Powering the energy transition: Unravelling the influence of perceived fairness on wind park acceptance among residents.

MASTER THESIS
PSYCHOLOGY OF CONFLICT, RISK & SAFETY

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ABSTRACT

Members of the United Nations Climate Conference agreed to move towards renewable energy and decrease fossil-based energy to decelerate climate change (Scheel, 2023). The way such renewable energy projects are implemented and how residents living next to energy projects such as wind parks react to the associated circumstances is an important area of research. This research investigated the influence that fairness can have on the acceptance of wind parks and whether the justice rules of distributional, procedural, interpersonal, informational, and recognition influence the respective fairness judgments. The sample consisted of 109 individuals living near to a wind park, mainly from Germany.

Several exploratory factor analyses were applied. Contrary to expectations, the analysis revealed only one factor for fairness judgment. Additionally, the different dimensions of fairness judgment were found to be highly intercorrelated. The fairness judgment significantly predicted acceptance. The items of procedural-, informational-, and interpersonal justice rules were all loading on only one factor each, confirming the expectations set by the literature. For distributional- and recognition justice rules, more than one factor was found. The subsequently labelled factor “distribution of benefits” was the significant predictor for fairness judgement and acceptance among the items of distributional justice rules. The same holds for "Inclusive and equitable community engagement" within recognition justice rules. The fairness judgment mediated the effect of each justice rule on acceptance.

The impact of fairness on the acceptance of wind parks and the importance of all dimensions of fairness were demonstrated. Providing a fair treatment and a fair implementation of the wind park to residents can increase acceptance. The questionnaire provides future research with a tool to extensively measure all the fairness aspects of a sustainable energy project in one survey. The findings provide insights that can be used in practice to increase acceptance of energy projects.

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Introduction

Acting against the climate change is one of the main challenges that society faces today. At the 28th United Nations Climate Conference (UN COP28) in 2023, participating countries collectively agreed to transition from fossil-based energy to renewable energy to slow down the pace of climate change (Scheel, 2023). Thus, the pressure on the countries to invest more in renewable energy is higher than ever. Unfortunately, wherever such a project is planned, opposition groups arise too as they do not like to live nearby or have other concerns (Brulle, 2020; Johansen, 2019).

Wind energy is one of the energy transition projects with numerous new parks planned, particularly in Germany, the primary focus area of this research (Kolvenbach & Schader, 2024). This research uses insights from existing wind parks to deepen the understanding of how residents perceive them. According to Brulle (2020) and Johansen (2019), the reactions towards a wind park seem to be mixed. Those who are in favor of the park mainly remain silent while the opposition groups challenge the realization of the projects. Through understanding the drivers of such reactions, the aim of this research is to give practical implications for an implementation process meeting residents' needs and thereby enhancing the acceptance of future wind parks.

Acceptance of a wind park depends on residents' perceptions of a wind park near their homes (Velasco-Herrejon & Bauwens, 2020). According to Ziggers (2024), perceived fairness is a central factor influencing the acceptance of a wind park project among residents living near a newly planned or already built energy project. Many researchers supported this argumentation (Clayton et al., 2016; Evensen et al., 2018; Gross, 2007; Velasco-Herrejon & Bauwens, 2020). The target group of this research are residents living near wind parks as they are exposed to the visual effects and noises of turbines (Hansen & Hansen, 2020; Hansen et al., 2019).

Fairness seems to consist of five dimensions and various researchers concentrated on different aspects of fairness in their research. Distributional fairness can be described as how fair people perceive the way the negative and positive outcomes of a project are allocated (Huijts et al., 2012). Procedural fairness pertains to the implementation of a project, the decision-making process, and the involvement of individuals in it (Huijts et al., 2014). Recognition fairness evaluates whether all individuals receive representation and consideration when decisions are made (Schlosberg, 2004; Walker & Day, 2012).

Interpersonal fairness concerns the treatment that people receive from other stakeholders during a project (Bal et al., 2023). Informational fairness assesses the adequacy, timing, and quality of information people receive during a project (Bal et al., 2023; Besley, 2010). To the best of the author's knowledge, no other quantitative research exists that covered these five fairness dimensions at once.

Colquitt et al. (2001) tested procedural, distributive, interpersonal, and informational fairness in the organizational context and concluded that the four of them are independent of each other. Mundaca et al. (2018) conducted semi-structured interviews with wind park stakeholders and concluded that procedural fairness and distributional fairness are important concepts that may influence project acceptance. Noteworthy, researchers have questioned the independence of procedural and distributive fairness (Ambrose & Arnaud, 2005; Walker & Baxter, 2017). Velasco-Herrejon and Bauwens (2020) performed a qualitative-quantitative approach and found that distributional, procedural fairness, and recognition fairness can influence project acceptance. Recognition fairness has not been researched a lot, but people seem to worry about disadvantaged groups not being recognized in energy projects (Bal et al., 2023; Evensen et al., 2018; Demski et al., 2009; Thomas et al., 2020; Vilhunen et al., 2019). The aims of this study are threefold. First, it examines whether the dimensions of fairness are independent or interdependent. Second, it investigates how the identified constellation of fairness dimension(s) influences the acceptance of wind parks. Lastly, the study seeks to provide insights that can improve the implementation of future energy transition projects.

Theoretical framework

The structure and definitions are based on Cropanzano et al. (2015) who theorized two concepts of fairness, namely justice rules and fairness judgments. According to them, justice rules assess whether the elements of a particular fairness dimension (distributive, procedural, recognition, informational, or interpersonal) are present. They further argued that fairness judgment is an individual's assessment based on the application of these justice rules. In other words, justice rules are an indirect measure of fairness, evaluating whether specific characteristics of a dimension are present, while fairness judgment serves as the direct measure of that dimension. For example, when evaluating the procedural fairness judgement of a wind park, this research assesses the justice rules associated with this component, assuming that their presence or absence will influence the overall fairness judgment. This same manner is applied to all other dimensions as well.

Distributional justice rules

Distributional fairness concerns the distribution of costs, risks, and benefits related to an energy project (Huijts et al., 2012) and if residents perceive this distribution as fair, the acceptance of the project is assumed to increase (Huijts et al., 2012; Perlaviciute & Steg, 2014; Steg et al., 2015). Porsius et al. (2015) as well as Velasco-Herrejon and Bauwens (2020) found that stakeholders' decisions leading to an unequal distribution of an energy project's burdens among residents can result in perceived unfairness. As a result, it appears to be important how the project's stakeholders distribute the costs, risks, and benefits among the residents.

Compensation is another part of distributive fairness. Leer Jørgensen et al. (2020) defined compensation as monetary or other types of benefits offered to residents near wind parks in exchange for living next to them. They contended that wind park opponents' opinions regarding the project cannot be changed through compensation or a fair distribution of benefits. However, other sources (Huijts et al., 2012; Perlaviciute & Steg, 2014; Steg et al., 2015) suggested that a fair distribution of benefits can increase the acceptance of a wind park. This research aims to clarify the effect of distributional fairness and correct the contradicting findings. Distributional justice rules are hypothesized to have significant effects on both, overall distributional judgment and the acceptance of the wind park.

Procedural justice rules

Perceived procedural fairness in the implementation of wind parks is determined by how fairly residents perceive the decision-making process, implementation procedures, and their own involvement (Huijts et al., 2014). A key element of procedural fairness is assumed to be whether and how residents are involved in the decision-making process (Devine-Wright, 2010; Devine-Wright, 2011; Liu et al., 2020; Mueller, 2020). Having a voice and being involved in the implementation of a project increases people's perceived fairness towards a project (Devine-Wright, 2010; Devine-Wright, 2011; Liu et al., 2020; Terwel et al., 2010; Terwel et al., 2014). Furthermore, involving people in the decision-making process of a project increases its acceptability (Perlaviciute & Squintani, 2020; Walker & Baxter, 2017; Walter, 2014; Wolsink, 2010; Wolsink, 2007; Wolsink & Breukers, 2010).

Lastly, Walker and Baxter (2017) found that policies limiting the influence that local communities had on the implementation of wind parks caused strong opposition groups. In conclusion, for the implementation of a wind park, the following questions are important: Can

residents voice their opinions? Can they participate in the decision-making process? Are their opinions considered by stakeholders? Importantly, residents need to believe that stakeholders take their opinions seriously, as it enhances the acceptance of a project (Evensen et al., 2018; Gross, 2007; Perlaviciute & Steg, 2014; Rand & Hoen, 2017; Walker & Baxter, 2017). Procedural justice rules are hypothesized to have significant effects on both, procedural fairness judgment and the acceptance of the wind park.

Interpersonal justice rules

According to Bal et al. (2023), interpersonal fairness is constituted by how fair people perceive their treatment in conversations during the implementation of a project. They mentioned perceived respect in conversations as a main factor in interpersonal fairness. In Besley's (2010) study, the effect of interpersonal fairness on nuclear power plant acceptance was investigated, but it did not influence the acceptance at all. There is a lack of research on interpersonal fairness in the energy transition context but there exists some research in the organizational context. Colquitt (2001) and Colquitt et al. (2001) found that interpersonal fairness is an independent factor in the organizational context. Additionally, they defined interpersonal fairness differently to Besley (2010) which may be the reason for Besley's insignificant findings. To reach clarity on the effect of interpersonal fairness on the acceptance of wind parks, this current research used the definition and measurement of Colquitt et al. (2001) as Besley (2010) did not cover all aspects that Colquitt et al. (2001) measured, namely they only asked about respect and trustworthiness.

Colquitt et al. (2001) defined interpersonal fairness as "the degree to which people are treated with politeness, dignity and respect by authorities or third parties involved in executing procedures or determining outcomes" (Colquitt et al., 2001, p. 427). Thus, the way those in charge of the wind park treat residents throughout the whole process of implementation and afterwards may influence the acceptance of the wind park. Interpersonal justice rules are hypothesized to have a significant effect on both, interpersonal fairness judgement and the acceptance of the wind park.

Informational justice rules

Informational fairness concerns how well residents are informed about the details of the project (Besley, 2010). In their qualitative interviews with residents living near a new high-voltage power lines, Porsius et al. (2015) found that their "participants perceived a mismatch between the information they wanted and the information they received" (Porsius et

al., 2015, p. 10). Instead of gaining insight into how the project impacted their daily lives, the participants received general information that was unrelated to them. This resulted in a negative attitude towards the stakeholders and the project. In their sample, the timing of releasing information was equally important to residents. Furthermore, based on Bal et al. (2023), informational fairness arises from the adequacy and transparency of information during a project and how fair residents perceive this. Thus, the quality, timing, and suitability of the provided information are important characteristics of informational fairness.

Demski et al. (2019) found that changes in energy provision may lead to worries or scepticism among people if they lack sufficient or adequate information about it. Additionally, Motosu and Maruyama (2016) emphasized the critical importance of providing information about a project to affected individuals to secure their acceptance of the project. Bidwell (2016) discovered that participants who received detailed information about offshore wind energy expressed greater support compared to a control group without information. It's important to note that general support for wind energy was already high in his sample and that it was an offshore park. This underscores the importance of researching informational fairness, particularly in the context of onshore wind parks. Still, informational fairness may play a critical role in residents' acceptance of wind parks. According to Devine-Wright (2010), providing information about the implementation and transparency of decision-making can serve as a prerequisite for perceiving energy projects as fair, aligning with the logic of justice rules that influence fairness judgments. Informational justice rules are hypothesized to have a significant effect on both, informational fairness judgment and the acceptance of the wind park.

Recognition justice rules

Recognition fairness is a concept that often appears in discussions about socioeconomic discrimination through gender, culture, and race (Jenkins et al., 2016; McCauley et al., 2013; Sovacool & Dworkin, 2014). According to Walker and Day (2012) and Schlosberg (2004), recognition fairness stems from ensuring equitable representation of individuals in a community based on their social, cultural, ethnic, racial backgrounds, and gender, while also ensuring equal political rights. In their research on "fuel poverty", Walker and Day (2012) stressed the importance of considering material inequality between people when making important decisions that affect those people. Thomas et al. (2020) mentioned that participants in their study worried that groups with economic problems may be overlooked in the planning of energy projects. In short, recognition fairness is about

recognizing the diversity of residents and considering the circumstances in the respective community (Schlosberg, 2004).

In this research, recognition fairness judgement is defined by the aspects of its justice rules like giving every resident near the wind park equal access to information, equal interpersonal treatment, equal access to the distribution of benefits, and an equal opportunity to take part in the implementation. Not adhering to recognitional fairness and excluding any cultural, political or socio-economic group of residents can result in missing some resident's views (Heffron et al., 2015; Jenkins et al., 2016; McCauley et al., 2013; Sovacool & Dworkin, 2014; Walker & Day, 2012) which may cause those residents a feeling of degradation (Schlosberg, 2004). This, in turn, could lead to a reduction in the perceived fairness among those excluded (Schlosberg, 2004), potentially leading to a decrease in their acceptance of the wind park. Recognition justice rules are hypothesized to have a significant effect on both, recognition fairness judgment and the acceptance of the wind park.

Current research

This explorative research examines whether the fairness judgment dimensions can be distinguished from each other. Once the factor analyses reveal the actual variable constellations, the relationships between justice rules, fairness judgments, and acceptance will be tested. The dimensional nature of fairness judgments will be investigated to determine whether distinct dimensions emerge. If separable dimensions are identified, hypotheses will be tested for each. If the fairness judgement dimensions cannot be distinguished, the influence of each justice rule dimension on overall fairness judgments and subsequent acceptance of the wind park will be examined. It is expected that the fairness judgment(s) mediate the relationships between the dimensions of the justice rules and the acceptance of wind parks, Figure 1 illustrates this. Thus, the score on the fairness judgment(s) may explain the influence of the justice rules on wind park acceptance (Ballen & Salehi, 2021; Taber, 2018; Zhao et al., 2010).

> H1: Distributional justice rules have a positive effect on the distributional fairness judgment, and in turn, the distributional fairness judgement is expected to have a positive effect on the acceptance of wind parks.

H2: Procedural justice rules have a positive effect on the procedural fairness judgment, and in turn, the procedural fairness judgment is expected to have a positive effect on the acceptance of wind parks.

H3: Interpersonal justice rules have a positive effect on the interpersonal fairness judgment, and in turn, the interpersonal fairness judgment is expected to have a positive effect on the acceptance of wind parks.

