January 2021

Fair Energy Transition for All – Literature Review

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1. Executive summary

This short report summarises the results from a desk review of peer reviewed literature on the subject of European participatory research in Europe into public perceptions of energy transitions. The results of this review are being used to inform the research methods for the Fair Energy Transition For All project.

The review addresses three main questions; what definitions of fairness are used in the literature, how has this research impacted on policy and what participatory methods have been employed to engage vulnerable European citizens with the issue of fair energy transitions?

Definitions

Definitions of fairness in the literature draw heavily on climate justice principles and use the term 'just transition' to describe the path to fair energy futures. The core principles used in describing these transitions are distributional and procedural justice – ensuring citizens share fairly in the outcomes of energy transitions as well as fair participation in the process of decision making. Research in just energy transitions utilises these definitions and applies them to the process of moving to a low-carbon society. These principles are used by researchers but are not well understood by the public and are only beginning to be utilised by charities, who interpret them in varying ways.

Have vulnerable citizens been involved in developing fair energy policies in Europe?

There is a small, emergent literature in fair energy policies and very little participatory research with vulnerable citizens has been done. Some efforts to involve the public in a fair energy transition have included consultation with local stakeholders, transparent co-development of energy policies and providing them with a choice in an equitable energy future. However, to date very little research has engaged vulnerable populations. Research has mainly focused on general stakeholders – who are unlikely to be vulnerable citizens. There is almost no evidence that vulnerable citizens have directly had input in the development of fair energy policies.

The impact of these interventions on policy

The research has highlighted the need for trust, and a public perception of fairness throughout energy transitions. Participation has been shown to increase both trust and the perception of fairness. Therefore, to prevent previous injustices reoccurring, more effort is needed to increase participation through - not only more research - but also a more deliberative public processes on local energy transitions that can be enacted by civil society organisations and other practitioners. The field is too new to have yet provided evidence of policy impact.

2. How is 'fairness' defined in energy transition discussions

Ideas of fairness are generally represented within the framework of climate and/or energy justice. Energy justice is a relatively new concept, which is used widely throughout the literature [1]. Energy justice comprises two key elements: distributional and procedural justice [2], [3]. Other principles of justice have been introduced as potential additional elements, these include restorative [4], capability [5] and flexibility [6],

[7]. They are not as widely used but worth mentioning as they contribute to the holistic picture of energy justice.

- "Distributional justice concerns the siting of infrastructure and the access to energy services … In this regard, energy justice concerns both physical access to heating and electricity and questions the extent of an individual's freedoms" [1]
- "Procedural justice calls for transparent, inclusive, non-discriminatory decision-making processes around energy. It stakes a claim for all stakeholders involved or affected by energy decision making to be able to participate in the process and to be effectively listened to" [8]

'Additional' principles considered:

- Restorative – "forces decision-makers to engage with [historical] justice concerns and consider any injustice caused by an energy activity that would have to be rectified" [9]
- Capability – "the ability for group members to live healthy, safe, dignified lives" [5]
- Flexibility – "the justice implications of flexibility capital" [6], meaning the ability to use energy in a more flexible way e.g. choosing when to commute to work (or choosing not to) [7]

While fair energy definitions - for the purpose of this document - are mostly focused on access to energy services, just energy transitions (or just transitions) are more focused on how changes in the way energy is generated impact on people, which are just when they demonstrate "a fair and equitable process of moving towards a post-carbon society" [4]. Most recently a comprehensive definition came from a review highlighting the need to safeguard social justice, equity, and welfare in the process of transition [10]. This extensive review outlines general agreed upon 'must have' principles in just energy transition policies [10]. These map onto the justice principles outlined above well:

- Collectives (generally low-income households) must have their barriers removed to allow access to the benefits of energy transitions
- Policies must be consistent, driven by a long-term vision and fuelled by cooperation between stakeholders, with special emphasis on the participation of the public
- Must consider and respect the rights of local communities and solve the historical injustices caused by the diversity of perspectives among stakeholders.
- The transition must be flexible enough to cope with uncertainty and social complexity

It was noted that "scholars have not [completely] agreed upon the principles of how to analyse a just energy transition" [10]. In lieu of this, however, community-based participatory decision-making was mentioned as a key component of just transition.

3. Evidence that the most vulnerable are the most adversely affected by energy transitions

3.1 Household
Energy transitions can also affect more vulnerable households, as most of the costs for businesses running wind and solar power are the generator and network fixed costs – with the cost reducing to very little once these initial costs are incurred. This means an initial fixed charge is used to defray costs, with the consequence being the less a household consumes, the more it pays per unit of energy used, resulting in low-income households being effectively penalised for using less and even more so if they use electricity for heating [11].

