

Renewable-Energy Acceptance Through Community Trust and Benefit Sharing

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Abstract

Accelerating renewable-energy deployment requires more than technological feasibility, competitive electricity costs, and supportive national policy. Wind farms, utility-scale solar developments, energy-storage facilities, transmission infrastructure, and community-energy projects are implemented in specific places where local populations experience both the benefits and burdens of the energy transition. Consequently, community acceptance is shaped not only by attitudes toward renewable energy as a technology but also by trust in developers and institutions, perceived fairness of decision-making, recognition of local concerns, and the distribution of economic and social benefits. This study examines how community trust and benefit-sharing arrangements can strengthen renewable-energy acceptance. A structured integrative review was undertaken using peer-reviewed research on social acceptance, energy justice, community ownership, procedural justice, distributive fairness, renewable-energy participation, and local benefit mechanisms. Recent empirical evidence from Portugal indicates that acceptance is influenced more strongly by meaningful participation, institutional credibility, perceived fairness, and local impacts than by technical knowledge or awareness of formal regulatory procedures. International energy-policy evidence likewise recommends early community engagement and transparent mechanisms through which affected communities share in renewable-energy revenues.

The analysis distinguishes benefit sharing from compensation: benefits are most likely to strengthen legitimacy when communities participate in defining priorities and when arrangements produce visible, durable, and fairly distributed local value rather than appearing to purchase consent after major decisions have already been made. The paper proposes a Trust–Benefit Renewable Acceptance Framework comprising early recognition, participatory project design, transparent impact communication, locally negotiated benefit sharing, accountable implementation, and continuous monitoring. Potential benefit mechanisms include community ownership, local equity participation, electricity discounts, community development funds, local employment and procurement, landholder payments, infrastructure investment, and shared environmental improvements. The study concludes that renewable-energy acceptance should be treated as a relational governance outcome. Durable acceptance develops when communities can influence decisions, verify promises, perceive a fair balance between burdens and benefits, and retain a meaningful stake in the energy transition.

Keywords: Renewable Energy Acceptance; Community Trust; Benefit Sharing; Energy Justice; Community Ownership; Procedural Justice; Distributive Justice; Social Acceptance; Wind Energy; Solar Energy



1. Introduction

Rapid expansion of renewable electricity is central to contemporary energy-transition strategies, yet technically feasible projects can encounter substantial local resistance when affected populations perceive environmental, social, landscape, economic, or governance consequences as unfair. The classical social-acceptance framework developed by Wüstenhagen, Wolsink, and Bürer distinguishes socio-political, community, and market acceptance, highlighting that general public support for renewable energy does not necessarily translate into support for a specific project in a particular locality. This distinction remains highly relevant because communities evaluate renewable-energy developments not only according to climate benefits but also according to how projects alter their immediate living environments, landscapes, livelihoods, land-use patterns, infrastructure, and local economies.

The conventional tendency to interpret local resistance as simple opposition to renewable technology is therefore inadequate. Contemporary research increasingly emphasizes relational and justice-based explanations. A 2026 study involving 300 residents in Portugal's Centro Region found that trust, participation, perceptions of distributive justice, transparency, and perceived impacts are central to the way communities evaluate wind and solar developments. The study reported that meaningful participation was associated with more favorable perceptions of procedural and distributive fairness, whereas awareness of environmental-impact-assessment procedures or regulatory structures did not independently improve acceptance. This indicates that formal compliance can be necessary without being sufficient for social legitimacy.

Community trust becomes particularly important because renewable-energy projects involve uncertainty. Local residents may need to rely on developers and public institutions for information about noise, land use, biodiversity, visual impacts, construction traffic, employment opportunities, future electricity infrastructure, project life cycles, and promised community benefits. When stakeholders doubt institutional competence, independence, honesty, or willingness to fulfill commitments, opposition can become a governance response rather than simply a technological preference. In the Portuguese study, all 41 respondents who explicitly stated that they lacked confidence in the entities responsible for project implementation reported zero willingness to pay, illustrating the potentially powerful relationship between distrust and withdrawal of financial support.

