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Exploring the Spatial Dynamics of a Just Regional Energy Transition: What If We Ask Citizens?

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ABSTRACT

The installation of wind turbines and solar parks in valued rural landscapes has led to local concerns and perceived injustices to the extent that the societal acceptance of the energy transition is at stake. Although the literature on energy justice is blooming, research into citizens' understandings of justice with regards to regional energy transitions is rare. This paper examines the aspects citizens consider relevant when discussing a just energy transition in a regional context. Eleven focus groups, including 42 participants with various backgrounds, were conducted in four cities in the province of Overijssel, the Netherlands. The results show that citizens express justice claims by referring to spaces, places, and scales both within and beyond the region. From the perspective of citizens, regional energy transitions are both influenced by, and have an impact on, existing socio-spatial inequalities at multiple levels, ranging from households to the entire world. Citizens also acknowledge that energy policies and changes made at one scale can create injustices at other scales, referring to the different impacts national subsidies have on rich and poor neighborhoods, or to different effects of implementing renewable energy facilities on rural landscapes and urban regions. Our findings illustrate the multi-scalar character of justice concerns in regional energy transitions. A better understanding of the spatial justice considerations that are fundamental to the concerns of citizens can help improve policy processes and communication about regional energy transitions.

1 | Introduction

The global energy transition encompasses major changes in technology and infrastructure, sources of production and consumption patterns, and a rigorous redesign of urban and rural landscapes. This raises concerns about energy justice, such as the fairness of procedures, distribution of costs and benefits, and the (non-)inclusion of vulnerable groups (Jenkins et al. 2016; Heffron 2022). In the Netherlands, justice has recently become a key pillar in national energy policy (de Looze et al. 2024). To do justice to local concerns and to create support for renewable energy facilities, the National Climate Agreement (2019) allocated the implementation of renewable energy infrastructures to 30 newly formed administrative layers called "Energy Regions" (Hoppe and Miedema 2020; Gerritsen 2024). The energy regions administer geographically demarcated areas within the 12 provinces and are tasked with developing a regional energy strategy (RES) in collaboration with grid operators, energy cooperatives and other local stakeholders. The underlying motivation behind such regionalization of energy transition strategies is that decision-making about the spatial integration of renewable energy generating capacity should best be done "close to the local living environment of residents, but at a higher scale than the municipality" (Prins and van de Belt 2020, 226). The regional level was considered more suitable than the municipal level in order to avoid conflicts between municipalities regarding the

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location of wind turbines and solar parks. This would prevent municipalities from only locating these facilities at their borders, causing more nuisance to neighboring municipalities than to their own constituencies.

The delegation of decision-making about siting renewable energy facilities to such "Energy Regions" can be seen as an act of "doing justice" in a spatial context (Walker 2009). The introduction of "Energy Regions" shows that the government sees "the region" as the workable scale to consider fair distributions of costs and benefits, a fair decision-making process, and the recognition of vulnerabilities in decision making about renewable energy facilities. While the newly emerged Dutch Energy Regions as administrative layers between municipalities and provinces serve as our point of departure in this paper, in the following, we will use the term "region" in broader social and geographical terms. The region, and what is regional, is not only how it is represented in law and regulations (like the "Energy Region"), but also this local environment in which people live, work and spend their free time.

With justice being a key challenge in the governance of energy transitions in general (Pellegrini-Masini et al. 2020), scholars have started to explore what "justice" means in different policy contexts, and for different stakeholders (see e.g., Herberg et al. 2023). Such studies, for example, analyze how political actors use justice arguments in national-level policy debates about low-carbon transitions (Fischer et al. 2024), or document the justice concerns that energy experts and the general public associate with low-carbon transitions (Sovacool et al. 2019). These studies recognize that when identifying justice concerns, it matters whose perspectives are included. Citizens may have different interpretations of justice compared to how policymakers or developers would frame their justice concerns or have different ideas about who is affected by energy transitions and at what scale (Huttunen et al. 2024). Yet, when citizen perspectives are examined, this is often in the context of specific local renewable energy projects that affect people living in the direct surroundings (e.g., Lennon et al. 2019). This is understandable as injustices are most directly experienced around local projects and, besides, it is likely that research participants can best be recruited from where the action is. There is, however, little empirical research that explores citizens' concerns around energy transitions in their living environment in a broader sense. Such broader concerns may relate to how energy transitions intersect with existing spatial distributions of incomes, nature areas, pollution, or infrastructures in the region. Consequently, we lack knowledge about citizens' perspectives on a just energy transition in relation to other societal and policy challenges in their region and the ways in which these can inform a just energy policy and outcomes. How these citizens interpret what a just energy transition is for their region may be very different from policymakers' constructions of a just regional transition.

In this paper, we aim to unpack the construction of energy justice and the spatial dimensions that citizens attribute to it. In doing so, we hope to shed light on the potential injustices that remain hidden when studying spatial energy injustices only from the perspective of policymakers and experts in energy transition governance. The following two related questions will be addressed: (1) What issues do citizens raise when discussing the energy transition in the context of existing spatial distributions of socio-economic and environmental inequalities in their region? (2) What is the relationship between justice and different aspects of spatiality in these issues? To answer these questions, we explored what concerns citizens have with respect to energy justice in their region in the Dutch province of Overijssel. Data are derived from 11 focus groups in which citizens used various maps and other visual materials to share and discuss their perspectives on a just energy transition in the region they live in. We categorized their concerns as environmental, socio-economic or energy-system related and analyzed how such concerns refer to spatialized justice dimensions. Our main finding is that justice and spatiality are relational: what citizens interpret as fair or just in the energy transition is not fixed, but is co-shaped by the spaces, places, and scales they refer to.

