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The legacy of the cod fishery collapse: Understanding wind energy acceptance in Newfoundland through energy justice and place

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ABSTRACT

As renewable energy grows globally, understanding community acceptance of wind energy projects is crucial for ensuring a fair and equitable energy future. Procedural and distributional justice have been widely identified as central to shaping community acceptance. However, there are increasing calls to examine how local historical context plays a role not only in influencing acceptance but also in how residents rationalise their justice considerations. Drawing on energy justice and place attachment/disruption theory, this study investigates how historical experiences with resource development influence perceptions of fairness and acceptance of onshore wind energy in Newfoundland, Canada. Based on semi-structured interviews ($n = 22$) and surveys ($n = 146$) with residents living near existing wind projects, this study finds high acceptance of current projects (76–100 %), but a distinct pattern of 'sceptical optimism' toward future developments. On one hand, residents' attachment to their once-thriving communities and positive experiences with current wind projects contribute to support for future development. On the other, residents' optimism is tempered by hard-learned lessons from the previous resource developments. The findings underscore the need to integrate recognition justice and local historical context more fully into energy justice and acceptance frameworks, highlighting how past (in)justices inform both community support and the evolving understanding of fairness of energy transitions.

1. Introduction

What does the collapse of cod fisheries in the 1990s have to do with the acceptance of onshore wind energy in the 2020s? Though research has thoroughly examined concerns about onshore wind turbines [1] – from landscape alterations [2] to impacts on local environments, including birds and bat populations [3] – the connection with fishing may seem obscure. Yet in rural coastal Newfoundland, residents evaluate current and potential wind developments through the lens of their experiences with previous resource projects, such as the collapsed cod fisheries, alongside their experience with existing wind installations.

Newfoundland and Labrador (NL), a province on Canada's east coast, possesses North America's greatest potential for onshore wind energy [4], yet development has been limited. This constraint stems primarily from political and economic factors [5], prompting the NL Government to impose a moratorium on privately-led onshore wind development from 2007 to 2022 (see Section 3). The lifting of this moratorium by the NL Government in 2022 triggered numerous proposals across the island [6], creating a unique opportunity to study community acceptance in a transitioning energy landscape.

Responding to calls for more context-sensitive approaches to community acceptance [7], this study examines how residents' perceptions of Newfoundland's four existing wind projects and future wind potential are shaped by energy justice and local historical context. While this research does not assume that wind development is inherently good or inevitable in NL, understanding residents' perspectives remains crucial for ensuring fairness if new projects move forward across the province. This paper begins by outlining an integrated conceptual framework before contextualising it through NL's resource development history. It then examines how these historical experiences shape community acceptance and justice perceptions.

2. Conceptual framework

There is growing recognition among scholars that energy justice and local historical context are crucial for understanding community acceptance of renewable energy projects [7,8]. However, critical gaps remain in understanding how these factors interact to shape residents' evaluations in regions with complex histories of resource extraction, as seen in NL. This section outlines an integrated framework combining

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energy justice and historical context (through place attachment and disruption) to address these gaps.

2.1. Community acceptance

Social acceptance research has grown from marginal studies to become fundamental in broader social science debates [1]. Batel [9] categorises this evolution into three waves: normative, criticism, and critical. The 'normative' wave explains opposition through NIMBYism (not-in-my-backyard), attributing resistance primarily to proximity. The 'criticism' wave moves on from this explanation to consider acceptance through socio-psychological factors like perceived fairness. The 'critical' wave critiques all previous approaches, seeking to address discrimination, injustices, and inequalities in renewable transitions while recognising that people's responses are socially embedded and co-constructed. This study bridges the second and third waves, exploring justice factors in community acceptance while critically examining how these perceptions are shaped by socially embedded historical experiences with resource development.

Due to varying public support patterns observed in the critical wave of research, Wustenhagen et al. [10] proposed a tripartite categorisation of social acceptance: market, socio-political, and community acceptance. This study focuses on community acceptance – i.e., local stakeholders' acceptance of siting decisions and renewable projects [10]. One common explanation for high community acceptance of onshore wind is that residents feel they are meaningfully involved in decision-making and receive fair benefits [8,11,12]. These factors align with Walker and Devine-Wright's [13] 'ideal' community renewable project framework. This framework evaluates projects along two dimensions: process – the degree of residents' involvement in planning, development, and operation; and outcomes – the degree of local benefits, including financial returns. While originally designed to categorise diverse projects, with those with a high degree of fairness in process and outcomes considered 'ideal' [13], researchers applied this framework to community acceptance studies and found that projects which achieve highly in both dimensions typically gain greater local acceptance (as seen in [7,14]).

Despite evidence supporting the Walker and Devine-Wright framework for understanding acceptance [12,15–22], Baxter et al. [7] argue that it oversimplifies the complexity of acceptance and propose three key extensions. First, they separate outcomes into benefits and negative impacts to reflect their different geographic scales (with impacts like noise often experienced locally near turbines [23]). Second, they add investment scale as a dimension (distinguishing community from privately owned projects). Third, they embed the framework within the local historical context of energy transitions, suggesting that local responses to wind energy are framed by the concept of place – i.e., that locals are attached to the place they live and that they attach meaning to the material world around them. Unlike the original four-quadrant model, where the upper right represents the 'ideal', this modified framework reconfigures the axes with local communities at the centre (origin point). Thus, in this framework, projects that keep benefits, ownership, and decision-making closer to this local centre, rather than distant or external, are more likely to achieve higher community acceptance.

Building on these theoretical frameworks, this paper employs an integrated conceptual framework (Fig. 1), which retains the simplicity of Walker and Devine-Wright's [13] approach but embeds it within a

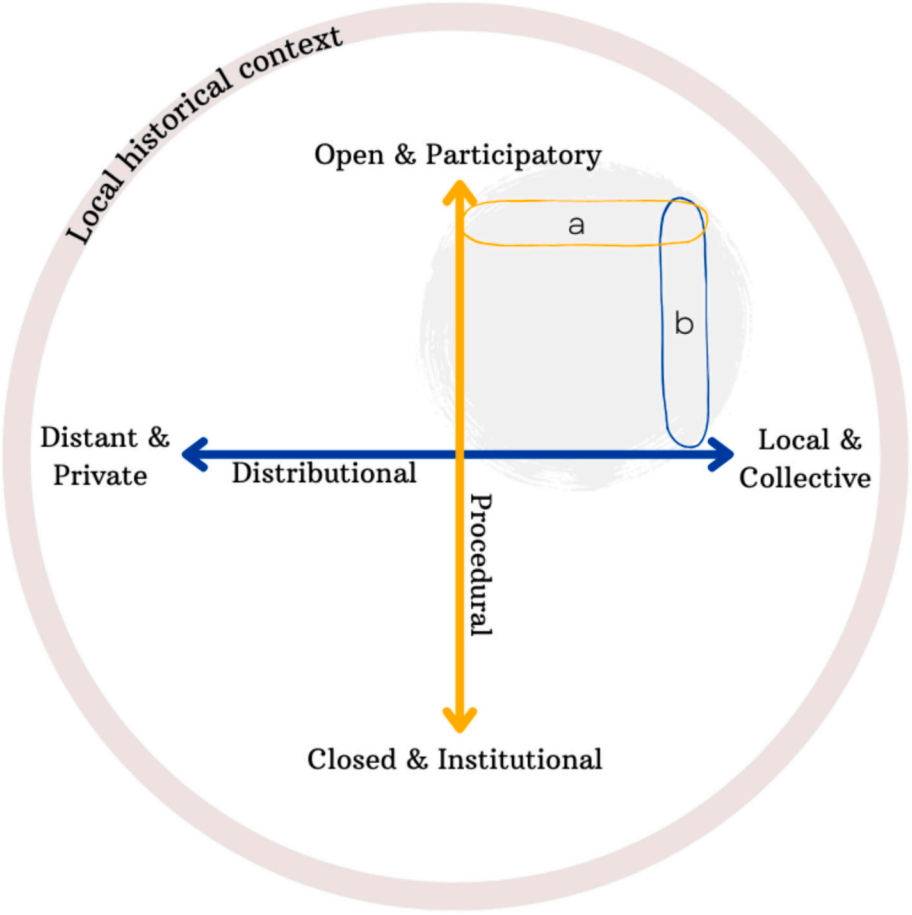

Fig. 1. Conceptual framework for community acceptance adapted from Walker and Devine-Wright [13] and Baxter et al. [7]. Projects with greater acceptance tend to be situated in the top right-hand corner, with highly perceived energy justice. However, these concepts are interrelated and influenced by local historical context.

framing of local historical context as suggested by Baxter et al. [7]. As with the original framework, the area where a and b overlap is where acceptance is likely highest, while the highlighted circle in the upper right-hand side recognises that projects can still be "productive and useful" ([13], p. 499) without achieving the highest degree of involvement or fairness in benefits. This framework provides an analytical starting point for examining community acceptance, remaining open to additional factors that emerge from residents' lived experiences, while acknowledging that these factors are interrelated.

In the following sections, the theoretical frameworks of energy justice, place attachment, and place disruption help to examine this integrated framework. Energy justice provides insights into Walker and Devine-Wright's [13] core dimensions by examining how communities evaluate the fairness of both processes and outcomes in renewable energy projects. Place attachment and disruption theories address Baxter et al.'s [7] emphasis on the historical context of energy projects. Together, these perspectives create a more nuanced framework for analysing how Newfoundland communities evaluate current and potential wind developments.

2.2. Energy Justice

The pursuit of a fair and inclusive energy system has become critical in academic and policy discussions [24,25]. Consequently, energy justice research has expanded rapidly, examining topics such as energy poverty [26,27] and renewable acceptance [7,8,11]. The core framework in energy justice involves three tenets: procedural justice, distributional justice, and recognition justice. This study applies this framework to residents' perceptions of justice, rather than predetermined metrics, examining how lived experiences influence community evaluations of wind energy developments.

Procedural justice refers to how fair and equitable the involvement of all stakeholders has been in the decision-making process [28,29]. The concept, first proposed by Thibaut and Walker [30], has been used to emphasise that affected communities should participate as equals in deliberations [28]. In wind projects, procedural justice includes meaningful consultation throughout planning and development, transparent communication about project details, and opportunities for community input in decision-making processes. This dimension closely aligns with Walker and Devine-Wright's [13] process dimension, emphasising the importance of local involvement in project development.

Distributional justice examines whether costs and benefits are shared fairly among community members regardless of social status or demographics [29]. For wind energy, material benefits typically involve financial compensation, which must be carefully managed to avoid perceptions of 'bribery' – e.g., if residents perceive payments as substitutes for safety protections [21]. To assess perceived impacts, this study uses Roddis et al.'s [31] framework categorising material impacts into aesthetics, environmental, economic, and project details, all of which influence community acceptance (see [8,11,32,33]). These concepts relate to Walker and Devine-Wright's [13] outcomes, but separate perceived impacts as suggested by Baxter et al. [7].

Recognition justice refers to the proper recognition of all actors within a framework of love, law, and status order [34]. This concept addresses love through social arrangements (e.g., affordable energy), law through acknowledging each other's dignity and equal moral standing (e.g., by assigning rights to communities), and status order by recognising the value of varied identities and their epistemic contributions (e.g., supporting workers affected by regional coal phase-outs) [34]. This concept also addresses how injustice manifests when communities experience misrecognition, where their existence, needs, or knowledge are ignored, misrepresented, or portrayed in demeaning ways [29]. Though scholars emphasise its importance [25,35], this dimension is absent from both Walker and Devine-Wright's [13] framework and Baxter et al.'s [7] extension. While recognition justice was not directly sought in the methods of this research, the analysis remains open to such themes emerging from residents' experiences with energy developments in NL.