H4: Informational justice rules have a positive effect on the informational fairness judgment, and in turn, the informational fairness judgment is expected to have a positive effect on the acceptance of wind parks.

H5: Recognition justice rules have a positive effect on the recognition fairness judgment, and in turn, the recognition fairness judgment is expected to have a positive effect on the acceptance of wind parks.

Figure 1

Justice rules mediate the relationship between acceptance of the wind park and fairness judgments.

Method

Participants

Out of the 311 participants who began the survey, 109 (35%) were deemed usable for the analysis. The primary reasons for the exclusion of 75% of participants were that four did not consent to participate and 134 had too many missing values because they did not complete all questions (at least 76% of the survey had to be completed to reach the fairness judgments). Lastly, 64 participants had to be removed as they had too many missing values.

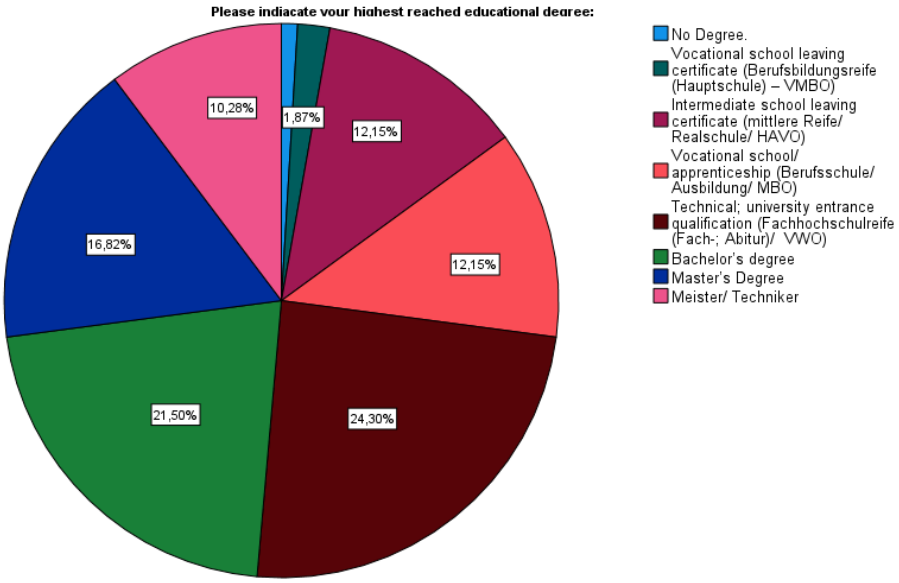
In some special cases, after manually scanning the scores, a maximum of 45 missing values was accepted. That was done because even if participants had incomplete responses in some areas, they sometimes provided complete scores for fairness judgments or justice rules dimensions. Therefore, the data of such participants was still considered usable for analysis. The remaining participants had some missing values as well, which led to some variables having lower sample sizes than others. Tables 1 to 7 show the actual answers given *(N)* for each item.

The ages of the participants ranged from 20 to 79 years. They had an average age of $M = 46.09$ ($SD = 14.65$). 33% of the participants were female and 65% male, while 2% did not want to indicate their gender. A third gender ("diverse") was provided but no participant indicated this choice. 91,7% of the sample were currently living in Germany, 4,6% in the Netherlands, and only 1.8%, namely two participants, lived in another country. One was from Wales and one from Italy. Another two participants (1.8%) did not want to indicate their home country. The cities and areas for which online or physical survey invitations were distributed are listed in Appendix A.

Figure 2 shows the descriptives of the highest reached educational degree of participants, which were quite diverse. Most participants had lower education than a bachelor's ($N = 41$), 23 completed a bachelor's degree, 18 completed a master's degree, thirteen completed an apprenticeship, and eleven completed a "Meister/ Techniker" which is a certification in Germany that signifies an advanced level and expertise in a job field, one participant had no degree and two participants refused to answer.

Figure 2

Educational Status of participants



86.2 % of participants indicated that they see the wind park from their home, while 47.7 % said that they also hear noises from it. 84.4 % of the participants lived in the area when the wind park decision and implementation took place. Only 19.3 % of the participants indicated that they profit from the wind park, while 44 % indicated that others profit from it while they do not. It seems that it is difficult to judge for the participants if and how other residents are affected negatively or differently than themselves as 48.6 % answered "I don't know." to this question, while 21.1 % indicated "No." and 30.3 % indicated "Yes.".

Design and procedure

This research consists of perceived distributional-, procedural-, recognition-, interpersonal-, and informational justice rules, as well as distributional-, procedural-, recognition-, interpersonal-, and informational fairness judgments as independent variables and acceptance of the wind park as the dependent variable. Through the cross-sectional design of the research, the questionnaire captured the thoughts of people living next to wind parks, specifically how fair they perceive(d) various aspects of the park and if they accept it or not. Before the final questionnaire was released, a pilot test was performed with two participants living near a wind park, which led to some adaptations. Appendix B contains the procedure for the pilot test.

During the sampling, participants received a link that brought them to the questionnaire on Qualtrics.com. To take part in the research, they needed to sign an informed consent form (see Appendix C). Additionally, the study required participants to reside near a

wind park and be at least 18 years old. If that was not the case, the survey would end for them at this point. In case they were suitable for taking part in the survey and accepted the informed consent, they were asked to indicate their age, gender, and educational level, and some information about their living situation next to the wind park was collected. Next, they were guided through the survey (see Appendix D) which is explained in the "Measures" section below. Upon completion of the measurements outlined below, the researcher thanked the participants for their participation and provided them with the researcher's email address for future updates on the survey findings.

The survey was provided to participants via e-mail, WhatsApp, Facebook, LinkedIn, X (former Twitter) and Instagram online (see Appendix E) or physically through a barcode on a flyer (see Appendix F) which was displayed in communities (20 flyers placed in local shops like in Appendix G) or placed in the mailboxes of residents near a wind park by the researcher (90 flyers in mailboxes (Appendix H) where a wind park was located).

Measures

The sections below explain the items for the justice rules, fairness judgments, and acceptance measures. Appendix D offers a more detailed version with a German translation. Some measurements from existing questionnaires were adapted and new ones were created specifically for the context of wind parks. Next to the scale, optional open questions about fairness and details about the wind park were added, aimed to help understanding the reasons behind participant's scores.

An explorative factor analysis was conducted to explore the underlying structure of the acceptance scale. The principal axis component analysis was based on the criterion "Eigenvalue greater than 1" with a varimax rotation. For each of the following factor analyses, the command "/MISSING PAIRWISE" was used to limit the loss of information as this command also includes the score of participants that have missing values in their record. The internal consistency reliability for each scale was assessed using Cronbach's alpha coefficient.

Distributional fairness measures

The items measuring distributional justice rules were created based on already existing measurements by Walker and Baxter (2017), Porsius et al. (2015) and Leer Jørgensen et al. (2020). The scale contains six items assessing how the benefits and negative impacts of the

wind park, as well as compensation for the wind park, were distributed among residents. A 7-point Likert scale was used, ranging from 1 “strongly disagree” to 7 “strongly agree”. Examples of these items are “The benefits of the wind park in my community are distributed evenly between residents living near it.” and “All residents are adequately compensated for the negative impact (e.g., nuisance from noise or shadow) of the wind park by the other stakeholders and/ or decision-makers of the wind park.”.

Based on the pilot test (see Appendix B) three items measuring how the costs of the wind park were divided were provided to participants only in case they indicated that they covered any financial costs of the wind park. However, these items were excluded from the analysis because only three participants responded to them.

The three distributional fairness judgment measurements are based on Huijts et al. (2012), Perlaviciute and Steg (2014) and Steg et al. (2015) and were assessed through a 7-point Likert scale. An example is: “The positive and negative outcomes of the wind park are overall fairly distributed.”.

An explorative factor analysis was conducted to explore the underlying structure of the acceptance scale. The principal axis component analysis was based on the criterion “Eigenvalue greater than 1” with a varimax rotation. For each of the following factor analyses, the command “/MISSING PAIRWISE” was used to limit the loss of information as this command also includes the score of participants that have missing values in their record. The internal consistency reliability for each scale was assessed using Cronbach's alpha coefficient. This type of analysis was performed for each of the following scales.

The results of the principal axis analysis for distribution justice rules suggests the presence of three factors, as detailed in Table 3 below. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.680, indicating a mediocre level of sampling adequacy (Kaiser, 1974). Bartlett's Test of Sphericity was significant, $\chi 2(21) = 157.65$, $p = <.001$, suggesting that the correlations among items were sufficient for conducting factor analysis (Bartlett, 1954).

Table 1

Factor loadings distributional justice rules (Rotated Factor Matrix with Varimax).

Item	Factor loadings			*N*	Label
	1	2	3		
The benefits of the wind park in my community are distributed evenly between residents living near to it.	.87	-.04	.31	80	distribution of benefits
The benefits of the wind park in my community are distributed evenly between residents, other stakeholders and/or decision-makers of the wind park.	.85	.09	.20	74	
Those who invested more in the wind park also get more financial benefits from it.	.06	-.01	.38	80	deleted
The negative impacts (e.g., nuisance from noise or shadow) affect residents equally.	-.10	.83	.03	95	distribution of negative impacts
The negative impacts (e.g., nuisance from noise or shadow) of the wind park in my community are distributed evenly between residents and other stakeholders.	.18	.81	-.01	94	
All residents are adequately compensated for the negative impact (e.g., nuisance from noise or shadow) of the wind park by the other stakeholders and/ or decision-makers of the wind park.	.58	.07	.64	72	deleted
Those who experience more negative impacts from the wind park (e.g., nuisance from noise or shadow) than others also receive more benefits from the park (shares or other financial benefits).	.30	.02	.79	66	compensation for negative outcomes

The principal axis factoring analysis revealed that three factors had eigenvalues greater than 1. The first two items measure how fair participants perceive the distribution of benefits from the wind park among residents, stakeholders and/or decision-makers and had the highest loadings on a factor that was subsequently labelled as “distribution of benefits”. It had an eigenvalue of 3.02, explaining 43.2 % of the variance. The variable distribution of benefits was calculated by averaging the first two items (N = 71, M = 3.05, SD = 1.94, α =.88).

Items four and five measured how the negative impacts of the wind park are distributed among residents and had the highest factor loadings on a factor that was subsequently labelled “distribution of negative impacts”. It had an eigenvalue of 1.65, explaining 23.6 % of the variance. The variable distribution of negative impacts was calculated by averaging items four and five (N = 93, M = 3.23, SD = 1.73, α = .79).

The last item measured how fair residents find the distribution of benefits in relation to the negative impacts of the wind park and had the highest factor loading on a factor that was subsequently labelled as “compensation for negative outcomes”. It had an eigenvalue of 1.09, explaining 14.3 % of the variance. The variable compensation for negative outcomes was

calculated through the last item of distributional justice (N = 94, M = 2.97, SD = 1.88). As this variable has only one item, Cronbach's alpha could not be computed.

The third item did not load significantly onto any of the three factors, so it was excluded from the analysis as suggested by Costello and Osborne's (2005) article on factor analysis. It measured whether residents who invested more in the wind park also received greater benefits. However, due a mistake the word "residents" was not included, which could have led to confusion, making participants think the question was only about investors. Additionally, the sixth item showed similar loadings on both the first and third factors, making it indistinguishable from the others. Based on Costello and Osborne's (2005) statistical advice, this item was removed too.

Procedural fairness measures

The procedural fairness judgment and the procedural justice rules were created based on Liu et al. (2020), Perlaviciute and Squintani (2020), Evensen et al. (2018), Coenen (2009) and Stern and Dietz (2008). The scale contains eleven items that assess how residents were involved in the decision-making process about the wind park. It was assessed how they could participate, whether their opinions were considered, and how transparent decision-makers were about the implementation of the wind park. A 7-point Likert scale was used, ranging from 1 "strongly disagree" to 7 "strongly agree". Examples of procedural justice rules items are "Residents could express their opinion to the decision maker during the decision-making process about the project." and "The decision-makers carefully balanced opinions and viewpoints without being prejudiced.". The measurement items for procedural fairness judgment are: "The procedure of the implementation of the wind park was fair." and "The decision-making for the implementation of the wind park was fair.".

Firestone et al. (2020) found that while residents near offshore wind parks could participate in implementation discussions, some chose not to participate for various reasons. Therefore, to assess the quality of the involvement and opinions of participants, open questions were added to enable a better interpretation of individual participant scores and to gather deeper insights for practical implications. An example is the following: "Did you take part in a vote (or anything comparable) about the wind park? If yes, shortly mention how that took place.". Appendix D provides more information on the items and answer options.

The results of the principal axis analysis for procedural justice rules suggested the existence of one factor, as detailed in Table 3 below. The Kaiser-Meyer-Olkin (KMO)

measure of sampling adequacy was 0.848, indicating a meritorious level of sampling adequacy (Kaiser, 1974). Bartlett's Test of Sphericity was significant, $\chi 2(55) = 890.79$ $p = <.001$, suggesting that the correlations among items were sufficient for conducting factor analysis (Bartlett, 1954). The analysis yielded one primary component with an eigenvalue of 8.49, explaining 77.2 % of the total variance. One factor for procedural justice rules was confirmed. The variable procedural justice rules was calculated by averaging the eleven items ($N = 51$, $M = 3.80$, $SD = 1.93$, $\alpha = .97$).

Table 2

Factor loadings procedural justice rules (1 factor extracted).

Item	Factor loadings	*N*
Residents could express their opinion to the decision maker during the decision-making process about the project.	.83	86
The decision-makers listened attentively to the residents that were affected by the wind park.	.89	84
Opinions of residents about the wind park were sufficiently considered in the decision-making process.	.92	88
Local interests were sufficiently taken into account in the decision-making process for the construction of the wind farm.	.83	91
The decision-makers carefully balanced opinions and viewpoints without being prejudiced.	.94	82
The decision-making process was free of bias.	.88	79
The decision-makers represented the residents in terms of gender, age, origin and socio-economic background.	.84	77
The decision-makers had diverse backgrounds that represented the diversity of residents affected by the wind park.	.85	78
The decision-making process was transparent to me.	.91	90
The decision-makers were very open and clear about how they made the decisions about the wind park project.	.88	89
The decisions that led to the implementation of the wind park were made based on complete and balanced information.	.85	81

Interpersonal fairness measures

The interpersonal fairness judgment and interpersonal justice rules are based on Colquitt (2001) and Colquitt et al. (2001). As suggested by Colquitt's measurement (2001), the first item of interpersonal fairness is respect, and the other two are dignity and politeness, which people perceive in the treatment of others. Although this measurement was devised a long time ago, it did not become outdated as organizational literature continues to use its items as a standard for measuring interpersonal fairness (e.g., Brockner et al., 2020). Hence,

this variable was tested in the energy transition context. The items were tailored to the wind park scenario. A 7-point Likert scale was used, ranging from 1 “strongly disagree” to 7 “strongly agree”. An example of interpersonal justice rules is: “The stakeholders and/or decision-makers of the wind park in my community communicated with residents in a friendly manner.” an example of the interpersonal fairness judgment is: “The stakeholders of the wind park treated all residents fairly.”.