The paper firstly explores key literature on spatial and energy justice to develop a spatial lens to analyze justice concerns of citizens. Next, we explain our methodological approach for gaining insights into citizen perspectives on spatial energy (in)justices. The results section presents the key spatial distributional, procedural, and recognition justice issues citizens expressed, grouped under socio-economic, environmental, and energy system concerns. Finally, we discuss how citizens construct notions of energy justice in their region and the role of spatiality in this. We also reflect on the use of visual materials in conversations about energy justice and draw out implications of our study for governance in the context of a just energy transition.

2 | Theoretical Framework—A Spatial Lens on Energy Justice

A widely used framework (Jenkins et al. 2016) for analysing justice in the energy transition is specifically concerned with (1) the distribution of burdens and benefits (distributional justice); (2) questions about access to decision-making processes (procedural justice); and (3) whether needs of (vulnerable) citizens are respected and recognized (recognition justice). Yet, as Bouzarovski and Simcock (2017) pointed out, "justice in terms of distribution, procedure or recognition defined at one scale does not necessarily mean justice is achieved elsewhere (Harvey 1973; Walker 2012)". Energy justice, therefore, has a spatial dimension, which assumes even greater significance for this paper, considering the recent establishment of 30 "Energy Regions" in the Netherlands, where the siting of energy infrastructures and the distribution of burdens and benefits must be determined. So how can we conceptualize the spatiality of energy justice and operationalize it for our interpretative analysis of citizens' concerns? We start from a broad consensus in the literature, where space is seen as a social construct rather than a physical context for society (Pirie 1983), and where spatial justice represents "a particular emphasis and interpretive perspective" rather than a "substitute or alternative to other forms of justice" (Soja 2010, 13).

Spatiality in relation to "justice" can be understood with reference to space, place, and scale (Gürtler 2023). *Spaces* are geographical entities "being constructed through social relations and practices, while at the same time co-constituting those relationships and practices" (Gürtler 2023, 5). Spatial injustices may thus play out in the social construction of what constitutes an

energy space and who has the power and the means to dominate such construction. *Places* refer to specific sites in space. But also, places are not fixed but relational: the proximity of one (energy production and/or consumption) place to the other is determined by the links between them. Such links may comprise energy or mobility infrastructures. In this respect, (in)justices may be perceived between places suffering or benefitting from renewable energy infrastructures. Lastly, *scale* indicates the geographical reach of governance structures, such as local, regional or national governmental levels (Gürtler 2023). In terms of scale, typical injustices may emerge in cases where decisions about energy interventions and measures that matter for one scale are made on a distinctly different spatial or political scale. In addition, injustices apparent on one scale do not necessarily mean that they appear on another scale as well.

With these three concepts of spatiality in mind, we can now revisit the three tenets of energy justice: distributive, procedural and recognition (Jenkins et al. (2016); Garvey et al. (2022); and Walker (2009)). As *distributional justice* is about the distribution of burdens and benefits, a spatial perspective includes *where* these burdens and benefits are allocated in terms of spaces and places, and the scales at which those effects play out. Those spaces, places and scales not only refer to biophysical sites, but also to (imagined) categories like "the richer areas," urban or rural contexts or higher or lower levels of administration. An implication of transforming a centralized fossil fuel-based energy system to a decentralized, renewable energy system is that the facility of energy generation becomes distributed over different spaces. Compared to large conventional gas, coal or nuclear power plants, strategically concentrated at places like harbors and urban centers, the new forms of energy generation are much more dispersed over space. Hence, when considering energy justice, it matters where renewable energy projects are sited, and who will receive the gains or experience the burdens in that location and beyond. The assessment of what is a gain or burden, and at which place, space or scale, may differ between policy makers and citizens.

Procedural justice is about access to decision-making processes that govern the distributions of benefits and burdens and includes participation in decision-making by those affected; information provisioning; and representations in institutions (Jenkins et al. 2016). A spatial perspective on procedural justice considers at what (institutional) scales decision-making about the regional energy transition takes place; whether affected communities are involved in decision-making at scales that are relevant to them; and whether their knowledge and concerns are taken up in decisions. Procedural justice can be reached through the disclosure of information to citizens about policy dilemmas and decisions but also about existing spatial distributions of inequalities in the region (e.g., energy poverty, the liveability of different areas). Representation refers to whether and how groups of citizens from various places and their interests are represented in institutions and at what scales (e.g., neighborhood, municipality, province).

Lastly, justice in terms of *recognition* refers to whether vulnerable or affected groups and their needs are respected and recognized in the decision-making about renewable energy (Jenkins et al. 2016). In spatial terms, respect and recognition entail not only individual or group identities, but also identities in relation to regions and places (e.g., rural identities), though they may partly overlap with individual or group identities. In other respects, spatial recognition is about how people feel recognized in their personal, historical affiliation to certain landscape types, like people's appreciation of open polders, clear horizons, or particular nature reserves. Also in the assessment of recognition justice, policy makers, academics and citizens may have very different perspectives. As Bouzarovski and Simcock (2017) have argued, spatial inequalities of recognition and procedure may be both unjust in their own right, while also helping structure and reproduce geographical distributive inequalities.