The rationale for using the tenets of energy justice is the similarities between Walker and Devine-Wright's [13] process and outcomes and procedural and distributional justice. These concepts have been studied across different contexts, clearly demonstrating a positive relationship between acceptance and a just process [8,11,22,36–39] and a fair distribution of benefits [8,11,21,36,40]. Examining community acceptance through a justice lens is essential as research shows that developers tend to avoid privileged areas, and that planning applications tend to be approved in areas with lower voting turnout in democratic elections [41], and that economic vulnerability has been used to justify development impacts in planning applications [42]. These patterns suggest approved projects may not be perceived as 'just' by residents, and may face less opposition in economically vulnerable communities with limited resources to challenge developments. Understanding community acceptance alongside perceived justice, therefore, becomes essential for revealing contextual power imbalances in renewable energy siting.

While Baxter et al. [7] suggest that procedural and distributional justice must work in tandem to achieve broad public support, research has challenged this assertion. Hogan [8] examined how ownership structure (community, cooperative, or private) influences which justice factors Scottish residents prioritise, finding that ownership was an important factor – i.e., those near community-owned projects emphasised procedural elements, whilst those near private developments focused on distributional benefits. Similarly, Ature [43] found that in Ramea, Newfoundland (one of this study's research sites), residents maintained positive attitudes toward wind projects due to benefits such as job creation despite lacking meaningful engagement in ownership or maintenance. Both studies found that factors beyond process and outcomes influenced acceptance, while also influencing which justice considerations are prioritised by residents. Though Hogan acknowledges contextual factors such as ownership structure, a critical gap remains in understanding how broader local contexts shape attitudes and justice perceptions.

This gap in energy justice literature is further highlighted by Bal et al. [35] who reviewed how perceptions of fairness are currently studied within energy social science. They found limited research explaining why people view specific aspects of energy transitions as fair or unfair. However, they offer two exceptions [44,45]. Relevant to this study, Velasco-Herrejon and Bauwens [45] aimed to understand the factors behind the acceptance of three Indigenous communities neighbouring wind installations in Southern Mexico. They found that the communities had complex conceptions of justice. For example, communities valued equal access to employment, education, income sources, and recognition of Indigenous identity, highlighting the critical role of contexts in shaping acceptance and justice concerns.

Research has consistently demonstrated the importance of justice in determining acceptance of onshore wind projects (see [7]). However, as shown in this section, critical gaps remain in understanding how contextual factors beyond procedural and distributional justice influence project acceptance [7] and shape residents' perceptions of fairness in current developments [35,45]. This study addresses these gaps by examining how residents' local experiences with resource projects influence their perceptions of acceptance and justice.

2.3. Place attachment and place disruption

Place extends beyond simple geographic location, differing from related concepts like 'space' or 'environment' by encompassing the physical aspects of a specific location and the different meanings and emotions associated with it by individuals or groups [46,47]. In community acceptance research, 'place' has been examined through frameworks including place attachment (bonds with locales) and place identity (locations contributing to self-identity; see [48]). Researchers have explored how change can affect people-place bonds [49], with such

impacts termed as 'disruption' to place attachment [50] or 'threat' to place identity [51].

Research has shown that the relationship between place attachment and disruption is integral to whether residents accept wind energy in specific locations [49]. Opposition is more likely for projects that threaten valued landscapes, such as those considered scenic or 'wild' [3,32,52,53] or when residents have memories of previous place disruptions, as seen in South Korea where past ecological disruptions like landslides influenced opposition to wind projects [54]. However, acceptance is usually high in already industrialised areas, often associated with the continuity of the landscape [55,56]. Despite these findings, limited research has examined how residents navigate the complex interplay of place attachment, scenic value, and dependence on local industry and resource extraction when forming their attitudes toward new projects.

Research on deindustrialisation illustrates some of this complexity. Thomas et al. [57] found that in Port Talbot, South Wales, memories of the steel industry's decline undermined acceptance of low-carbon transitions, particularly when they resembled forces that had previously created overdependence on external ownership. Similarly, Gibbs [58] documented how memories of the coal industry in Scotland continue to shape cultural and place identities long after operations ended, with these memories being passed intergenerationally through what he terms "a cultural circuit of coalfield memory" ([58], p. 57). This literature provides a framework for examining how past resource experiences influence attitudes toward energy projects in resource-dependent communities.

This paper integrates energy justice and local historical context to examine community acceptance of wind energy in Newfoundland. While research has established the importance of procedural and distributional justice [7,8,11] and place attachment [48,57] separately influencing acceptance, their intersection remains underexplored, particularly in communities with complex histories of resource extraction. This integrated approach addresses calls for more context-sensitive approaches to community acceptance [7] and a better understanding of perceptions of fairness [35]. The following section provides context about NL's resource development history and regional literature crucial for understanding residents' perceptions of wind projects.

3. NL context

Understanding community responses to wind energy in Newfoundland requires examining the province's complex history of resource development, which has profoundly shaped both place identity and expectations about industrial projects. This section provides the historical and institutional context necessary for applying the conceptual framework.

This research focuses on the island of Newfoundland, which is characterised by rugged coastlines, boreal forests, and largely untouched land [59]. While fishing has been central to coastal communities, moose hunting has become a significant cultural practice since their introduction in the early 20th century [60]. Since joining Confederation in 1949 as Canada's newest province, NL has maintained a strong cultural identity and independence. The historical isolation of coastal communities has preserved distinctive cultural features, including local dialects with English and Irish influences [59]. However, the relationship between NL and mainland Canada has had challenges, which are exacerbated by persistent stereotypes and derogatory 'Newfie' jokes that portray Newfoundlanders as unintelligent [61]. There have also been conflicts over resource development, including disputes with the federal government over offshore oil revenue sharing and federal loan guarantees for hydroelectric projects [62].

Under Canada's federal system, provinces control natural resources within their borders while the federal government regulates interprovincial energy trade, offshore resources, and nuclear activities [63]. Municipalities have jurisdiction within their boundaries for local planning and taxation, though provincial and federal governments lead projects on their respective Crown lands (public land owned and administered by government). Environmental assessments are typically completed at the provincial level but may involve federal review depending on potential impacts (e.g., to fish habitat, migratory birds, cross-border effects, or Indigenous rights) or is situated on federal land [64]. Provincial environmental assessment legislation mandates public engagement for development projects, including 35-day public comment periods for all registered projects, mandatory community information programs for larger developments, and provisions for public hearings when projects generate significant community concern [65].

Despite jurisdiction and potential for onshore wind energy, development has been minimal [4]. NL's energy context partly explains this, where the energy sector is dominated by hydroelectricity (95 % of the energy mix), followed by oil and diesel (3 %) [66]. Electricity distribution operates through a dual utility structure comprising Newfoundland Power (privately-owned) and NL Hydro (provincial Crown corporation), serving about 280,000 customers through three networks: the island interconnected system, the Labrador interconnected system, and 21 isolated coastal communities reliant on diesel generation [67]. Consumer electricity tariffs are regulated, with island customers paying about 14 cents per kWh as of 2024 [68]. Given the higher costs of diesel generation in remote communities, the NL government provides electricity rebates to bring rates in line with the main interconnected systems [67].

In 2007, the NL Government established a policy framework requiring that all wind development on provincial Crown land be undertaken by the provincial Energy Corporation or its designated partners, with the stated goal of maximising benefits from wind generation by maintaining provincial control [69]. However, only three demonstrator projects were developed during this period, with the last one developed in 2011 (see Section 4.1, Table 1). Mercer et al. [5] argue that the primary barriers to wind energy were political and economic, due to the province's institutional focus on hydroelectric development and oil revenues. This wind moratorium remained in effect until 2022, when it was lifted to enable wind development for industrial use and export [6], coinciding with a hydrogen alliance signed between the Prime Minister of Canada and German Chancellor in Stephenville, NL [70]. The Department of Industry, Energy and Technology, which leads the province's energy development initiatives, now oversees the wind development process through its Crown Land Call for Bids framework, with several large-scale projects selected in 2023, including World Energy GH2's 4GW Project Nujio'qonik [71]. This project features two wind farms with up to 164 turbines each on the Port au Port Peninsula and Codroy area for green hydrogen production and ammonia export to Germany, potentially creating substantial job opportunities [72].

This enthusiasm for wind-hydrogen development reflects a longer pattern in NL's approach to resource industries. Historical accounts describe NL's Premiers (the head of the provincial government) as "obsessed with natural resource development" ([73], p. 212), even before the decline of the cod fishery. The cod fishery, a mainstay in NL's economy throughout the nineteenth century [74], shaped the province's economic and cultural identity. However, despite clear evidence of decline, overfishing continued until collapse, leading to a federal moratorium in 1992 [74]. This devastated coastal communities, putting over 30,000 fishers and plant workers (about 12 % of the province's labour force) out of work [74]. This pivotal event has profoundly influenced NL's approach to resource development, driving a persistent search for new industries to fill the economic and social void left by the cod fisheries.

To diversify NL's economy, its first premier, Joey Smallwood, saw significant industrial and natural resource development as fundamental to the province's future [62]. Smallwood's vision included the Churchill Falls hydroelectricity project, which began operating in 1974 and now generates about 5428 MW [75]. The project remains controversial due to a long-term contract selling most of its energy to Hydro-Quebec at a

fixed low price until 2041, which Freehan and Baker [76] described as "barely distinguishable from being free" (p. 209). Bannister [73] argues that controversy over this hydroelectric project shaped residents' identity as a province perpetually struggling against external forces and awaiting deliverance from past injustices, a pattern which was repeated with the cod fishery's collapse in 1992.

Between 2013 and 2021, a second hydroelectricity project, Muskrat Falls (824 MW), was constructed to move past Churchill Falls' legacy [73]. Premier Danny Williams, who championed this project, stated, "It's the day, hopefully … when Newfoundlanders can finally let go of the Upper Churchill (Churchill Falls) and say, 'Done. It's over'" (p. 216, [73]), demonstrating how deeply the Churchill Falls controversy remained in the province's collective memory. When the project cost overran by $7.4 billion, totalling $12.7 billion, and a formal inquiry found executive mismanagement by the province-owned energy company [77], it reinforced the regional identity of resource mismanagement and economic loss.

Despite efforts to replace fishery jobs, this pattern has continued across other resource extraction industries, often reinforcing economic vulnerability. Mining exemplifies these challenges. In St. Lawrence, one of this study's research areas, mining operations exposed workers to severe health hazards, causing many lung cancer cases [78]. The industry has also been plagued by decades of cyclical shutdowns, resulting from companies going bankrupt, with some closures as recent as 2022 [79].

The oil and gas sector has followed a similar boom-bust pattern. Since offshore discoveries in the 1990s [62], the industry was widely heralded as the province's economic salvation, though with underlying cautious scepticism captured in Bruce Moss' song "The Islander" – a de facto anthem on the island:

> "Now that the oil is on our shore, we better take the time,
> to develop it more carefully, or else you're going to find,
> what could have been the answer to our poor economy,
> has changed our way of living and destroyed our fishery".

While oil wealth briefly transitioned NL into a 'have province' in the 2000s, which Bannister [73] argues ended NL's regional identity of struggle, the sector has proven volatile. For example, it contributed 35 % of GDP in 2007 before declining significantly after 2014, with unemployment reaching 14.4 % by 2016 [80]. Despite net-zero commitments and recurring boom-bust cycles, the NL government continues to prioritise offshore oil and gas [81].

In this context, despite initial steps toward wind energy development, its future role in NL remains uncertain. The proposed $25 billion World Energy GH2 Wind-Hydrogen-Ammonia project has secured federal funding and provincial environmental approval in April 2024 [82], though the Federal Environment Minister deemed federal assessment unnecessary [83]. Local media have documented mixed responses. Some see the project as an economic opportunity, particularly in hydrogen production and job creation. Others worry about the project's scale, environmental impacts, and lack of federal assessment [83].

This historical context of resource development and place disruption provides a crucial framework for understanding how communities in NL evaluate current and future energy projects. Bannister [73] shows how projects like Churchill Falls have shaped regional identity, yet there remains a gap in understanding how these layered historical experiences influence local communities' responses to wind developments. By examining how this historical context influences both perceptions of acceptance and justice, this study provides a novel perspective on community responses to renewable energy transitions in regions with complex resource extraction legacies. This is particularly important given that most of the research in NL has been focused on elite narratives (though see [43]), rather than centring the community voices that have been largely absent from energy transition narratives.