The results of the principal axis analysis for interpersonal justice rules suggested the existence of one factor, as detailed in Table 3 below. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.849, indicating a meritorious level of sampling adequacy (Kaiser, 1974). Bartlett's Test of Sphericity was significant, $\chi 2(6) = 450.44$, $p = <.001$, suggesting that the correlations among items were sufficient for conducting factor analysis (Bartlett, 1954). The analysis yielded one primary component with an eigenvalue of 3.73, explaining 93.2 % of the total variance. The analysis identified a single factor for interpersonal justice rules. The variable interpersonal justice rules was calculated by averaging the four items ($N = 76$, $M = 5.03$, $SD = 1.83$, $\alpha = .97$).

Table 3

Factor loadings interpersonal justice rules (1 factor extracted).

Item	Factor loadings	*N*
The stakeholders and/or decision-makers of the wind park in my community treated all people in a polite manner.	.92	81
The stakeholders and/or decision-makers of the wind park in my community communicated with residents in a friendly manner.	.97	85
The stakeholders and/or decision-makers of the wind park in my community treated all people with dignity.	.96	77
The stakeholders and/or decision-makers of the wind park in my community treated all people with respect	.95	79

Informational fairness measures

The informational fairness judgement and the informational justice rules are based on the literature of Bal et al. (2023), Besley (2010), Devine-Wright (2011), Motosu and Maruyama (2016) and Porsius et al. (2015) and were adopted to the energy transition context. The items measure the timing, content, quality and transparency of the information residents perceived regarding the wind park.

A 7-point Likert scale was used, ranging from 1 “strongly disagree” to 7 “strongly agree”. An example of informational justice rules is: “Important information was provided at

the right time and before major changes of the wind park were discussed or implemented." and an example of the informational fairness judgment is: "Every resident had a fair opportunity to receive the information on the wind park project.".

The results of the principal axis analysis for informational justice rules suggested the existence of one factor, as detailed in Table 4 below. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.91, indicating a marvellous level of sampling adequacy (Kaiser, 1974). Bartlett's Test of Sphericity was significant, $\chi^2(15) = 480.84$, $p = < .001$, suggesting that the correlations among items were sufficient for conducting factor analysis (Bartlett, 1954). The analysis revealed that one factor had an eigenvalue of 5.05, explaining 84.31 % of the variance. Based on the criterion that the eigenvalue is above one, one factor is found for informational justice rules. The variable informational justice rules was calculated by averaging the six items ($N = 68$, $M = 4.06$, $SD = 1.96$, $\alpha = .96$).

Table 4

Factor loadings informational justice rules (1 factor extracted).

Item	Factor loadings	*N*
Stakeholders and/or decision-makers of the project provided us with understandable information about every step of the wind park project.	.92	93
Stakeholders and/or decision-makers of the project provided us with relevant information about every step of the wind park project.	.91	92
Important information was provided at the right time and before major changes of the wind park were discussed or implemented.	.89	89
The information that we received from the stakeholders and/or decision-makers was in line with our expectations.	.92	84
If necessary, further information was available on request.	.85	87
The stakeholders and/or decision-makers of the wind park were the first to communicate or pass on the relevant information on the wind farm before it was made public by other persons.	.89	77

Recognition fairness measures

The recognition fairness judgment and justice rules are based on the literature from Walker and Day (2012), Schlosberg (2004), Jenkins et al. (2016), McCauley et al. (2013), Sovacool and Dworkin (2014), Heffron et al. (2015) and Thomas et al. (2020). Perceived recognition fairness is yet to be measured quantitatively in the energy transition context, and the items were newly created for this research. A 7-point Likert scale was used, ranging from 1 "strongly disagree" to 7 "strongly agree". An example of recognition justice rules is: "All residents near the wind park had an equal opportunity to take part in the discussions about the wind park." an example of the informational fairness judgment is: "All residents near the

wind park, irrespective of their social, cultural, ethnic, racial, economic background, and gender, were fairly acknowledged during the whole implementation of the wind park.".

The results of the principal axis analysis suggested the presence of two factors, as detailed in Table 5 below. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.73, indicating a middling level of sampling adequacy (Kaiser, 1974). Bartlett's Test of Sphericity was significant, $\chi^2(36) = 578.50$, $p = <.001$, suggesting that the correlations among items were sufficient for conducting factor analysis (Bartlett, 1954).

Table 5

Factor loadings recognition justice rules (Rotated Factor Matrix with Varimax) revealed two factors.

Item	Factor loadings		*N*	*Label*
	1	2		
Obtaining information about the wind park project was easy for every resident who wanted to do so.	.78	.32	92	inclusive and
All residents near the wind park were treated equally by all other stakeholders and/or decision-makers.	.86	.19	77	equitable community
All residents near the wind park had equal access to the benefits of the wind park if they wanted to.	.78	.30	83	engagement
All residents near the wind park had an equal opportunity to take part in the discussions about the wind park.	.78	.19	92	
Residents who are socially disadvantaged for individual reasons (e.g., due to old age, financial situation, health issues) or belonging to a minority group were recognized in the decision making of the wind park project.	.80	.40	69	
Residents who are socially disadvantaged for individual reasons (e.g., due to old age, financial situation, health issues) or belonging to a minority group were taken into account in the positive outcomes of the wind park project.	.79	.41	68	
Residents who are socially disadvantaged for individual reasons (e.g., old age, financial situation, health issues) or who belong to a minority were taken into account in the negative outcomes of the wind farm.	.75	.35	69	
Residents with low financial means were also given the opportunity to financially benefit from the wind park.	.28	.92	73	recognition of lower-income
Residents with a lower income could financially benefit from the wind park as much as those with a higher income.	.30	.77	71	residents

The principal axis factoring analysis revealed that two factors had eigenvalues greater than 1. Factor 1 has an eigenvalue of 6.19 explaining 68.7 % and factor 2 has an eigenvalue of 1.05, explaining 11.7 % of the variance, respectively. Items one to seven measured the extent to which the wind park project ensured easy access to all fairness dimensions (distributional, procedural, interpersonal and information fairness) including the recognition and consideration of socially disadvantaged individuals in both positive and negative outcomes. All of these items had their highest factor loading on a factor that was subsequently labelled "inclusive and equitable community engagement". This variable was calculated by averaging the first seven items ($N = 49$, $M = 3.65$, $SD = 1.84$, $\alpha = .94$). Items eight and nine measured

whether those with lower financial means had the same opportunity to benefit from the wind parks as those with higher financial means. All of these items had their highest factor loading on a factor that was subsequently labelled “recognition of lower-income residents”. The variable recognition of lower-income residents was calculated by averaging the last two items (N = 70, M = 2.99, SD = 1.91, α = .90).

Acceptance measures

Lastly, acceptance of the wind park was measured based on Huijts et al.’s (2014) definition and Walter’s (2014) measurement. Walter’s (2014) measurement was already used in research and was slightly adapted to the context of this study. It measured whether residents accept the wind park or not. A 7-point Likert scale was used, ranging from 1 “strongly disagree” to 7 “strongly agree”. Two examples for the acceptance items are: “Do you think the implementation of the wind park project in your community was acceptable or unacceptable?” and: “Did you support or oppose the wind park project before its implementation?”.

The results of the principal axis analysis suggested the existence of one factor, as detailed in Table 6 below. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.84, indicating a meritorious level of sampling adequacy (Kaiser, 1974). Bartlett's Test of Sphericity was significant, $\chi 2(10) = 437.48$, $p = <.001$, suggesting that the correlations among items were sufficient for conducting factor analysis (Bartlett, 1954). The results of the principal axis analysis with varimax rotation showed the presence of one factor. The analysis yielded one primary component with an eigenvalue of 4.08, explaining 81.6 % of the total variance. The dependent variable acceptance of the wind park was calculated by averaging the five items (N = 85 , M = 4.52, SD = 1.69, α = .76).

Table 6

Factor loadings acceptance of wind park (1 factor extracted).

Item	Factor loadings	*N*
Do you think the implementation of the wind park project in your community was acceptable or unacceptable?	.82	98
Do you have a positive or negative opinion about the wind park in your community?	.93	98
Did you support or oppose the wind park project before its implementation?	.88	88
Did you support or oppose the wind park project during its implementation?	.94	88
Do you currently support or oppose the wind park project today?	.79	98

Fairness judgments – overall factor analysis

The suitability of the data for factor analysis was assessed prior to conducting the principal component analysis. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.88, exceeding the recommended threshold of 0.6, indicating that the sample was adequate for factor analysis (Kaiser, 1974). Bartlett's Test of Sphericity was significant, $\chi 2(91) = 1545.95$, $p = <.001$, suggesting that the correlations among items were sufficiently large for principal component analysis (Bartlett, 1954). The results of the principal axis analysis with varimax rotation showed the presence of one factor. The analysis yielded one primary component with an eigenvalue of 11.74, explaining 83.8 % of the total variance within the variable. The factor loading can be found in Table 1 below.

Table 7

All fairness judgments' factor loadings revealed that they all load on one factor.

Initial Construct	Item	Factor loadings	N
Distributional fairness judgments	The positive and negative outcomes of the wind park are overall fairly distributed.	.95	82
	The positive and negative outcomes of the wind park are fairly distributed among residents and other stakeholders.	.94	76
	All the outcomes of the wind park are fairly distributed among all people somehow affected by the wind park.	.91	82
Procedural fairness judgments	The procedure of the implementation of the wind park was fair.	.93	85
	The decision-making for the implementation of the wind park was fair.	.88	91
Interpersonal fairness judgments	The social interaction of the stakeholders of the wind park with residents was fair.	.89	89
	The stakeholders of the wind park treated all residents fairly.	.90	75
	The communication of the stakeholders towards residents was fair.	.91	75
Informational fairness judgments	The information provision on the wind park project was fair.	.91	76
	Every resident had a fair opportunity to receive the information on the wind park project.	.93	75
	The content of the information we received about the wind park was a fair representation of the information we needed.	.93	75
Recognition fairness judgments	All residents near the wind park, irrespective of their social, cultural, ethnic, racial, economic background, and gender, were fairly acknowledged during the whole implementation of the wind park.	.86	89
	During the decision-making process for a potential wind park, all residents were given fair consideration regardless of their social, cultural, ethnic, and economic background or gender.	.86	86
	All residents near the wind park, irrespective of their social, cultural, ethnic, racial, economic background, and gender, were fairly acknowledged in the distribution of the positive and negative outcomes of the wind park.	.83	87

The factor analysis of the overall fairness items revealed that the categories of fairness—distributional, procedural, interpersonal, informational, and recognition fairness judgments—are not distinct from one another. Instead, the analysis identified a single underlying factor that encompasses all these fairness dimensions, representing an overall fairness judgment. As a result, the research approach was adjusted to focus on this unified concept of fairness. Subsequently, the study examined the influence of the justice rules (distributional, procedural, interpersonal, informational, and recognition) on the subsequently labelled overall fairness judgment, and ultimately on acceptance. Consequently, the variable fairness judgment was calculated by averaging the 14 items (N = 51, M = 4.31, SD = 1.96, α = .98).

Data analysis

The data was imported as an SPSS file from Qualtrics to perform the analysis with the statistical program SPSS. This method section has already presented descriptive statistics, factor analyses, and reliability analysis measured by Cronbach's alpha. To test hypotheses two to six and check for mediation effects, a linear regression was run for each hypothesis with two independent variables, the respective justice rules component and fairness judgment, and the dependent variable acceptance of the wind parks. Each case was assumed to be mediated by the fairness judgment.

Results

Correlations

Table 8

Correlations between explored study variables.

	Procedural justice rules	Informational justice rules	Interpersonal justice rules	Distribution of benefits	Distribution of negative impacts	Compensation for negative outcomes	Inclusive and equitable community engagement	Recognition of lower income residents	Fairness judgements
Informational justice rules	.90**	1							
Interpersonal justice rules	.77**	.86**	1						
Distribution of benefits	.79**	.73**	.57**	1					
Distribution of negative impacts	-.14	.08	-.12	.08	1				
Compensation for negative outcomes	.60**	.61**	.43**	.69**	.12	1			
Inclusive and equitable community engagement	.91**	.87**	.76**	.76**	-.06	.50**	1		
Recognition of lower income residents	.64**	.57**	.51**	.61**	.06	.57**	.59**	1	
Fairness judgements	.89**	.92**	.91**	.67**	.11	.63**	.87**	.64**	1
Acceptance	.77**	.75**	.81**	.64**	-.04	.53**	.79**	.44**	.85**

**. *Correlation is significant at the 0.01 level (2-tailed)*

In line with hypothesis one, the correlations between the distribution of benefits (factor one of distributional justice rules), fairness judgments, and acceptance were significant. The correlations between the distribution of negative impacts (second factor) and fairness judgment as well as acceptance are insignificant. The correlations between compensation for negative outcomes (third factor) and fairness judgment, as well as acceptance, are significant. The distribution of benefits correlated significantly with all variables seen in Table 8 except the distribution of negative impacts. The distribution of negative outcomes had no significant relationship with any of the variables in the sample. Compensation for negative outcomes had significant correlations with all variables seen in Table 8 except the distribution of negative outcomes.

In line with Hypothesis two, the correlations between procedural justice rules and fairness judgments as well as acceptance were significant. Table 8 shows a significant correlation between procedural justice rules, interpersonal and informational justice rules,

benefit distribution, compensation for negative outcomes, inclusive and equitable community engagement, and recognition of lower-income residents. There was no significant correlation between procedural justice rules and the distribution of negative impacts.