Benefit sharing provides a second pathway through which local legitimacy may be strengthened. Host communities may experience land-use change, visual intrusion, construction activity, ecological risks, or infrastructure pressures while much of the electricity and financial return flows elsewhere. The International Energy Agency consequently recommends local community engagement and profit-sharing as policy mechanisms that can strengthen public acceptance. Suggested approaches include citizen investment opportunities and transparent redistribution of renewable-energy revenues to affected communities. The IRENA Coalition for Action similarly emphasizes community ownership, local economic participation, and the equitable distribution of benefits as mechanisms capable of widening support and improving community well-being.

The central challenge is that community benefits cannot simply be added to a project after trust has already been lost. Compensation introduced late in development can be interpreted as an attempt to purchase acceptance rather than a fair share of value. Earlier research on wind energy demonstrates that distributive fairness is closely connected with procedural fairness and recognition, while community-ownership research shows that local ownership can strengthen acceptance when projects meet



expectations concerning justice and community outcomes. The present study therefore examines renewable-energy acceptance as an integrated relationship among trust, participation, fairness, benefit sharing, and community agency, and develops a practical framework for aligning renewable deployment with locally legitimate development.

2. Objectives of the Study

2.1 To Examine Trust as a Foundation of Renewable-Energy Acceptance

The first objective is to examine how trust in developers, regulators, government institutions, community organizations, and other relevant actors affects perceptions of renewable-energy projects.

The analysis focuses particularly on transparency, institutional competence, reliability of commitments, responsiveness to community concerns, and the credibility of information provided during project development.

2.2 To Evaluate Benefit Sharing Through an Energy-Justice Perspective

The second objective is to evaluate different community-benefit mechanisms according to distributive, procedural, and recognition justice. The study considers financial and non-financial arrangements including community funds, local ownership, electricity discounts, employment, procurement, infrastructure investment, landholder payments, and environmental improvements.

2.3 To Develop an Integrated Trust–Benefit Acceptance Framework

The third objective is to develop an evidence-informed framework through which developers, governments, local authorities, and communities can connect participation, trust building, project-impact management, and benefit sharing throughout the renewable-energy project life cycle.

3. Review of Literature

3.1 Social Acceptance, Trust, and Procedural Fairness

Wüstenhagen, Wolsink, and Bürer's multidimensional conception of renewable-energy acceptance established that the success of renewable innovation depends upon more than national-level political approval. Community acceptance concerns the reactions of populations living near specific infrastructure, while market acceptance relates to consumer and investor adoption. Justice scholarship subsequently provided a stronger explanation of why projects possessing broad environmental benefits may encounter local resistance. Gross's Australian wind-energy research demonstrated that perceptions of procedural and distributive fairness are closely associated with community responses to wind developments. Procedural justice concerns whether affected people receive meaningful opportunities to participate, whether information is accessible, whether decision-makers listen, and whether the process is impartial.

Contemporary evidence reinforces this distinction. Miguel and colleagues found that procedural formality should not be confused with procedural justice. Awareness of formal environmental-assessment or licensing procedures did not produce measurable improvements in acceptance in their sample, whereas meaningful participation was consistently associated with stronger perceptions of fairness. This implies that public meetings, environmental reports, and consultation periods cannot build

legitimacy merely because they exist. Their effect depends on whether local residents believe their concerns can influence project design and whether responses from institutions are credible.

3.2 Distributive Justice and Community Benefit Sharing

Distributive justice concerns how the economic, social, and environmental benefits and burdens of renewable-energy infrastructure are allocated. Jørgensen, Anker, and Lassen's research on Danish wind projects found that distributive unfairness remained an important concern even where compensation and co-ownership mechanisms existed. Critically, residents' judgments about distributive fairness were inseparable from procedural fairness and recognition.