3.2 Gender
There is evidence that the most vulnerable will be adversely affected through engrained systems. For example, gender roles result in women doing more work at home and earn less money on average, meaning they are more vulnerable to energy poverty [12]. They are also doubly burdened as they spend an increased amount of time on pro-environmental behaviours known as the 'feminisation of pro-environmental behaviours' [11]. Although women are more vulnerable to transition, there is a lack of specific consequences for women in the literature considering this theoretical deduction [10].

3.3 Spatial
Living in rural, or even sub-urban areas aggravates the risks of energy vulnerabilities, and this is being reproduced by low-carbon energy transitions as many households are locked-in to outdated carbon heavy energy systems [13]. This creates systematic disadvantages in an already uneven energy landscape through distribution of resources being consolidated in areas with more economic, political, infrastructural and symbolic power. This is especially true for low-income households in energy peripheries who are also vulnerable to mobility transitions [13].

3.4 Mobility
Vulnerability in mobility has multiple facets. Firstly, those who can afford low-emission vehicles can avoid regressive taxes and inefficiencies in older systems. They will benefit from the resultant allocation of financial resources and space into the future as they can adopt new technology more easily [14]. In Portugal, for example, impoverished suburban communities have been pushed into dependency on cars through urban policy, with lack

of investment in public transport infrastructure due to the city being designed for car use [15]. Although private car use is relatively circumscribed to an advantaged social group in these communities, both those with and without cars in these communities will be adversely affected by transitions if there is a push towards low-emission private vehicles [15], [16].

4. Methods used to research perceptions of a fair energy transition.

Participatory research with vulnerable people and just energy transitions is sparse, with most of the emerging literature being published in the last few years. Table 1 highlights energy transition research that include the voice of stakeholders. In almost all cases vulnerability isn't considered or is only inferred by proxy of low-income, most of the policy recommendation is informed through theoretical deduction. No research papers specifically speak to vulnerable people to ascertain their opinion on energy transition and no research includes them directly in the development of solutions. Methods included focus groups, workshops, interviews, action research, observations and questionnaires. Recruitment of participants was varied as the research covers multiple methodologies. In terms of engaging vulnerable citizens, snowballing sampling and attending local stakeholder events (with charities, local governments, energy co-operatives etc.) seems to be the best avenue to finding vulnerable participants [17]–[20].

Table 2 includes research on just energy transitions from localised renewables projects (e.g. wind farms). Opinions of local stakeholders were sought out, again with little mention of vulnerability of participants. However, this research – although more concerned on localised spatial justice – gives insight into ways to engage previously ignored stakeholders and elements to integrate into policy. The need for co-development, a perception of fairness and trust in the process is highlighted throughout Table 2.

5. Impacts on policy development and communication.

5.1 Gender
A participatory policy expert panel in Spain, found gender to be a factor that needs to be integrated into energy transition solutions, especially including more women in the policy formation as male experts dominate the decision-making process [21]. This was generalised and not specific to the most vulnerable women, however female opinions showed that they believed women voices were underrepresented and more equality is needed [21].

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5.2 Mobility

Policy needs to create pathways that encourage culture and behaviours change through public transport infrastructure investment. This will support a just energy transition, especially towards walking, cycling and public transport [14], [15], [22]. However, if there is push is towards electric private vehicles, you will marginalise not only the most vulnerable (without car), but also the 'slightly less' vulnerable (who cannot afford low-emission cars). For policy, a perception of fairness is key for social support, as a lack of trust in government and energy companies was prevalent [16].

5.3 Spatial

Co-creating place-based narratives through transparent, participatory deliberative decision-making could support higher involvement with locals in community renewable energy and prosumerism [18], [23]–[25]. For local communities living near energy projects (table 2), co-development of the process (procedural justice) with a perception of fairness and trust in outcomes (distributive justice), although concession on participation can be ameliorated through financial compensation. The justice principles are also evident in Denmark where perceptions of distributive unfairness were intertwined with perceptions of unfair procedure with a lack of recognition in the planning and decision-making process [26]. Uneven spatial energy policy that embeds more vulnerability through a landscape that favours 'agglomeration and growth' should be challenged and re-evaluated with participation of diverse stakeholders [13]. However, the research in Table 2 also shows disinterest in participation from a significant proportion of local citizens, therefore active stakeholder engagement is crucial but will not create a perfect participation landscape.