4. Methods

4.1. Study areas

This research examines residents' views on the four existing wind farm locations in Newfoundland's coastal communities of Fermeuse, St. Lawrence, and Ramea (Fig. 2). These communities host Newfoundland's only wind projects, providing critical insights into resident perceptions. This section first introduces the study areas, followed by the data collection and analysis.

Fermeuse and St. Lawrence each have nine Elemental Energy turbines located about 1 km from town. Ramea has two smaller projects—one by NL Hydro and one by Frontier Power Systems—located less than 1 km from town. These demonstration projects were built when the NL government was exploring wind energy potential, spanning the period before and during the wind moratorium on private development (2004–2011, see Table 1). The turbines in Ramea differ from those in Fermeuse and St. Lawrence in height and capacity, with the 2004 project representing an earlier generation of wind technology (see Table 1 and Fig. 3).

Although the communities share similar demographics, Fermeuse and Ramea have experienced slightly larger population declines compared to St. Lawrence, which is potentially attributed to the latter's mining industry. Ramea's Wind-Hydrogen-Diesel demonstration project is no longer operational [43]. Despite its innovative design integrating wind power with hydrogen storage, the project was decommissioned in 2014 after NL Hydro encountered persistent technical challenges with the hydrogen-fuelled generator [84]. However, the project's three wind turbines remain standing, though inactive.

The primary research methodology employed is semi-structured interviews supplemented by survey data to analyse wind energy acceptance, perceived energy justice, and place attachment and disruption. Due to COVID-19 restrictions and limited access to community-wide addresses, surveys were conducted prior to interviews. The survey and semi-structured interview protocol were designed based on previous literature (e.g., [21–22,31,92]) and then pre-tested. Residents (age $\geq$ 18) living near the wind turbines were sampled. Semi-structured interviews served as the principal method due to their ability to elicit participants' worldviews while allowing concepts to emerge organically from the data [93].

Mailout surveys (n = 146) were implemented from Jan-Apr 2021, achieving an average response rate of 25 %. A three-contact mailout method, adapted from Vaske [94], was used: (a) pre-notification postcard with online survey link; (b) first survey packet; (c) reminder postcard with online survey link. An additional reminder postcard with a shorter survey was sent to increase the response rate (see Tables A.1 and A.2 for variable wording and omissions). Resource constraints prevented additional contacts. Surveys were sent to all local addresses on Canada Post's system (see Table 2 for sample information).

Between September and October 2022, 6–8 semi-structured interviews were conducted in each community, lasting between 30 and 90 min (see Table 2). Eight residents preferred to be contacted by phone rather than meet in person. Budget constraints prevented additional contacts. Residents were initially invited to an interview in the survey, and a reminder invitation to all addresses on the mailing system was sent two weeks in advance. This recruitment was supplemented by snowball sampling to increase participation, particularly to address gender imbalance, though ultimately only one female participated in each community (see Section 4.2 for limitations). During fieldwork, residents

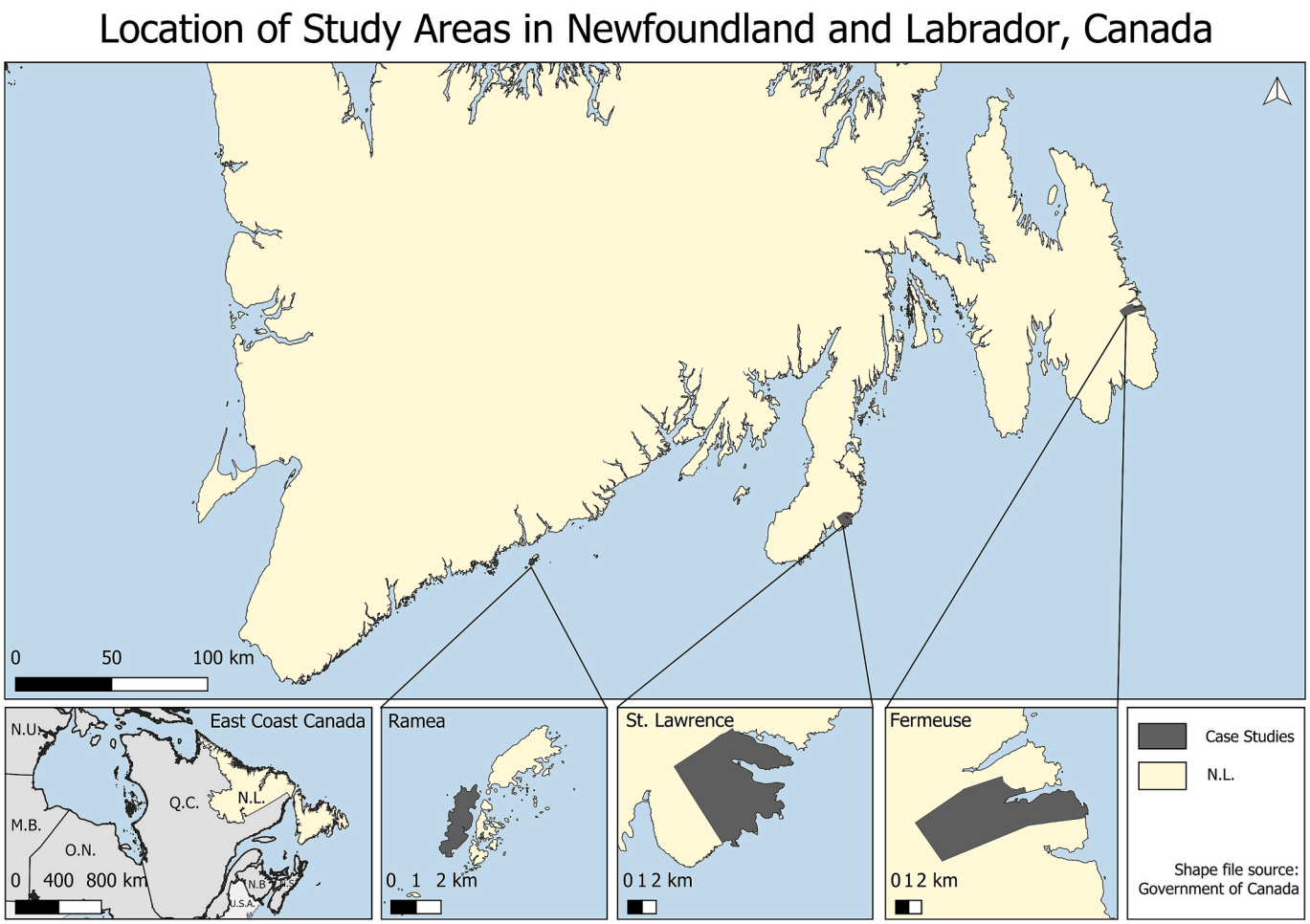

Fig. 2. Location of study areas in the eastern Canadian province of Newfoundland and Labrador (NL).

voluntarily provided informal tours of their towns, offering additional contextual insights and local historical perspectives that enriched the interview data.

The interviews utilised a semi-structured format organised around four broad areas of inquiry:

(1) Understanding residents' perspectives on the wind projects near their communities, including their views on how the turbines fit within their community;
(2) Identifying factors that residents believe influenced their views of the wind projects and exploring what actions, if any, could have improved their attitudes;
(3) Examining residents' experiences with the decision-making process and their perceived benefits and impacts from the project;
(4) Gathering insights for future wind energy developments in the province.

The first section explored place attachment and general community perspectives, before progressing to more specific inquiries about energy justice. The final area on future developments encouraged broader reflections on provincial energy transitions, integrating elements from both place and justice frameworks. The semi-structured interview format provided a flexible framework that allowed participants to introduce place-specific contexts and independent perspectives.

All interviews were coded using NVIVO 12. The coding process involved the development of a detailed coding tree based on critical concepts from the literature review, including acceptance and perceived energy justice factors (procedural justice, distributional justice) alongside place attachment and historical place disruption (i.e., history of changes in resource industries). This analysis combined deductive and inductive approaches, allowing for systematic analysis of the interview data concerning the study's aims while remaining responsive to new insights such as those related to place and recognition justice. To protect participant anonymity, pseudonyms were used, and any potentially identifying information was removed from quotes. The study received ethical approval from the University's Ethics Committee (approval code: GG15091).

4.2. *Methodological limitations*

Several limitations should be acknowledged in this study. While the original research design intended to begin with qualitative interviews due to limited literature on wind energy in NL (though see [5,43]), COVID-19 restrictions necessitated starting with surveys instead. Pandemic conditions also prevented the planned door-to-door sampling approach, and the rural characteristics required the use of Canada Post's direct mailing list in the absence of a comprehensive household database. This method yielded a response rate of approximately 25 %, which is consistent with similar Canadian studies (e.g., [21,22]). The reliance on convenience sampling for both surveys and interviews (with added snowball sampling for interviews) potentially overrepresents participants with stronger opinions about wind energy projects. Consequently, the survey data are used primarily to supplement and triangulate the more detailed insights gathered through qualitative interviews. Gender representation presents another limitation, as participation remained predominantly male despite efforts to diversify perspectives through

Table 1
Description of case studies, demographics, and interviews and survey samples.

Project details	Fermeuse	St. Lawrence	Ramea	
Project type	Wind	Wind	Wind	Wind-Hydrogen-Diesel
Size of project	27 MW	27 MW	0.39 MW	0.30 MW
Model & number of turbines	9 Vestas V90 3 MW	9 Vestas V90 3 MW	6 Windmatic 15 s 65 kW	3 NorthernPower100 100 kW
Height of turbines	Between 69 and 85 m	75 m	25 m	Between 30 and 50 m
Owner	The project underwent several ownership changes before Elemental Energy (private company) acquired the project in 2020.	Same as Fermeuse.	Frontier Power Systems (private company)	NL Hydro (provincial Crown corporation)
Operating Since	2009	2009	2004	2011
Currently operating	Yes	Yes	Yes	No, but turbines are still present alongside a hydrogen electrolyser, storage tanks, and associated generating units.
Distance from town	About 800 m from Fermeuse	About 1 km from the St. Lawrence	Adjacent to the town	
Rationale and origins	Initiated by Vector Wind Energy in response to NL Hydro's call for a Wind Demonstration Project. The project aimed to address provincial energy needs while reducing emissions [85].	Initiated by NeWind Group in response to NL Hydro's call for a Wind Demonstration Project. The project aimed to test the reliability of wind technology in Newfoundland's climate while reducing greenhouse gas emissions [86].	In 2004, Ramea was chosen as Canada's first wind-diesel demonstration project, with Frontier Power Systems Inc. installing 6 turbines. In 2007, NL Hydro (formerly under Nalcor Inc.) established a subsequent wind-hydrogen-diesel project with 3 additional turbines and hydrogen storage to further displace diesel use. Both initiatives aimed to address high costs, carbon emissions, and environmental risks in isolated communities [43].	
Employment impact	• 10 to 20 during construction • 2–4 full-time jobs for operation and maintenance • Annual servicing of 2–4 days [85].	• 20–25 people during construction • 2–3 full-time jobs for operation and maintenance • 2 part-time jobs for maintenance assistance [86].	• More than 10 people were involved in the erection of the turbines, which spanned over a 12-day period [87] • Ramea Volunteer Fire Department received hydrogen safety training and specialised detection equipment [43].	
Public Comment Periods	• Initial comment period (2006) • Noise and Visual Analysis Studies public review and comments (2008) [88].	• Environmental assessment public comment period (2001) [89].	• During initial project planning, public meetings were held at the Ramea community centre to present project details and the Town Council was consulted [43]. • Initial public comment period for Wind-hydrogen-diesel (2007) [90]	
Benefits	Provides tax revenue to the local council and supports community initiatives, such as local environmental, education, and other types of community organisations.	Same as Fermeuse.	No direct involvement of community in operations or benefits. Frontier Power Systems was Canada's first wind-diesel demonstration project, built to support the community to reduce diesel generation [43].	

snowball sampling. This imbalance may have influenced the range of views captured, though it is worth noting that women's expressed attitudes aligned with findings from previous research in Ramea [43] and studies on Newfoundland identities [73]. Additionally, most participants were over 40, which may have influenced their perspectives on community revitalisation. Nevertheless, this study is the first to examine factors influencing wind acceptance across the three communities with wind energy in Newfoundland. Future research could employ door-to-door methods to achieve a more balanced representation.