This relationship is crucial for benefit-sharing design. A community fund may provide significant financial value while still being viewed negatively if the developer unilaterally determines its amount, eligibility criteria, allocation priorities, or governance arrangements.

Benefit sharing should therefore be defined more broadly than direct financial compensation. It can include:

- community ownership or equity;
- revenue-sharing arrangements;
- electricity-bill reductions;
- locally governed development funds;
- local employment and apprenticeships;
- local procurement commitments;
- support for community facilities;
- environmental restoration;
- energy-efficiency programs;

and investment in transport, education, digital connectivity, or other local priorities.

The IEA specifically recommends transparent redistribution of renewable-energy revenue and opportunities for citizens to participate financially in projects. IRENA's community-energy framework likewise emphasizes locally retained social and economic benefits and the importance of giving communities a genuine voice and stake in renewable-energy development.

3.3 Community Ownership and Recognition Justice

Community ownership represents a particularly strong form of benefit sharing because residents participate not merely as recipients but as economic actors within the project.

IRENA defines community energy through combinations of community voting control, local ownership, and local distribution of social and economic benefits. Its 2024 analysis argues that citizen ownership and involvement can strengthen support, improve local value creation, and contribute to energy security and community development.

Ownership is important because it can alter the relationship between the project and the community. A development imposed upon a locality may be perceived as an external infrastructure burden, whereas a project in which residents possess decision rights or financial stakes can be interpreted partly as a locally embedded asset.

However, community ownership does not automatically guarantee justice. Research on renewable-energy communities warns that vulnerable and underrepresented groups can still experience

participation barriers. Evidence from 71 European renewable-energy communities found that their capacity to include vulnerable groups and address energy poverty remained uneven.

Recognition justice is therefore required alongside ownership. Developers and public authorities must recognize differences in income, land tenure, cultural relationships with place, Indigenous rights, age, gender, employment, and access to investment capital. A benefit arrangement that is attractive to affluent property owners may remain inaccessible to renters or low-income households.

4. Research Methodology

4.1 Research Design

The study adopts a structured integrative literature-review and conceptual-synthesis design.

This method was selected because no original community survey, project dataset, or primary stakeholder interviews were supplied for the manuscript. Accordingly, the study does not invent respondents, project locations, acceptance percentages, regression results, or benefit-sharing outcomes. The manuscript synthesizes established theory with recent empirical and institutional evidence and develops an integrated conceptual framework suitable for subsequent empirical testing.

4.2 Evidence Identification and Selection

The core literature covered research published between 2007 and August 2026, allowing the analysis to connect foundational social-acceptance theory with current energy-justice and community-benefit research.

Search themes included:

- “renewable energy social acceptance”;
- “community trust renewable energy”;
- “benefit sharing wind solar”;
- “distributive fairness renewable energy”;
- “procedural justice wind energy”;
- “community ownership renewable energy acceptance”;
- “energy justice community participation”;

Priority was given to peer-reviewed empirical research, systematic reviews, internationally recognized institutional publications, and recent studies examining community acceptance directly.

4.3 Analytical Framework

The reviewed evidence was coded into six categories:

- Trust — credibility, competence, honesty, and reliability of institutions.
- Procedural justice — voice, participation, transparency, and influence.
- Distributive justice — allocation of financial, social, and environmental benefits and burdens.
- Recognition justice — representation and respect for diverse community interests.
- Benefit sharing — mechanisms through which project-generated value is retained locally.
- Acceptance — willingness to support, tolerate, participate in, invest in, or cooperate with a renewable-energy project.



Table 1: Research Methodology and Evidence-Synthesis Protocol

Component	Specification
Research design	Structured integrative review
Core period	2007–August 2026
Research context	Wind, solar and community renewable-energy development
Primary constructs	Trust, participation, procedural justice, distributive justice, recognition and benefit sharing
Evidence types	Peer-reviewed studies and authoritative energy-policy publications
Unit of analysis	Community-level renewable-energy acceptance mechanism
Original primary sample	None
Original inferential statistics	None
Analytical approach	Thematic comparative synthesis
Graph data	Published 2026 Portugal renewable-energy acceptance study
Main output	Trust–Benefit Renewable Acceptance Framework

4.4 Research Integrity and Limitations

The study intentionally distinguishes published empirical evidence from conceptual recommendations. The graph presented in the analysis section reproduces reported counts from a published 2026 study and is identified accordingly. No synthetic community respondents or invented renewable-energy projects are presented as empirical findings.

