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Legitimacy through representation? Media sources and discourses of offshore wind development

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Introduction: The choice of which individuals and entities to include as sources in newspaper articles is an important decision for journalists, in large part because they can shape how readers understand the issue and which arguments become most salient. This is particularly important for issues that are relatively new or unknown to readers. The growing topic of offshore wind in the United States is a prime example of an issue that many people are encountering for the first time via media reporting. This issue has also proven to be highly divisive, with heated oppositional arguments being promoted by different entities. This study seeks to understand which entities are being represented in media coverage of offshore wind, and the different framing strategies that various entities use in quotes about the first two large-scale projects in the United States, South Fork Wind and Vineyard Wind I.

Methods: We use a newspaper content analysis to identify and code the sources quoted in articles reporting on South Fork Wind and Vineyard Wind I from 2013-2022, as well as the emphasis frames used by each entity.

Results: We find that coverage varies in the two cases, but developers and political officials are quoted most frequently. As these entities tend to use frames highlighting the benefits of offshore wind more frequently than the risks, those perspectives dominate news coverage. Meanwhile, perspectives of community members and impacted industries such as the fishing industry are represented less frequently in news coverage.

Discussion: These findings help explain the dominance of certain frames and perspectives in offshore wind, and they raise important questions about which voices are legitimized through representation in news media.

KEYWORDS

offshore wind, media, newspapers, credibility, framing, content analysis

1 Introduction

Representation of sources and perspectives in media coverage of environmental topics is critical to how the public forms attitudes on these issues. Particularly on issues that impact diverse stakeholder groups, a journalist's choice of which voices to highlight can influence audience perceptions of expertise and dominant narratives (Suldovsky et al., 2018). Prior studies have found that articles that feature quotes from certain stakeholders tend to foreground frames reflecting those perspectives, as opposed to other competing frames, which can shape how an issue is perceived by readers (Das, 2019).

Critical evaluations of media sources can also shed light on systemic inequities that exacerbate false perceptions of authority and expertise in environmental politics and discourse (Priest, 1995). A heavy reliance on government sources in the news media reflects journalists' tendency to prioritize sources viewed as credible, easy to access, and well-informed. This can give government and official sources more agency and power in setting the tone and perspectives used to frame the issue. Meanwhile, sources representing grassroots groups or communities, who may be less organized or more challenging for journalists to identify and contact for comment, tend to be underrepresented in media coverage of environmental issues.

Local environmental issues are often highly fragmented, with multiple stakeholders competing to foreground their perspectives in mainstream media and public opinion (Miller and Riechert, 2000; Motion and Kay Weaver, 2005). As a result, an imbalance in who is represented in the media can highlight and legitimize the perspectives and narratives of some stakeholders at the expense of others. This is particularly notable because studies have found that different stakeholder groups frame issues in different ways (e.g., Sandman, 1994; Riechert, 1996; Griffin and Dunwoody, 1997; Brown et al., 2020). For example, if the perspectives of traditionally accessible sources such as government or industry differ from those of community groups, this can lead to an imbalance in discourses highlighted in the media. Due to this, it is important to understand what the representation of various sources in media coverage looks like, and how that may mainstream certain perspectives over others in debates around local environmental issues such as renewable energy projects.

While some studies have examined these questions pertaining to news coverage of renewable energy more broadly (Masia, 2007), the emerging issue of offshore wind in the United States has received minimal attention from communication scholars. This is problematic, as there are several characteristics of offshore wind that may contribute to unique communication trends and media ecosystems. Many of the impacted stakeholders of offshore wind are diffuse geographically, difficult to reach, and (at least initially) not centrally organized. The maritime dimensions of offshore wind development exacerbate this issue; potentially affected users of the area, such as fishers and mariners, are transient, often based in distant (even foreign) ports, and often identify with communities at sea (St. Martin and Hall-Arber, 2008). Meanwhile, dominant traditional sources of information, including government and industry, are often unable to represent the full array of stakeholder impacts, or may have incentive to promote pro-wind perspectives to fulfill organizational or policy goals to promote renewable energy or economic development. Recent accusations of mis- and disinformation strategies used in communication of offshore wind place an urgent importance on the critical analysis of journalistic sources (Catalan-Matamoros and Elías, 2020; Kyriakidou and Cushion, 2021). As the question of offshore wind becomes a reality in the United States, understanding how these stakeholders are represented differently in the media may shed light onto which discourses gain traction and inform public opinion, and which do not. This study seeks to fill this empirical gap in communications and media research on offshore wind in the United States context.

Addressing a dearth of communication research on offshore wind in the United States, this study uses the first two large-scale offshore wind projects to begin construction in the United States – Vineyard Wind and South Fork Wind – as a comparative case study to investigate the entities quoted by the media, the messaging and framing strategies that different sources use, and how these strategies have evolved over time. We seek to understand *which entities* are featured in media coverage of these two projects, and *what strategies* these entities use to frame the discourse around offshore wind being presented to the public through newspaper coverage. We discuss the forces in environmental media that contribute to these findings, the implications for environmental politics and discourse, and recommendations for more equitable media communication on environmental issues.