Regarding positionality within these communities, I occupy both insider and outsider positions. While I am a Canadian who lived in St. John's, NL (2012–2018), I am also a 'Mainlander' as Newfoundlanders would describe Canadians not from the island. My parents are from Newfoundland, and my childhood summers were spent visiting grandparents on the island's west coast, creating a personal attachment. During community visits (though not in interviews), my father accompanied me, and his 'insider' status likely helped establish trust. To address potential bias, I implemented neutral questioning protocols and maintained a reflexive analytical approach [93]. Nevertheless, this partial insider position likely facilitated more open conversations and deeper insights than might not have been possible for a complete outsider in these closeknit communities.

5. Results

This section examines residents' perceptions of wind energy through energy justice and local historical context. First, the results examine how local historical context (through place attachment and disruption) influences residents' evaluations of wind energy (5.1). The analysis then examines perceived energy justice in current projects (5.2) and how these experiences shape community acceptance of future developments (5.3).

Fig. 3. Photos of the four wind projects in the three communities of St. Lawrence, Fermeuse, and Ramea during fieldwork by researcher.

Table 2
Demographics, interviews, and survey samples.

Project details	Fermeuse	St. Lawrence	Ramea
Demographics			
Population 2021 [91]	266 (50.75 % Male)	1115 (49 % Male)	390 (48 % Male)
15–64	150	645	205
65+	95	340	165
Population change 2016–2021	−18.2 %	−6.5 %	−13.2 %
Survey			
Sent	80	460	175
Useable surveys	27 (34 %)	77 (17 %)	42 (24 %)
Percentage female	33 %	37 %	21 %
Interviews			
Number interviewed	6	8	8
Number Female	1	1	1

5.1. The legacy of historical resource disruption on wind energy perceptions

5.1.1. Place attachment to the cod fishing era and disruption from its collapse

Residents expressed strong place attachment to their communities. This deep sense of belonging was evident in how they described the interconnectedness of local life in these small, close-knit places. As Andrew suggested, living in Ramea

> "has been an absolute gift…It's a different way of life living here… I know everyone" (Ramea #6).

Residents also expressed strong attachment to the local landscapes, describing their love for activities such as nature and wildlife photography, walking on local trails, and spending time on or near the ocean. Indeed, residents' attachment transcended physical distance, with many maintaining deep emotional ties to these communities, as described by interviewees who had left to find work elsewhere but eventually returned.

Residents also described an attachment to a past community, one before the 1992 cod moratorium. The cod fishery was described as the fundamental economic and social foundation of the province, as Patrick succinctly observed

> "Newfoundland and Labrador was a poor province built on the strength of the fishery" (Fermeuse #4).

The depth of this attachment was particularly evident in residents' vivid memories of community life during the fishing industry's peak. James's detailed recollection of 1950s Ramea captures the vibrancy that the fishery once supported:

> "We had everything here in Ramea…a supermarket, clothing and everything coming from Boston… fresh fish all year round…full water and sewer system all through town. The roads were paved in the early '80s … all of the roads…And we had a good recreation system… the hockey rink and six hockey teams, senior hockey teams, men playing hockey out there! Ball teams on the ball field. Now, there is not enough to even make a team. We had all that. Swimming pool on the back of the island… There was nothing that Ramea wanted for" (Ramea #4).

The 1992 cod moratorium was viewed as a sudden and profound disruption to the cherished memories of a prosperous community. Referring to the sudden closure of fisheries and fish plants, Andrew observed,

> "All you've worked for can be lost in an afternoon" (Ramea #6),

emphasising how fast things can change. This abrupt disruption forced many residents to leave their communities to seek employment elsewhere. As Daniel relayed:

> "It is the same old story in Newfoundland. You have to leave to get work" (Fermeuse #2).

Residents described this experience of having to leave for work as a common reality across Newfoundland's coastal communities after the collapse of the fisheries.

The impact of the cod fishery disruption is also visible on the local landscapes. While in the communities, residents offered guided tours, during which they often contrasted cherished local features with the visible impacts caused by the cod fishery collapse. In Ramea, for instance, the wind turbines were built amid growth, but the town's population declined sharply after the fisheries and fish plants closed. As

James explains:

> "30 odd building lots are vacant because when the town started to disappear, nobody built there" (Ramea #4).

Graduation photos lining the school's entrance hall, observed during a visit, also reflect this demographic shift. Class sizes declined from nearly 30 students in 1994 to four students from 2014 onwards – a stark illustration of what residents described as a school now oversized for their population.

These experiences of economic upheaval and disruption, combined with their attachment to their communities, both past and present, play an important role in how residents view new developments in their community, including wind energy. Given the loss experienced with the cod moratorium, residents viewed wind energy through the lens of community renewal and historical disruption. Patrick, for instance, explicitly connected the province's fishing heritage to wind energy's potential to

> "grow back [the community] to when I was a kid … You put these (wind turbines) up … and Newfoundland was once famous for its fish, but now it's also famous for its wind" (Fermeuse #4).

In this context, wind energy was not just framed as a technological alternative but as a potential means of restoring community prosperity, explicitly linked to the legacy of the fisheries.

Despite seeing wind energy as an economic opportunity, residents understood that the small-scale projects in their communities could not replace the extensive employment and social infrastructure once provided by the fisheries. As Patrick stated:

> "You aren't creating big jobs in wind. Once the windmills are up, you only need a handful of people to maintain them. Nothing can ever replace the fishery, where you are dealing with tens of thousands of people, but wind energy is benefiting the people that are here with the tax base…Most people in outports are retired people. The kids, when they get their education, they're gone into another community or another province" (Fermeuse #4).

These limitations created complex tensions for residents. While they appreciated the modest benefits wind energy provided, they recognised it could not fill the economic and social void left by the fisheries. Evidence of this persistent economic challenge is that young people continue to leave these communities after completing their education (see also Section 5.2.2). However, residents acknowledged that the larger wind-hydrogen developments being proposed at the time might present different economic possibilities.

Residents' scepticism toward wind energy extended beyond the fishery; it was embedded in a deeper historical narrative of resource extraction across the province. As William lamented:

> "The government just seems out of touch. Talking about past governments more than the present. But in Newfoundland, it has always been the idea that somebody else has to do this. A company has to come in here and set that up. And that's always been the same with fishery, mining, and energy. I suppose I tend to lose faith, based on the past, from what I've seen, a waste of money and resources. But hopefully, things are going to change. We have to be hopeful" (St. Lawrence #3).

William's statement reflects how scepticism toward wind energy stems from a historical pattern of external resource extraction. Despite this fatalism born from past disappointments, residents maintain cautious hope that wind energy might finally bring positive change.

5.1.2. *The unfulfilled promise of hydroelectricity*

Large-scale hydroelectric projects like Churchill Falls and Muskrat Falls created similar disruption patterns. Though residents were disappointed in its outcomes, Churchill Falls was seen to be born out of a desire to provide economic opportunities in a province with great need. As Andrew explains:

> "You can't condemn them (the provincial government). People had limited finances, and somebody came in with a willingness to develop it… People were poor. They needed jobs (Ramea #6).

Despite shortcomings, residents were somewhat forgiving of the result on its own. However, when discussing Muskrat Falls, which went $7.4 billion over budget, residents were reminded of the government's mismanagement of Churchill Falls, leaving many unforgiving:

> "But Muskrat Falls… I don't care what way they twist it … It is a bill that our children's children down the road from us will still be paying for. And by that time, if it ever gets paid for, it will need maintenance and repairs. Then, the federal government has to subsidise our power rates because of this. Who didn't think it through? A lot of people" (Fermeuse #4).

Further undermining public trust, a formal inquiry concluded that executives "frequently took unprincipled steps" to secure the project [77]. The NL Government later acknowledged the financial burden of Muskrat Falls as "one of the biggest challenges facing our province" (p. 1, [95]). This disruption created distrust in the promise of new developments, influencing how interviewees evaluate wind energy.

Residents frequently drew explicit comparisons between the perceived past hydroelectric failures and potential wind energy outcomes when discussing their expectations for new developments in the province. As William explains:

> "We've had a lot of failures in the past. You look at the government's fiscal situation that we're in; we don't even need to mention Muskrat Falls, but it's just an example of how much waste that could have been converted into wind energy. Nothing wrong with hydro but just based on the costs" (St. Lawrence #3).

While hydroelectricity was once viewed as a path to economic revival, the perceived failures of previous developments have reinforced a regional identity marked by loss and struggle. These experiences with hydroelectric development have fostered both cautious optimism about wind energy as a potential alternative and scepticism about whether its economic benefits will materialise in meaningful ways for local communities.

5.1.3. *Mining's toxic legacy*

Mining in NL, particularly in communities like St. Lawrence, has left a complex legacy characterised by significant safety hazards and eventual corporate bankruptcies that devastated local economies. As William explained:

> "These (mining) companies, they come in and it was always the same pattern. They take advantage of the situation because they know the government was begging for industry. Then all of a sudden, Jesus, they were bankrupt … That's the kind of crap you deal with in Newfoundland. We've had quite a history. Let's face it" (St. Lawrence #3).

Mining companies' bankruptcies intensified economic hardships in St. Lawrence. These disruptions reinforced a pattern where the province's desperation for industry led to exploitation and abandonment, leaving communities bearing the social and economic costs.

Residents' negative experiences with mining, once seen as a replacement for fishing jobs, influenced their acceptance of wind energy. Beyond economic instability, mining brought severe health consequences, as William explained:

> "They lost a lot of men from industrial disease in the mines from the '30s to '70s … The graveyard is full, just the size of it compared to the size of the town … But the wind development…the fact that the operation is just continuous, smooth. Whatever they did in the

background. Who really cares? Because they are not threatening people" (St. Lawrence #3).

Wind energy's safety and stability contrasted sharply with mining's hazards and volatility, strengthening local support for wind development.

5.1.4. Oil's fading flame, wind's promise

Residents described how oil and gas development in NL, once celebrated as the province's economic salvation, has produced mixed outcomes for their communities and province more generally. While acknowledging oil's current economic importance, several residents saw wind energy as representing a more sustainable direction. As Patrick suggests:

> "Oil is going to be gone down the road. It's a non-renewable resource… But right now, we still need some oil. Everything is oil based… But on the windmills … it's good for our communities … I'm in favour of the windmills because it's the way of the future, it's clean air" (Fermeuse #4).

In contrast to oil's "fly in and fly out" work, wind projects offered local opportunities that could enable youth to "move back home and start a family here" (Fermeuse #6). While residents with working-age children expressed these hopes for their children, previous resource disruptions have made them cautious about any industry's transformative potential.

5.1.5. Breaking the pattern? Wind as a potential opportunity

Unlike previous resource disruptions, residents viewed wind energy as a positive change that provided financial support for community viability amid population decline (see also Section 5.2.2). As Robert explained:

> "I think they're good for the community because, of course, they bring in taxes, which we can use because our population has decreased … so financially, they are a great benefit" (Fermeuse #1).

This focus on tax revenue shows how residents valued wind energy specifically as a means to maintain essential services despite their shrinking population base.

Beyond economic benefits, wind projects contributed to a positive sense of place identity for residents, challenging persistent stereotypes about Newfoundland and providing a source of community pride. William articulated this shift in perception:

> "Lots of people, especially in Ontario, just never thought that wind turbines would exist here … But the fact is that when they see that, they say, Jesus, you live in a modern place. Absolutely. We have electricity and everything now from wind turbines. Moving right along" (St. Lawrence #3).