A limitation of the present review is that community acceptance is context-dependent. Results from one country, technology, ownership structure, or regulatory system cannot automatically be generalized to every renewable-energy project. Benefit-sharing preferences may also vary according to local economic conditions, project scale, land ownership, cultural values, and historical relationships with institutions.

5. Analysis

5.1 The Trust–Fairness–Acceptance Relationship

The evidence supports a relational pathway in which renewable-energy acceptance develops through more than technical information.

A simplified sequence can be expressed as:

Meaningful Participation → Procedural Fairness → Institutional Trust → Distributive Fairness → Community Acceptance

The sequence is not strictly linear. Trust can influence whether communities enter participatory processes, while fair participation can subsequently strengthen trust.

Miguel and colleagues' 2026 study is particularly informative. Their evidence showed that community participants were substantially more likely to believe that concerns had been considered and benefits distributed fairly. Half of participants viewed benefit distribution as fair, whereas none of the non-participants did so in the relevant cross-tabulation. The authors caution that some regression models had limited statistical power, but the descriptive patterns consistently favored meaningful participation over formal procedural awareness.

The same study found that technical awareness of an Environmental Impact Assessment did not meaningfully reduce perceptions of negative impacts: for wind projects, 38% of respondents without EIA knowledge reported negative impacts compared with 39% among those aware of the EIA. The practical implication is clear: information is necessary, but relationships determine whether information is believed.

5.2 Designing Benefit Sharing for Legitimacy

Benefit sharing should be designed according to the type of burden experienced and the social structure of the host community.

Table 2: Community Benefit-Sharing and Trust-Building Matrix

Benefit Mechanism	Primary Community Value	Trust-Building Potential	Principal Equity Risk	Recommended Governance
Community equity ownership	Long-term financial stake and decision participation	Very high where ownership is meaningful	Low-income residents may lack capital	Accessible investment structure and reserved community share
Community development fund	Flexible funding for collective priorities	High if locally governed	Developer may control priorities	Independent/local board with published accounts
Electricity-bill discount	Direct household benefit	High visibility	Eligibility boundaries may cause conflict	Transparent geographic and social criteria
Revenue sharing	Links project performance with community benefit	Strong long-term alignment	Revenue volatility	Predetermined formula and public reporting
Local employment	Income, skills and economic participation	Strong when jobs are credible and	Temporary construction jobs may be overstated	Local workforce plan with measurable targets



Benefit Mechanism	Primary Community Value	Trust-Building Potential	Principal Equity Risk	Recommended Governance
		lasting		
Local procurement	Supports local businesses	Improves perceived economic value	Benefits may concentrate among few firms	Open supplier access and reporting
Landholder payment	Compensates direct land use	Necessary for affected owners	Non-host neighbors may perceive inequality	Complement with wider community benefits
Infrastructure investment	Roads, public facilities, broadband or services	Visible collective benefit	Projects may replace public obligations	Community-selected priorities
Environmental restoration	Addresses biodiversity or landscape effects	Builds ecological legitimacy	May be viewed as insufficient compensation	Independent monitoring and community participation