2 Background and literature review

2.1 The media's role in shaping perceptions of expertise

The media plays a critical role in shaping public opinion about environmental issues by shaping how a topic is framed, how environmental risk is communicated, and whose perspective is elevated as an authoritative voice on an issue (Legagneux et al., 2018; Suldovsky et al., 2018). In the context of environmental issues, the public may not always be capable of identifying who is an expert and whose opinion to trust (Huckfeldt, 2001). The media mediates the relationship between stakeholders and a public audience by selecting whose voice and narrative to elevate, shaping public perspectives of who should be considered an expert on a topic (Priest, 1995; Treem and Leonardi, 2016).

Traditional conceptions of expertise center the expert as having "superior knowledge about an object … or topic," or subject matter expertise (Hartelius, 2011, p. 213). However, expertise comes in multiple forms beyond this formal conceptualization and is conferred in diverse ways (Collins and Evans, 2018). A journalist's choice to elevate the perspective of a stakeholder confers expertise (Motion and Kay Weaver, 2005) even if the journalist does not explicitly label the quoted stakeholder as an expert (Suldovsky et al., 2018). The expert's perspective then is likely to be viewed as more trustworthy, credible, and legitimate to an audience that may not otherwise know whose voice to trust on an issue (Huckfeldt, 2001).

In this way, experts may be considered "[t]hose who control valued knowledge" (Wayland, 2003; Carr, 2010) and are "authorized … to make determinations about what is true, valid, or valuable within [a knowledge] domain" (Carr, 2010; Matoesian, 2024). Expertise confers status, power, and authority by attributing the expert as the arbiter of the truth (Wayland, 2003; Barton and Bunderson, 2014), more easily convincing the public that the expert is correct even without substantiating evidence (Kuhn and Jens, 2016; Suldovsky et al., 2018). Experts have the cultural and epistemic authority to represent legitimate or credible perspectives on a topic, and this authority may be leveraged to shape the narrative to the expert's advantage (Wayland, 2003; Carr, 2010; Matoesian, 2024).

2.2 Representation of sources in the media

Journalists strategically select entities to highlight in the media and thus determine which stakeholders are featured as experts on an

issue. Since journalists are often not experts on the subject matter of a given article and face strict deadlines for reporting, they tend to rely on outside sources to inform coverage of environmental issues. The search for sources has been described by Sandman (1994) as a "scavenger hunt" early during the reporting process, during which journalists tend to rely on actors they perceive as official, such as government and industry sources (Wei et al., 2015). Government agencies also may control information, particularly sensitive environmental information. As a result, government actors are often quoted in media coverage of environmental risks (Hurlimann and Dolnicar, 2012; Wei et al., 2015; Brown et al., 2020; Amiraslani and Dragovich, 2021). In turn, information provided by these entities tends to shape early framing of an issue, and early framing shapes future coverage of an issue that relies on the context established in earlier coverage (Sandman, 1994).

Corporate or industry actors are often the next most frequently cited entities in the media, particularly when industry is heavily involved in a particular environmental challenge or opportunity (Greenberg et al., 1989; Sandman, 1994; Boykoff and Boykoff, 2007; Suldovsky et al., 2018). Gilbert et al. (2019) found that business representatives were more heavily quoted than any other entity in early newspaper coverage of the first ever offshore wind farm in the United States. In an analysis of policy networks shaping offshore wind in New England, Smythe (2024) also finds that developers play an influential role in the offshore wind-fisheries policy network as they act as brokers or gatekeepers, influencing interactions between other actors in the network.

Other sources, including local stakeholders who may be significantly impacted by an issue, are often less likely to be featured as experts in coverage of environmental issues. Suldovsky et al. (2018), for example, found that shellfishers and worm diggers were most impacted by the closure of shellfish flats, but they were not frequently quoted in the media. When their perspectives were included, they were framed in opposition to government sources, rather than as experts on the issue that directly impacted them. Brown et al. (2020) similarly found that local stakeholders impacted by oyster restoration projects, such as fishers, were not frequently quoted in articles, even at the local level. The lack of representation of fishing interests was also found by Watson (2014) in coverage of oil spills. One explanation for this difference in prevalence is that community groups and environmental advocates can sometimes be perceived by journalists as less credible or easily available (Sandman, 1994). Research has also found that when journalists do feature environmental advocates, they may do so strategically to advance a competing or alarmist narrative (Sandman, 1994) or may minimize their perspectives rather than featuring them as experts (Motion and Kay Weaver, 2005).