Hence, taking a spatial lens on energy justice means being attentive to how expressions of distributional, procedural, and recognition justice concerns contain references to specific spaces, places, and scales. This lens (Figure 1) will be employed in the empirical analysis of our focus groups with citizens, which we will introduce in the next section. Rather than employing this lens for normative assessments, we aim to use
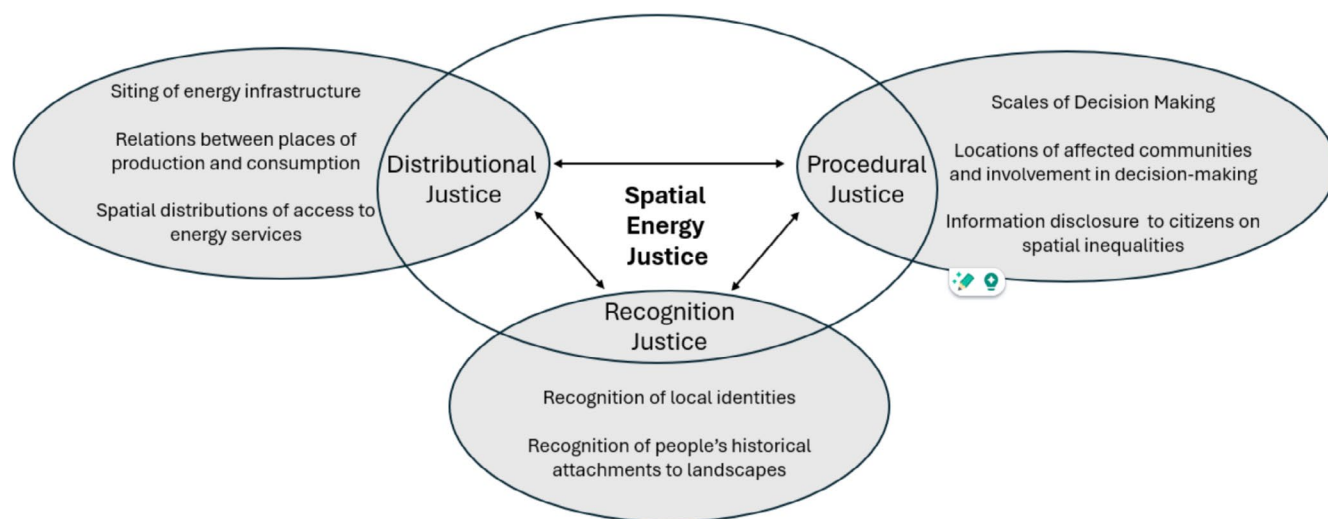

FIGURE 1 | Tenets of spatial energy justice and example attributes.

it as an interpretative lens to analyze citizens' construction of energy justice and the spatial dimensions that they attribute to it.

3 | Case Selection and Research Methods

To analyze citizens' concerns around energy justice, we organized focus group discussions in which we addressed and engaged our participants as citizens in the two "Energy Regions" Twente and West-Overijssel, together comprising the province of Overijssel. The province is in the east of the Netherlands, with almost 1.2 million inhabitants, half of whom live in the five bigger-sized cities Zwolle, Deventer, Enschede, Hengelo and Almelo (Provincie Overijssel 2024). It is characterized by open landscapes, some big natural reserves, and vast rural areas with predominantly dairy farms (CBS 2024). The focus group sessions were designed to capture participants' concerns as expressed in discussions with others about the energy transition in relation to wider socio-economic and environmental characteristics of the province. We chose to conduct focus groups over individual interviews because focus group discussions will likely bring up a wider range of sensitive and personal disclosures than the sum of individual interviews would (Guest et al. 2017).

As input for the focus group sessions, we designed two specific sets of visual materials: thematical geographical maps of the regions and drawings of justice dimensions around renewable energy. The thematical geographical maps were designed to stimulate discussion about energy in relation to wider socio-economic and environmental characteristics of the region, thereby emphasizing distributional justice issues. The maps covered various aspects of existing spatial distributions of burdens and benefits related to people's socio-economic and living environment in the province. There were seven maps in total, which showed energy use, energy poverty, health risks, income, livability, nature networks, and energy generation. As such, these geographical maps provided input for discussing a broad range of concerns that linked to distributional justice aspects in particular. We also designed three drawings of justice dimensions: one to discuss distributional justice, one for procedural justice and one for recognition justice (see Appendix A). These drawings were meant to invite participants to reflect on issues around decision-making, participation, and inclusion more generally. The maps and drawings thereby provided a structure that invited people to voice both concerns that more implicitly linked to justice, as well as statements about what they considered "just."

We used different recruitment channels with the aim of having a diverse group of participants for the sessions. First, we made use of a survey among inhabitants of Overijssel province that we had conducted in an earlier phase of the project (Van Duren et al. 2022). This survey covered a broad range of topics related to energy consumption, production, and policies, and a number of questions specifically addressed citizens' perspectives on spatial aspects of energy transitions and energy justice. We contacted survey respondents who had expressed interest in continuing participation in the study ($N = 112$). In addition, we involved local organizations that help vulnerable citizens with energy saving. Third, we sent emails to local (sport) clubs and neighborhood associations in these four cities to spread the word. Fourth, posters and flyers were spread in public spaces (library, pharmacies, restaurants, shops) in each of the cities approximately 3 or 4 weeks before the session. In total, 68 persons signed up to participate in the focus groups and 42 persons eventually showed up (see Appendix B).

We conducted a total of 11 focus groups in the two Energy Regions between April and July 2023. These focus groups were conducted in four different cities, with two to three groups per city. During the sessions, participants were seated in groups of four, supported by one moderator per table. All moderators (research assistants, project partners, and local key figures who volunteered to moderate) followed a 2-h training by the researchers to ensure consistency between all the sessions. In the sessions, the groups used the visual materials to identify and discuss justice concerns. Half of the groups used the geographical maps, while the other groups were instructed to use the drawings representing energy justice dimensions. Each of the discussions at the different tables were individually recorded and transcribed, and photos and visual materials were included into the script, based on the timestamps when the specific materials were discussed. Field notes from all moderators were added to the data set to reflect on the setting and atmosphere. For analyzing the data, first, we uploaded all 11 focus group transcripts in Atlas.Ti. Second, we created a codebook based on the three tenets of energy justice: distributional justice; procedural justice; and recognition justice with sub-codes like availability; affordability; responsibilities; burdens. As a next step, we coded the data according to different geographical levels to which people made reference in their discussions: individual-household; street-neighborhood; municipality; region-province; nation; and world. Within each focus group we analyzed how participants responded to each other's arguments (e.g., were they supportive or disagree with one another). We compared the different focus groups in how participants in their statements about justice concerns made references to particular spaces (e.g., agricultural space, energy space, nature, etc.), places (e.g., towns, villages) and scales (e.g., municipalities, regions, provinces, etc.).