This pride in modernisation contrasts with the loss that characterised past resource developments. Wind energy represented community sustainability without hydroelectric cost overruns, mining health hazards, or oil's volatility. Its perceived stability aligned with residents' hopes for sustainable industries that could potentially break historical disruptive patterns.

5.2. Experiences with wind developments

5.2.1. Community acceptance of nearby wind farms

Residents across all three communities expressed strongly positive views toward their local wind farms in both interviews and surveys (see Fig. 4, 3a-b), despite project variations (standard turbines in Fermeuse and St. Lawrence versus Ramea's older turbines with a Wind-Hydrogen-Diesel project). However, Ramea showed slightly lower acceptance (76.2 %) than St. Lawrence and Fermeuse (100 %), possibly reflecting project continuity issues. For example, Andrew expressed:

> "disappointment when they sort of stopped the project" (Ramea #5)

when discussing the discontinued Wind-Hydrogen-Diesel project.

5.2.2. Perceived distributional justice: benefits and trade-offs

When interviewees were asked about factors influencing their acceptance, residents highlighted two main distributional aspects, with local economic benefits being primary. Fermeuse and St. Lawrence residents emphasised these advantages, with David noting that the turbines provide a

> "very progressive tax regime put in place for the community" (St. Lawrence #8),

which prevented tax rate increases. Survey results reflected this pattern, with Fermeuse and St. Lawrence respondents showing greater agreement on the economic benefits than those in Ramea (Fig. 4, 3a). In Ramea, despite residents not receiving direct financial benefits through tax incentives from either project, anticipated economic gains initially drove their support. One resident explained:

> "In the beginning, we were hopeful and very willing for the project to take place…hoping that it was going to make a difference to our electricity bills … but we've seen nothing. I think the project was basically a flop" (Ramea #1).

As an off-grid community reliant on diesel generators, residents hoped the project would reduce electricity costs. However, these savings never materialised because NL Hydro maintains uniform pricing across all off-grid communities regardless of local generation methods [43]. Residents hoped wind projects would reduce diesel use, but the Wind-Hydrogen-Diesel system has been inactive for years and Frontier Power's project is too small to power the island consistently, leaving the community dependent on diesel generation.

Residents also valued the creation of local permanent jobs that

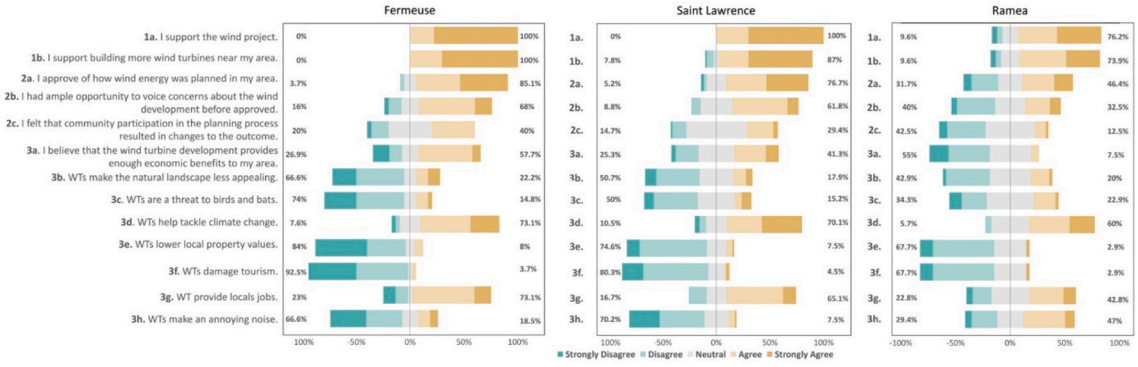

Fig. 4. Surveyed participants' responses on acceptability (1a-b), procedural justice (2a-c), distributional justice (3a), and perceived impacts (3b-h) of the wind projects. Abbreviations are used, i.e., WT for wind turbines. See Appendix 1 for full question wording (Table A.1 and A.2).

allowed people to return to their communities. Elizabeth observed:

> "They have been good for the community. There's a lot of people who've come. Well, at the beginning of it, a lot of people got jobs. There are two locals that have permanent jobs there" (Fermeuse #5).

Despite the limited number of permanent positions, these roles generated significant enthusiasm. Survey results confirmed this sentiment, with residents across all communities agreeing that wind projects created jobs (Fig. 4, 3a and g).

The second rationale focused on environmental benefits, with residents consistently describing wind energy as modern, cost-effective, and environmentally friendly. Survey data reflects this view, with most respondents seeing wind turbines as addressing climate change (Fig. 4, 3d). William explained:

> "I've sent people pictures and stuff of our town…and they say, 'Oh, your town is so modern, it has windmills.' You know, people are impressed with that. And who wouldn't be in this day and age…the fact that you have something that is so cost-effective and clean energy… which is the big one nowadays. That's the direction the world has to go in" (St. Lawrence #3).

As demonstrated in this quote, residents take pride in their community's contribution to renewable energy, environmental responsibility, and being seen as modern.

Moreover, initial concerns about potential negative impacts were often dispelled through direct experience, as Patrick explained:

> "The thing about windmills… it's like when it came here, there's always going to be negativity, because 'oh they'll kill the birds', or 'they'll be some noisy' or 'cause cancer'. 'There's a lot of moose in that area' and 'all the moose will be gone', all this stuff. Everything I just said is not true. It did not kill birds. It is the best hunting area; I think they attract moose. It is a tourist attraction. And it also benefits the community, the province, and the country as a whole" (Fermeuse #4).

Some residents described unexpected benefits, from perceived improved hunting to tourism potential. While survey respondents acknowledged concerns about impacts on wildlife and noise (Fig. 4, 3c and h), they still supported the projects. This widespread support despite potential trade-offs reflects a pragmatic balancing of priorities, as Michael explains:

> "I hate anything that touches any part of the environment, but I knew people need to make a living. For me to speak up in this town and say we don't want any work here, let's not hurt the environment. You know what I mean? So there's a balance" (St Lawrence #4).

This demonstrates how residents weigh distributional justice in economically vulnerable communities, while also reflecting recognition injustice as some feel compelled to set aside environmental values rather than having them meaningfully addressed. Yet other residents saw wind energy as addressing both concerns, with Robert proclaiming:

> "We are saving the environment … we are saving Newfoundland!" (Fermeuse #1).

Despite these tensions, residents' support for wind projects reflected shared hopes for both economic opportunities and environmental progress.

5.2.3. Perceived procedural justice: communication and community involvement

Perceived procedural justice was only mentioned in interviews if directly probed. When addressed, interviewees primarily discussed their experience with communication with the developer rather than opportunities to voice concerns or participate in the outcome. Participants across different communities reported varying experiences. In Fermeuse and St. Lawrence, participants described positive engagement. As Thomas explained:

> "I was happy with how everything went. I really was. And we had good communication with the guys that started up the project" (Fermeuse #3).

Residents reported that developers held preliminary consultation meetings before construction and engaged informally with the community, requesting assistance with construction (such as using residents' all-terrain vehicles). They also offered locals excess construction materials, which provided local benefits while likely reducing developers' disposal costs in the island context. In contrast, Ramea residents reported limited communication, particularly regarding the termination of the Wind-Hydrogen-Diesel project. While residents' speculations about the causes aligned with government explanations (e.g., technical issues and Muskrat Falls, [84]), the lack of clear communication eroded community trust.

The limited discussion of procedural elements in interviews aligns with survey results. While residents reported generally positive involvement, they rated procedural aspects less favorably than overall project support (Fig. 4, 2a-c), particularly in Ramea where 30–42 % disagreed about having voice or influence in the outcomes. However, developments in Ramea at the time of the interviews suggested evolving approaches to community involvement. Frontier Power has proposed community ownership as part of turbine upgrades, with the community potentially using non-operational Wind-Hydrogen-Diesel turbines as their stake. Andrew described the arrangement:

> "Shares would come to the town, and after so many years, there would be some kind of a low-cost buying … After it's paid for, [the developer] will transfer full ownership with the exception of technical assistance and bits and pieces like that" (Ramea #6).

While residents expressed interest in gaining greater control over local energy, they remained cautious about implementation challenges, particularly securing existing turbines from the provincial utility. As these discussions were preliminary during data collection, many details about ownership structure and implementation remained undefined.

5.3. Lessons for future development

Despite emphasising distributional benefits when discussing current projects, interviewees identified various procedural, distributional, and recognition justice needs for future developments. Drawing on past industry experiences, Andrew highlighted key considerations:

> "I'm not opposed at all to windmills. It's not the windmill per se. It's who owns it. Who controls it? Who controls the land around it and to it? What's the purpose of it? How many are you looking at? In a given area, how is it going to impact the people who live there?" (Ramea #6).

These questions reveal heightened procedural justice concerns stemming from experiences with externally controlled developments. Participants also warned against leasing land without guarantees and stressed the need for transparent land-use decision-making. This advice applies to various stakeholders within Newfoundland's governance context, where municipal governments control decisions within their boundaries, but provincial authorities typically oversee projects on Crown land. Overall, their experiences of disruption from resource-based developments led residents to advocate for more thoughtful and accountable decision-making in future projects, particularly after witnessing the consequences of mining bankruptcies.

Building on procedural justice concerns, residents advocated for greater transparency and education about wind projects. Emma suggested:

> "Just more awareness, more education about how they actually operate, the purpose of them, where exactly the power goes, how it

benefits the community, how it impacts the community. I still think there's a big gap in knowledge as to how and whether they benefit or impact the community itself…. Most people don't even know who's the operator of those mills" (St. Lawrence #7).

This highlights a procedural justice gap where limited information prevents residents from fully evaluating projects. Emma's recommendation for proactive information sharing emphasises the need for continuous community engagement throughout project lifespans.

Residents also stressed the inevitability of the change that is occurring around them. As Patrick stated:

"Down the road, everything changes. You can do what you like, but you can't stop it, just like you can't stop the wind from blowing. So, years down the road. There will be names of families we don't recognise" (Fermeuse #4).

This recognition of inevitable change adds a vital dimension to residents' perspectives. Alongside Andrew's concerns about ownership and Emma's call for transparency, their testimonies suggest residents want development processes that provide recognition justice through agency and meaningful inclusion. These concerns likely reflect caution stemming from previous resource disruptions and desires for greater control over their future.

6. Discussion and conclusion

6.1. How resource development legacies shape wind energy acceptance

Across the three communities, place attachment and disruption shape residents' perceptions of current and future wind projects. While residents' place attachment aligns with broader studies of NL identity [73,96], it produces a different response than typically seen in energy research. Unlike studies where place attachment leads to opposition [3,32,52,53], this study finds 'sceptical optimism'. In other words, residents support wind energy as a potential means to restore community prosperity lost after the cod fishery collapse, while memories of previous resource development disruptions temper their expectations.

The 1992 cod fishery moratorium represents the most significant disruption to these communities, with a distinctive effect compared to other contexts. Rather than generating opposition to energy developments (e.g., [54,57]), it intensified residents' desire for solutions to restore community prosperity. This memory, which has been passed down generations, mirrors Gibbs' [58] concept of a 'cultural circuit of coalfield memory' (p. 57). Following the fisheries collapse, communities sought economic revival through other resource industries, but disappointing experiences with these projects have created a cautious lens through which residents now evaluate wind energy.

Hydroelectricity projects exemplify this pattern of hope and disappointment. Churchill Falls and Muskrat Falls, promoted as significant economic opportunities for the province, instead reinforced a cycle of unfulfilled potential. Additionally, Bannister [73] argues that hydroelectric controversies shaped NL's identity as a province struggling against external forces, and that this identity diminished when offshore oil brought temporary prosperity. However, this study reveals the persistence of this adversity-shaped identity in wind energy debates. Similar to Thomas et al. [57], who found that memories of steel industry decline made Port Talbot residents wary of externally controlled transitions, hydroelectric disappointments in NL fostered scepticism about large-scale energy projects. However, unlike in Thomas et al.'s study, despite these memories, NL residents maintain a cautious hope that wind energy might revitalise their communities.