Studies have found that the role of academic and non-governmental researchers in media coverage of environmental issues varies by context. Hurlimann and Dolnicar (2012) and Amiraslani and Dragovich (2021) found a lack of representation of academic and non-governmental researchers in media coverage of environmental issues, such as issues concerning water resources. Others have found the opposite, that scientists received substantial coverage in the press about eutrophication (Lyytimäki, 2007) and environmental issues in the Baltic Sea (Jönsson, 2011). This may depend on the level of scientific complexity of an issue, how much science literacy is required by the reader to grasp the key debates around the issue, and the overall availability and accessibility of scientific information on the topic.

2.3 Framing strategies used in environmental media

Journalists decide which entities to feature in the media (often to promote a certain narrative, other times due to convenience and accessibility). Meanwhile, the entities quoted in turn use strategies to drive the narrative about an issue to a public audience and shape the public's perception of the issue (Motion and Kay Weaver, 2005. In this way, media coverage of environmental issues reflects both reporters' choice of who to feature as an expert, as well as narratives that shape public perceptions and priorities regarding an issue (Phillimore and Moffatt, 1994; Brown et al., 2020). When an environmental issue is highly controversial or contentious, stakeholders may seek access to the media to outcompete other perspectives and to strategically frame the narrative in their favor (Motion and Kay Weaver, 2005).

Frames can be thought of as communication strategies that increase the salience of a certain dimension of an issue over another (Entman, 1993). A common framing dichotomy in environmental communication is focusing on the benefits versus risks of a particular solution to the environment, communities, the economy, public health, etc. Often this is presented as a tradeoff between economic risks and environmental benefits (e.g., Bain and Selfa, 2013), but both proponents and opponents of certain solutions may frame the narrative on multiple issue dimensions (such as environment, economy, politics, etc.).

In the context of renewable energy, environmental organizations are likely to use environmental or conservation-oriented frames, whereas property owners are more likely to use economic frames focused on property rights and compensation (Riechert, 1996). Scientists have also been found to be more likely to use environmental frames than other sources (Brown et al., 2020). Government officials and industry representatives are more likely to use framing strategies that advance a political, economic, or organizational agenda or to maintain the status quo (Sandman, 1994; Griffin and Dunwoody, 1997; Brown et al., 2020). These entities may provide information that aligns with their ideological perspective to enhance the legitimacy of their narrative and their organization (Motion and Kay Weaver, 2005).

In this study, we investigate not only the entities most frequently represented in media coverage of two offshore wind projects, but also the frames that these entities use to highlight the benefits or risks of these projects. Through this analysis, we can begin to understand how the representation of different entities in the media, and the frames they use, may drive the overall discourse and public opinion formation on offshore wind in the United States.

3 Materials and methods

3.1 Comparative case study context

Offshore wind is still a nascent industry in the United States. The Block Island Wind Farm, a small (30 MW) array of turbines off Block Island, Rhode Island, became the first offshore wind farm in the United States when construction was completed in 2016. Since then,

numerous other ocean leases have been awarded, primarily in the Northeast United States. However, as the failure of the earlier Cape Wind project demonstrates (Kimmell and Stolfi Stalenhoef, 2011), each offshore wind project faces unique challenges and opportunities, from the technical, stakeholder engagement, and permitting dimensions. Because these complexities can directly shape how the projects are covered in the media (Diamond et al., under review), it is important to analyze media coverage of multiple projects and account for diversity in stakeholder groups, timelines, and project nuances.

For that reason, we elected to use a comparative case study approach, analyzing the newspaper coverage of the first two large-scale offshore wind projects in the United States: Vineyard Wind I and South Fork Wind. Vineyard Wind I, the larger of the two (800 MW), is being developed by Avangrid Renewables and Copenhagen Infrastructure Partners. The project is located 15 miles southeast of Martha's Vineyard and Nantucket, Massachusetts (Figure 1). The first large-scale offshore wind project in the United States, the project broke ground in 2021 and began providing electricity to Massachusetts in early 2024.

South Fork Wind is a smaller-scale project (132 MW) developed by Deepwater Wind (now Ørsted). It is located 16 miles south of Rhode Island and 35 miles east of Long Island, New York. The second large-scale offshore wind project in the United States, construction on South Fork Wind started in February 2022 and began transmitting energy to Long Island in late 2023. While these two projects are the first of their kind in the United States and followed similar timelines, they have different developers, deliver power to different states, and impact stakeholders such as the environmental and fishing communities in different ways.

Additionally, there are notable differences in community context for each of these projects. The transmission cable for South Fork lands in the village of Wainscott in East Hampton, New York, (South Fork Wind, n.d.). Wainscott has 4,318 full-time residents, with a median household income of $135,927 (US Census Bureau, 2021). During the planning stages there was significant debate over which beach community the cable would land in, which contributed to a sentiment of competition and discord among community members and local political officials, with communities generally opposing the cable landing on their beach. Additionally, the South Fork lease area includes portions of Cox Ledge, an important fishing ground for several commercial fisheries in New England.