6. Participation, perception of fairness and trust

Participatory approaches can improve environmental decision-making, through achieving a sense of fairness and legitimacy, and instil a sense of satisfaction and trust that citizens have had their voice heard [27]. This increases their trust in the transition process and needs to be continually developed [27]–[29]. However, the most vulnerable, who tend to have the least social capital, are likely to be less engaged or trusting of the process. Research found that citizens with less social capital have the least trust in their community and government, and consequently are less in support of renewable policies [30]. Recommendations include, combining increasing social capital with economic incentives to reduce the perception of 'threat' from transition energy policy [30]. A review states the renewable energy transition goals are realistic and acceptable if framed in a discourse of sustainability, equity and justice [31], which was supported by comprehensive participation processes [28]. Intermediaries work as an avenue for

vulnerable citizens to have their voice heard, however multiple intermediaries approach the energy justice principles differently [17]. Therefore, dialogue between stakeholders is needed to improve coherence around implementation of the justice principles.

Far more work is needed to engage vulnerable citizens voices in the transition process. This will likely need to be an iterative process where participation induces trust which leads to more participation. Although introducing stakeholders around the table doesn't necessarily solve all problems and caution is advised in putting too much emphasis on relying on participation as a panacea [32].

7. Methodology

The methodology used in this review of the literature focussed on journals that were identified as providing the appropriate literature on the specified brief area. Key words were used to filter through the journals, these included searching for each word individually such-as: 'renewable' 'transition' 'just' 'justice' 'fair' 'fairness' 'vulnerable' 'energy'. Then combination of these words, for example 'just energy transition' were also used. The journals used in the review included: "Applied energy" "Renewable energy" "Energy policy" "Energy research and social science" "Renewable and sustainable energy reviews" "The energy journal".

As the papers discovered through the journals were being reviewed, other research papers were identified through the references used in these papers and throughout the literature. This helped the author find new papers in more obscure journals that were appropriate to include in the review.

The papers deemed most appropriate due to the remit of the review were included. However, due to the lacuna of research that was specific to the exact brief, other papers were included that were considered to be important for the overall picture of energy justice transitions in Europe - for example the research papers in *Table 2*.

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Appendix: Tables summarizing participatory approaches

Table 1 – research papers that use participatory methods or surveys to understand opinions of citizens to energy transitions in European countries

Country, year, reference	What 1. models and theories 2. methodologies were used to define the research questions?	How were participants recruited? What are the selection criteria?	Were vulnerable citizens able to state their view and participate in the development of solutions?	Policy Implications
Ukraine, Serbia, 2019 [43]	1. Modular participatory backcasting 2. Iterative participatory process with many 'modules'. Individual interviews	Stakeholder analysis. City council, various heating company stakeholders, NGOs and individual consumers/consumer associations	Vulnerability not mentioned	Recommendations on addressing dominance of a few individuals and stakeholder fatigue.
Denmark, Germany, 2018, [44]	1. Energy justice framework 2. Semi-structured interviews	energy academy, government, locals farmers (heavily consulted), representatives from heating cooperatives, municipality.	Perceived fairness of procedures a pre-condition for legitimacy of outcomes.	
Wales, 2017, [45]	1. The 3 (main) justice tenets. 2. participatory workshops and action research, follow-up interviews	Snowball sampling (community energy leaders, project members, policymakers, local authorities, developers)	Vulnerability not mentioned	context is key and strategies for energy justice exceed energy-based goals and are often tailored to reflect local circumstances.
Italy, 2017, [9]	1. Participatory budgeting (PB) and 3 justice tenets 2. focus groups	Focus groups with 'community groups' presumably through membership-based electric cooperatives	Vulnerability not mentioned. Some contribution	Consumption from collective owned RE installations as collective self-consumption and thus to permit receiving the provided incentives
Germany, 2020, [34]	1. Fairness in participation 2. Questionnaire	respondents were recruited from an access panel. Paid a small monetary incentive (€ 1.25)	Economic status wasn't a variable measured	Respondents aware of participation options but very few engage in process
Scotland, 2019, [46]	1. vulnerability conceptual framework 2. interviews	Access to participants through trusted intermediaries (local authority and community-based organisation)	Yes, direct interviews with 'fuel poor' households. Not focussed on transition	Time-consuming and costly – but worthwhile. Have a local fuel poverty support service within a local authority
Netherlands, 2020, [47]	1. The 3 (main) justice tenets. 2. interviews with household (implementing smart grid projects and expert interviews)	The households involved with smart grid pilot projects	Vulnerability not mentioned although some were social housing participants	Mechanisms to make RE technologies accessible to low-income households during transition until they become cheaper (solar & batteries). Build perception of trust in developers of smart system
Wales, 2020, [27]	1. energy vulnerability/justice 2. 30 semi-structured interviews	Households in periphery and vulnerable to uneven spatial justice	Yes, to a certain extent	energy efficiency improvements and household level installations appear to be most inclusive. Integrate spatial justice considerations.
Italy, 2018, [48]	1. Social approach to energy transition 2. Focus group, interview, ethnographic observation, participatory action	Spent time building trust in the community, time investment in understanding local social energy transition dynamics	Tried to include every facet of the community – though some voice may have been missed	Participatory approach with case-study research creates a civic sustainability science and connect local movements with global significance
England, 2018, [25]	1. The 3 (main) justice tenets. 2. Participatory Action Research methodology. In-depth interviews and focus groups	Through attending local events and connecting with actors. Non-profit Intermediaries, local government, local energy cooperative and energy company	Via intermediaries.	Intermediaries act as a critical bridge between deprived communities and local low-carbon energy initiatives and other energy stakeholders.

