.org/10.1016/j.respol.2018.03.010>.
- European Environment Agency, 2024. Delivering justice in sustainability transitions — European environment agency (Briefing). <https://www.eea.europa.eu/publications/delivering-justice-in-sustainability-transitions/>.

- Fischer, A., Joosse, S., Strandell, J., Söderberg, N., Johansson, K., Boonstra, W.J., 2023. How justice shapes transition governance – a discourse analysis of Swedish policy debates. *J. Environ. Plann. Manage.* 0, 1–19. <https://doi.org/10.1080/09640568.2023.2177842>.
- Flanagan, K., Uyarra, E., Laranja, M., 2011. Reconceptualising the ‘policy mix’ for innovation. *Res. Policy* 40, 702–713. <https://doi.org/10.1016/j.respol.2011.02.005>.
- Fraser, N., 2009. *Scales of justice: Reimagining political Space in a Globalizing World*. Columbia University Press.
- Fricker, M., 2007. *Epistemic Injustice: Power and the Ethics of Knowing*. Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780198237907.001.0001>.
- García-García, P., Carpintero, O., Buendía, L., 2020. Just energy transitions to low carbon economies: a review of the concept and its effects on labour and income. *Energy Res. Soc. Sci.* 70, 101664. <https://doi.org/10.1016/j.erss.2020.101664>.
- Geels, F.W., 2011. The multi-level perspective on sustainability transitions: responses to seven criticisms. *Environ. Innov. Societal Trans.* 1, 24–40. <https://doi.org/10.1016/j.eist.2011.02.002>.
- Geels, F.W., 2002. Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study. *Res. Policy* 31, 1257–1274. [https://doi.org/10.1016/S0048-7333\(02\)00062-8](https://doi.org/10.1016/S0048-7333(02)00062-8).
- Ghosh, B., Kivimaa, P., Ramirez, M., Schot, J., Torrens, J., 2021. Transformative outcomes: assessing and reorienting experimentation with transformative innovation policy. *Sci. Public Policy* 48, 739–756. <https://doi.org/10.1093/scipol/scab045>.
- Goddard, G., Farrelly, M.A., 2018. Just transition management: balancing just outcomes with just processes in Australian renewable energy transitions. *Appl. Energy* 225, 110–123. <https://doi.org/10.1016/j.apenergy.2018.05.025>.
- Gough, I., 2017. *Heat, Greed and Human need: Climate change, Capitalism and Sustainable Wellbeing*. Edward Elgar Publishing.
- Green, F., Gambhir, A., 2020. Transitional assistance policies for just, equitable and smooth low-carbon transitions: who, what and how? *Clim. Policy* 20, 902–921. <https://doi.org/10.1080/14693062.2019.1657379>.
- Hebinck, A., Diercks, G., von Wirth, T., Beers, P.J., Barsties, L., Buchel, S., Greer, R., van Steenberg, F., Loorbach, D., 2022. An actionable understanding of societal transitions: the X-curve framework. *Sustain. Sci.* 17, 1009–1021. <https://doi.org/10.1007/s11625-021-01084-w>.
- Heffron, R.J., McCauley, D., 2022. The ‘just transition’ threat to our energy and climate 2030 targets. *Ener. Policy* 165, 112949. <https://doi.org/10.1016/j.enpol.2022.112949>.
- Huan-Niemi, E., Huttunen, S., Paloviita, A., Puupponen, A., Lehtonen, H., Niemi, J., 2021. Action-oriented knowledge for sustainable management of organic soils in Finnish agriculture. *Agricul. Food Sci.* 32, 36–49. <https://doi.org/10.23986/afsci.120743>.
- Hurlbert, M., Rayner, J., 2018. Reconciling power, relations, and processes: the role of recognition in the achievement of energy justice for Aboriginal people. *Appl. Energy* 228, 1320–1327. <https://doi.org/10.1016/j.apenergy.2018.06.054>.
- Huttunen, S., 2015. Farming Practices and Experienced Policy Coherence in Agri-environmental Policies: the Case of Land Clearing in Finland. *J. Environ. Policy Plann.* 17, 573–592. <https://doi.org/10.1080/1523908X.2014.1003348>.
- Huttunen, S., Turunen, A., Kaljonen, M., 2022. Participation for just governance of food-system transition. *Sustainability* 18, 500–514. <https://doi.org/10.1080/15487733.2022.2088187>.
- Huttunen, S., Tykkyläinen, R., Kaljonen, M., Kortetmäki, T., Paloviita, A., 2024. Framing just transition: the case of sustainable food system transition in Finland. *Environ. Policy Govern.* <https://doi.org/10.1002/eet.2096>.