4 | Results

Below, we present the results of the focus group sessions under three inductively defined themes: environmental concerns, energy system concerns, and socio-economic concerns. Under *environmental concerns*, we analyze how people express worries about spatial distributions of environmental benefits and burdens; their concerns about decision-making about these issues; and recognition issues related to the environment and place-based and regional identities. Under *energy system concerns* we report on how people talked about unequal spatial distributions of energy production and consumption sites, including relations between where new energy production infrastructure is located and where consumption takes place, and the processes that govern this. The section on *socio-economic concerns* analyzes how people see the energy transition in relation to existing spatial distributions of income, energy poverty, and liveability in and between households and neighborhoods, decision-making about these issues and the recognition of socio-economically vulnerable groups. Rather than an analytically deductive grouping of

the results into the three spatialized tenets of energy justice, grouping the results under these three main themes provides an accurate representation of the conversations participants had with each other. Within each thematic area, however, we follow the order of first describing citizens' distributional justice concerns, followed by their considerations on procedural and recognition justice.

4.1 | Environmental Concerns: Siting Renewable Energy in Rural Areas

A first set of concerns could be categorized as 'environmental' because they revolve around the impact of the energy transition on the living environment, biodiversity, or natural landscapes. For the participants, it was self-evident that the energy transition has material implications for the environment. In discussing their concerns, participants often compared different land uses. In one of the sessions, the scarcity of existing space in the Netherlands was emphasized: "A farmer might say the energy transition offers opportunities for our landscape and a good business model for our region. Someone else might say we need to keep our nature areas free of windmills and solar parks. So yes, I find that very tricky. How do we divide our land, which is not very spacious anyhow?". One specific distributive justice concern was around the use of agricultural land for solar energy production: "Are we going to cover expensive, precious food producing farmlands with solar panels? That's not practical, then we won't have any farmland left. So, my wish is to not sacrifice any land or nature for it, but to cover all roofs with solar panels first." This wish to prioritize "roof space" for installing solar panels rather than using "valuable" agriculture and nature areas was shared widely amongst the participants. Yet, one participant nuanced this idea by claiming that too much space was used for agriculture "because the Netherlands exports 80% of its produced meat." Another participant pointed to places where distribution centers are built, to explain his concerns about the use of space for renewable energy generation: "Distribution facilities have been built up recently, where I don't see solar panels on the roofs yet. So these [new facilities] are only helping to raise the temperature further. And half a kilometre away, indeed, the panels are installed on a grassland. Why not turn that into nature development? That would slow down warming too". The siting of energy infrastructure-a key distributive justice issue-was thus discussed while comparing the value of using spaces for energy production with that of other uses of space.

Participants did not just assess energy production space against other uses of space, but also suggested that natural spaces can support the energy transition. Examples mentioned were creating more green spaces by removing tiles and concrete to diminish heat stress, which in turn would save energy for air conditioning. Other people saw benefits in combining renewable energy generation with nature and argued that when combined with greenery, solar panels would "produce more" as the greenery would keep the panels cooler and therefore yields would be higher. Another participant imagined a more instrumental use of nature, and suggested siting wind turbines near forests so that the trees would absorb the noise pollution. This shows that these people considered natural spaces beneficial for the energy transition because they would support renewable energy production and lower energy consumption. The siting of energy infrastructure, a pivotal distributive spatial justice concern, was thus also discussed in terms of potential "fit" with nature.

Distributive justice issues were also discussed with reference to existing relations between rural and urban areas, and relations between different regions in the Netherlands. In general, participants acknowledged that it was almost inevitable that benefits and burdens of wind energy are unequally distributed between "the city" and "the hinterlands": "You can never put a wind turbine in the city. It should always be sited in the countryside. So, the outlying area gets up on its hind legs, like 'we will get all those windmills and all those solar parks! And those people in the city itself, they won't be affected!'". Participants argued that rural areas should be recognized as "places where people live," and they were worried that local people would suffer from burdens such as noise annoyance. When asked about a more just way of siting wind turbines, participants suggested the clustering of windturbines, preferably in areas outside the province of Overijssel. Here Flevoland—a province that already has a large number of wind parks—and the North Sea were mentioned a few times. Yet, the role of rural areas in the energy transition was also interpreted in terms of fullfilling a societal function: "I think a city has different priorities in terms of function for society than some other places. I come from a farming family myself, let that be noted. But I think there are more opportunities there [in rural areas] to take on this energy transition than in the city. Only small gains can be realized there [in the city] as compared to where you can do it much more efficiently somewhere else [in the countryside]." Hence, where siting renewable energy projects in rural areas generally was seen as undesirable, this shifted when participants addressed rural areas in *relation to* cities, and thought about their distinct functions.

A similar spatial relation appeared in discussions about siting of wind parks in the Eastern or Western regions of the Netherlands. Someone reasoned that from a national perspective, when considering a fair distribution of the burdens of an energy transition, the Eastern regions may engage in energy production to "compensate" for their lower contribution to a national level economy: "As a country, you have to make a compromise somewhere. I mean, we in the East of the Netherlands don't really have a port like Rotterdam. So we benefit from the West, from the activity there. You have to meet eachother somewhere. You can't say, 'we're not doing this, choke on it!'. So in that context, it would be fair to compensate a bit." Hence, what is perceived as fair or unfair in siting of renewable energy infrastructure is relational: it is shaped by how people see the connections between particular places in the Netherlands.