Meanwhile, the transmission cable for Vineyard lands in Barnstable on Cape Cod, Massachusetts, a town with 48,556 full-time residents and a median household income of $82,816 (US Census Bureau, 2021). While the South Fork project was selected following a request for proposals by the Long Island Power Authority (LIPA) to meet energy needs in Long Island (South Fork Wind, n.d.), the Vineyard Wind lease area was awarded as the first large-scale offshore wind project in the United States following a major push by both the federal and Massachusetts state governments. This led to a "first in the nation" sentiment that translated to significant enthusiasm and positive media attention to the project. These aspects of community context lend helpful insight into unpacking the trends in media coverage of both projects.

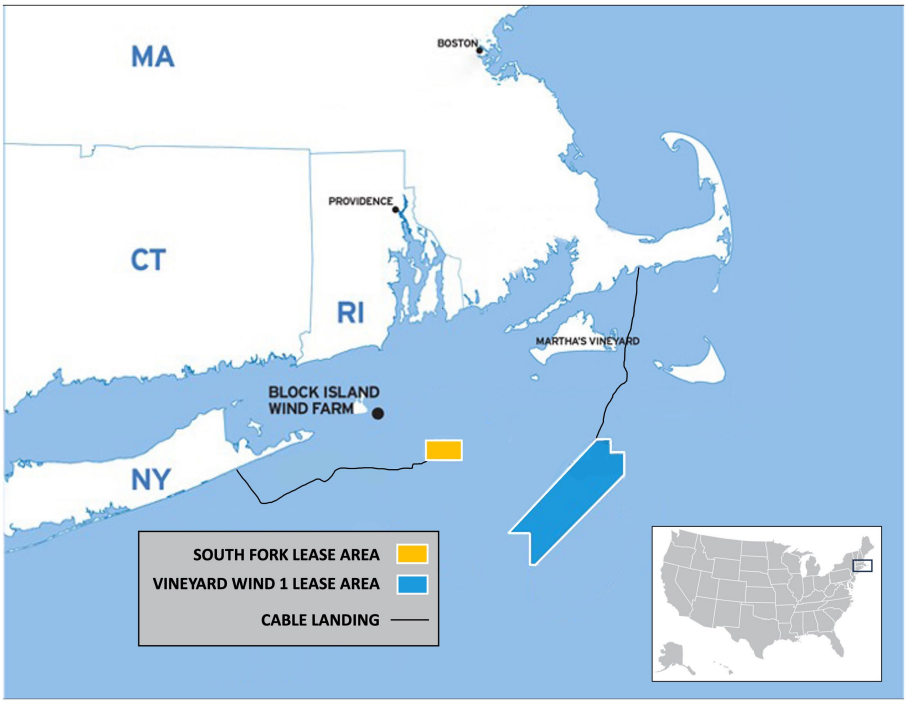

FIGURE 1
Map of South Fork Wind and Vineyard Wind I lease areas and cable landings.

TABLE 1 Entity categories and descriptions (listed in order of quote frequency from highest to lowest for the full sample).

Entity Quoted	Description
Developer or Industry	Developer spokespeople and industry collaborators at port facilities or other relevant infrastructure
Political Official	Officials from local to federal scales elected or appointed into office (e.g., council member, legislator, Governor, President, Secretary, etc.)
Government	Unelected civil service employees working for local, state, national, or foreign governments, often representing a public agency
Community Member or Group	Individuals or organizations from local communities or residents within a community (not part of the local government)
Fishing Industry	Representatives of commercial or recreational fishing industries or fishing interests, including fishers themselves
Environmental Organization	Non-governmental organizations representing environmental or renewable energy interests
Scientist or Researcher	Scholars representing diverse fields such as economics, oceanography, and renewable energy, often affiliated with a university, non-governmental organization, or other research institution
Union and Labor	Representatives of unions and labor interests
Political Candidate	Individuals running for elected office from local to federal scales and speaking as a candidate (*includes incumbents running for re-election when speaking as a candidate*)
Consultant	Consultants providing expertise or advice about offshore renewable energy for various organizations or government agencies
Utilities	Utility companies including electric companies
Higher Education	Representatives of institutions of higher education including administrators and staff; not in a research capacity
Journalist	Reporters or journalists
Tribal or Indigenous	Tribal or Indigenous individuals or groups
Judicial	Judges or court representatives

3.2 Data collection

This study used a thematic content analysis approach of newspaper articles about Vineyard Wind and South Fork Wind to identify the entities quoted in the articles and the frames used by each category of entity. The overall population was all newspaper articles published prior to June 2022 covering Vineyard Wind or South Fork Wind as a primary topic. To gather this population of articles, we first used the media database Nexis Uni to search for English-language articles mentioning "Vineyard Wind" or "South Fork Wind" at least two times. A first search excluded too many articles about South Fork after a validation check, so a second search using the terms "Long Island wind farm" and "New York wind farm" was also conducted.[1] Nexis Uni was selected as the most commonly used database for media content analyses (Buntain et al., 2023), and all newspapers that came up in the search were included in the overall population (no selection was done based on newspaper characteristics, such as political orientation). However, it is important to note that recent studies suggest that various news databases may include different articles, so we cannot claim that this dataset includes all articles published on these two projects (Buntain et al., 2023).