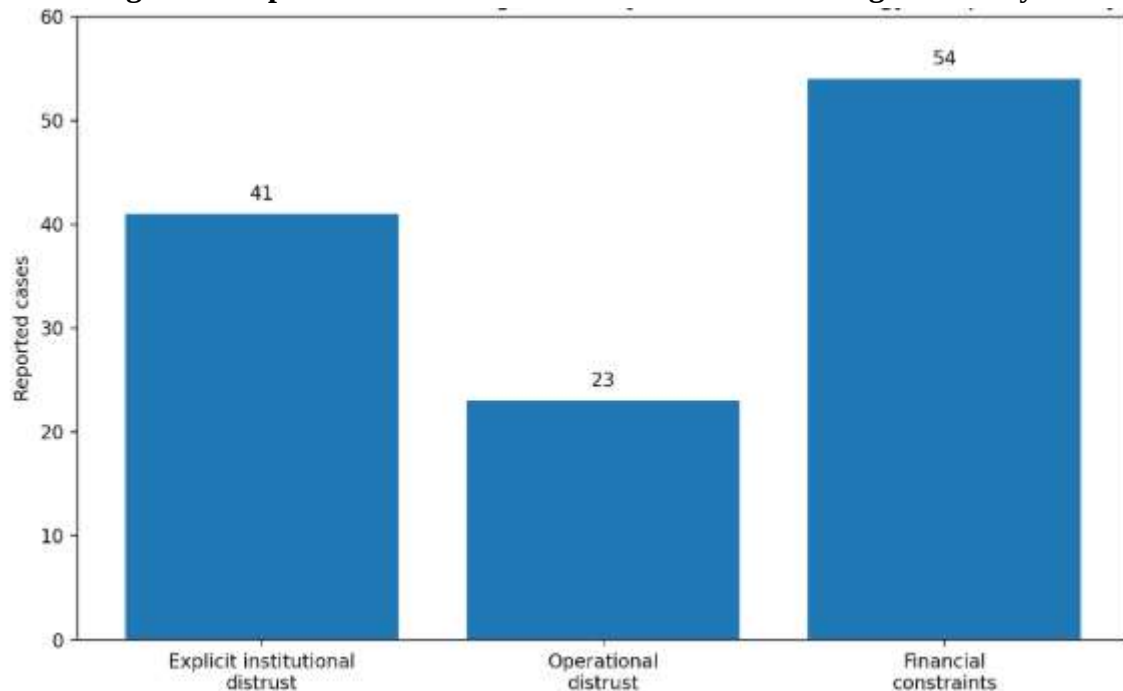
The table illustrates why benefit sharing should involve a portfolio of mechanisms rather than a single payment:

- Direct compensation can address identifiable financial loss.
- Community funds can finance collective priorities.
- Ownership can create long-term participation.
- Local jobs and procurement can strengthen regional economic development.
- Environmental programs can address ecological impacts.
- The optimal package depends upon locally identified priorities.

5.3 Empirical Illustration: Distrust and Financial Support

Miguel and colleagues identified three reported patterns among reasons associated with zero willingness to pay for renewable-energy projects: 41 cases of explicit institutional distrust, 23 cases of operational distrust, and 54 cases involving financial constraints. All 41 respondents explicitly citing lack of confidence in responsible project entities reported zero willingness to pay.

Figure 1: Reported Reasons Associated with Zero Willingness to Pay



The graph is important because it distinguishes affordability from legitimacy.

Financial constraints represent a practical inability to contribute.

Institutional distrust represents unwillingness to cooperate because the governance arrangement itself lacks credibility. Operational distrust reflects skepticism that promised plans or targets will actually be fulfilled.

A subsidy may help a household facing financial constraints, but it will not necessarily resolve distrust. Distrust requires transparency, credible institutions, verifiable commitments, meaningful participation, and evidence that promised benefits are delivered.

6. Discussion

6.1 Community Acceptance Cannot Be Purchased After the Decision

One of the strongest implications of the literature is that benefit sharing becomes less credible when major project decisions are already fixed. If residents encounter a completed siting plan and are subsequently offered a community fund, the payment may be interpreted as compensation for exclusion rather than shared value creation.