A recurring concern was about how the local landscape would be affected by wind turbines and solar parks. In discussing this, participants referred to their regional identity and to landscape values, but also mentioned broader qualitative changes in landscapes such as urbanization, industrialization, and extractivism. For example, some reasoned that resistance against wind turbines in rural areas was understandable because such energy infrastructure would affect the "beautiful Twents landscape". Someone else mentioned that they preferred energy production infrastructure to be sited along roads "because that road already spoils the landscape." Others were concerned that using natural

and rural areas for energy production could lead to a "loss of the naturalness" of the area and broader spatial changes. As one participant shared their worries: "I think the moment you start using all this nature, for solar parks or windmills, then maybe there is no environmental health risk, but you do get a kind of urbanization because it is no longer natural". A related concern voiced by another participant was that the development of wind and solar parks would lead to "some sort of new industry, under the guise of sustainable energy." These discussions show that landscape concerns extend far beyond the local and regional level, with participants worrying about how energy infrastructure becomes part of spatial transformation processes that are difficult to control in and by the region.

Lastly, there were concerns about the spatial claims of energy infrastructure and how its potentially harmful effects would spread over time. People were worried that large scale solar parks would create new waste problems in the long run. As one participant explained: "My concern is that because of the energy transition, and the space and extra resources it requires and so on, that nature suffers a lot." Other participants referred to the potential harmful effects of renewable energy infrastructure on animals in the direct surroundings. There were also concerns about broader effects on ecosystems: how large-scale wind energy at sea would affect fish or would lead to changes in the currents. A related procedural concern was about a perceived disregard of knowledge about the effects of past spatial interventions. Participants referred to the discovery and exploitation of large natural gas reserves in the province of Groningen in the 1950s, resulting in damaging earthquakes over time. According to our participants, fair procedures entail more than just mobilizing local knowledge in the context of local conditions. They also involve recognizing and leveraging collective knowledge regarding earlier spatial interventions in other places in the Netherlands and decision-making that takes into account broader spatial and temporal scales.

4.2 | Energy System Concerns: Spatial Proportionality

Concerns about the energy transition were not only related to the building of renewable energy production sites in the region; they also concerned ownership of these facilities, and where and by whom energy is consumed. Participants reflected on the meaning of fairness in the spatial distribution of energy production infrastructure in relation to where consumption takes place. In the focus group sessions, participants compared maps with distributions of renewable energy generation per municipality with those of distributions in energy consumption per district. This led them to reflect on balancing energy production and consumption differences in the region. Looking at the energy consumption data map of the province, one participant shared: "I find it odd that Enschede is low in energy consumption, even though there are all kinds of high-tech things there. So, I would assume energy consumption is high there. I do think they should generate more proportionally anyway". This idea of generating energy "proportionally" as a desirable goal (hence the "should") was echoed by other participants. Again, reflecting on what the maps showed, another participant remarked that "one municipality generates much more than the other municipality.

I think there should be more balance there. [...] Some municipalities are just totally out of balance with each other." The idea of a "balance" in production and consumption even led people to suggest that municipalities could work together to achieve this: "So there are municipalities that generate more than they consume themselves. That means they can also compensate for that. Say, for instance, Deventer can generate less, because it has less municipal land for windmills. Then an agreement can be arranged with the municipality of Rijssen that together they will achieve 100% [renewable energy]". Some saw the province as a suitable scale to organize such 'balance': "I think you have to look especially at a provincial level, that as a province, your electricity consumption equals your generation. That could mean that one municipality generates, and stores more and then gives more to a municipality that generates less, because it's a smaller municipality, for example. But I would keep it within the province. That you seek a balance of how much you generate and how much you use." Another participant suggested that energy generated within one municipality could be sold at a lower rate to its inhabitants, while energy 'from outside' would be made more expensive. Several participants thus suggested that balancing production and consumption levels is a desirable goal in regional energy transitions, showing their understanding of relational spatial injustices.

These discussions about the need for a more balanced energy system should also be seen in the light of a major procedural justice concern people had about the lack of transparency in the current energy system. Several participants voiced concerns about the non-disclosed origins of energy they consume, and about the equally undisclosed destination of energy that is generated in the region. One participant illustrates: "The energy network is so opaque! At least for me as a layperson it is: is the energy coming out of my socket today from Russia, from Turkey, or from my own solar panels?" Concerns about transparency were also voiced in relation to regionally produced energy. One participant reflected on their experiences with an international commercial developer in a local energy project. "In one project, we were supposedly allowed to participate. But that project had been realized by a German project developer, who had seven projects in the Netherlands with 20 hectares of solar panels and [who] would sell those to a company in Switzerland. And that company in Switzerland was in the same city as a Swiss company that was involved in this Russian gas pipeline! Well, then you get the idea that solar parks in the Netherlands are owned by countries you don't want to see owning these things. [These developers] are very sneaky guys, who manage to arrange things for companies we don't have an eye on." This quote shows that procedural justice issues relating to local energy projects are about influence and powers that extend far beyond their region. These participants grasp how local projects could be related to the interests of foreign countries and companies.

4.3 | Socio-Economic Concerns: Spatial Inequality and Responsibility

With the implementation of a regional energy transition, energy measures affect households and neighborhoods of various socio-economic strata. In the focus group sessions, people discussed the regional energy transition in relation to spatial

distributions in income, energy poverty, and liveability in and between households and neighborhoods. First, participants recognized that energy affordability is shaped by different housing conditions and spatially unequal distributions in income. They mentioned that those citizens living in areas with lower quality (and poorly insulated) housing often have lower incomes and yet higher energy costs. For example, a participant reflecting on geographical maps with information about energy consumption and energy poverty said: "This actually surprises me. Precisely the areas where there is a lot of energy poverty are also low in consumption. So, then you would say, that's not [where the problem is] at all. Because [in those areas] where people can apparently afford it, there is higher consumption." The map made this participant realize that those in energy poverty contribute little to the problem of high energy consumption. Another participant connected energy consumption to spatial distributions of incomes: "In socio-economic terms, Almelo, for example, is a very poor municipality with a lot of poorly insulated houses and a population that is relatively poor. So, a solution needs to be found for that too. Because they naturally consume a lot of [energy], because there is no other way." In other words, participants observed energy-related inequalities as overlaying other spatial inequalities in the built environment and in relation to income distributions.