In line with Hypothesis three, the correlations between interpersonal justice rules and fairness judgments as well as acceptance were significant. Interpersonal justice rules correlated significantly with all other variables seen in Table 8 instead of the distribution of negative outcomes.

In line with hypothesis four, the correlations between informational justice rules and fairness judgments as well as acceptance were significant. Informational justice rules correlated significantly with all other variables seen in Table 8 instead of the distribution of negative outcomes.

In line with hypothesis five, the correlations between inclusive and equitable community engagement (factor one of recognition justice rules) and fairness judgments as well as acceptance were significant. Also, the correlations between recognition of justice rules' second factor, recognition of lower-income residents, fairness judgments, and acceptance were significant. Inclusive and equitable community engagement and recognition of lower-income residents had significant correlations with all variables seen in Table 8 except the distribution of negative outcomes.

Hypothesis testing

To test hypothesis one, which says that distributional justice rules have a positive effect on fairness judgment, and in turn, fairness judgement on acceptance, a multiple regression analysis was performed (N = 37). The variable distribution of benefits was a significant predictor of fairness judgement (B = .62, p = < .001), while the distribution of negative impacts (B = .06, p = .661) and the compensation for negative outcomes (B = .09, p = .461) had no significant influence. Another two multiple regression analyses were conducted to examine the predictors of acceptance (N = 37). In the first model, the distribution of benefits was a significant predictor of acceptance (B = .53, p = <.001), while the distribution of negative impacts (B = -.09, p = .496) and the compensation for negative outcomes (B = .04, p = .730) had no significant influence. In the second model, which included the expected mediator fairness judgment, this variable emerged as a significant predictor (B = .68, p = <.001), while the previously significant effect of the distribution of benefits became insignificant (B = .11, p = .315). This demonstrated that overall fairness

perceptions fully mediate the relationship between the distribution of benefits and acceptance (Ballen & Salehi, 2021; Taber, 2018; Zhao et al., 2010). A Sobel test was conducted to further examine the mediation effect. The Sobel test was significant ($z = 3.47$, $p = <.001$). This result confirms hypothesis one, which suggests that fairness judgments mediate the relationship between the distribution of benefits and acceptance. All of the tests for the variables distribution of negative impacts and compensation were insignificant, and the hypothesis needs to be rejected.

An example quote towards distributional justice that describes how compensation can positively influence the acceptance of a wind park is the following: “The local community has a high income from the wind park, which has enabled a large children's playground to be built and a welcome bonus to be given to parents for every newborn child.”. This participant (A) had high missing values for most of the other variables but had the highest possible mean score – 7 – on the distribution of benefits and a comparable high score on acceptance. Another participant (B) indicated they got a “Payment” as compensation. This person had a score of five on the distribution of benefits and rather high scores on fairness, judgment, and acceptance (see Appendix I).

To test hypothesis two, which says that procedural justice rules have a positive effect on fairness judgment, and in turn, fairness judgement on acceptance, a multiple regression analysis was performed ($N = 33$). Procedural justice rules was a significant predictor of fairness judgments ($B = .90$, $p = <.001$). Another two multiple regression analyses ($N = 33$) were conducted to examine the predictors of acceptance. In the first model, procedural justice rules were a significant predictor of acceptance ($B = .67$, $p = <.001$). In the second model, the expected mediator fairness judgment emerged as a significant predictor ($B = .68$, $p = <.001$), while the previously significant effect of procedural justice rules became non-significant ($B = .05$, $p = .755$). This showed that the relationship between procedural justice rules and acceptance is fully mediated by overall fairness perceptions (Ballen & Salehi, 2021; Taber, 2018; Zhao et al., 2010). Furthermore, the Sobel test was significant ($z = 3.54$, $p = <.001$) which proves the mediation as well. Hypothesis two can be confirmed.

The following quote towards procedural justice rules shows how a negative perception of them can influence fairness judgment and acceptance. The participant (C) at hand stated: “It was decided solely by the municipal council, which is elected by the citizens. There was no citizens' assembly before the election and citizens were unable to influence the decision

afterwards." This participant scored a 3.3 on the procedural justice rules and had a rather low score on fairness, judgment, and acceptance. Overall, this person scores below the sample's mean on the three variables (see Appendix J).

To test hypothesis three, which says that interpersonal justice rules have a positive effect on fairness judgment, and in turn, fairness judgement on acceptance, a multiple regression analysis was performed (N = 49). The variable interpersonal justice rules was a significant predictor of fairness judgments (B = .97, p = <.001). Another two multiple regression analyses (N = 46) were conducted to examine the predictors of acceptance. In the first model, interpersonal justice rules was a significant predictor of acceptance (B = .75, p = <.001). In the second model, fairness judgment emerged as a significant predictor (B = .57, p = .001), while the previously significant effect of interpersonal justice rules became insignificant (B = .19, p = .283). This suggests that the relationship between interpersonal justice rules and acceptance is fully mediated by overall fairness perceptions (Ballen & Salehi, 2021; Taber, 2018; Zhao et al., 2010). Furthermore, the Sobel test was significant (z = 3.36, p = <.001) which proves the mediation as well. The results confirm hypothesis three. An open comment on interpersonal justice rules is presented after the analysis of recognition justice rules.

To test hypothesis four, which says that informational justice rules have a positive effect on fairness judgment, and in turn, fairness judgement on acceptance, a multiple regression analysis was performed (N = 46). The variable informational justice rules was a significant predictor of fairness judgments (B = .92, p = <.001). Two more multiple regression analyses (N = 46) were conducted to examine the predictors of acceptance. In the first model, informational justice rules was a significant predictor of acceptance (B = .67, p = <.001). In the second model, fairness judgment emerged as a significant predictor (B = .74, p = <.001), while the previously significant effect of informational justice rules became insignificant (B= -.01, p = .949). This suggests that the relationship between informational justice rules and acceptance is fully mediated by overall fairness perceptions (Ballen & Salehi, 2021; Taber, 2018; Zhao et al., 2010). Furthermore, the Sobel test was significant (z = 4.01, p = <.001) which proves the mediation as well. The results confirm hypothesis four.

The following participant's open comment and its scores on informational justice rules and acceptance exemplify what happens when informational fairness is not perceived: acceptance of the wind park is considerably lower than the sample mean score (see Appendix

K). Participant D said: “As residents, we have not even been consulted or informed about anything. At the same time, the wind farm will be rebuilt and extended soon. Thank you for the comprehensive survey.”

To test hypothesis five, which says that recognition justice rules have a positive effect on fairness judgment, and in turn, fairness judgement on acceptance, a multiple regression analysis was performed (N = 34). The variable inclusive and equitable community engagement was a significant predictor of fairness judgment (B = .82, p = <.001), while the variable recognition of lower-income residents (B= .19, p = .066) had no significant effect compared to fairness judgment. Then, the predictors of acceptance were investigated. In the first model (N = 34) without fairness judgment, the variable inclusive and equitable community engagement was a significant predictor of acceptance (B = .75, p = <.001), while the variable recognition of lower-income residents had no significant effect (B = -.03, p = .749). In the second model (N = 34), fairness judgment became the significant predictor (B = 0.68, p = < .001) while the previously significant variable inclusive and equitable community engagement became non-significant (B = .19, p = .226). This proves fairness judgments to be a mediator in the relationship between inclusive and equitable community engagement and acceptance of a wind park (Ballen, & Salehi, 2021; Taber, 2018; Zhao et al., 2010). For this relationship, the Sobel test was significant too (z = 3.51, p = <.001) which proves mediation as well. Hypothesis five can be confirmed for inclusive and equitable community engagement, but not for recognition of lower-income residents.

The following quote from Participant E is an example of how a treatment that is perceived as unfair can influence fairness judgment and acceptance: “As a local resident, you were treated like a second-class citizen by the district building authority...when the location was being determined, no thought was given to the local boundaries in order to ensure the greatest possible distance from all affected residents”. The score on interpersonal, informational, and recognition justice rules of the participant was one, as it was for fairness judgment, and acceptance. Being treated as a “second-class citizen by the district building authority” seemed to have a negative impact on this participant’s judgment of fairness and acceptance which exemplifies the significant effect of interpersonal justice. The participant also stressed that it was not made sure that all affected residents received the greatest possible distance from the wind park, which may be a hint at the significant influence of justice rules. This negative example was chosen because it clearly shows how an unfair perception of implementation and treatment can influence the acceptance of a wind park. It seems like this

participant was really upset about how residents of the respective wind park were treated, and this was mirrored in the low scores on justice rules, fairness judgment, and acceptance of the wind park (see Appendix L).

Discussion

This study investigated if and how the perceived fairness of a wind park influences its acceptance among residents. It was explored whether the fairness dimensions (distributional, procedural, recognition, informational, and interpersonal), as constructed in the theoretical framework, are distinct from each other or if they form one overall factor. Furthermore, the investigation probed whether literature-based justice rules impact fairness judgment, which in turn shapes the acceptance of wind parks. The analysis of the data set revealed that the overall fairness factors are not distinct from each other as they are highly intercorrelated. The factor analyses showed that the literature-based characteristics of procedural-, interpersonal- and informational justice rules do measure these factors as expected. Furthermore, all three also influence fairness judgement which in turn influences acceptance. Contrary, the characteristics of distribution- and recognition justice rules were subsequently adapted based on results of the factor analyses. For both, the adapted version of justice rules had a significant impact on fairness judgment and acceptance of wind parks. The significant influence that each justice rules dimension had on the fairness judgment supports the fairness framework from Cropanzano et al. (2015) who were the first to introduce the concepts of justice rules and fairness judgment and their relationship.

The subsequently calculated variable fairness judgment significantly influences the acceptance of wind parks and is a mediator in all five relationships between the justice rules and the acceptance of wind parks. Thus, the results stressed the importance of perceived fairness among residents regarding the implementation of wind parks. Overall, it was shown that residents are indeed more likely to accept sustainable energy measurements, like a wind park, if they perceive them as fair, as expected by past research (Clayton et al., 2016; Evensen et al., 2018; Gross, 2007). The findings of this study can help improve future implementation plans for new energy projects by increasing their acceptance among residents. This can be achieved by incorporating the aspects of all five justice rules into the implementation of wind parks, as explained in the following paragraphs. Additionally, the newly created measurement for justice rules, fairness judgement and acceptance of wind parks was tested and revised which made it a valuable tool for future research in the context of perceived fairness in the energy transition context.

Additionally, the open comments discussed support the critical role that fairness perceptions play in the acceptance of wind parks. Participants expressed whether they perceived the implementation process, treatment of residents, or distribution of benefits as fair, which was reflected in their scores on the corresponding justice dimensions, fairness judgments, and acceptance measures. These examples illustrate how perceptions of fair or unfair treatment can significantly impact the acceptance of new energy projects, highlighting the importance of a fair implementation process.

Fairness judgement dimensions in the energy transition context

The explorative factor analysis revealed that the fairness judgment dimensions (distributional, procedural, interpersonal, informational, and recognition) are all loading on the same underlying factor (overall fairness judgment) and therefore are not distinct from each other. Walker and Baxter (2017) already questioned the interdependence of distributional and procedural fairness, which this research supports because the variables were highly intercorrelated. In this sample, fairness judgment mediates all the relationships between justice rules and acceptance. The relationship between the justice rules and fairness judgment was significant as well. Thus, the justice rules are important antecedents of fairness judgments and should be considered in wind park implementation to increase residents' acceptance.

Distributional justice rules and its influence on fairness judgment and acceptance

Contrary to expectations, the explorative factor analysis for distributional justice rules revealed that the theory-based items loaded on three subsequently labelled factors, "distribution of benefits", "distribution of negative impacts" and "compensation for negative impacts" respectively. Only for the variable distribution of benefits, the findings are in line with hypothesis one and showed that it positively influences fairness judgment, and acceptance. It assessed whether the benefits of the wind park were distributed fairly among residents. The fairness judgment fully mediated the relationship between the distribution of benefits and acceptance. Thus, results showed that contrary to the findings of Leer Jørgensen et al. (2020), monetary means derived through the wind park can influence the opinion (in this case the acceptance) that residents have. Leer Jørgensen et al. (2020) conducted research in Denmark, while the main participants in the current study are from Germany and the Netherlands. It is possible that the latter countries have more appealing concepts for residents, but future research is needed to better understand the differences between these studies.

The variable “distribution of negative impacts” measured how fair residents perceived the distribution of negative effects like shadowing and noises among residents. The variable “compensation for negative outcomes” assessed if residents who are negatively affected by the wind park get compensation and how fair this compensation is perceived (see Table 1). Both variables had no significant effect, neither on fairness judgment nor on acceptance.

Huijts et al. (2014) defined distributional fairness as consisting of the distribution of costs, risks, and benefits related to an energy project. Through this research, the distribution of benefits proved to be the most important aspect of this definition, and it was the only variable that had a significant impact on fairness judgment and acceptance. It seems that resident’s acceptance is influenced by factors that the stakeholders of the wind park can really change: the distribution of advantages from the wind park among residents.

Procedural justice rules and its influence on fairness judgment and acceptance

In line with hypothesis two, the findings showed that participants who had a higher score on procedural justice rules also had a higher fairness judgment and acceptance of the wind park. Fairness judgment fully mediated this effect. To achieve a higher fairness judgment and acceptance, it is crucial for practitioners to develop a fair procedure for implementing the wind park. The items of the procedural justice rules found through this research provide detailed information on how to do this.

The discussed open comment on this dimension also showed that it matters if and how residents are involved in the decision-making process. In the case of this participants, residents sole influence stemmed from the general election of the municipal council, unrelated to specific decisions concerning the wind park. But it is important that participants have a voice in the process, as this seems to increase acceptance. Furthermore, the feeling that this participation has a real impact can increase acceptance, as suggested by past researchers (Evensen et al., 2018; Gross, 2007; Perlaviciute & Steg, 2014; Rand & Hoen, 2017; Walker & Baxter, 2017).

Interpersonal justice rules and its influence on fairness judgment and acceptance

In line with hypothesis two, the findings showed that a higher score on interpersonal justice rules is connected to a higher score on fairness judgment as well as acceptance of the wind parks. Fairness judgment fully mediated this effect. For practitioners, it is important to stress that stakeholders need to be aware of the interpersonal justice rules when interacting

with residents to reach high fairness judgment and acceptance. The items of the interpersonal justice rules found through this research provide detailed information on how to do this.