- Janssen, A., Beers, P., van Mierlo, B., 2022. Identity in sustainability transitions: the crucial role of landscape in the Green Heart. *Environ. Innov. Soc. Trans.* 42, 362–373. <https://doi.org/10.1016/j.eist.2022.01.008>.
- Jenkins, K.E.H., Sovacool, B.K., Blachowicz, A., Lauer, A., 2020. Politicising the just transition: linking global climate policy, nationally determined contributions and targeted research agendas. *Geoforum* 115, 138–142. <https://doi.org/10.1016/j.geoforum.2020.05.012>.
- Johnstone, P., Hielscher, S., 2017. Phasing out coal, sustaining coal communities? Living with technological decline in sustainability pathways. *Extrac. Indust. Soc.* 4, 457–461. <https://doi.org/10.1016/j.exis.2017.06.002>.
- Juhola, S., Heikkinen, M., Pietilä, T., Groundstroem, F., Käyhkö, J., 2022. Connecting climate justice and adaptation planning: an adaptation justice index. *Environ. Sci. Policy* 136, 609–619. <https://doi.org/10.1016/j.envsci.2022.07.024>.
- Kaljonen, M., Kortetmäki, T., Tribaldos, T., 2023. Introduction to the special issue on just food system transition: tackling inequalities for sustainability. *Environ. Innov. Soc. Trans.* 46, 100688. <https://doi.org/10.1016/j.eist.2022.100688>.
- Kaljonen, M., Kortetmäki, T., Tribaldos, T., Huttunen, S., Karttunen, K., Maluf, R.S., Niemi, J., Saarinen, M., Salminen, J., Vaalavuo, M., Valsta, L., 2021a. Justice in transitions: widening considerations of justice in dietary transition. *Environ. Innov. Soc. Trans.* 40, 474–485. <https://doi.org/10.1016/j.eist.2021.10.007>.
- Kaljonen, M., Ott, A., Huttunen, S., Kuusela, A.-J., Lonkela, A., 2021b. Policy mixes for more vital legume value chains: evaluation across competing policy frames. *Int. J. Sociol. Agric. Food (Online)* 27, 1–21. <https://doi.org/10.48416/ijfaf.v27i2.455>.
- Kaljonen, M., Karttunen, K., Kortetmäki, T., 2022. A just food system transformation. *Pathways to a sustainable and fair food system. Suomen ympäristökeskuksen raportteja 38/2022*. Suomen ympäristökeskus, Helsinki, p. 17. [in Finnish] <http://hdl.handle.net/10138/349713>.
- Kanger, L., Sovacool, B.K., Noorkoiv, M., 2020. Six policy intervention points for sustainability transitions: a conceptual framework and a systematic literature review. *Res. Policy* 49, 104072. <https://doi.org/10.1016/j.respol.2020.104072>.
- Kekkonen, H., Ojanen, H., Haakana, M., Latukka, A., Regina, K., 2019. Mapping of cultivated organic soils for targeting greenhousegas mitigation. *Carbon Manage.* 10, 115–126. <https://doi.org/10.1080/17583004.2018.1557990>.
- Kern, F., Kivimaa, P., Martiskainen, M., 2017. Policy packaging or policy patching? The development of complex energy efficiency policy mixes. *Energy Res. Social Sci.* 23, 11–25. <https://doi.org/10.1016/j.erss.2016.11.002>.
- Kern, F., Rogge, K.S., Howlett, M., 2019. Policy mixes for sustainability transitions: new approaches and insights through bridging innovation and policy studies. *Res. Policy*, Policy Mixes Sustain. Trans. 48, 103832. <https://doi.org/10.1016/j.respol.2019.103832>.
- Kivimaa, P., Heikkinen, M., Huttunen, S., Jaakkola, J., Juhola, S., Juntunen, S., Kaljonen, M., Käyhkö, J., Leino, M., Loivaranta, T., Lundberg, P., Lähtenmäki-Uutela, A., Näkkäläjärvi, K., Sivonen, M.H., Vainio, A., 2023. Evaluation of justice in climate policy. *Suomen ilmastopaneeli*. <https://doi.org/10.31885/9789527457214>.
- Kivimaa, P., Kern, F., 2016. Creative destruction or mere niche support? Innovation policy mixes for sustainability transitions. *Res. Policy* 45, 205–217. <https://doi.org/10.1016/j.respol.2015.09.008>.
- Kortetmäki, T., Järvelä, M., 2021. Social vulnerability to climate policies : building a matrix to assess policy impacts on well-being. *Environ. Sci. Policy* 123, 220–228. <https://doi.org/10.1016/j.envsci.2021.05.018>.