Procedural and distributive justice therefore need to develop together. Gross's early community-fairness research and Jørgensen and colleagues' Danish wind-energy study both demonstrate the close relationship between how decisions are made and how their outcomes are judged. A fair benefit package developed through an unfair process may not generate acceptance. Likewise, a highly participatory process that leaves communities carrying most burdens while investors capture most benefits may eventually lose legitimacy. Trust grows when procedure and distribution reinforce each other.

6.2 From Consultation to Community Co-Design

Traditional project consultation often begins after developers have selected a preferred location, technology, and project configuration. A trust-based approach should begin earlier.

The International Energy Agency specifically identifies early community involvement, including during project design, as a mechanism capable of increasing acceptance and reducing opposition risk.

A stronger participation model can involve communities in:

- identifying sensitive locations;
- developing setback preferences;
- planning transport routes;
- evaluating environmental concerns;
- selecting benefit priorities;
- designing community funds;
- developing local employment plans;
- and determining monitoring arrangements.

Participation does not mean that every individual receives a veto over every project decision. It means that stakeholders can understand constraints, communicate concerns, influence feasible alternatives, and receive reasoned responses.

6.3 Benefit Sharing Should Build Long-Term Community Capacity

The strongest benefit-sharing arrangements can extend beyond one-time payments.

IRENA's 2024 community-energy analysis emphasizes local ownership, economic participation, skills, local value creation, social cohesion, energy access, energy security, and environmental stewardship as potential community-energy benefits.

This suggests a shift from compensation logic to shared-development logic. Under compensation logic, communities receive something because they host infrastructure. Under shared-development logic, renewable infrastructure becomes part of a broader local development strategy.

For example, a project could combine:

- a community ownership stake;
- long-term electricity discounts for nearby households;
- technical apprenticeships;
- local supplier development;
- biodiversity restoration;
- and a community-controlled development fund.

Such a package distributes benefits across households that differ in land ownership, age, income, employment status, and capacity to invest.

The IEA similarly recommends that revenue redistribution operate according to transparent and objective criteria. This transparency is important because poorly governed benefit funds can themselves become sources of mistrust. Annual reporting should therefore disclose the value of benefits, eligibility rules, recipients or beneficiary categories, decision procedures, project commitments, and progress against agreed targets.



7. Conclusion

Renewable-energy acceptance is fundamentally shaped by the relationships among infrastructure, institutions, and local communities. Although wind and solar projects may have strong national environmental justification, they can generate legitimate local concerns related to land use, landscape change, environmental impacts, construction activity, community identity, and the distribution of economic value. The evidence reviewed in this study indicates that trust, meaningful participation, procedural fairness, and institutional credibility are central to local acceptance. Recent empirical evidence from Portugal further suggests that relational and justice-oriented considerations may be more influential than awareness of technical or regulatory procedures. In particular, explicit institutional distrust was associated with complete refusal to contribute financially among relevant respondents, highlighting the importance of credible and accountable institutions. These findings suggest that trust must be established before project approval rather than requested after opposition has emerged.

Benefit sharing represents an important mechanism for transforming renewable-energy development from an externally imposed land-use change into a locally meaningful economic and social opportunity. However, benefit sharing should not be understood simply as compensation. More legitimate arrangements emerge when communities participate in defining appropriate benefits, allocation criteria are transparent, and both directly affected households and the wider host community are considered. Community ownership, local equity opportunities, electricity discounts, revenue sharing, development funds, employment, local procurement, infrastructure investment, environmental enhancement, and energy-efficiency support can strengthen acceptance when adapted to local circumstances. Based on these principles, the proposed Trust–Benefit Renewable Acceptance Framework consists of six connected stages: early recognition of affected communities, meaningful participation, transparent impact assessment, fair benefit negotiation, accountable implementation, and continuous verification and adaptation. Community participation should influence substantive decisions rather than remain symbolic, benefits should be negotiated rather than merely announced, and institutional commitments should be measurable and independently verifiable.