Different from Besley's (2010) research on the acceptance of nuclear power plants, which did not find a significant effect of interpersonal fairness, the results of this first qualitative research on wind parks showed a significant effect. There may be two reasons that explain the difference in the findings. The first may be that the energy technology is different, as Besley researched in the context of nuclear energy. When interpreting this comparison, bear in mind that people often perceive wind energy as safer than nuclear energy, and they have more concerns about the latter (Batel et al., 2013; Khorsand et al., 2015; Steentjes et al., 2017). This may have caused the participants in Besley's (2010) research to be biased about the topic in general, preventing them from forming an objective opinion on matters related to nuclear power plants. The second reason for the differing results may be that the measurements missed an aspect that Colquitt et al. (2001) included: dignity. This research used the measurement of Colquitt et al. (2001) which was tested many times before and was perceived as more suitable for the researcher. Thus, Besley's (2010) measurement may not have been valid, as it overlooked dignity as a key component of interpersonal fairness judgment. Future researchers should instead use the measurement from this study (based on Colquitt et al. (2001)), which has been adapted to the context of the energy transition context.

Informational aspects and its influence on overall fairness and acceptance

In line with hypothesis three, the findings showed that a higher score on informational justice rules is connected to a higher score on fairness judgment as well as acceptance of the wind parks. Fairness judgment fully mediated the effect that of informational justice rules on acceptance. For practitioners, it is important to stress that stakeholders need to be aware of the informational justice rules when interacting with residents to reach high fairness judgment and acceptance. The theoretical framework, the respective result section, and the items in Table 4 provide detailed information on how to do this.

Past researchers suggested that providing information regarding a wind park project is important to reach acceptance among residents, as this research has shown too (Bidwell, 2016; Devine-Wright, 2011; Motosu & Maruyama, 2016). In line with previous researchers' findings (Devine-Wright, 2010; Devine-Wright, 2011; Porsius et al., 2015), the information should also match the expectations and needs of residents and be transparent about the process. This research's measurement incorporates all of these aspects.

Recognition aspects and its influence on overall fairness and acceptance

The explorative factor analysis for recognition justice rules revealed that the theory-based items actually loaded on two different factors which were subsequently labelled as "inclusive and equitable community engagement" and "recognition of lower-income residents" respectively. In line with hypothesis five, inclusive and equitable community engagement influence both fairness judgment and acceptance. The relationship between inclusive and equitable community engagement and acceptance was fully mediated by fairness judgment. Inclusive and equitable community engagement measured if all residents, irrespective of their ethical or social backgrounds and circumstances, had equal access to information, advantages, and discussions and received the same interpersonal treatment from decision-makers. The significant effects on fairness judgment and acceptance prove what was already expected by Schlosberg (2004).

Items of recognition of lower-income residents assessed if residents with low financial means had the same access to financial gains from the wind park as better-earning residents. This variable had no significant effect. It's possible that residents are unaware of their neighbours' earnings or their investments in the wind park, indicating a need for further research on this aspect The basis for the items of recognition of lower-income residents was that Thomas et al. (2020) found that people seem to worry that groups with a low income may not be incorporated in the outcomes of energy projects. The results of this study could not prove this.

As the first quantitative research on recognition justice rules in the energy transition context, the results and the measurement of this study provide a nourishing ground for future research to validate the findings of this study. As a first step, the results showed that it does matter if all people are treated equally. Stakeholders should consider the theoretical insights and the characteristics of recognition justice rules that were provided in this research to ensure a good fairness judgment and acceptance among residents when planning a wind park or other energy projects.

Strengths

First, participants were quite diverse in their educational background, gender, and age, and they lived next to different wind parks (see Appendix A). Of the 109 participants who started the survey by confirming that they live near a wind park, 86% indicated that they see wind turbines from their home, and about half of them (47%) indicated hearing noises from

the turbines. These diverse perspectives allow for a comprehensive understanding of the various impacts of wind park implementation. The sample provides valuable insights into both the positive and negative side effects, perceived fairness, and acceptance of wind parks.

Secondly, this study demonstrated the influence that justice rules and fairness judgments have on acceptance of wind parks. These findings provide a foundation for practical implications for stakeholders involved in wind parks and other energy projects. Higher perceived justice rules lead to higher fairness judgments, which, in turn, increase the likelihood of greater acceptance of such projects. The insights from this study can help refine the implementation processes of energy projects and contribute to a smoother energy transition.

Lastly, this study provided a new and thorough analysis and fine-tuned measurement for fairness in the energy transition context, which eases future research. This measurement combines the five most relevant fairness dimensions, and researchers can use it to assess the effect that justice rules and fairness judgment have on acceptance of any energy transition project. As energy policies are an intensively discussed topic as well, this measurement can also help to understand people's fairness judgments regarding this topic better. For any energy transition project, this measurement can yield findings that help increase acceptance by ensuring that all relevant fairness characteristics are taken care of.

Limitations

Accompanying the relatively low sample size (N = 109), this sample displayed many missing values in the questionnaire. To ensure that participants give an honest answer to the questions they were given the option to indicate "I don't know. / This does not apply to me." as well. Due to the many missing values that did not follow any pattern, the sample sizes for the variables were different. In total, only 18 participants had no missing values.

Relatedly, there were also methodical limitations. For running a multiple regression with the eight independent variables, a sample size of 18 is inadequate and would not provide the statistically strong and generalizable findings needed (Graham, 2009; Nemes et al., 2009).

Therefore, each variable was analysed individually. However, this approach limits the ability to detect potential combined effects and interactions between the variables, as their relationships could not be tested together. This may have resulted in missing important confounding variables. Especially for high correlations between the variables, which was the

case in this research, the sample size should be as large as possible (Nemes et al., 2009). A regression model that combined all variables simultaneously would have provided more information and clarity on the relationships and significance among the variables.

The high correlation between some of the variables (see Table 8) may pose another limitation and present a direction for future research. The independence of the justice rules, as well as their distinctness towards fairness judgment, can be avenues for future research. All the justice rules except for the distribution of negative impacts had a significant correlation with fairness judgment. Additionally, all procedural justice rules, instead of distribution of negative impacts, correlated significantly with each other. Thus, multicollinearity within the different justice rules dimensions and towards fairness judgment may exist, which could question the independence of the variables.

Another issue was the questionnaire's length. It appears that at a certain point, participants got bored with the questionnaire and stopped filling it out. Some participants open comments indicated that the questions appeared to be monotonous, which could have caused the dropouts. Future researchers should aim to solve this problem of getting the impression that the questions repeat themselves.

Finally, the variable recognition justice rules and scores on the respective fairness judgment items could be biased. Concerns could be raised that the current research did not reach the necessary people who represent the community adequately and that some views may have been missed. Furthermore, residents may not perceive this dimension as problematic unless they belong to a disadvantaged group. It may be hard to reach people who were not recognised for the wind park by stakeholders in the first place. Also, the views of those with no access to devices or the internet to fill out the online survey are not represented in this survey. Therefore, the findings for this fairness dimension may need to be handled with more caution than the others.

Future research

To address the sample size issues and enable the analysis of a model that incorporates all variables simultaneously, as well as to investigate potential multicollinearity, the sample size needs to be increased. To increase the number of participants who complete the questionnaire, it should be revised by cutting down the number of questions or rewrite some

of them to have more variation in the formulations. This revision should address the open comments that criticized the length and similarities of the questionnaire items.

It was found that the fairness dimensions are not distinct from each other and that they all belong to one factor. Based on the arguments provided in the introduction and the theoretical framework, one can still argue that the five fairness dimensions cover different aspects of fairness. The different aspects of these dimensions were presented as justice rules, but the analysis showed that there only is one fairness judgement factor, made up by all five dimensions. One possible explanation for this discrepancy may be that participants perceive them as closely connected or overlapping. Thus, the distinctions made in theory may not hold in practice, with participants viewing the different fairness dimensions as intertwined or influencing each other. A qualitative follow-up study could bring more clarity by investigate the reason(s) behind the present result.

Another area of research that this study could not cover is a closer examination of the importance of informational fairness. Devine-Wright (2010) identified the provision of information about a project as the basis for involving residents in a project. This brings another perspective on the role informational justice rules may have in the implementation of energy projects. As previously explained, procedural justice rules concern how fair people perceive a project's procedure and whether they can participate in it. Devine-Wright (2010) argued further that participating in a project requires having the right information about it from the outset. It can thus be hypothesized that informational justice rules may be an antecedent of procedural justice rules, as people need to be informed about the details and plans for the implementation of a project to participate in this process. There may be a direct effect of the timing, relevance, and quality of information provided to residents on how they perceive procedural justice rules because people cannot participate if they receive no information. This should be investigated in future research.

Recognition fairness may also play a more important role in this context as well. Based on Schlosberg (2004) and Young (1990), an inadequate consideration of group diversity will cause an unfair distribution of risks, costs, and benefits of a wind park. Based on the same reasoning explained in the paragraph above, the recognition fairness aspect may be an antecedent to distributive justice rules. Respectively, the distribution of benefits and burdens of a wind park cannot be perceived as fair by all parts of the community if not all parts of the community are properly recognized in the first place. Schlosberg (2004) even

argued that a lack of recognition may be the basis for an unfair distribution of respective burdens or benefits.

Furthermore, if one applies the same reasoning to the justice rules, it could be the case that the recognition justice rules dimension is an antecedent for the rest of them. Thus, if residents are not recognized in the first place, they can perceive it as very unfair. In addition, Walker and Day (2012) concluded that recognition-, distribution-, and procedural fairness influence each other. They also mention having access to information as part of procedural fairness and perceived respect (which this research names as a part of interpersonal fairness) as a part of recognition fairness. Therefore, to test all these hypotheses within one model, more research and a larger sample is needed.

Conclusion

This study showed that the five dimensions of justice rules predict the single overall fairness judgment variable and in turn acceptance of a wind park. The influence of each justice rule dimension is fully mediated by the fairness judgment. Additionally, the newly created, literature-based measurement for fairness – covering the fairness judgement and its corresponding justice rules – and acceptance for wind parks was successfully tested. It can now be used in future research on energy transition projects to better understand how to maximize resident acceptance of them.

On a practical level, future stakeholders in new energy projects can profit from the findings of this research by applying all aspects of justice rules dimensions and the fairness judgment. Residents must be equally recognized, and benefits should be fairly distributed among them. They should be involved in decision-making, treated fairly, and provided with adequate information at the right time. Meeting these conditions increases the likelihood that residents will judge the energy project as fair, thereby improving their chances of accepting it. Placing greater emphasis on fairness in the implementation of energy projects may be a pivotal element in advancing the energy transition.

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Appendix

Appendix A – List of the main sample areas

Cities, Communities, and wind parks present in the sample
Altenberge, GER
Lauenbrück, GER
Bassum, GER
Stuhr, GER
Barrien , GER
Fintel, GER
Tostedt, GER
Syke, GER
Lavesum, GER
Haltern am See, GER
Beelen, GER
Welbergen, GER
Ochtrup, GER
Wilhelmshaven, GER
Ochtrup, GER
Ohne, GER
Waigandshain, GER
Hamm Rhynern/ Weetfeld, GER
Großefehn, GER
Windpark Westenholz, GER
Königsmoor, GER
Rehborn, GER
Lübke, GER
Tribsess, GER
Münster, GER
Wildpark Schöppingen-Brook, GER
Meppen, GER
Fintel, GER
Olfen und Hullern (Westruper), GER
Großenwede, GER
Stuhr, GER
Floth, GER
Lauenbrück, GER
Potenza, Italy
Region Enschede, NL
Greenchoice Hartelkanaal, NL
Nij Hiddum Houw, NL
Windpark Oostermoer, NL

Appendix B – Pilot test of the Questionnaire

After testing the initial measurement with pilot participants representative of the sample population, some changes were made that are described in the following: During the pilot test, the author sat down with the participants, guided them through the questionnaire in a Word document, asking them to respond to each question, clarify their understanding, and indicate whether they understood the questions and answers. Subsequently, the author made modifications to the question(s) or left them unchanged. The test subjects were between 35 and 45 and lived in areas near wind parks; one of them invested in shares of a wind park, and the other did not invest in the wind park, but both lived close to wind turbines. Thus, the participants in the pilot test of this study were knowledgeable about wind parks and their circumstances, and their practical insight contributed to the final measurement version seen in Appendix B.

A more formal adaptation of the questionnaire after the pilot test concerns the general order of the questionnaire. Pilot participants indicated that it would make more sense to them if the wind park-specific questions were placed at the beginning. They argued that it would help them better understand the study's context. After considering these aspects, they concluded that participants should recall important facts about their wind park before indicating their scores on the various scales.

The main adaptation to the questionnaire was made to the items of distributive fairness. Huijts et al. (2012) suggested that distributive fairness is about the costs, risks, and benefits of a project. On the contrary, throughout the pilot tests and the discussion with participants, the researcher became aware that the target group (residents living next to the wind park) normally does not cover any costs of the wind park they live next to. Thus, the owner(s) of the wind parks normally contact people who own land on which they want to build the wind turbines, and these people then sell or lease the land to the owners of the potential wind park. The residents living next to this land do not cover any costs when a wind park is built, in most cases. Pilot participants indicated that they could only experience negative impacts in terms of shadowing or nuisance and positive financial impacts through compensation or owning shares of the wind park. Therefore, the following items were only provided to participants indicating “Yes” on the question “Did residents need to cover parts of the costs of the wind park?” (in fact, only three participants indicated “Yes” which was the reason these questions were not included in the analysis).

“The costs of the wind park in my community are distributed appropriately between residents.”

“The costs of the wind park in my community are distributed appropriately between residents and other stakeholders.”

“The costs of the wind park have been fairly distributed among residents and other stakeholders.”

In case participants indicated “No”, the items above were not provided to them. Thus, the revised main items for distributive fairness participants cover only the negative and positive outcomes of the wind parks for residents. In case any other participants did experience other positive or negative consequences through the wind park that were not covered in the survey, two open questions were added after the end of the items assessing the score of distributive fairness: “Besides what has been discussed, have you encountered any other positive effects or benefits from the presence of the wind park? If so, please specify: "Besides what has been discussed, have you encountered any other negative effects from the presence of the wind park? If so, please specify.”. Thus, the revised main items for distributive fairness participants cover only the negative and positive outcomes of the wind parks for residents. This adaptation ensured that participants only answered relevant questions and that the survey's duration was kept to a minimum.