- Kuhmonen, I., Siltaoja, M., 2022. Farming on the margins: just transition and the resilience of peripheral farms. *Environ. Innov. Soc. Trans.* 43, 343–357. <https://doi.org/10.1016/j.eist.2022.04.011>.
- Laakso, S., Matschoss, K., Apajalahti, E.-L., 2022. What is clean and comfortable? Challenging norms and conventions in everyday life toward sustainability. *Europ. J. Cult. Polit. Sociol.* 9 (3), 273–298. <https://doi.org/10.1080/23254823.2021.2000880>.
- Lazarevic, D., Salo, H., Kautto, P., 2022. Circular economy policies and their transformative outcomes: the transformative intent of Finland’s strategic policy programme. *J. Clean Prod.* 379, 134892. <https://doi.org/10.1016/j.jclepro.2022.134892>.
- Lehtonen, H., Huan-Niemi, E., Niemi, J., 2022. The transition of agriculture to low carbon pathways with regional distributive impacts. *Environ. Innov. Soc. Trans.* 44, 1–13. <https://doi.org/10.1016/j.eist.2022.05.002>.
- Lempinen, H., Vainio, A., 2023. Lost in transition: peat workers’ experiences of Finland’s low carbon transition policies. *Extrac. Indust. Soc.* 15, 101312. <https://doi.org/10.1016/j.exis.2023.101312>.
- Lonkela, A., Kaljonen, M., 2021. Promises of meat and milk alternatives: an integrative literature review on emergent research themes. *Agric. Human Values* 38, 625–639. <https://doi.org/10.1007/s10460-020-10184-9>.
- Lonkela, A., Lukkarinen, J., van Oers, L., Feola, G., Kaljonen, M., 2024. Just destabilization? Considering justice in the phase-out of peat. *Environ. Innov. Societal Trans.* 52, 100867. <https://doi.org/10.1016/j.eist.2024.100867>.
- Loorbach, D., 2014. *To Transition! Governance Panarchy in the New Transformation*. Erasmus University Rotterdam, Rotterdam.

- Mavrot, C., Hadorn, S., Sager, F., 2019. Mapping the mix: linking instruments, settings and target groups in the study of policy mixes. *Res. Policy* 48, 103614. <https://doi.org/10.1016/j.respol.2018.06.012>.
- Mayer, A., 2018. A just transition for coal miners? Community identity and support from local policy actors. *Environ. Innov. Soc. Trans.* 28, 1–13. <https://doi.org/10.1016/j.eist.2018.03.006>.
- McCaughey, D., Heffron, R., 2018. Just transition: integrating climate, energy and environmental justice. *Ener. Policy* 119, 1–7. <https://doi.org/10.1016/j.enpol.2018.04.014>.
- McGrath, S., Deneulin, S., 2021. Education for just transitions: lifelong learning and the 30th anniversary human development report. *Int. Rev. Educ.* 67, 637–658. <https://doi.org/10.1007/s11159-021-09914-w>.
- Moodie, J., Tapia, C., Löfving, L., Gassen, N.S., Cedergren, E., 2021. Towards a territorially just climate transition—assessing the Swedish EU territorial just transition plan development process. *Sustainability* 13, 7505. <https://doi.org/10.3390/su13137505>.
- Nowakowska, A., Rzeńca, A., Sobol, A., 2021. Place-based policy in the “Just transition” process: the case of Polish coal regions. *Land (Basel)* 10, 1072. <https://doi.org/10.3390/land10101072>.
- Pianta, M., Lucchese, M., 2020. Rethinking the European green deal: an industrial policy for a just transition in Europe. *Rev. Rad. Polit. Econ.* 52, 633–641. <https://doi.org/10.1117/0486613420938207>.
- Poschen, P., 2015. Decent Work, Green Jobs and Sustainable Economy. Solutions for Climate Change and Sustainable Development. International Labour Organisation.
- Puupponen, A., Lonkila, A., Savikurki, A., Karttunen, K., Huttunen, S., Ott, A., 2022. Finnish dairy farmers’ perceptions of justice in the transition to carbon-neutral farming. *J. Rural Stud.* 90, 104–112. <https://doi.org/10.1016/j.jrurstud.2022.01.014>.
- Rogge, K.S., Reichardt, K., 2016. Policy mixes for sustainability transitions: an extended concept and framework for analysis. *Res. Policy* 45, 1620–1635. <https://doi.org/10.1016/j.respol.2016.04.004>.
- Rogge, K.S., Stadler, M., 2023. Applying policy mix thinking to social innovation: from experimentation to socio-technical change. *Environ. Innov. Soc. Trans.* 47, 100723. <https://doi.org/10.1016/j.eist.2023.100723>.