The framework also recognizes that community acceptance is dynamic and may change throughout the project life cycle. Support can increase when developers fulfill their commitments, while confidence may decline when promised benefits fail to materialize or when communities perceive decision-making as unfair. Developers and public institutions should therefore maintain meaningful engagement throughout planning, construction, and operation rather than ending consultation once regulatory approval has been secured. Future empirical research should test the framework across wind, solar, energy-storage, transmission, and hybrid renewable-energy projects in diverse national and socioeconomic settings. Longitudinal studies should examine how different benefit-sharing arrangements influence trust, procedural justice, distributive fairness, project acceptance, conflict frequency, and long-term community support. Overall, renewable-energy projects are more likely to achieve durable acceptance when communities are treated not simply as locations for infrastructure, but as legitimate partners whose voices shape decisions, whose communities receive a fair share of value, and who have meaningful opportunities to verify whether institutional commitments are being honored.



References

1. R. Wüstenhagen, M. Wolsink, and M. J. Bürer, "Social acceptance of renewable energy innovation: An introduction to the concept," *Energy Policy*, vol. 35, no. 5, pp. 2683–2691, 2007, doi: 10.1016/j.enpol.2006.12.001.
2. C. Gross, "Community perspectives of wind energy in Australia: The application of a justice and community fairness framework to increase social acceptance," *Energy Policy*, vol. 35, no. 5, pp. 2727–2736, 2007, doi: 10.1016/j.enpol.2006.12.013.
3. S. Batel, P. Devine-Wright, and T. Tangeland, "Social acceptance of low carbon energy and associated infrastructures: A critical discussion," *Energy Policy*, vol. 58, pp. 1–5, 2013, doi: 10.1016/j.enpol.2013.03.018.
4. N. Simcock, "Procedural justice and the implementation of community wind energy projects: A case study from South Yorkshire, UK," *Land Use Policy*, vol. 59, pp. 467–477, 2016.
5. M. L. Jørgensen, H. T. Anker, and J. Lassen, "Distributive fairness and local acceptance of wind turbines: The role of compensation schemes," *Energy Policy*, vol. 138, Art. no. 111294, 2020, doi: 10.1016/j.enpol.2020.111294.
6. F. Hanke, R. Guyet, and M. Feenstra, "Do renewable energy communities deliver energy justice? Exploring insights from 71 European cases," *Energy Research & Social Science*, 2021.
7. B. J. A. Walker, R. Wiersma, and E. Bailey, "Community benefits, framing and the social acceptance of offshore wind farms: An experimental study in England," *Energy Research & Social Science*, 2014.
8. M. L. Jørgensen, H. T. Anker, and J. Lassen, "Distributive fairness and local acceptance of wind turbines: The role of compensation schemes," *Energy Policy*, vol. 138, Art. no. 111294, 2020.
9. J. L. Hogan et al., "Why does community ownership foster greater acceptance of renewable-energy projects? The role of energy justice in onshore wind development," *Local Environment*, 2024.
10. C. W. Shyu, "Energy justice-based community acceptance of local-level renewable-energy development," *Energy Research & Social Science*, 2025.
11. T. Miguel, M. Robaina, A. Botelho, et al., "Public participation, institutional trust, and distributive justice in wind and solar projects," *Environmental Management*, vol. 76, Art. no. 201, 2026, doi: 10.1007/s00267-026-02520-2.
12. B. Acevedo et al., "Community preferences in energy justice: Perspectives on community-benefit agreements for utility-scale solar development," *Energy Research & Social Science*, 2026.
13. S. Harty et al., "A comparative analysis of community benefit funds and community equity mechanisms in renewable-energy development," *Energy Policy*, 2026.
14. International Energy Agency, *COP28 Tripling Renewable Capacity Pledge: Policy Priority Areas for Advanced Economies*, Paris, France, 2024. The report recommends early community engagement, citizen financial participation, and transparent redistribution of renewable-energy revenues to affected communities.
15. IRENA Coalition for Action, *Community Energy Benefits: Powering Universal Wellbeing*, International Renewable Energy Agency, Abu Dhabi, 2024, ISBN 978-92-9260-638-1.