Mining, oil, and gas experiences further shaped residents' perceptions of wind energy. In St. Lawrence, residents contrasted the health impacts of mining and bankruptcies with the perceived safety and stability of wind energy. Similarly, while oil and gas brought economic benefits, its boom-bust cycles and perceived declining viability positioned wind as a more sustainable alternative. This pattern aligns with Huber's [97] argument in his book Lifeblood that oil narratives often promise prosperity but typically result in "wealth and poverty, boom and busts" (p. 2). In contrast to research in other resource-dependent regions, where industrial legacies typically generate resistance to new energy developments [54,57], residents viewed wind energy as breaking this pattern of unsafe and unstable development.

Current wind projects enjoyed high acceptance across all communities (76.2–100 % in surveys, Fig. 4). Despite variations in project characteristics, interviewees' explanations align with justice explanations, primarily citing distributional benefits such as tax revenue and the clean reputation of wind energy, findings similar to those of Hogan [8] (see Section 6.3). Yet underlying these explanations, residents also evaluated wind energy through the lens of past industries, valuing stability and predictability over benefit magnitude. This willingness to accept much smaller employment benefits (i.e., 2–3 jobs versus thousands in the former cod fishery) in exchange for reliability reflects residents' experiences with significant disruption from industry. Although some research suggests that industrial histories can reduce opposition to new energy infrastructure by reinforcing established development patterns (e.g., [56]), these findings also indicate that resource histories can create openness to new energy technologies when perceived as breaking harmful cycles.

Alongside residents' preference for stability over the scale of benefits, their emphasis on wind energy as 'clean' and modern revealed an understudied dimension of energy acceptance, recognition justice. In a province that has long felt distinct from, and often misunderstood by, the rest of Canada, such as through derogatory "Newfie" stereotypes, residents' pride in hosting modern wind technology was seen to challenge these narratives. While procedural and distributional justice have dominated energy justice literature [35], these findings demonstrate that recognition justice plays a significant role in shaping community responses to energy development, particularly in regions with strong cultural identities and histories of feeling marginalised.

Notably, even setbacks within the wind sector did not generate negative perceptions among respondents. For example, the NL government's wind moratorium did not reduce residents' enthusiasm for wind energy. Similarly, Ramea's disappointing Wind-Hydrogen-Diesel project closure did not diminish support for wind technology in general. Unlike disruptions from mining bankruptcies or Muskrat Falls cost overruns, setbacks in wind projects did not impose lasting economic hardship on communities. Current wind projects demonstrated the stability and reliability absent from other resource developments, making residents less negative toward wind developments in general. However, residents remained wary due to previous experiences with resource development failures.

Ramea also stood out as the only community discussing the potential for community ownership, reflecting residents' critical reflections on past resource development. Frontier Power initially proposed community ownership, but only after several years of project operation. While interested, residents remained wary about implementation challenges, particularly the delayed timeline and the need to secure turbine ownership from the provincial utility. Community ownership models exist across Canada, though the specific models and level of community control vary significantly between provinces, with some offering targeted support mechanisms like feed-in tariffs for community projects [98]. Given the complexity of the proposed ownership scheme, alternatives like shared ownership arrangements may be more appropriate. This arrangement would allow communities to become financial partners, such as by owning physical portions or purchasing shares of future revenue [99], potentially reducing financial and administrative burdens while maintaining community involvement.

6.2. Implications for future wind energy projects in NL

As the NL government's Department of Industry, Energy and Technology considers moving forward with large-scale wind energy development, these community perspectives take on heightened importance. The proposed 4GW World Energy GH2 Project Nujio'qonik marks a dramatic leap from existing 27 MW developments, scaling from nine turbine projects to approximately 164 turbines on just one of its four sites, with each site expected to generate over 1GW [83,100]. This shift represents a fundamentally new scale of development, far beyond what these communities have previously experienced, with the potential to transform entire regions.

The perspectives shared by residents in this study offer critical guidance, highlighting the importance of all three tenets of justice, particularly recognition. They highlighted the need for clear communication, transparent decision-making, and ongoing community engagement, with specific concerns about ownership, control, purpose, turbine quantity, and local impacts being addressed. These concerns are deeply rooted in past experiences of resource mismanagement that left many communities vulnerable to economic disruption. Given the province's shared history of resources (e.g., hydroelectric development and the collapse of the cod fisheries), these concerns likely resonate across many rural communities in NL, including regions where new large-scale wind projects are being proposed.

To ensure fairer developments, the NL government should develop best practice guidance for onshore wind projects that incorporates meaningful community engagement, transparent decision-making, and explores local ownership models (e.g., community benefit societies or co-operatives, as implemented elsewhere in Canada [98]). Creating such standards may be critical to building trust and acceptance for future large-scale wind energy initiatives in the region, while addressing concerns over past developments. As there are reports of delays to wind-hydrogen projects in 2025 due to challenging market conditions for green hydrogen [101], there is time for the NL Government to implement clear, community-informed policies that build trust and address justice concerns.

6.3. Implications for community acceptance and energy justice frameworks

This paper seeks to integrate an energy justice approach with local historical context to understand community acceptance of wind energy (present and future) and residents' rationales behind their justice considerations. While residents framed their acceptance of current wind projects largely in terms of energy justice, discussions about future developments revealed that these perceptions were deeply shaped by past experiences with other resource projects. These historical experiences contributed to what this paper terms *sceptical optimism*. On the one hand, residents' attachment to their once-thriving communities and positive experiences with current wind projects drive support for future development. On the other, residents' optimism is tempered by hard-learned lessons from the previous resource projects that have shaped community identity and expectations.

These findings contribute to three critical areas in existing frameworks for understanding perceived energy justice and acceptance. First, while previous studies typically find that place attachment leads to opposition when developments threaten valued places [49], this research reveals that attachment can also generate support, such as in economically vulnerable communities attached to memories of past prosperity. For example, residents supported wind energy because they saw it as a potential means to restore the economic vitality they remembered from when the cod fishery was thriving. This attachment to a past place supports the optimistic side of their attitude toward wind energy.

Secondly, this study addresses a gap identified by Bal et al. [35] in energy justice literature regarding what underlies communities' conceptions of fairness in energy transitions. Building on Hogan's [8] insight that contextual factors likely influence how residents prioritise justice considerations, this research finds that communities' notions of fairness are deeply embedded in historical experiences with resource development. This finding underscores the importance of recognition justice. For instance, residents in St. Lawrence valued wind energy's safety record compared to prior experiences with industries such as mining. This reveals a complex tension. While renewable energy projects in vulnerable communities can provide important pathways to justice by creating new economic opportunities, these same vulnerabilities may also expose communities to exploitation. Echoing Velasco-Herrejon and Bauwens' [45] findings on wind energy acceptance in Mexico, this study underscores that community understandings of justice are nuanced, context-specific, and deeply shaped by history, culture, and everyday realities. To advance energy justice research and practice, future work must more fully incorporate these localised, lived experiences into frameworks and policy design.

Lastly, frameworks for understanding community acceptance of renewables have typically focused on procedural and distributional justice factors (e.g., [7,13]). However, consistent with Baxter et al. [7], this research supports expanding these frameworks to incorporate local historical context as a critical component, equal in importance to procedural and distributional justice (see Fig. 1). Additionally, these findings support existing calls for recognition justice to be examined alongside procedural and distributional justice [25,35]. Rather than constituting a separate axis in the framework, recognition justice operates alongside local historical context, shaping how communities interpret procedural and distributional justice. Future research should further explore how recognising local historical context, and the (in) justices found within it, can enhance understanding of justice considerations and, consequently, community perceptions of current and future energy projects.

CRediT authorship contribution statement

Jessica L. Hogan: Writing – review & editing, Writing – original draft, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix 1

Table A.1
Survey percentage results from Newfoundland survey across each community for acceptance, procedural, and distributional justice.

	Fermeuse					St. Lawrence					Ramea				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Acceptance															
I support the existing wind power project in my area.	0	0	0	22.2	77.8	0	0	0	29.9	70.1	4.8	4.8	14.3	35.7	40.5
Count	0	0	0	6	21	0	0	0	23	54	2	2	6	15	17
Missing	0														
I support building more turbines near my community.	0	0	0	29.6	70.4	1.3	6.5	5.2	27.3	59.7	4.8	4.8	16.7	42.9	31
Count	0	0	0	8	19	1	5	4	21	46	1	2	7	18	13
Missing	0														
Procedural Justice															
I approve of the way wind energy was planned in my area.	0	3.7	11.1	40.7	44.4	2.6	2.6	18.2	37.7	39	7.3	24.4	22	29.3	17.1
Count	0	1	3	11	12	2	2	14	29	30	3	10	9	12	7
Missing	1														
I had ample opportunity to voice concerns about the wind development before it was approved.	4	12	16	52	16	0	8.8	29.4	51.5	10.3	5	35	27.5	22.5	10
Count	1	3	4	13	4	0	6	20	35	7	2	14	11	9	4
Missing	13*														
I felt that community participation in the planning process resulted in changes to the outcome.	4	16	40	40	0	1.5	13.2	55.9	25	4.4	7.5	35	45	10	2.5
Count	1	4	10	10	0	1	9	38	17	3	3	14	18	4	1
Missing	13*														
Distributional Justice															
I believe that the wind turbine development provides enough economic benefits to my area.	15.4	11.5	15.4	50	7.7	4	21.3	33.3	29.3	12	17.5	37.5	37.5	7.5	0
Count	4	3	4	13	2	3	16	25	22	9	7	15	15	3	0
Missing	5														

* Missing values here were from those who only lived in the community after the project was built.

Table A.2
Survey percentage results from Newfoundland survey across each community for statements on perceived impact.

	Fermeuse					St. Lawrence					Ramea				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Disagree	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Wind turbines… … make the natural landscape less appealing.	22.2	44.4	11.1	11.1	11.1	10.4	40.3	31.3	11.9	6	2.9	40	37.1	17.1	2.9
Count	6	12	3	3	3	7	27	21	8	4	1	14	13	6	1
Missing	17*														
… are a threat to birds and bats.	29.6	44.4	11.1	11.1	3.7	9.1	40.9	34.8	6.1	9.1	11.4	22.9	42.9	20	2.9
Count	8	12	3	3	1	6	27	23	4	6	4	8	15	7	1
Missing	18*														
… help tackle climate change.	3.8	3.8	19.2	46.2	26.9	4.5	6	19.4	32.8	37.3	0	5.7	34.3	37.1	22.9
Count	1	1	5	12	7	3	4	13	22	25	0	2	12	13	8
Missing	18*														
… lower local property values.	48	36	8	8	0	11.9	62.7	17.9	6	1.5	11.8	55.9	29.4	0	2.9
Count	12	9	2	2	0	8	42	12	4	1	3	14	14	2	2
Missing	19*														
… damage tourism.	44.4	48.1	3.7	3.7	0	19.7	60.6	15.2	1.5	3	11.8	55.9	29.4	0	2.9
Count	12	13	1	1	0	13	40	10	1	2	4	19	10	0	1
Missing	19*														
… provide local jobs.	11.5	11.5	3.8	57.7	15.4	0	16.7	18.2	53	12.1	5.7	17.1	34.3	31.4	11.4
Count	3	3	1	15	4	0	11	12	35	8	2	6	12	11	4
Missing	19*														
… make an annoying noise.	33.3	33.3	14.8	11.1	7.4	28.4	41.8	22.4	6	1.5	5.9	23.5	23.5	38.2	8.8
Count	9	9	4	3	2	19	28	15	4	1	2	8	8	13	3
Missing	18*														

* Missing values for 17 individuals are due to these statements not being included on a shorter survey used to increase response rate (see Methods).

Data availability

The data that has been used is confidential.

References

[1] J. Rand, B. Hoen, Thirty years of North American wind energy acceptance research: What have we learned? Energy Res. Soc. Sci. 29 (2017) 135–148, https://doi.org/10.1016/j.erss.2017.05.019.