- Sanz-Hernández, A., Ferrer, C., López-Rodríguez, M.E., Marco-Fondevila, M., 2020. Visions, innovations, and justice? Transition contracts in Spain as policy mix instruments. *Ener. Res. Soc. Sci.* 70, 101762. <https://doi.org/10.1016/j.erss.2020.101762>.
- Sarkki, S., Ludvig, A., Nijnik, M., Kopyi, S., 2022. Embracing policy paradoxes: EU’s just transition fund and the aim “to leave no one behind. *Int. Environ. Agreem.* 22, 761–792. <https://doi.org/10.1007/s10784-022-09584-5>.
- Schlosberg, D., 2013. Theorising environmental justice: the expanding sphere of a discourse. *Env. Polit* 22, 37–55. <https://doi.org/10.1080/09644016.2013.755387>.
- Schlosberg, D., 2007. *Defining Environmental Justice*. Oxford University Press, Oxford.
- Skjærseth, J.B., 2021. Towards a European green deal: the evolution of EU climate and energy policy mixes. *Int. Environ. Agreem.* 21, 25–41. <https://doi.org/10.1007/s10784-021-09529-4>.
- Smith, A., Contreras, G.A.T., Brisbois, M.-C., Lacey-Barnacle, M., Sovacool, B.K., 2023. Inclusive innovation in just transitions: the case of smart local energy systems in the UK. *Environ. Innov. Soc. Trans.* 47, 100719. <https://doi.org/10.1016/j.eist.2023.100719>.
- Smith, A., Hargreaves, T., Hielscher, S., Martiskainen, M., Seyfang, G., 2016. Making the most of community energies: three perspectives on grassroots innovation. *Environ. Plann. A* 48, 407–432. <https://doi.org/10.1177/0308518X15597908>.
- Sovacool, B.K., Martiskainen, M., Hook, A., Baker, L., 2019. Decarbonization and its discontents: a critical energy justice perspective on four low-carbon transitions. *Clim. Change* 155, 581–619. <https://doi.org/10.1007/s10584-019-02521-7>.
- Statistics Finland, 2023. Greenhouse gas emissions in Finland 1990–2021. National inventory report under the UNFCCC. Submission to the European union, Finland’s National Inventory Report 2023.
- Stavis, D., Felli, R., 2020. Planetary just transition? How inclusive and how just? *Earth system governance*. In: *Explor. Planet. Just.*, 6, 100065. <https://doi.org/10.1016/j.esg.2020.100065>.
- Stavis, D., Felli, R., 2015. Global labour unions and just transition to a green economy. *Int. Environ. Agreem.* 15, 29–43. <https://doi.org/10.1007/s10784-014-9266-1>.
- Tribaldos, T., Kortetmäki, T., 2022. Just transition principles and criteria for food systems and beyond. *Environ. Innov. Soc. Trans.* 43, 244–256. <https://doi.org/10.1016/j.eist.2022.04.005>.
- Turnheim, B., 2022. Destabilisation, decline and phase-out in transitions research. In: Koretsky, Z., Stegmaier, P., Turnheim, B., van Lente, H. (Eds.), *Technologies in Decline. Socio-Technical Approaches to Discontinuation and Destabilisation*. Routledge, London.
- UNFCCC, 2016. Paris Agreement, in UNFCCC COP Report Number 21, Addendum, At 21, United Nations. Do. FCCC/CP/2015/10/Add.1.
- van der Ploeg, J.D., 2020. Farmers’ upheaval, climate crisis and populism. *J. Peasant Stud* 47, 589–605. <https://doi.org/10.1080/03066150.2020.1725490>.
- van Oers, L., Feola, G., Moors, E., Runhaar, H., 2021. The politics of deliberate destabilisation for sustainability transitions. *Environ. Innov. Soc. Trans.* 40, 159–171. <https://doi.org/10.1016/j.eist.2021.06.003>.
- van Oers, L., Feola, G., Runhaar, H., Moors, E., 2023. Unlearning in sustainability transitions: insight from two Dutch community-supported agriculture farms. *Environ. Innov. Soc. Trans.* 46, 100693. <https://doi.org/10.1016/j.eist.2023.100693>.
- Williams, S., Doyon, A., 2019. Justice in energy transitions. *Environ. Innov. Soc. Trans.* 31, 144–153. <https://doi.org/10.1016/j.eist.2018.12.001>.
- Zijlstra, T., Avelino, F., 2012. A Socio-spatial perspective on the car regime. In: Geels, F., Kemp, R., Dudley, G., Lyons, G. (Eds.), *Automobility in Transition? A Socio-Technical Analysis of Sustainable Transport*. Routledge, New York.