During the discussions with the pilot participants, it became clear that to interpret the answers residents give on the benefits of the wind park, it may be important to know if the owner or company of the wind park is based in the tax-relevant municipal area or a more distant area. In this way, the wind park owner's income tax would benefit the local municipality or not. If the owner is not based in the municipality of the wind farm, the residents and infrastructure of the municipality would not benefit from the wind park. Of course, there are still other possible benefits, like getting compensated or owning shares of the wind park. The following question was added to the background questions to better understand the results: “Is the owner of the wind park located in your local community, possibly contributing income taxes to benefit your community?”. This question can be answered with “Yes, the owner of the wind park is located in the same community as the wind park.” and “No, the owner of the wind park is located outside the community.” but also gives the choice “I don’t know” in case people have no information about it.

Furthermore, minor adjustments to certain items were made. The questions about the "positive impact of the wind park" were criticized by both pilot testers as they think that the only positive impact of living next to a wind park can be through financial gains. Either through compensation or by profiting from shares and dividends. Thus, the items about positive impacts were all changed to formulations that describe financial gains from the wind park.

Additional concerns were raised about the wind park-specific questions that ask about the distance from participant's homes to the next wind turbines and some demographics, as pilot testers indicated that this would be too specific and that they feel uncomfortable with the disclosure of such information as it is too personal. Thus, instead of asking about residents' monthly income range, it is only asked if residents were financially able to invest in the wind park and whether they did so or not. Additionally, questions about gender, their age group, and their highest educational degree were assessed. Pilot testers raised additional concerns about the wind park-specific questions, which inquire about the distance from participants' homes to the next wind turbine. They expressed discomfort with the disclosure of such personal information, citing it as too specific. Based on Bond (2010), there does not seem to be a difference in acceptance of wind parks between people who rent or own their home next to wind parks if they cannot see the wind turbines. To make participants feel more comfortable, the questions assessing the distance toward the wind turbines were adapted, and it is only asked if the turbines are visible from their home (and in their everyday life) and if they hear any noises from them. At the same time, this is more in line with the findings of Bond (2010), as the visual effect seems to matter more than the distance. This question was answered as well, as people also worry about noises produced by wind turbines (Bond, 2010).

After that, the feedback from the pilot tests was incorporated into the German version of the questionnaire. All items and questions were translated back from German to English and compared to the initial English versions. Appendix D displays the new, adapted English version that emerged from this comparison. Thus, the changes and adaptations after the pilot tests were translated into English, and a last comparison was made between the two languages to make sure that they convey the same meaning.

Appendix C - Informed Consent

Dear Participant,

The aim of the research is to assess which factors influence the acceptance of projects like wind parks to better understand how we could do something against climate change while making sure that residents are justly treated. This will be assessed by asking several questions regarding the wind park you are living next to.

To take part in this study, it is required that you are at least 18 years old and live in the vicinity of a wind park. Filling in the questionnaire will take approximately 10 to 15 minutes.

This study is conducted by a student undertaking the Master of Psychology at the University of Twente. The data will be analysed and used for a master's thesis, which potentially results in its publication in a scientific journal.

You are free to decide whether you want to complete this questionnaire or not. The following data will be assessed next to the questions about how you perceive the wind park (which you are allowed not to answer): age, gender, education level, and some questions related to the wind park and your living situation. The data will be gathered with the use of the program Qualtrics. Qualtrics is only accessible for the researchers. The data will be stored on the computers of the researchers and anonymized. The anonymized, coded data collected in this study may be stored in an online repository and released to the public but will not contain information that can identify you; no information that can be used to personally identify you will be shared with others. You can withdraw from this study at any time. Please note that once you have given your answers, you can only withdraw them up until the time of the completion of the master thesis by contacting the researcher. This study has been reviewed and approved by the University of Twente ethics board.

By ticking the box below, you declare that you read the information about the study. You know that the participation is voluntary, that data will be processed anonymously, that you can only withdraw them up until the time of the completion of this thesis and that you can withdraw from the study at any moment, without indicating a reason.

If you have any questions or want to be updated on the findings of this study, feel free the contact the researcher via email: t.j.lippers@student.utwente.nl
Answers:
I consent, start the questionnaire!
I do not consent; I do not wish to participate!

German Version:

Liebe Teilnehmerin, lieber Teilnehmer,

Es liegt ganz bei Ihnen, ob Sie diesen Fragebogen ausfüllen möchten oder nicht. Das Ziel der Untersuchung ist es, zu ermitteln, welche Faktoren die Akzeptanz von Projekten wie Windparks beeinflussen, um besser zu verstehen, wie wir etwas gegen den Klimawandel tun und gleichzeitig sicherstellen können, dass die Anwohner gerecht behandelt werden. Zu diesem Zweck werden mehrere Fragen zum Windpark in Ihrer Nähe gestellt.

Um an dieser Studie teilzunehmen, müssen Sie mindestens 18 Jahre alt sein und in der Nähe eines Windparks wohnen. Das Ausfüllen des Fragebogens wird etwa 10 bis 15 Minuten dauern.

Diese Studie wird von einem Studenten des Masterstudiengangs Psychologie an der Universität Twente durchgeführt. Die Daten werden analysiert und für eine Masterarbeit verwendet, die möglicherweise in einer wissenschaftlichen Fachzeitschrift veröffentlicht wird.

Neben Fragen über den Windpark werden folgende Daten erhoben: Alter, Geschlecht, Bildungsgrad und einige Fragen zum Windpark und zu Ihrer Wohnsituation. Die Daten werden mit Hilfe des Programms Qualtrics erhoben. Qualtrics ist nur für die Forscher zugänglich. Die Daten werden auf den Computern der Forscher gespeichert und anonymisiert. Diese Daten können am Ende anonymisiert veröffentlicht werden. In dieser Veröffentlichung gibt es aber keine Informationen, die Hinweise auf Ihre Person geben. Sie können die Studie jederzeit abbrechen. Bitte beachten Sie, dass Sie Ihre Antworten nur bis zur Fertigstellung der Masterarbeit zurückziehen können, indem Sie sich an den Forscher wenden. Diese Studie wurde von der Ethikkommission der Universität Twente geprüft und genehmigt.

Durch das Ankreuzen der untenstehenden Antwort erklären Sie, dass Sie die Informationen über die Studie gelesen haben. Sie wissen, dass die Teilnahme freiwillig ist, dass die Daten anonym veröffentlicht werden könnten, dass Sie sie nur bis zur Fertigstellung dieser Arbeit zurückziehen können und dass Sie während der Studie jederzeit ohne Angabe von Gründen Ihre Teilnahme abbrechen können.

Wenn Sie Fragen haben oder über die Ergebnisse dieser Studie informiert werden wollen, wenden Sie sich bitte per E-Mail an den Forscher: t.j.lippers@student.utwente.nl

Antworten:
Ich bin einverstanden, beginnen Sie mit dem Fragebogen!
Ich bin nicht einverstanden, ich möchte nicht teilnehmen!

Appendix D: Measurement: Perceived fairness in the energy transition and acceptance of wind parks

Demographics

Introduction sentence: The following statements aim to assess demographics of participants. Your personality will be kept anonymous.
Einleitungssatz: Die folgenden Angaben dienen dazu, die demografischen Daten der Teilnehmer zu erfassen. Ihre Persönlichkeit bleibt anonym.

Demographics	German Version	Answers	German Version
Please indicate your age:	**Bitte geben Sie Ihr Alter an:**	Indicate your age. Prefer not to say.	A: Geben Sie Ihr Alter ein. B: Das möchte ich lieber nicht sagen.
Please indicate your gender:	**Bitte geben Sie Ihr Geschlecht an:**	Choose gender. Prefer not to say.	A: Wählen Sie Ihr Geschlecht. : Das möchte ich lieber nicht sagen.
Please indicate your highest reached educational status:	**Bitte geben Sie Ihren höchsten erreichten Bildungsstand an:**	Choose: - Meister/ Techniker (highest German technical/ craftsman Degree outside a university) - Master's Degree - Bachelor's degree - Technical; university entrance qualification (Fachhochschulreife (Fach-; Abitur)/ VWO) - Vocational school/ apprenticeship (Berufsschule/ Ausbildung/ MBO) - Intermediate school leaving certificate (mittlere Reife (Realschule/ HAVO) - Vocational school leaving certificate (Berufsbildungsreife (Hauptschule) – VMBO) - None. - Prefer not to say.	Wählen Sie: - Meister/ Techniker - Master's Degree - Bachelor's degree - Fachhochschulreife (Fach-; Abitur) - Berufsschule/ Ausbildung - mittlere Reife (Realschule) - Berufsbildungsreife (Hauptschule) - Kein Abschluss. - Das möchte ich lieber nicht sagen.
Which country do you live in?	**In welchem Land leben Sie?**	A: Germany B: Netherlands C: Another country? Please enter here: D: Prefer not to say.	A: Deutschland B: Niederlande C: In einem anderen Land? Geben Sie dies bitte hier an: D: Das möchte ich lieber nicht sagen.

Assessment of residents and the characteristics of wind park they live close to:

Introduction sentence: The following information is used to better classify your living situation in the vicinity of the wind park. Your personal details will be kept anonymous.
Einleitungssatz: Die folgenden Angaben dienen dazu, ihre Lebenssituation im Umfeld des Windparks besser einordnen zu können. Ihre Persönlichkeit wird anonym gehalten.

Introduction Questions	**German Version**	**Answer Options**	**German Version**
Which wind park is near to your house/ located in your community? Please provide the name of the wind park and the municipality it is in. Please think about this wind park while answering all the following questions in this questionnaire.	**Welcher Windpark befindet sich in der Nähe Ihres Hauses / in Ihrer Gemeinde? Bitte geben Sie den Namen des Windparks und die Gemeinde an, in der er sich befindet. Bitte beantworten Sie die folgenden Fragen dieser Umfrage für diesen Windpark.**	Enter here: Prefer not to say.	Geben Sie diesen bitter hier an: Das möchte ich nicht angeben.
How many years ago was the wind park officially opened?	**Vor wie vielen Jahren wurde der Windpark offiziell eröffnet?**	Please indicate: _ years ago: (0-20 years/ + option: Over 20 years ago.)	Geben Sie dies bitte an: Vor _ Jahren: (0-20 Jahre/ + Option: Vor über 20 Jahren.)
Are the wind turbines of the wind park visible in the vicinity of your home?	**Sehen Sie von Ihrem Zuhause aus die Windkraftanlagen des Windparks?**	Choose: Yes. No.	Wähle aus: Ja. Nein.
Are the wind turbines visible in your daily environment?	**Sehen Sie die Windkraftanlagen des Windparks in Ihrer alltäglichen Umgebung?**	Choose: Yes. No.	Wähle aus: Ja. Nein.
Do you hear noises from wind turbines in the vicinity of your home?	**Hören Sie Geräusche von Windkraftanlagen in der Nähe Ihres Hauses?**	Choose: Yes. No.	Wähle aus: Ja. Nein.
Do you hear noises from wind turbines in your daily environment?	**Hören Sie in Ihrer alltäglichen Umgebung Geräusche von Windkraftanlagen?**	Choose: Yes. No.	Wähle aus: Ja. Nein.
Does the wind park negatively affect you?	**Wirkt sich der Windpark negativ auf Sie aus?**	Choose:	Wähle aus:

If it does, please describe how:	**Wenn sie negativ betroffen sein sollten, beschreiben Sie bitte, wie:**	Yes, _____. No.	Ja, _____. Nein.
Have you benefited or are you still benefiting financially from the wind park? **If yes, please indicate how:**	**Haben Sie finanziell von dem Windpark profitiert oder profitieren Sie noch immer davon?** **Wenn ja, geben Sie bitte an, wie:**	Choose: Yes, _____. No.	Wähle aus: Ja, _____. Nein.
Is the owner of the wind park located in your local community and may pay income taxes that benefit your community?	**Ist der Eigentümer des Windparks in Ihrer Gemeinde ansässig und zahlt möglicherweise Einkommenssteuern, die Ihrer Gemeinde zugutekommen?**	Choose: A: Yes, the owner of the wind park is located in the same community as the wind park. B: No, the owner of the wind park is located outside the community. C: I don't know.	Wähle aus: A: Ja, der Firmensitz des Windparks befindet sich in derselben Gemeinde wie der Windpark. B: Nein, der Firmensitz des Windparks befindet sich außerhalb der Gemeinde. C: Ich weiß es nicht.
Do other residents experience negative impacts through the wind park that you do not experience? **If yes, please describe:**	**Erleben andere Anwohner negative Auswirkungen durch den Windpark, die Sie nicht erleben?** **Wenn ja, beschreiben Sie bitte, welche:**	Choose: A: Yes, _____. B: No. C: I don't know.	Wähle aus: A: Ja, _____. B: Nein. C: Ich weiß es nicht.
Do other residents experience positive impacts through the wind park that you do not experience? **If yes, please describe:**	**Erleben andere Anwohner positive Auswirkungen (z.B., finanzielle Vorteile) durch den Windpark, die Sie nicht erleben?** **Wenn ja, beschreiben Sie bitte, welche:**	Choose: A: Yes, _____. B: No. C: I don't know.	Wähle aus: A: Ja, _____. B: Nein. C: Ich weiß es nicht.
Did residents need to cover costs of the wind park? **If yes, please indicate which costs.**	**Mussten Anwohner Kosten für den Windpark übernehmen?** **Wenn ja, geben Sie bitte an, welche Kosten.**	Choose: Yes, _____. No.	Wähle aus: Ja, _____. Nein.

If answered with "Yes, …" - the items of "Distributional justice rules and fairness" will be answered. If answered with "No.", these questions will be skipped.

Distributional justice rules and fairness: Addition for costs. Needs to be added in case participants answered the question above with "Yes, …".
In this case, the scores need to be added to the scores of distributional justice rules and perceived distributional fairness judgment.