The Nexis Uni database does not include local newspapers, so we also ran the same searches in relevant local newspapers from communities impacted by the two projects in Connecticut, Rhode Island, and New York (full list of newspapers included in Supplementary Table A1). These local newspapers tended to be coastal community-based and covered general community news (not specialist or partisan newspapers). Data were cleaned to remove duplicates (in the case of duplicates republished in other outlets, the earliest published article was kept), op-eds, and articles not focusing primarily on one of the two projects. This left a population of 696 newspaper articles published between 2013 and 2022, with 174 articles derived from Nexis Uni and 522 articles derived from local newspapers. For analysis, we randomly selected 150 articles for each project ($n = 300$), due to coding capacity given the large number of factors being coded for in the analysis. There was an average $r = 0.95$ correlation between the number of articles published per quarter for the sample and the population, suggesting the sample is representative of the population of articles.

3.3 Content analysis

The first stage of the content analysis was to identify which entities were quoted most frequently in the articles. Researchers inductively coded for entities quoted by stakeholder category (see Table 1 for the full list of categories). If entities quoted represented more than one stakeholder category, we coded them as the category that they were representing in the relevant quote.

Each entity was coded only once at the first mention per article, even if the article featured several quotes from that individual. We also coded instances where an individual was named and their position on the issue was paraphrased, but not directly quoted. Primary coding was completed by one member of the research team, but intercoder reliability was verified on 10% of the sample with a second researcher. For sources quoted, intercoder reliability produced a reliability coefficient (overall unweighted Kappa coefficient) of 0.83.

The second stage of content analysis was to identify the frames used by each category of entities quoted. Frames attributed to sources (either through quotes or paraphrasing) were coded. Multiple different frames could be coded in one article, or even in one quote. This coding

1 Similar searches for "Massachusetts wind farm" did not bring up additional articles about Vineyard Wind.

TABLE 2 Frame categories and examples of benefit and risk frames for each category.

Frame category	Benefit frame examples	Risk frame examples
Economic	Energy cost-savings, economic development, job creation	High costs of projects, negative impacts on property values, fishing industry, or tourism
Political	Leadership in offshore wind space, celebrating political transparency, constituent representation, embodiment of democratic values	Political conflict or controversy, lack of transparency, abuse of power
Environmental	Climate change mitigation	Habitat destruction, harm to wildlife
Social/Cultural/Aesthetic	Community engagement	Impacts to viewscapes, threats to cultural heritage, justice concerns
Technical	Scientific/engineering advancements, technological innovation	Navigational risks, capacity of infrastructure (e.g., ports and turbines)
Public Health	Air quality improvements	Water quality concerns

was done deductively, categorizing the discursive frames as either benefits (emphasizing the positive implications of the project) or risks (emphasizing the negative implications of the project), following a common framing dichotomy in environmental communication (e.g., Stephens et al., 2009; Pralle and Boscarino, 2011; Zukas, 2017; Gearhart et al., 2019; Peterson et al., 2019). Frames identified as either benefit or risk frames were then subcategorized into economic, political, environmental, social/cultural/aesthetic, technical, and public health benefit or risk frames (e.g., Thompson, 2005; Fischlein et al., 2014). For frames used, intercoder reliability produced a reliability coefficient of 0.76. Table 2 presents examples of the benefit and risk frames for each frame category. The relationship between entity quoted and frames was found by analyzing instances of overlap between entity codes and framing codes.

4 Results

4.1 Who is quoted most frequently?

Entities quoted in newspaper articles about both projects were generally similar, with the same five stakeholder categories quoted most frequently (albeit in different orders): political officials, developers, community members, government, and the fishing industry (Figure 2).

Articles about South Fork quoted political officials most frequently (26% of all quotes[2] in South Fork coverage). This included local political officials such as the East Hampton Town Supervisor Peter Van Scoyoc, who was a frequently quoted and vocal proponent of the project. Developers were also frequently quoted (21%), including representatives from Deepwater Wind (later acquired by Ørsted), which jointly developed the project with Eversource Energy. Less frequently included were quotes by community members or groups (17%), the fishing industry (11%), and government (who were mostly at the state or local scale; a detailed breakdown of the scale of government and political officials quoted can be found in Supplementary Figures A1, A2) (6%). Notably, other local stakeholder groups such as Tribal communities were not quoted in the South Fork sample, despite being impacted by the development of the project [for instance, through the potential disruption of native burial sites and threats to Indigenous submerged land rights (Lynders, 2023)].