[2] A.D. Sæþórsdóttir, R. Ólafsdóttir, Not in my back yard or not on my playground: Residents and tourists' attitudes towards wind turbines in Icelandic landscapes, Energy Sustain. Dev. 54 (2020) 127–138, https://doi.org/10.1016/j.esd.2019.11.004.

[3] M.J. Pasqualetti, The Thread of Energy, Oxford University Press, Oxford, 2022, https://doi.org/10.1093/oso/9780199394807.001.0001.

[4] C. Barrington-Leigh, M. Ouliaris, The renewable energy landscape in Canada: A spatial analysis, Renew. Sust. Energ. Rev. 75 (2017) 809–819, https://doi.org/10.1016/j.rser.2016.11.061.

[5] N. Mercer, G. Sabau, A. Klinke, "Wind energy is not an issue for government": Barriers to wind energy development in Newfoundland and Labrador, Canada, Energy Policy 108 (2017) 673–683, https://doi.org/10.1016/j.enpol.2017.06.022.

[6] NL Government, Minister Parsons Announces End of Moratorium on Wind Development, https://www.gov.nl.ca/releases/2022/iet/0405n07/, 2022 (accessed 4 April 2025).

[7] J. Baxter, C. Walker, G. Ellis, P. Devine-Wright, M. Adams, R.S. Fullerton, Scale, history and justice in community wind energy: An empirical review, Energy Res. Soc. Sci. 68 (2020) 101532, https://doi.org/10.1016/j.erss.2020.101532.

[8] J.L. Hogan, Why does community ownership foster greater acceptance of renewable projects? Investigating energy justice explanations. Local Environ. 29 (9) (2004) 1221–1243, https://doi.org/10.1080/13549839.2024.2360716.

[9] S. Batel, Research on the social acceptance of renewable energy technologies: Past, present and future, Energy Res. Soc. Sci. 68 (2020) 101544, https://doi.org/10.1016/j.erss.2020.101544.

[10] R. Wüstenhagen, M. Wolsink, M.J. Bürer, Social acceptance of renewable energy innovation: An introduction to the concept, Energy Policy 35 (5) (2007) 2683–2691, https://doi.org/10.1016/j.enpol.2006.12.001.

[11] J.L. Hogan, C.R. Warren, M. Simpson, D. McCauley, What makes local energy projects acceptable? Probing the connection between ownership structures and community acceptance, Energy Policy 170 (2022) 113257, https://doi.org/10.1016/j.enpol.2022.113257.

[12] C.R. Warren, M. McFadyen, Does community ownership affect public attitudes to wind energy? A case study from south-west Scotland, Land Use Policy 27 (2) (2010) 204–213, https://doi.org/10.1016/j.landusepol.2008.12.010.

[13] G. Walker, P. Devine-Wright, Community renewable energy: What should it mean? Energy Policy 36 (2) (2008) 497–500, https://doi.org/10.1016/j.enpol.2007.10.019.

[14] E. Creamer, G.T. Aiken, B. Van Veelen, G. Walker, P. Devine-Wright, Community renewable energy: What does it do? Walker and Devine-Wright (2008) ten years on, Energy Res. Soc. Sci. 57 (2019) 101223, https://doi.org/10.1016/j.erss.2019.101223.

[15] F.D. Musall, O. Kuik, Local acceptance of renewable energy—A case study from southeast Germany, Energy Policy 39 (6) (2011) 3252–3260, https://doi.org/10.1016/j.enpol.2011.03.017.

[16] G. Bristow, R. Cowell, M. Munday, Windfalls for whom? The evolving notion of "community" in community benefit provisions from wind farms, Geoforum 43 (6) (2012) 1108–1120, https://doi.org/10.1016/j.geoforum.2012.06.015.

[17] L. Ferrer-Martí, A. Garwood, J. Chiroque, B. Ramirez, O. Marcelo, M. Garfí, E. Velo, Evaluating and comparing three community small-scale wind electrification projects, Renew. Sust. Energ. Rev. 16 (7) (2012) 5379–5390, https://doi.org/10.1016/j.rser.2012.04.015.

[18] N. Simcock, Exploring How Stakeholders in Two Community Wind Projects Use a "Those Affected" Principle to Evaluate the Fairness of Each Project's Spatial Boundary, Local Environ. 19 (3) (2014) 241–258, https://doi.org/10.1080/13549839.2013.788482.

[19] S. Haf, K. Parkhill, The Muillean Gaoithe and the Melin Wynt: Cultural sustainability and community owned wind energy schemes in Gaelic and Welsh speaking communities in the United Kingdom, Energy Res, Soc. Sci. 29 (2017) 103–112, https://doi.org/10.1016/j.erss.2017.05.017.

[20] K. Sperling, How does a pioneer community energy project succeed in practice? The case of the Samsø Renewable Energy Island, Renew. Sustain. Energy Rev. 71 (2017) 884–897, https://doi.org/10.1016/j.rser.2016.12.116.

[21] C. Walker, J. Baxter, "It's Easy to Throw Rocks at a Corporation": Wind Energy Development and Distributive Justice in Canada, J. Environ. Policy Plan. 19 (6) (2017) 754–768, https://doi.org/10.1080/1523908X.2016.1267614.

[22] C. Walker, J. Baxter, Procedural Justice in Canadian Wind Energy Development: A Comparison of Community-Based and Technocratic Siting Processes, Energy Res. Soc. Sci. 29 (2017) 160–169, https://doi.org/10.1016/j.erss.2017.05.016.

[23] C. Walker, J. Baxter, D. Ouellette, Beyond Rhetoric to Understanding Determinants of Wind Turbine Support and Conflict in Two Ontario, Canada Communities, Environ. Plan. A Econ. Space 46 (3) (2014) 730–745, https://doi.org/10.1068/a130004p.

[24] K. Jenkins, B.K. Sovacool, N. Mouter, N. Hacking, M.K. Burns, D. McCauley, The methodologies, geographies, and technologies of energy justice: a systematic and comprehensive review, Environ. Res. Lett. 16 (4) (2021) 043009, https://doi.org/10.1088/1748-9326/abd78c.

[25] R.J. Heffron, Energy justice – the triumvirate of tenets revisited and revised, J. Energy Nat. Resour. Law 42 (2) (2023) 1–7, https://doi.org/10.1080/02646811.2023.2256593.

[26] N. Simcock, K. Jenkins, M. Lacey-Barnacle, M. Martiskainen, G. Mattioli, D. Hopkins, Identifying double energy vulnerability: A systematic and narrative review of groups at-risk of energy and transport poverty in the global north, Energy Res. Soc. Sci. 82 (2021) 102351, https://doi.org/10.1016/j.erss.2021.102351.

[27] P. Mulder, F. Dalla Longa, K. Straver, Energy poverty in the Netherlands at the national and local level: A multi-dimensional spatial analysis, Energy Res. Soc. Sci. 96 (2023) 102892, https://doi.org/10.1016/j.erss.2022.102892.

[28] G. Ottinger, T.J. Hargrave, E. Hopson, Procedural Justice in Wind Facility Siting: Recommendations for State-Led Siting Processes, Energy Policy 65 (2014) 662–669, https://doi.org/10.1016/j.enpol.2013.09.066.

[29] K. Jenkins, D. McCauley, R. Heffron, H. Stephan, R. Rehner, Energy justice: A conceptual review, Energy Res. Soc. Sci. 11 (2016) 174–182, https://doi.org/10.1016/j.erss.2015.10.004.

[30] J. Thibaut, L. Walker, Procedural Justice: A Psychological Analysis, Lawrence Erlbaum Associates, Hillsdale, NJ, 1975.

[31] P. Roddis, S. Carver, M. Dallimer, P. Norman, G. Ziv, The role of community acceptance in planning outcomes for onshore wind and solar farms: An energy justice analysis, Appl. Energy 226 (2018) 353–364, https://doi.org/10.1016/j.apenergy.2018.05.087.

[32] C.R. Warren, R.V. Birnie, Re-powering Scotland: Wind Farms and the Energy or Environment? Debate, Scottish Geogr. J. 125 (2) (2009) 97–126, https://doi.org/10.1080/14702540802712502.

[33] M.D. Leiren, S. Aakre, K. Linnerud, T.E. Julsrud, M.R. Di Nucci, M. Krug, Community Acceptance of Wind Energy Developments: Experience from Wind Energy Scarce Regions in Europe, Sustain 12 (5) (2020) 1754, https://doi.org/10.3390/su12051754.

[34] N. van Uffelen, Revisiting recognition in energy justice, Energy Res. Soc. Sci. 92 (2022) 102764, https://doi.org/10.1016/j.erss.2022.102764.

[35] M. Bal, M. Stok, G. Bombaerts, N. Huijts, P. Schneider, A. Spahn, V. Buskens, A fairway to fairness: Toward a richer conceptualization of fairness perceptions for just energy transitions, Energy Res. Soc. Sci. 103 (2023) 103213, https://doi.org/10.1016/j.erss.2023.103213.

[36] C. Gross, Community perspectives of wind energy in Australia: The application of a justice and community fairness framework to increase social acceptance, Energy Policy 35 (5) (2007) 2727–2736, https://doi.org/10.1016/j.enpol.2006.12.013.

[37] J. Ki, S.J. Yun, W.C. Kim, S. Oh, J. Ha, E. Hwangbo, H. Lee, S. Shin, S. Yoon, H. Youn, Local residents' attitudes about wind farms and associated noise annoyance in South Korea, Energy Policy 163 (2022) 112847, https://doi.org/10.1016/j.enpol.2022.112847.

[38] K. Langer, T. Decker, J. Roosen, K. Menrad, A qualitative analysis to understand the acceptance of wind energy in Bavaria, Renew. Sust. Energ. Rev. 64 (2016) 248–259, https://doi.org/10.1016/j.rser.2016.05.084.

[39] M. Wolsink, Wind power implementation: the nature of public attitudes: equity and fairness instead of 'backyard motives', Renew. Sust. Energ. Rev. 11 (6) (2007) 1188–1207, https://doi.org/10.1016/j.rser.2005.10.005.

[40] W. Jepson, C. Brannstrom, N. Persons, "We Don't Take the Pledge": Environmentality and environmental skepticism at the epicenter of US wind energy development, Geoforum 43 (4) (2012) 851–863, https://doi.org/10.1016/j.geoforum.2012.02.002.

[41] D. van der Horst, D. Toke, Exploring the landscape of wind farm developments; local area characteristics and planning process outcomes in rural England, Land Use Policy 27 (2) (2010) 214–221, https://doi.org/10.1016/j.landusepol.2009.05.006.

[42] P. Devine-Wright, Place attachment and public acceptance of renewable energy: A tidal energy case study, J. Environ. Psychol. 31 (4) (2011) 336–343, https://doi.org/10.1016/j.jenvp.2011.07.001.

[43] A.R.A. Ature, Local Engagement and Success of Small-Scale Renewable Energy Projects in Remote Areas: Insights from Ramea's Wind Energy Projects. MA Thesis in Environmental Policy, Memorial University of Newfoundland. https://research.library.mun.ca/15351/1/thesis.pdf, 2022 (accessed 4 April 2025).

[44] E.D. Rasch, M. Köhne, Practices and imaginations of energy justice in transition. A case study of the Noordoostpolder, the Netherlands, Energy Policy 106 (2017) 607–614, https://doi.org/10.1016/j.enpol.2017.03.037.

[45] P. Velasco-Herrejon, T. Bauwens, Energy justice from the bottom up: A capability approach to community acceptance of wind energy in Mexico, Energy Res. Soc. Sci. 70 (2020) 101711, https://doi.org/10.1016/j.erss.2020.101711.

[46] T.F. Gieryn, A Space for Place in Sociology, Annu. Rev. Sociol. 26 (1) (2000) 463–496, https://doi.org/10.1146/annurev.soc.26.1.463.

[47] Y.F. Tuan, Space and Place: The Perspective of Experience, University of Minnesota Press, Minneapolis, 1977.