Relatedly, participants recognized that national financial instruments and subsidies can lead to injustices at the local and household levels, because subsidies are not equally accessible or beneficial to all socio-economic groups in society. In this respect, someone brought up the example of the financial compensation that all Dutch households received because of the energy price peak in 2022. "It's insane that I got this allowance! And that the government hasn't thought about that. Somehow it's understandable, because some kind of plan had to be made in a month. The government really can't differentiate students from people who have solar panels on their roofs. So, while I think that is indeed very crooked, it is quite understandable. Right?"

Participants also identified injustices in the distributions of responsibilities for implementing energy measures at the scale of individual households versus the responsibilities of governments and companies. One participant explained why she did not invest in solar panels herself: "I'm still waiting for the moment that the government says: guys we're going to do it all together, and we're going to create something. But no, you have to give [yourself-generated energy] back to Essent [Energy Company] or I don't know who. And they are then going to do their net metering somehow…, whatever. And then they will benefit from it, and I won't." In this example, the participant linked her own individual efforts to impacts at larger scales and sees the distribution of benefits that would follow from her (individual) investment as unfair. Others explicitly mentioned lack of action from people in powerful positions as a concern: "The people with money, who somewhere at the top decide what happens. […]. Sometimes I think maybe the whole climate crisis is nonsense. Because they are doing nothing, they're just not taking any action." In general, in discussing responsibilities, people referred to various levels of scale: "We are of course a small country, we do our best. Of course, there are many countries that I think are big consumers, big polluters, where perhaps even bigger steps can be taken. But

that doesn't take away the fact that (…) you have to look at yourself first to see what you can do."

4.4 | Summary

Citizens expressed various environmental, socio-economic, and energy system concerns in relation to the energy transition in their region. Table 1 presents an overview of the specific concerns that came up in the focus group sessions, grouped under the three spatialized tenets of distributional, procedural, and recognition justice.

5 | Discussion and Conclusion

In this paper, we used a spatial justice lens to explore how citizens interpret energy justice issues in a regional context. We set out to answer the following two questions: (1) What issues do citizens raise when discussing the energy transition in the context of existing spatial distributions of socio-economic and environmental inequalities in their region? And (2) what is the relationship between justice and different aspects of spatiality in these issues? Below we present what roles spatiality played in citizens' constructions of energy justice in their region.

5.1 | Spatialized Energy Justice: Distributions, Procedures and Recognition

In terms of distributional justice, our findings show that people are concerned about how costs and benefits of the energy transition will intersect with inequalities between the rural and urban areas and at household and neighborhood levels. The energy transition might reinforce or even exacerbate socio-economic inequalities between households and different neighborhoods. There were concerns about national energy policies (e.g., subsidies) creating injustices at neighborhood and household levels, with richer households and homeowners disproportionately benefiting. Yet, distributional issues did not just concern the costs, but also how the siting of renewable infrastructure affects landscapes and land use. Here, justice was about balancing the value of new energy production spaces with the value of other uses of space, like agriculture, nature, or industry. There was a broader concern that energy production spaces over time become encapsulated in dynamics like industrialization and urbanization, and that valued local landscapes are lost. Our findings also show that people considered energy spaces or systems more just if energy production and consumption levels would be in balance at the municipal or provincial scale.

Procedural justice issues were mostly related to the lack of transparency of energy system flows and interests, not just in the centralized energy system, but also in regional and local projects with commercial actors and foreign powers reaping the benefits of local energy projects. Concerns were raised regarding the expertise of local and regional policymakers, and more generally, the lack of consideration given to the spatial (and temporal) reach of environmental effects in policy-making. Another issue was the feeling of lack of action of those in power (governments,

TABLE 1 | Citizen concerns under spatialized justice dimensions.

Spatialized justice dimension	Citizen concerns
Environmental concerns: siting renewable energy in rural areas	
Distributional	– Space for energy production versus other uses of space (e.g., agriculture, nature)—Harmful effects of energy infrastructure on nature—Further industrialization and urbanization—Distributions of burdens and benefits among East and West of the Netherlands—Distributions of burdens and benefits among rural and urban areas
Procedural	– Disregard of knowledge about past spatial interventions and their (harmful) effects
Recognition	– Diverse functions of rural areas—Loss of valued local landscapes—Lack of recognition of longer term negative effects on non-humans and ecosystems
Energy system concerns: spatial proportionality	
Distributional	– Spatial distribution of energy production and consumption areas
Procedural	– Lack of transparency about where electricity is produced, consumed or exported to—Role of commercial and/or foreign actors in local energy projects—Lack of expertise of policy makers at local and regional level
Recognition	—
Socio-economic concerns: spatial inequality and responsibility	
Distributional	– Lower quality (and poorly insulated) housing with lower income inhabitants have relatively high energy costs—Energy subsidies and existing socio-economic inequalities between households and/or neighborhoods
Procedural	– Lack of action by people in powerful positions—Responsibilities of individual households versus the responsibilities of governments and companies
Recognition	—

companies), while at the same time a lot of effort is expected from individual residents.

Finally, recognition justice issues relate to who or what is affected in different places. Here people stressed how policies and energy measures can have profound impacts on poorer households, on rural inhabitants, and local identities in relation to landscape (such as the typical "Twente" landscape). Yet, recognition issues do not just relate to vulnerable groups: people also feared the long-term impacts of energy infrastructure, materials, and wastes on animals, ecosystems, and landscapes, and considered that this was often disregarded in policies.