Table 2 – research papers that use participatory methods or surveys to understand opinions of citizens to local development of renewable energy projects (e.g. wind turbines) in European countries

Country, year, reference	What 1. models and theories 2. methodologies were used to define the research questions?	How were participants recruited? What	Vulnerability of citizens? Did they contribute to solutions?	Policy Implications
Netherlands 2017, [30]	1. The 3 (main) justice tenets. 2. Ethnographic case study - participant observation, interviews	Snowball sampling. Contact with a local activist to start (connected to Friends of the Earth). 52 participants	Hard to determine vulnerability of citizen	Be aware of local practices and imaginations as this creates perception of justice. Ensure people feel recognised, build on local initiatives
Scotland, 2013, [28]	1. transition-periphery dynamics 2. interviews	Not stated. Some estate owners.	Not stated.	community and heritage important in the cocreation of their collective identity and their 'sense of place'.
Denmark, 2020, [49]	1. Community benefits and perceptions of fairness 2. Focus groups and 13 interviews	local citizens living in the locality of the wind projects (3 proximity scales)	Vulnerability not mentioned	Perception of decision-makers being bribed, and 'green scheme' local projects not addressing adverse effects of the wind project
France, 2020, [29]	1. Community renewable energy (CRE) 2. interviews, observations	Through desk-based research representatives from CRE projects were found and interviewed.	Vulnerability not mentioned, unlikely to	CRE is a tool to mobilize people and contribute to transition. Facilitate self-consumption of energy leading to higher ownership and attract members with empowering narratives
Switzerland, 2020, [50]	1. Justice framework and social acceptance 2. Survey (Choice experiments)	Respondents were selected from an actively recruited online consumer panel to represent Switzerland's population	'low-income' respondents were included. Their choice was recorded in survey	benefit sharing schemes and low (or net-positive) environmental impacts. Co-ownership and co-development of REP and designed in-keeping with local nature.
Germany, 2018, [51]	1.Justice framework 2.Focus groups and survey (choice experiments)	Market research institute recruited 15 participants from three villages with high wind-power potential.	No vulnerability mentioned. Reponses helped design the survey.	Different levels of involvement mentioned, however all support cooperative planning and decision-making participatory processes. '92% are willing to trade off financial and procedural participation against changes to their electricity bill'
Denmark, 2020, [31]	1. Justice, fairness, co-ownership schemes and value-loss theories 2. Focus groups and interviews	Local citizens contacted by phone. Found through newspapers, word-of-mouth, Google Maps.	Vulnerable small community included. Expressed compensation for property value loss	Community and individual concerns shape perceptions of fairness. Fair amounts of compensation and equal access by local citizens to compensation schemes, as well as consultation.
Switzerland, 2017, [26]	1. Justice and social acceptance framework 2. survey	1004 recipients to represent Switzerland's population through market research agency	'low-income' respondents were included. Their choice was recorded in survey	While justice is important, it is not a panacea and salient stakeholders are important. Ecological impacts and local ownership explain >70% of respondents' hydropower acceptance
Agean islands, 2019, [52]	1. Social acceptance 2. Computer-assisted telephone interview	1001 recipients responded to automated phone call-based interviews	Not mentioned. Automated response choices.	Accessible and tailored information dissemination. Past experience and knowledge of RE systems had a positive influence on attitudes to transitions