Distributional justice rules **Addition for Costs.**	The costs of the wind park in my community are distributed appropriately between residents. The costs of the wind park in my community are distributed appropriately between residents, other stakeholders and/or the decision-makers of the wind park.	Die Kosten für den Windpark in meiner Gemeinde werden angemessen auf die Anwohner verteilt. Die Kosten für den Windpark in meiner Gemeinde werden angemessen zwischen den Anwohnern, anderen Beteiligten und/oder den Entscheidungsträgern des Windparks verteilt.	Likert-Scale: 7-point scale ranging from 1 strongly disagree to 7 strongly agree German: 7-Punkte-Skala von 1: stimme überhaupt nicht zu bis 7: stimme voll zu	Huijts et al. (2012); Perlaviciute & Steg, (2014); Steg et al. (2015); Walker, & Baxter (2017); Porsius et. Al (2016); Leer Jørgensen et al. (2020).
Overall perceived distributional fairness judgment **Addition for Costs.**	The costs of the wind park have been fairly distributed among residents and other stakeholders.	Die Kosten für den Windpark wurden fair an die Anwohner und andere Beteiligte verteilt.		

Measurement for perceived fairness and acceptance of wind parks:

Introduction sentence:
The following statements are designed to assess your current thoughts. Please answer them based on your current opinions.

In some statements, "other stakeholders" are mentioned which represent: Those in charge of the wind park and/ or those who made the decisions during the implementation of the wind park. As these can vary depending on the wind park, this term was chosen. Please bear this in mind when answering respective questions.

Einleitungssatz:
Die folgenden Aussagen zielen darauf ab, Ihre derzeitigen Gedanken einzuschätzen. Bitte beantworten Sie die Fragen einfach aufgrund Ihrer heutigen Meinung.

In manchen Aussagen werden die Beschreibungen "andere Beteiligte" erwähnt. Dieser Begriff ist stellvertretend für: Diejenigen, die für den Windpark verantwortlich sind und/oder diejenigen, die die Entscheidungen bei der Umsetzung des Windparks getroffen haben. Da diese je nach Windpark unterschiedlich sein können, wurde sich für diese Bezeichnung entschieden. Bitte beachten Sie dies bei der Beantwortung der Fragen, in denen der Begriff auftaucht.

Variable measured	Question/ Statement	German Version	Answer Options	Source
Distributional justice rules **Background questions**	In case it was possible to buy shares: I was financially able to buy shares of the wind park. I invested in the wind park. Overall, I am open to accepting possible local changes from wind turbines, such as noise or shadows, if this benefits environmental protection for our planet	Falls es möglich war, Anteile zu kaufen: Ich war finanziell in der Lage, Anteile an dem Windpark zu kaufen. Ich habe in den Windpark investiert. Grundsätzlich wäre ich bereit, eventuelle lokale Veränderungen, wie beispielsweise Geräusche oder Schattenwurf durch Windkraftanlagen, in Kauf zu nehmen, wenn	Yes/No German: Ja/Nein (Not included in the score of distributional characteristics – only added to interpret the findings afterwards.) Likert-Scale: 7-point scale ranging from 1 strongly disagree to 7 strongly agree German:	Huijts et al. (2012); Perlaviciute & Steg, (2014); Steg et al. (2015); Walker, & Baxter (2017); Porsius et. Al (2016); Leer Jørgensen et al. (2020).

	through the production of wind energy.	dies dem Umweltschutz durch die Erzeugung von Windenergie zugutekommt.	7-Punkte-Skala von 1: stimme überhaupt nicht zu bis 7: stimme voll zu
	Those who experience more negative impacts from the wind park (e.g., nuisance from noise or shadow) than others received a one-time financial compensation.	Diejenigen, die mehr negative Auswirkungen durch den Windpark erfahren als andere (z. B. Belästigung durch Lärm oder Schattenwurf), erhielten eine einmalige finanzielle Entschädigung.	Yes/No/I don't know. German: Ja/Nein/Ich weiß es nicht.
Distributional justice rules	The benefits of the wind park in my community are distributed evenly between residents living near to it.	Die Vorteile des Windparks in meiner Gemeinde sind gleichmäßig auf die Anwohner verteilt.	Likert-Scale: 7-point scale ranging from 1 strongly disagree to 7 strongly agree
	The benefits of the wind park in my community are distributed evenly between residents, other stakeholders and/or decision-makers of the wind park.	Die Vorteile des Windparks in meiner Gemeinde sind gleichmäßig zwischen den Anwohner, anderen Beteiligten und/oder Entscheidungsträgern des Windparks verteilt.	German: 7-Punkte-Skala von 1: stimme überhaupt nicht zu bis 7: stimme voll zu
	Those who invested more in the wind park also get more financial benefits from it.	Diejenigen, die mehr in den Windpark investiert haben, haben auch mehr finanziellen Nutzen davon.	
	The negative impacts (e.g., nuisance from noise or shadow) affect residents equally.	Die negativen Auswirkungen (z. B. Lärmbelästigung oder Schattenwurf) betreffen die Anwohner gleichermaßen.	
	The negative impacts (e.g., nuisance from noise or shadow) of the wind park in my community are distributed evenly between residents and other stakeholders.	Die negativen Auswirkungen (z.B. Lärmbelästigung oder Schattenwurf) des Windparks in meiner Gemeinde verteilen sich gleichmäßig auf Anwohner und andere Beteiligte.	
	All residents are adequately compensated for the negative impact (e.g., nuisance from noise or shadow) of the wind park by the other stakeholders and/ or decision-makers of the wind park.	Alle Anwohner werden für die negativen Auswirkungen des Windparks (z.B. Lärmbelästigung oder Schattenwurf) von den anderen Beteiligten und/oder Entscheidungsträgern des Windparks	

		angemessen entschädigt.		
	Those who experience more negative impacts from the wind park (e.g., nuisance from noise or shadow) than others also receive more benefits from the park (shares or other financial benefits).	Diejenigen, die mehr negative Auswirkungen durch den Windpark erfahren als andere (z. B. Lärmbelästigung oder Schattenwurf), erhalten gegenwärtig auch mehr Vorteile durch den Windpark (Aktien oder andere finanzielle Vorteile).		
Addition to distributional justice rules Open Question.	Besides what has been discussed, have you encountered any other positive effects or benefits from the presence of the wind park? If so, please specify.	Haben Sie neben den genannten Aspekten noch andere positive Auswirkungen oder Vorteile des Windparks feststellen können? Wenn ja, geben Sie dies bitte an.	Choose: No. Yes, type here: German: Wähle: Nein. Ja, bitte beschreiben Sie:	Added after Pilot test.
	Besides what has been discussed, have you encountered any other negative effects from the presence of the wind park? If so, please specify.	Haben Sie neben den genannten Aspekten noch andere negative Auswirkungen des Windparks feststellen können? Wenn ja, geben Sie dies bitte an.		

Introduction sentence:
The following statements are about your thoughts on the planning and construction phase of the wind park. Please think back on the time before and during the implementation of the wind park while answering them.

In some statements, “other stakeholders” are mentioned which represent: Those in charge of the wind park and/ or those who made the decisions during the implementation of the wind park. As these can vary depending on the wind park, this term was chosen. Please bear this in mind when answering respective questions.

Einleitungssatz:
Bei den folgenden Aussagen geht es um Ihre Gedanken zur Planungs- und Bauphase des Windparks. Bitte denken Sie bei der Beantwortung der Fragen an die Phase vor dem Beginn und während des Baus der Anlage zurück.

In manchen Aussagen wird die Beschreibung "andere Beteiligte" erwähnt. Dieser Begriff ist stellvertretend für: Diejenigen, die für den Windpark verantwortlich sind und/oder diejenigen, die die Entscheidungen bei der Umsetzung des Windparks getroffen haben. Da diese je nach Windpark unterschiedlich sein können, wurde sich für diese Bezeichnung entschieden. Bitte beachten Sie dies bei der Beantwortung der Fragen, in denen der Begriff auftaucht.

Variable measured	Question/ Statement	German Version	Answer Options	Source
Procedural justice rules **Background questions**	If possible: Did you participate in the decision-making process about the wind park? Did you voice your opinion to stakeholders of the wind park? Did you take part in a vote (or anything comparable) about the wind park? If yes, shortly mention how that took place.	Falls möglich: Haben Sie an dem Entscheidungsprozess zur Entstehung des Windparks teilgenommen? Haben Sie den Entscheidungsträgern und anderen Beteiligten des Windparks Ihre Meinung zu dem Projekt mitgeteilt? Haben Sie an einer Abstimmung (oder etwas Vergleichbarem) über den Windpark teilgenommen? Wenn ja, beschreiben Sie bitte kurz, wie abgelaufen ist.	Yes/No/ (It was not possible.) + Open Question German: Ja/Nein/ (Es war nicht möglich.) + Offene Frage (Not included in the score of procedural characteristics - only added to interpret the findings afterwards.)	Firestone et al. (2020); Liu et al. (2019); Perlaviciute, & Squintani (2020); Evensen et al. (2018); Coenen (2009); Dietz and Stern (2008).
Procedural justice rules	Residents could express their opinion to the decision maker during the decision-making process about the project. The decision-makers listened attentively to the residents that were affected by the wind park. Opinions of residents about the wind park were sufficiently considered in the decision-making process. Local interests were sufficiently taken into account in the decision-making process for the construction of the wind farm. The decision-makers carefully balanced opinions and viewpoints without being prejudiced. The decision-making process was free of bias.	Die Anwohner konnten den Entscheidungsträgern während der Entstehungsphase des Projektes ihre Meinung sagen. Die Entscheidungsträger hörten den vom Windpark betroffenen Anwohnern aufmerksam zu. Die Meinungen der Anwohner über den Windpark wurden im Entscheidungsprozess ausreichend berücksichtigt. Bei der Entscheidungsfindung zum Bau des Windparks wurden die lokalen Interessen ausreichend berücksichtigt. Die Entscheidungsträger haben die Meinungen der Anwohner sorgfältig abgewogen, ohne dabei voreingenommen zu sein. Der Entscheidungsprozess war frei von Voreingenommenheit.	Likert-Scale: 7-point scale ranging from 1 strongly disagree to 7 strongly agree German: 7-Punkte-Skala von 1: stimme überhaupt nicht zu bis 7: stimme voll zu	Firestone et al. (2020); Liu et al. (2019); Perlaviciute, & Squintani (2020); Evensen et al. (2018); Coenen (2009); Dietz and Stern (2008).

	The decision-makers represented the residents in terms of gender, age, origin and socio-economic background.	Die Entscheidungsträger repräsentierten die Bewohner in Bezug auf Geschlecht, Alter, Herkunft und sozioökonomischen Hintergrund.		
	The decision-makers had diverse backgrounds that represented the diversity of residents affected by the wind park.	Die Entscheidungsträger hatten unterschiedliche Hintergründe und repräsentierten die Vielfalt der vom Windpark betroffenen Anwohner.		
	The decision-making process was transparent to me.	Der Entscheidungsprozess war für mich transparent.		
	The decision-makers were very open and clear about how they made the decisions about the wind park project.	Die Entscheidungsträger waren sehr klar und offen darüber, wie sie die Entscheidungen für den Windpark getroffen haben.		
	The decisions that led to the implementation of the wind park were made based on complete and balanced information.	Die Entscheidungen, die zur Realisierung des Windparks führten, wurden auf Grundlage vollständiger und ausgewogener Informationen getroffen.		
Recognition justice rules	Obtaining information about the wind park project was easy for every resident who wanted to do so.	Jeder Anwohner, der Informationen über den Windpark bekommen wollte, hat diese auch ohne großen Aufwand bekommen.	Likert-Scale: 7-point scale ranging from 1 strongly disagree to 7 strongly agree German: 7-Punkte-Skala von 1: stimme überhaupt nicht zu bis 7: stimme voll zu	Walker & Day (2012); Schlosberg (2004); Jenkins et al. (2016); McCauley et al. (2013); Sovacool & Dworkin, (2014); Heffron et al., (2015); Thomas et al. (2020).
	All residents near the wind park were treated equally by all other stakeholders and/or decision-makers.	Alle Anwohner des Windparks wurden von allen anderen Beteiligten und Entscheidungsträgern gleich behandelt.		
	All residents near the wind park had equal access to the benefits of the wind park if they wanted to.	Alle Anwohner hatten den gleichen Zugang zu den Vorteilen des Windparks, wenn sie diese in Anspruch nehmen wollten.		
	All residents near the wind park had an equal opportunity to take part in the discussions about the wind park.	Alle Anwohner hatten die gleiche Möglichkeit, sich an den Diskussionen über den Windpark zu beteiligen.		

Residents who are socially disadvantaged for individual reasons (e.g., due to old age, financial situation, health issues) or belonging to a minority group were recognized in the decision making of the wind park project.	Anwohner, die aufgrund individueller Gründe (z.B. hohes Alter, finanzielle Situation, gesundheitliche Beeinträchtigung) sozial schwächer als andere sind oder einer Minderheit angehören, wurden bei der Entscheidungsfindung für den Windpark berücksichtigt.
Residents who are socially disadvantaged for individual reasons (e.g., due to old age, financial situation, health issues) or belonging to a minority group were taken into account in the positive outcomes of the wind park project.	Anwohner, die aufgrund individueller Gründe (z.B. hohes Alter, finanzielle Situation, gesundheitliche Beeinträchtigung) sozial schwächer als andere sind oder einer Minderheit angehören, wurden bei den positiven Auswirkungen des Windparks berücksichtigt.
Residents who are socially disadvantaged for individual reasons (e.g., old age, financial situation, health issues) or who belong to a minority were taken into account in the negative outcomes of the wind farm.	Anwohner, die aufgrund individueller Gründe (z.B. hohes Alter, finanzielle Situation, gesundheitliche Beeinträchtigung) sozial schwächer als andere sind oder einer Minderheit angehören, wurden bei den negativen Auswirkungen des Windparks berücksichtigt.
Residents with low financial means were also given the opportunity to financially benefit from the wind park.	Auch Anwohner mit geringen finanziellen Mitteln hatten die Möglichkeit, finanziell von dem Windpark zu profitieren.
Residents with a lower income could financially benefit from the wind park as much as those with a higher income.	Anwohner mit einem geringeren Einkommen hätten ebenso die Möglichkeit gehabt, von dem Windpark finanziell zu profitieren, wie jene mit einem höheren Einkommen.