With regards to the regional energy transition and the way citizens construct their notions of energy justice in a regional context, the findings underpin the multi-scalar character of concerns about just energy transitions: from the perspective of citizens, the energy transition in their region is both influenced by and has impact on existing socio-spatial inequalities at multiple scales, ranging from household level to the global level. Citizens also acknowledge that energy policies and changes made at one scale can create (perceived) injustices at another scale, for example in the different impacts of national subsidies on rich and poor neighborhoods, or how implementing energy goals at a regional level has different effects on rural municipalities' landscapes than on urban regions. Our findings thereby offer an empirical substantiation for the plea in energy justice literature to use a spatial lens (see for example Gürtler 2023). The findings also show that justice and spatiality are *relational*

(Garvey et al. 2022; Walker 2009): what our participants considered just or not just is neither absolute nor fixed, as their arguments shifted when new spatial relations were invoked (e.g., in assessing whether renewable energy infrastructures would be justified in local rural areas, in the North Sea or on the roofs of urban structures). Justice and spatiality are also *co-productive*: participants acknowledged that energy transition interventions affect and may even create new spatial relations. Examples are the references made to the creation of new spatial relations between local, regional and national scales when talking about fair balancing of energy production and consumption; societal functions of energy production in relation to the city, or the West of the Netherlands; or energy poverty distributions between different neighborhoods.

5.2 | Reflections on the Focus Group Sessions, Maps and Drawings

To obtain the perspectives of citizens on spatial energy justice in the regional energy transition, our sampling strategy for recruiting participants was deliberately geared to recruit a wide set of citizens in Overijssel. It thereby went beyond recruiting those who stand to lose something in relation to a specific renewable energy project in their neighborhood. This choice inevitably resulted in findings that were rich in elaborations on justice beyond the scale of participants' own neighborhood or city. In this respect, the paper differs from and contributes to literature on energy justice (Cuppen 2018; Solman et al. 2021; van

Boven et al. 2025) which focuses on perspectives regarding the development of specific energy projects or energy communities.

For practical reasons, the 11 focus group discussions were organized in four cities of Overijssel, which, due to the dominance of urban participants in the groups, may have created a bias in the findings, for instance in the deliberations on justice around the urban–rural divide. However, we found that participants proved to be knowledgeable about typical urban issues, such as energy poverty, as well as the needs of farmers and residents in rural areas. They were also well aware of distributional issues regarding space for nature, agriculture, and renewable energy in rural Overijssel.

While our findings reflect a variety of concerns that these citizens have, we acknowledge that these do not represent the full range of potential spatial justice issues citizens may be concerned about. The discussions were prompted by the maps and drawings, and these visual inputs steered discussions to specific spatial issues at local and regional scales, and not to, for instance, temporal or cosmopolitan justice. Yet, our findings show that people do make reference to places, spaces and scales beyond the region and to longer term effects when reflecting on justice concerns. Hence, while the administrative boundaries of the region were on the map, citizens created links and new spatial relations across and beyond these maps.

Our experiences with developing visual materials for the focus group discussions in this study lead us to recommend academics and policymakers to rethink the use of visuals in (planned) regional energy interventions. In most of these spatial planning developments, only maps are used, mostly to indicate possible areas for siting wind turbines or solar parks. However, citizens' concerns go beyond the siting of wind turbines or solar panels. Our findings show that different types of visual materials like regional, national and supra-national maps and drawings of justice dimensions allow citizens to position the energy transition in a wider context than the project location. Policymakers can start from such maps and drawings to involve people as citizens rather than as a locally affected population only. Zooming out from the level of a local project to the level of the region or the country can bring in additional approaches to assessing and mitigating distributional (in)justices, like we saw with people's pleas for "balancing" production and consumption levels, and for "compensation" or "finding compromise" with places and regions elsewhere. Policymakers can make use of the terms that people themselves use to explain policy choices with relation to (re)distributions. By giving room for citizens' perspectives on such wider matters of concern around just energy transitions, policymakers not only foster procedural justice but can also improve recognition of the broader impacts of regional energy decisions, both within and beyond the region, and increase their awareness of distributional injustices across different levels of scale.

5.3 | Implications for Just Transition Governance

What do these findings mean for the "doings of justice" in transition governance, both in specific policy contexts like the Dutch Regional Energy Strategies and in energy transitions more broadly? Existing literature on just energy transitions often focuses on injustices that are identified by policy makers, experts, or those already involved with or directly affected by renewable energy projects or the dismantling of energy systems based on fossil fuels (Van Veelen 2018; de Looze et al. 2024; Fischer et al. 2024). Case studies of energy transitions on local or regional levels focus on practices of invited participation in the context of particular renewable energy projects (Cuppen 2018; Solman et al. 2021; van Boven et al. 2025). In such processes, people living in close vicinity of a (planned) renewable energy project get invited to discuss the siting, to financially participate in the project, or to co-decide about the distribution of financial benefits. In spatial terms, this entails a particular framing of matters of concern as local and an approach that addresses only *local* people as the affected population.

Inviting people as citizens in a wider region to conceptualize and talk about justice, as we did in this study, can open up alternative problematizations of just energy transitions. Our findings have shown that for citizens, a just transition in their region is about much more than being able to co-decide about siting, financially benefitting from local ownership, or about compensation of job losses for workers in the fossil sector. Citizens' justice concerns go beyond distributions of ills and benefits in a specific locality and include issues like the changing role and function of spaces (urbanization, industrialization, developments in agriculture) and the ways in which renewable energy facilities affect existing socio-economic inequalities, as well as environments and places elsewhere. These insights on how citizens interpret issues of spatialized energy justice may be inspirational for policy makers and all others in their efforts of "doing justice" in the energy transition.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

Research data are not shared.