[48] P. Devine-Wright, Rethinking NIMBYism: The role of place attachment and place identity in explaining place-protective action, J. Community Appl. Soc. Psychol. 19 (6) (2009), https://doi.org/10.1002/casp.1004.

[49] P. Devine-Wright, Y. Howes, Disruption to place attachment and the protection of restorative environments: A wind energy case study, J. Environ. Psychol. 30 (3) (2010) 271–280, https://doi.org/10.1016/j.jenvp.2010.01.008.

[50] B.B. Brown, D.D. Perkins, Disruptions in Place Attachment, in: I. Altman, S. Low (Eds.), Place Attachment, Springer, Boston, 1992, pp. 279–304.

[51] M. Bonaiuto, G. Carrus, H. Martorella, M. Bonnes, Local identity processes and environmental attitudes in land use changes: The case of natural protected areas,

J. Econ. Psychol. 23 (5) (2002) 631–653, https://doi.org/10.1016/S0167-4870(02)00121-6.
[52] J. Barry, G. Ellis, C. Robinson, Cool Rationalities and Hot Air: A Rhetorical Approach to Understanding Debates on Renewable Energy, Global Environ. Polit. 8 (2) (2008) 67–98, https://doi.org/10.1162/glep.2008.8.2.67.
[53] Scognamiglio, 'Photovoltaic landscapes': Design and assessment. A critical review for a new transdisciplinary design vision, Renew, Sustain. Energy Rev. 55 (2016) 629–661, https://doi.org/10.1016/j.rser.2015.10.072.
[54] E.-S. Kim, J.-B. Chung, The memory of place disruption, senses, and local opposition to Korean wind farms, Energy Policy 131 (2019) 43–52, https://doi.org/10.1016/j.enpol.2019.04.011.
[55] D. Venables, N.F. Pidgeon, K.A. Parkhill, K.L. Henwood, P. Simmons, Living with nuclear power: Sense of place, proximity, and risk perceptions in local host communities, J. Environ. Psychol. 32 (4) (2012) 371–383, https://doi.org/10.1016/j.jenvp.2012.06.003.
[56] R. Cowell, The role of place in energy transitions: Siting gas-fired power stations and the reproduction of high-carbon energy systems, Geoforum 112 (2020) 73–84, https://doi.org/10.1016/j.geoforum.2020.03.009.
[57] G. Thomas, C. Cherry, C. Groves, K. Henwood, N. Pidgeon, E. Roberts, "It's not a very certain future": Emotion and infrastructure change in an industrial town, Geoforum 132 (2022) 81–91, https://doi.org/10.1016/j.geoforum.2022.04.003.
[58] E. Gibbs, Coal country: The meaning and memory of deindustrialization in Postwar Scotland, University of London Press, 2021.
[59] Newfoundland and Labrador Tourism, About this place. https://www.newfoundlandlabrador.com/about-this-place/natural-landscape, 2024.
[60] NL Government, Moose Management Plan. https://www.gov.nl.ca/ffa/files/wildlife-wildlife-pdf-moose-plan-2015-2020.pdf, 2015.
[61] R. King, S. Clarke, Contesting meaning: Newfie and the politics of ethnic labelling, J. Socioling. 6 (4) (2002) 537–558, https://doi.org/10.1111/1467-9481.00200.
[62] C. Atlin, M. C. J. Stoddart, Governance in Times of Crisis: the Muskrat Falls Case, St. John's, https://www.mun.ca/harriscentre/media/production/memorial/administrative/the-harris-centre/media-library/Times_of_Crisis_Muskrat_Falls.pdf, 2021 (accessed 4 April 2025).
[63] J. Winter, Canada: Tensions between energy and GHG policies, in Meeting the Paris Mandate: A Cross-national Comparison of Energy Policy-making, P. Geoffron, L. A. Greening, R. J. Heffron (Eds.). Springer, forthcoming. https://jenniferwinter.github.io/website/MakingEnergyPolicy_Canada.pdf.
[64] Parliament of Canada, Federal and Provincial Jurisdiction to Regulate Environmental Issues, https://lop.parl.ca/sites/PublicWebsite/default/en_CA/ResearchPublications/201386E#a3, 2024 (accessed 6 July 2025).
[65] NL Government, Environmental Assessment - a guide to the process, https://www.gov.nl.ca/ecc/files/GUIDE-TO-THE-PROCESS_May-2025-1.pdf, 2025 (accessed 6 July 2025).
[66] Canada Energy Regulator, Provincial and Territorial Energy Profiles, https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/provincial-territorial-energy-profiles/, 2023 (accessed 4 April 2025).
[67] NL Government, Electricity. https://www.gov.nl.ca/iet/energy/electricity/#:~:text=In%20Newfoundland%20and%20Labrador%2C%20the%20generation%20and%20distribution,Together%2C%20NP%20and%20Hydro%20serve%20about%20280%2C000%20customers, 2025 (accessed 6 July 2025).
[68] Newfoundland Power, Current Electricity Rates. https://secure.newfoundlandpower.com/my-account/usage/electricity-rates, 2025 (accessed 6 July 2025).
[69] NL Government, Focusing our energy. https://www.assembly.nl.ca/business/electronicdocuments/FocusingOurEnergy-EnergyPlan2007.pdf, 2007 (accessed 6 July 2025).
[70] M. Moore, 'Hydrogen alliance' formed as Canada, Germany sign agreement on exports, CBC. https://www.cbc.ca/news/canada/newfoundland-labrador/canada-germany-hydrogen-partnership-nl-1.6559787, 2023 (accessed Apr. 25, 2023).
[71] NL Government, Guidelines: Crown Lands Call for Bids for Wind Energy Projects. https://www.gov.nl.ca/iet/files/Guidelines-Crown-Land-Call-for-Bids-for-Wind-Energy-Projectsrev-121-Mar-3-2023.pdf, 2023 (accessed 6 July 2025).
[72] Government of Canada, Port au Port-Stephenville Wind Power and Hydrogen Generation Project. https://iaac-aeic.gc.ca/050/evaluations/proj/85756, 2023 (accessed 6 July 2025).
[73] J. Bannister, A River Runs Through It: Churchill Falls and the End of Newfoundland History, Acadiensis 41 (1) (2012) 211–225. https://journals.lib.unb.ca/index.php/Acadiensis/article/view/19083.
[74] D. Bavington, Managed Annihilation: An Unnatural History of the Newfoundland Cod Collapse, University of British Columbia Press, 2010.
[75] NL Government, Provincial Government Receives Report from 2041 Churchill River Management Panel, https://www.gov.nl.ca/releases/2023/exec/0206n04/, 2023 (accessed 4 April 2025).
[76] J.P. Freehan, M. Baker, The Origins of a Coming Crisis: Renewal of the Churchill Falls Contract, Dalhousie Law J. 30 (1) (2007).
[77] R.D. LeBlanc, Muskrat Falls: A Misguided Project. Commission of Inquiry Respecting the Muskrat Falls Project, https://www.muskratfallsinquiry.ca/, 2020 (accessed 4 April 2025).
[78] J.R. Martin, Fluorspar Mines of Newfoundland: Their History and the Epidemic of Radiation Lung Cancer, McGill-Queen's University Press, 2012. http://www.jstor.org/stable/j.ctt1pq1rm.
[79] VOCM, Hundreds Face Layoffs as St. Lawrence Mine Owner Files For 'Interim Receivership'. https://vocm.com/2022/02/22/officials-seeking-answers-after-canada-fluorspar-owner-of-st-lawrence-mine-files-for-interim-receivership/, 2022 (accessed 4 April 2025).
[80] C. Gillis, Bust Times Are Back in Newfoundland and Labrador, Macleans, https://macleans.ca/economy/bust-times-are-back-in-newfoundland-and-labrador/, 2016 (accessed 4 April 2025).
[81] T. Roberts, N.L. continues to bet big on the offshore, despite net zero commitments drawing closer, CBC, https://www.cbc.ca/news/canada/newfoundland-labrador/budget-oil-gas-growth-1.6788921, 2023 (accessed 6 July 2025).
[82] World Energy GH2, About us, https://worldenergygh2.com/about/, 2025 (accessed 6 July 2025).
[83] M. Moore, Proposed wind project in western Newfoundland gets $128M federal development loan, CBC News. https://www.cbc.ca/news/canada/newfoundland-labrador/world-energy-federal-loan-1.7128018, 2024 (accessed 4 April 2025).
[84] Board of Commissioners of Public Utilities, Abandonment of Hydrogen System. http://www.pub.nf.ca/applications/2023/NLH2023RameaWindHydrogen/index.php, 2023 (accessed 4 April 2025).
[85] Vector Wind Energy, Environmental Assessment Registration. https://www.gov.nl.ca/ecc/files/env-assessment-projects-y2006-1276-1276-registration.pdf, 2006 (accessed 4 April 2025).
[86] The NeWind Group, St. Lawrence Wind Demonstration Project. https://www.gov.nl.ca/ecc/files/env-assessment-projects-y2002-988-registration.pdf, 2001 (accessed 4 April 2025).
[87] Nalcor Energy, Ramea Report, http://www.globalislands.net/userfiles/_canada_Newfoundland4.pdf, 2010 (accessed 4 April 2025).
[88] NL Government, Fermeuse Wind Turbine Power Project, https://www.gov.nl.ca/ecc/projects/project-1276/, 2025 (accessed 4 April 2025).
[89] NL Government, St. Lawrence Wind Demonstration Project, https://www.gov.nl.ca/ecc/projects/project-988/, 2025 (accessed 4 April 2025).
[90] NL Government, Ramea Wind-Hydrogen Diesel Project. https://www.gov.nl.ca/ecc/projects, 2025 (accessed 4 April 2025).
[91] Statistics Canada, Census Profile. https://www12.statcan.gc.ca/census-recensement/index-eng.cfm, 2021. (Accessed 4 April 2025).
[92] Bailey and H. Darkal, (Not) talking about justice: justice self-recognition and the integration of energy and environmental-social justice into renewable energy siting, Local Environ., 23(3) (2018) 335–351. doi:https://doi.org/10.1080/13549839.2017.1418848.
[93] Bryman, Social Research Methods, 5th Edition, Oxford University Press, Oxford, 2016.
[94] J.J. Vaske, Survey Research and Analysis, 2nd ed, Sagamore-Venture, Urbana, 2019.
[95] NL Government, Protecting You from the Cost Impacts of Muskrat Falls. https://www.gov.nl.ca/iet/files/Framework.pdf, 2019 (accessed 4 April 2025).
[96] J. Baker, A Newfoundland Ethnicity? The Political Implications of Post-Confederation Nationalism in Newfoundland, Stud. Ethn. Natl. 14 (1) (2014) 74–100, https://doi.org/10.1111/sena.12080.
[97] M.T. Huber, Lifeblood: Oil, Freedom, and the Forces of Capital, University of Minnesota Press, 2013.
[98] C.E. Hoicka, J.L. MacArthur, From tip to toes: Mapping community energy models in Canada and New Zealand, Energy Policy 121 (2018) 162–174, https://doi.org/10.1016/j.enpol.2018.06.002.
[99] J. L. Hogan, P. Sumaria, F. Stewart, Sharing power: Unlocking shared ownership for a fast and fair net zero transition. https://www.regen.co.uk/insights/sharing-power-unlocking-shared-ownership-for-a-fast-and-fair-net-zero-transition, 2014 (accessed 4 April 2025).
[100] NL Government, Port au Port-Stephenville Wind Power and Hydrogen Generation Project (Project Nujio'qonik GH2). https://www.cbc.ca/news/canada/newfoundland-labrador/wind-hydrogen-placentia-bay-1.7503543, 2025 (accessed 16 July 2025).
[101] T. Roberts, N.L.'s wind-hydrogen hype is on fumes, but this Placentia Bay project is forging ahead. https://www.cbc.ca/news/canada/newfoundland-labrador/wind-hydrogen-placentia-bay-1.7503543, 2025 (accessed 7 July 2025).