Articles about Vineyard Wind quoted developers most frequently (28% of all quotes in Vineyard coverage). The next most frequently quoted entity was political officials (23%), often representatives from the Biden Administration including Secretary of Commerce Gina Raimondo and Secretary of the Interior Deb Haaland. Developers and political officials were quoted much more than other members of the government (16%), the fishing industry (10%), and community members or groups (7%). Notably, the scale of political officials differed between cases, with more municipal and local leaders quoted in South Fork coverage, and more federal leaders quoted in Vineyard coverage (see Supplementary Figures A1, A2). Like South Fork, there was minimal representation of Tribal communities in coverage of Vineyard, despite cable landings and construction areas in proximity to several established Tribal communities and reservations [including the Wampanoag Tribe of Gay Head (Aquinnah) on Martha's Vineyard, and the Mashpee Wampanoag Tribe on Cape Cod]. See Supplementary Materials for figures depicting the scale of government and political officials quoted for both cases.

The most frequently quoted entities for each project changed over time relative to milestones in the projects' development (see Figure 3). For example, in coverage of South Fork, representation of community members or groups increased substantially in early 2021, when local officials agreed to host the transmission cable for the project and the U.S. Bureau of Ocean Energy Management (BOEM) issued the draft environmental impact statement. Opponents to the project, including the community group Citizens for the Preservation of Wainscott, were vocally opposed to the project's siting in Wainscott. Representation of political officials also peaked at this time as the merits of the siting decision were debated and the decision was finalized. Meanwhile, representation of the fishing industry remained consistently low in coverage of South Fork.

For coverage of Vineyard, representation by developers, government, and political officials peaked in quarter three of 2019, when BOEM announced the project would be delayed for additional environmental review and local officials agreed to host the transmission cable landing. Representation by these entities, especially political officials, also increased in the first half of 2021, when BOEM issued the final environmental impact statement and Vineyard resumed and finalized its permitting after the Biden Administration took office. The change in representation of entities quoted over time suggests that the inclusion of different categories of stakeholders in the media is dependent, in part, upon the events that are happening throughout project permitting and development.

2 There were 478 total quotes by entities in South Fork coverage and 550 total quotes by entities in Vineyard coverage. Totals reflect the number of times an entity was quoted.

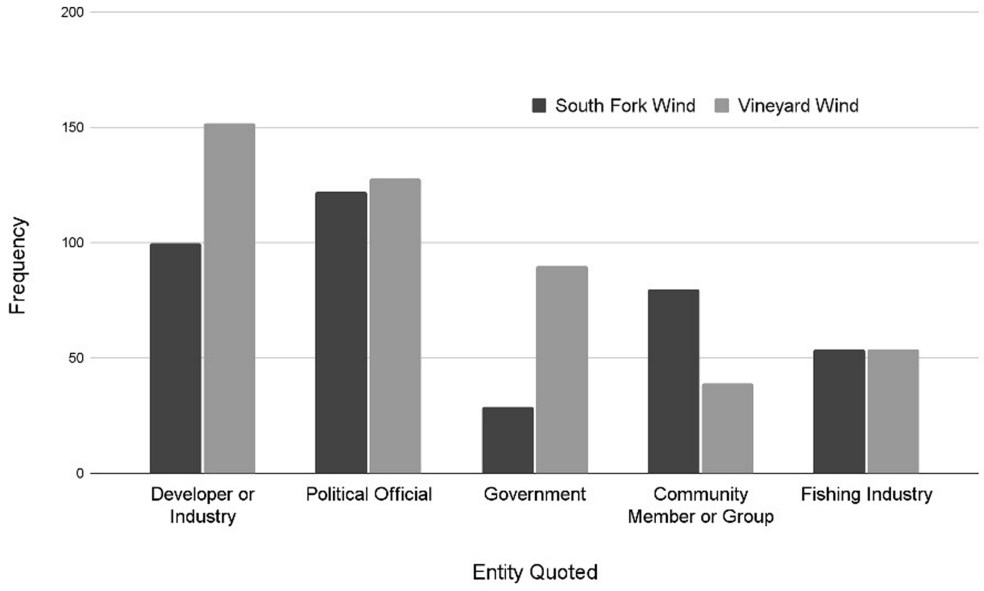

FIGURE 2
Frequency of quotes for the top five entities quoted for each case.

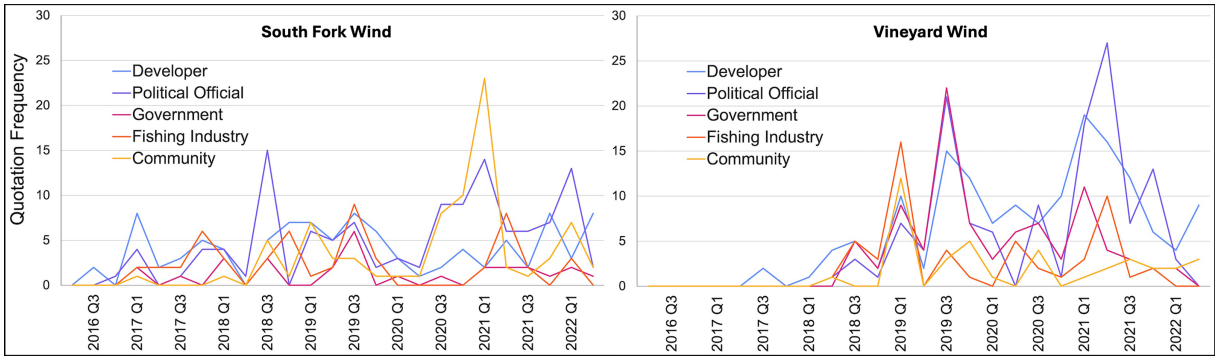

FIGURE 3
Entities quoted for each case over time.