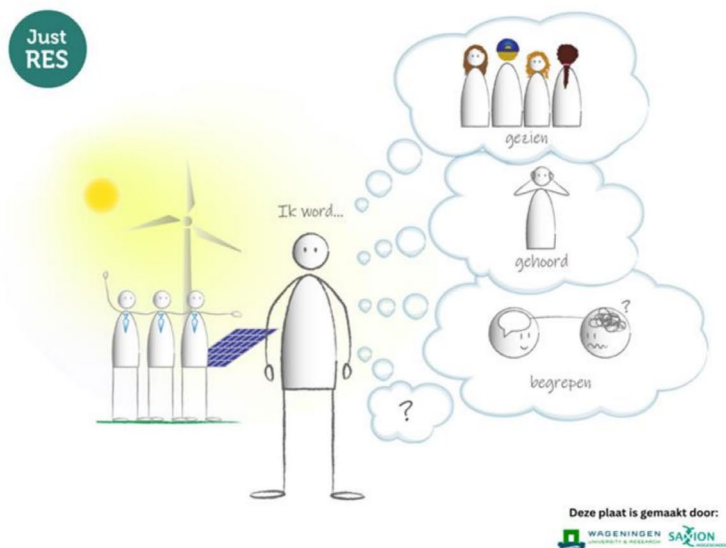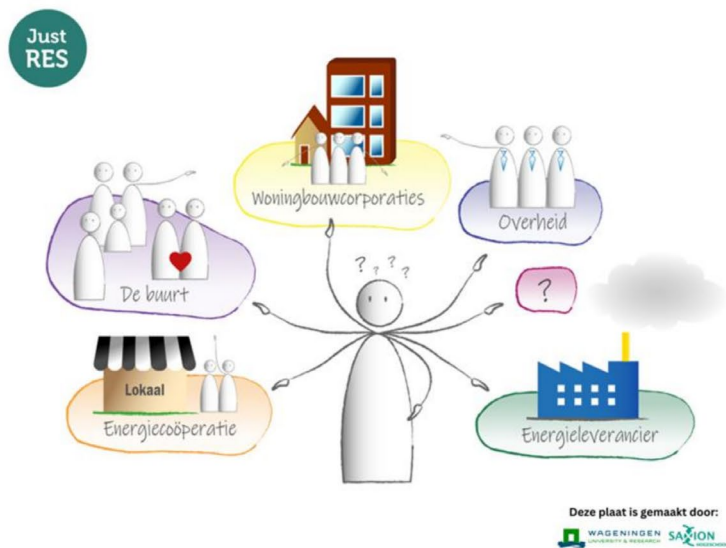## References

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Appendix A

Drawings Distributional, Procedural and Recognition Justice

Appendix B

See Table B1.

TABLE B1 | Overview of focus groups.

Location	Used material	Focus group table	Pseudonym	Gender	Age	Recruited via
Enschede (Session 1)	Drawings	1	Tom	Male	46	Email to energy corporation
	Drawings	1	Ingeborg	Female	47	Email to survey respondents
	Drawings	1	Susan	Female	54	Email to survey respondents
	Drawings	1	Mark	Male	51	Email to survey respondents
	Drawings	1	Ahmed	Male	35	Flyer at the public library
Zwolle	Interactive map	2	Adriaan	Male	69	Email to survey respondents
	Interactive map	2	Grace	Female	53	Email to survey respondents
	Drawings	3	Jan	Male	76	Email to survey respondents
	Interactive map	4	Rianne	Female	42	Email to survey respondents
	Drawings	3	Emile	Male	45	Email to survey respondents
	Interactive map	4	Joël	Male	20	Relative of Rianne
	Interactive map	4	Jordi	Male	23	Flyer at Saxion (University of Applied Sciences)
	Drawings	3	Annet	Female	58	Flyer at public library
	Interactive map	4	Mikel	Male	22	Flyer at Saxion (University of Applied Sciences)
	Interactive map	2	Wilma	Female	51	Relative of Grace
	Drawings	3	Nicole	Female	31	Email to survey respondents
Deventer	Interactive map	5	Geert	Male	73	Email to survey respondents
	Drawings	6	Mike	Male	60	Email to survey respondents
	Drawings	6	Bianca	Female	57	Email to survey respondents
	Drawings	6	Robin	Male	35	Email to survey respondents
	Interactive map	5	Marleen	Female		Flyer (location unknown)
	Drawings	7	Mark	Male	54	Email to survey respondents
	Drawings	7	Carina	Female	55	Email to survey respondents
	Interactive map	5	Donna	Female	18	Flyer at Saxion (University of Applied Sciences)
	Interactive map	5	Kaylee	Female	22	Flyer at Saxion (University of Applied Sciences)
	Drawings	7	Emma	Female	25	Researchers network
	Drawings	7	Marloes	Female	27	Invited through a local energy coach
Kampen	Drawings	8	Steffie	Female	27	Flyer at supermarket
	Interactive map	9	John	Male	64	Flyer at supermarket
	Interactive map	9	Jelle	Male	73	Email to energy corporation
	Interactive map	9	Karel	Male	Unknown	Researchers network
	Drawings	8	Mats	Male	Unknown	Relative of Koen
	Interactive map	9	Amber	Female	Unknown	Relative of Martijn
	Drawings	8	Ruben	Male	Unknown	Relative of Martijn

(Continues)

TABLE B1 | (Continued)

Location	Used material	Focus group table	Pseudonym	Gender	Age	Recruited via
Enschede (Session 2)	Drawings	10	Rufi	Female	56	Researchers network
	Interactive map	11	Pieter	Male	41	Email to energy corporation
	Drawings	10	Yasmin	Female	50	Via energy corporation
	Interactive map	11	Jan	Male	62	Via energy corporation
	Drawings	10	Sanne	Female	29	Via energy corporation
	Drawings	10	Rens	Male	36	Via former participant
	Interactive map	11	Ahmed	Male	35	Flyer at the public library (participated twice)
	Interactive map	11	Karin	Female	65	Via energy corporation