Informational justice rules	Stakeholders and/or decision-makers of the project provided us with understandable information about every step of the wind park project.	Die Projektbeteiligten und/oder die Entscheidungsträger lieferten uns verständliche Informationen über jeden Schritt des Windpark Projekts.	Likert-Scale: 7-point scale ranging from 1 strongly disagree to 7 strongly agree German: 7-Punkte-Skala von 1: stimme überhaupt nicht zu bis 7: stimme voll zu	Bal et al. (2023); Besley (2010); Devine-Wright (2010) Motosu & Maruyama (2016); Porsius et al. (2016).
	Stakeholders and/or decision-makers of the project provided us with relevant information about every step of the wind park project.	Die Projektbeteiligten und/oder die Entscheidungsträger lieferten uns relevante Informationen über jeden Schritt des Windpark Projekts.		
	Important information was provided at the right time and before major changes of the wind park were discussed or implemented.	Wichtige Informationen wurden zum richtigen Zeitpunkt zur Verfügung gestellt, bevor größere Veränderungen des Windparks diskutiert oder umgesetzt wurden.		
	The information that we received from the stakeholders and/or decision-makers was in line with our expectations.	Die Informationen, die wir von den Interessenvertretern und/oder Entscheidungsträgern erhalten haben, entsprachen unseren Erwartungen.		
	If necessary, further information was available on request.	Falls es nötig war, konnte man weitere Informationen auf Nachfrage bekommen.		
	The stakeholders and/or decision-makers of the wind park were the first to communicate or pass on the relevant information on the wind farm before it was made public by other persons.	Die Projektbeteiligten und/oder Entscheidungsträger haben die relevanten Informationen zum Windpark als Erste mitgeteilt oder weitergegeben, bevor sie von anderen Personen öffentlich gemacht wurden.		
Interpersonal justice rules	The stakeholders and/or decision-makers of the wind park in my community treated all people in a polite manner.	Die Projektbeteiligten und/ oder die Entscheidungsträger des Windparks in meiner Gemeinde behandelten alle Anwohner auf höfliche Art und Weise.	Likert-Scale: 7-point	Colquitt (2001); Colquitt et al. (2001); Bal et al. (2023).

	The stakeholders and/or decision-makers of the wind park in my community communicated with residents in a friendly manner.	Die Projektbeteiligten und/ oder die Entscheidungsträger des Windparks in meiner Gemeinde haben freundlich mit den Anwohnern kommuniziert.	scale ranging from 1 strongly disagree to 7 strongly agree German: 7-Punkte-Skala von 1: stimme überhaupt nicht zu bis 7: stimme voll zu	
	The stakeholders and/or decision-makers of the wind park in my community treated all people with dignity.	Die Projektbeteiligten und/ oder die Entscheidungsträger des Windparks in meiner Gemeinde haben alle Anwohner mit Würde behandelt.		
	The stakeholders and/or decision-makers of the wind park in my community treated all people with respect.	Die Projektbeteiligten und/ oder die Entscheidungsträger des Windparks in meiner Gemeinde haben alle Anwohner mit Respekt behandelt.		
Thank you very much for your time, you are almost finished! Now that I have asked you about various details of the wind park in your area, I would like to know how fairly you rate a few overarching topics regarding the wind park.				
Vielen Dank für Ihre Zeit, Sie sind fast fertig! Nachdem ich Sie zu verschiedenen Details zum Windpark in Ihrer Nähe befragt habe, würde ich gerne wissen, wie fair Sie ein paar übergeordnete Aspekte im Zusammenhang mit dem Windpark bewerten.				
Overall perceived interpersonal fairness judgment	The social interaction of the stakeholders of the wind park with residents was fair.	Der soziale Umgang der Projektbeteiligten und/ oder Entscheidungsträgern des Windparks mit den Anwohnern war fair.	Likert-Scale: 7-point scale ranging from 1 strongly disagree to 7 strongly agree German: 7-Punkte-Skala von 1: stimme überhaupt nicht zu bis 7: stimme voll zu	Colquitt (2001); Colquitt et al. (2001); Bal et al. (2023).
	The stakeholders of the wind park treated all residents fairly.	Die Projektbeteiligten und/ oder die Entscheidungsträger des Windparks haben alle Anwohner fair behandelt.		
	The communication of the stakeholders towards residents was fair.	Die Kommunikation der Projektbeteiligten und/ oder die Entscheidungsträger des Windparks mit den Anwohnern war fair.		
Overall perceived informational fairness judgment	The information provision on the wind park project was fair.	Die Bereitstellung von Informationen über das Windparkprojekt war fair.	Likert-Scale: 7-point	Bal et al. (2023); Besley (2010);

	Every resident had a fair opportunity to receive the information on the wind park project. The content of the information we received about the wind park was a fair representation of the information we needed.	Jeder Anwohner hatte eine faire Chance, Informationen über das Windparkprojekt zu erhalten. Der Inhalt der Informationen, die wir zum Windpark erhalten haben, war eine faire Repräsentation der Informationen, die wir benötigten.	scale ranging from 1 strongly disagree to 7 strongly agree German: 7-Punkte-Skala von 1: stimme überhaupt nicht zu bis 7: stimme voll zu	Devine-Wright (2010) Motosu & Maruyama (2016); Porsius et al. (2016).
Overall perceived recognition fairness judgment	All residents near the wind park, irrespective of their social, cultural, ethnic, racial, economic background, and gender, were fairly acknowledged during the whole implementation of the wind park. During the decision-making process for a potential wind park, all residents were given fair consideration regardless of their social, cultural, ethnic, and economic background or gender. All residents near the wind park, irrespective of their social, cultural, ethnic, racial, economic background, and gender, were fairly acknowledged in the distribution of the positive and negative outcomes of the wind park.	Während der gesamten Umsetzung des Windparks wurden sämtliche Anwohner unabhängig von ihrer sozialen, kulturellen, ethnischen und wirtschaftlichen Herkunft sowie ihres Geschlechts fair berücksichtigt. Während der Entscheidungsfindung über einen möglichen Windpark wurden sämtliche Anwohner unabhängig von ihrer sozialen, kulturellen, ethnischen und wirtschaftlichen Herkunft sowie ihres Geschlechts fair berücksichtigt. Bei der Verteilung der negativen sowie positiven Auswirkungen durch den Windpark wurden sämtliche Anwohner unabhängig von ihrer sozialen, kulturellen, ethnischen und wirtschaftlichen Herkunft sowie ihres Geschlechts fair berücksichtigt.	Likert-Scale: 7-point scale ranging from 1 strongly disagree to 7 strongly agree German: 7-Punkte-Skala von 1: stimme überhaupt nicht zu bis 7: stimme voll zu	Walker & Day (2012); Schlosberg (2004); Jenkins et al. (2016); McCauley et al. (2013); Sovacool & Dworkin, (2014); Heffron et al., (2015); Thomas et al. (2020).
Overall perceived procedural fairness judgment	The procedure of the implementation of the wind park was fair.	Das Verfahren für die Errichtung des Windparks war fair.	Likert-Scale: 7-point	Firestone et al. (2020); Liu et al. (2019);

	The decision-making for the implementation of the wind park was fair.	Die Entscheidungsfindung für die Realisierung des Windparks war fair.	scale ranging from 1 strongly disagree to 7 strongly agree German: 7-Punkte-Skala von 1: stimme überhaupt nicht zu bis 7: stimme voll zu	Perlaviciute, & Squintani (2020); Evensen et al. (2018); Coenen (2009); Dietz and Stern (2008).
Overall perceived distributional fairness judgment	The positive and negative outcomes of the wind park are overall fairly distributed. The positive and negative outcomes of the wind park are fairly distributed among residents and other stakeholders. All the outcomes of the wind park are fairly distributed among all people somehow affected by the wind park.	Die positiven und negativen Auswirkungen des Windparks sind fair verteilt. Die positiven und negativen Auswirkungen des Windparks sind fair unter den Anwohnern und anderen Beteiligten verteilt. Alle Auswirkungen des Windparks sind fair auf alle Menschen verteilt, die in irgendeiner Weise von dem Windpark betroffen sind.	Likert-Scale: 7-point scale ranging from 1 strongly disagree to 7 strongly agree German: 7-Punkte-Skala von 1: stimme überhaupt nicht zu bis 7: stimme voll zu	Huijts et al. (2012); Perlaviciute & Steg, (2014); Steg et al. (2015); Walker, & Baxter (2017); Porsius et. Al (2016); Leer Jørgensen et al. (2020).
Acceptance	Do you think the implementation of the wind park project in your community was acceptable or unacceptable?	Halten Sie die Umsetzung des Windparks in Ihrer Gemeinde für akzeptabel oder inakzeptabel?	Likert-Scale: 7-point scale ranging from 1 very unacceptable to 7 very acceptable German: 7-Punkte-Skala von 1 sehr inakzeptabel bis 7 sehr akzeptabel	Huijts et al. (2014); Walter (2014).
	Do you have a positive or negative opinion about the wind park in your community?	Haben Sie eine positive oder negative Meinung über den Windpark in Ihrer Gemeinde?	Likert-Scale: 7-point scale ranging from 1 very negative to 7 very positive German: 7-Punkte-Skala von 1 sehr negativ bis 7 sehr positiv	

	Did you support or oppose the wind park project before its implementation?	Haben Sie das Windpark-Projekt vor dessen Umsetzung unterstützt oder abgelehnt?	Likert-Scale: 7-point scale ranging from 1 very strongly oppose to 7 very much support German: 7-Punkte-Skala von 1 stark ablehnend bis 7 sehr stark unterstützend
	Did you support or oppose the wind park project during its implementation?	Haben Sie das Windpark-Projekt während der Bauphase unterstützt oder abgelehnt?	
	Do you currently support or oppose the wind park project today?	Engagieren Sie sich momentan unterstützend oder gegen (ablehnend) das Windpark-Projekt?	
	How often have you said things that were against or in favour of the wind park?	Wie oft haben Sie Dinge, die gegen oder für den Windpark waren, gesagt?	Likert-Scale: 7-point scale ranging from 1 never to 7 every time it was possible German: 7-Punkte-Skala von 1 nie bis 7 wann immer es möglich war
	How often have you done things that were against or in favour of the wind park?	Wie oft haben Sie Dinge, die gegen oder für den Windpark waren, getan?	
End of the Survey: Ende der Umfrage:	Thank you for your participation in my study! You have helped me a lot! If you would like to be informed about the results of this study, please contact me at the following e-mail address: t.j.lippers@student.utwente.nl Have a nice day!		Ich danke Ihnen für Ihre Teilnahme an meiner Studie! Sie haben mir sehr weitergeholfen! Wenn Sie über die Ergebnisse dieser Studie informiert werden wollen, melden Sie sich bitte unter folgender E-mail Adresse: t.j.lippers@student.utwente.nl Ich wünsche Ihnen noch einen schönen Tag!

Appendix E - Introduction for Participants reached through companies/ Social Media Posts for Sampling

🌬️ Be a wind of change! Do you live near a windpark or a wind turbine? I need your opinion! Leben Sie in der Nähe eines Windparks oder eines Windrads? Ich brauche Ihre Meinung! 🤝
+++ Deutsche Version weiter unten 😎 +++

Your insights matter! Share your thoughts on local impacts, benefits, and fairness in a quick survey.
Contribute to my Master's Thesis Study with my professors Nicole Huijts and Peter de Vries on wind park acceptance and help shape the future of clean energy without neglecting the opinion of the citizens who are affected by the measures 🌍 💚
Your participation fuels a better understanding of community perspectives on wind energy, guiding recommendations for a sustainable energy transition.

Take the survey now and make your opinion count!
Feel free to share the survey link or this post to amplify the impact! 👏
English Survey: https://lnkd.in/dyaQ6XQi

German version

Leben Sie in der Nähe eines Windparks oder haben Sie Bekannte, für die das zutrifft? Dann benötige ich Ihre Meinung und Teilnahme an meiner Studie!
Helfen Sie mit, die Energiewende voranzutreiben, ohne die Meinung der Bürger zu vernachlässigen, die im unmittelbaren Umfeld von entsprechenden Projekten wohnen! 🌍 💚

Im Rahmen meiner Masterarbeit mit meinen Professoren Nicole Huijts und Peter de Vries führe ich eine Umfrage durch, um die Erfahrungen von Anwohnern in der Umgebung von Windparks zu erfassen. Teilen Sie mir Ihre Gedanken zu lokalen Auswirkungen, Nachteilen oder Vorteilen des Windparks in Ihrer Nähe mit und lassen Sie mich wissen, ob Sie sich fair behandelt fühlen.

Machen Sie jetzt bei der Umfrage mit oder teilen Sie den mit Ihren Bekannten. Danke für Ihre Hilfe! 👏
Deutsche Umfrage: https://lnkd.in/d7Visfna

#EnergieWende #WindEnergie #Nachhaltigkeitsstudie #KlimaKonferenz #KlimaZiele #ErneuerbareEnergie #fairness
#EnergyTransition #WindEnergy #CommunityPerspectives #SustainabilityStudy #ClimateConference #RenewableEnergy #perceivedfairness

Appendix F – Flyer in English and German

Appendix G – Flyers for the Mailboxes

Appendix H – Example of a flyer presented at the entrance of a local supermarket in a Germany community in which a wind park is located

Appendix I – Scores of Participant A and B

Table 9

Scores of participants A and B.

	Distribution of benefits	St. Deviation	Fairness judgment	St. Deviation	Accpetance	St. Deviation
Whole sample	3.05	1.94	4.30	1.96	4.52	1.69
Participant A	7		/		5.80	
Participant B	5		5.93		6	

Appendix J – Scores of Participant C

Table 10

Scores of participant C.

	Procedural justice rules	St. Deviation	Fairness judgment	St. Deviation	Accpetance	St. Deviation
Whole sample	3.80	1.93	4.30	1.96	4.52	1.69
Participant C	3.30		3.57		4.00	

Appendix K – Scores of Participant D

Table 11

Scores of participant D.

	Informational justice rules	St. Deviation	Fairness judgment	St. Deviation	Accpetance	St. Deviation
Whole sample	4.06	1.96	4.30	1.96	4.52	1.69
Participant D	2.17		3.57		3.00	

Appendix L – Scores of Participant E

Table 12
Scores of participant E.

	Sample score	St. Deviation	Participant E
Distribution of benefits	3.05	1.94	2.00
Procedural justice rules	3.80	1.93	1.10
Interpersonal justice rules	4.06	1.96	1.00
Informational justice rules	5.03	1.83	1.00
Inclusive and equitable community engagement	3.65	1.84	1.00
Fairness Judgment	4.30	1.96	1.00
Acceptance	4.52	1.69	1.00