4.2 What framing strategies are used?

To further understand the agenda-setting effect of media coverage of offshore wind, we also investigated how each entity category framed the issue. This allowed us to gain a fuller picture of how the issue is being communicated to the public through the media. For simplicity, we categorized frames into those highlighting the benefits and risks of offshore wind and/or the projects themselves. Table 3 shows the distribution of framing strategies observed in the quotes from each entity category. The sections below analyze which framing strategies each entity category used most frequently, and how those strategies differed between cases.

4.2.1 Developers

Across the board, developers used benefit framing strategies much more than risk framing strategies, a logical finding based on the incentives developers have in expanding offshore wind. In our sample, developers used benefit frames 47 times in coverage of South Fork and 97 times in coverage of Vineyard Wind. Generally, developers focused on economic and political benefit frames, with less focus on environmental benefits (particularly in South Fork coverage). Developers also frequently used social/cultural/aesthetic benefit framing strategies, generally focusing on their support for community engagement. For example, a spokesperson for developer Ørsted was quoted saying, "We fully support the CRMC's [Rhode Island's Coastal Resources Management Council] new [project review] timeline, as it allows for more dialog and opportunity to work collectively to…advance this important offshore wind project."

When developers did use risk framing strategies, they tended to focus on political risks, referencing conflicts and tensions between actors in the development process. This was most apparent in coverage of Vineyard Wind. "It has been a long process. It has been a very intense process. It has also been a process when emotions have run high from time to time," said a Vineyard Wind developer, referring to the political difficulties that the project faced in getting approved.

TABLE 3 Distribution of framing strategies observed in quotes from the top 5 entity categories.

Entities quoted	Benefit frames						
	Total benefit frames	Economic	Environmental	Political	Social/cultural/ aesthetic	Technical	Public health
South Fork	106	29 (27%)	25 (24%)	28 (26%)	16 (15%)	7 (7%)	1 (1%)
Developer	47 (44%)	12	3	18	10	3	1
Political Official	40 (38%)	13	14	9	2	2	0
Government	7 (7%)	2	2	0	2	1	0
Community	7 (7%)	2	4	1	0	0	0
Fishing	5 (5%)	0	2	0	2	1	0
Vineyard	255	80 (31%)	46 (18%)	71 (28%)	29 (11%)	29 (11%)	0
Developer	97 (38%)	36	10	31	12	8	0
Political Official	120 (47%)	38	29	29	11	13	0
Government	25 (10%)	2	2	11	3	7	0
Community	13 (5%)	4	5	0	3	1	0
Fishing	0	0	0	0	0	0	0

Entities quoted	Risk frames						
	Total risk frames	Economic	Environmental	Political	Social/cultural/ aesthetic	Technical	Public health
South Fork	104	15 (14%)	21 (20%)	38 (37%)	19 (18%)	7 (7%)	4 (4%)
Developer	3 (3%)	0	0	2	1	0	0
Political Official	25 (24%)	3	2	13	7	0	0
Government	5 (5%)	0	2	1	0	2	0
Community	39 (38%)	3	5	17	8	2	4
Fishing	32 (31%)	9	12	5	3	3	0
Vineyard	78	27 (35%)	7 (9%)	27 (35%)	7 (9%)	7 (9%)	3 (4%)
Developer	9 (12%)	2	0	7	0	0	0
Political Official	13 (17%)	5	0	5	0	1	2
Government	8 (10%)	2	1	3	0	2	0
Community	13 (17%)	2	5	3	2	0	1
Fishing	35 (45%)	16	1	9	5	4	0

4.2.2 Political officials

Framing strategies used by political officials favored benefits over risks, but the balance differed between the two cases. In coverage of South Fork, political officials used more benefit (40 instances) than risk (25 instances) frames, with an emphasis on economic and environmental benefits, and political risks. Risks were highlighted most frequently by local political officials (see Supplementary Figure A2). These political risks were generally referencing the intense local political debate about where to site the onshore cable landing. Political officials also used social/cultural/ aesthetic risk framing strategies, often invoking threats to local community members' sense of place. "It's a beloved beach. People feel strongly," said a local official in Wainscott, Long Island.

In coverage of Vineyard Wind, political officials used benefit framing strategies (120 instances) significantly more than risk framing strategies (13 instances) across all scales of government (local, state, and federal political officials). These strategies included highlighting economic benefits most frequently, followed by environmental and political benefits. Most of the statements about benefits came from state or federal political officials. For instance, state political officials focused primarily on economic (19 instances) and political benefits (13 instances). This aligns with the strong state-level political support for the Vineyard Wind project in Massachusetts, seen through the state's congressional delegation leadership and aggressive economic incentives for the project (Norton, 2019; An Act Driving Clean Energy and Offshore Wind, 2022).

4.2.3 Government

Government representatives were quoted at different rates between the two projects, and their framing strategies differed as well. For South Fork, government entities used benefit (7 instances) and risk (5 instances) frames roughly equivalently, with little difference between state and local government entities (see Supplementary Figure A3). These quotes were not clustered in a single framing strategy; government representatives discussed the

economic, environmental, social/cultural/aesthetic, and technical benefits of South Fork, as well as the environmental, political, and technical risks of this project.

Coverage of Vineyard Wind, however, quoted government representatives much more frequently than coverage of South Fork, and these quotes used benefit frames (25 instances) more than risk frames (8 instances). Benefits were highlighted the most by federal government entities. In coverage of Vineyard, government discourse primarily discussed political benefits, with moderate use of technical benefits as well. In coverage of Vineyard, the government also used technical benefit framing strategies. The government was much less likely to use risk framing strategies in either case, with only a few mentions of environmental, economic, technical, or political risks of either project by the government.

4.2.4 Community members/groups

The framing strategies used by community members/groups also differed by case. In coverage of South Fork, community members/groups used risk framing strategies much more frequently (39 instances) than benefit framing strategies (7 instances). These were primarily political risk frames, generally criticizing the developers or the engagement process. One leader of a community group in Long Island criticized the developer Ørsted (formerly Deepwater), calling them "heartless" and "tone deaf." Another community leader said "Deepwater is backed by very sophisticated investors who know how to negotiate. They are conning you." This suggests a high level of distrust of developers among community members in the development of South Fork Wind.

Community members quoted in coverage of Vineyard Wind were more evenly divided in their framing strategies, using 13 benefit frames and 13 risk frames. In terms of benefits, community members emphasized the economic and environmental benefits most frequently, as well as some social/cultural/aesthetic benefit frames where community members discussed the value of the wind farms to their communities (in replacing other energy sources and progressing a just transition to clean energy). When using risk frames, community members/groups used five out of the six risk frame categories, with environmental risks appearing slightly more frequently. This risk framing generally focused on ways that the projects could harm the natural environment or disturb marine life or fishing. For example, a Nantucket resident argued that "this [Vineyard Wind] represents the transformation and industrialization of a pristine natural environment."

4.2.5 Fishing industry

Of all the stakeholder groups, the fishing industry was quoted using risk frames the most frequently (67 instances between the two projects). In coverage of Vineyard Wind, this was mostly economic risk framing, emphasizing the negative economic impacts the industry would incur due to the project's impacts to fish stocks and vessel navigation. Fishing industry representatives also used many political risk frames when discussing Vineyard Wind, most of which emphasized disappointment in their level of engagement in the approval and decision-making process. One local fishing group called it "a public process failure, putting at risk those men and women who still go out to work every day so that Americans can eat."

In coverage of South Fork Wind, the fishing industry leaned most heavily (12 instances) on environmental risk frames (notably, these frames were only used once by the fishing industry in coverage of Vineyard). Much of these frames focused on risks to important fishing and fish spawning grounds around Cox Ledge, where the turbines and cables would be routed. Notably, nine of the 12 instances of environmental risk framing came from a single person, Bonnie Brady, Executive Director of the Long Island Commercial Fishing Association. However, the fishing industry also frequently used economic and, to a slightly lesser degree, political risk framing in this case. Economic risk framing emphasized the negative impacts on the fishing industry. For example, Brady commented in one article, "If those offshore wind energy leases are not stopped, it will result in thousands of lost U.S. fishing jobs and the destruction of domestic fishing stocks."

5 Discussion

Understanding which entities were most frequently quoted in news coverage of offshore wind provides insight into whose voices are leveraged and legitimized in media coverage. Sources viewed as "official" or "reputable" tend to be featured most frequently in media coverage of an emerging topic (Hurlimann and Dolnicar, 2012; Brown et al., 2020; Amiraslani and Dragovich, 2021). An implication of this is that other voices and perspectives on an issue, who may be harder for journalists to reach or viewed as having less relevant expertise, tend to be underrepresented (Suldovsky et al., 2018). While we use representation as a proxy for legitimacy (and acknowledge that we do not directly measure perceptions of source legitimacy), another important impact of this imbalance is that the frames and arguments emphasized by these "official" sources can dominate the coverage and minimize other framing arguments held by less easily accessible sources (Sandman, 1994).

This analysis finds that entities who are typically more accessible to journalists and traditionally viewed as experts tend to be quoted most frequently in media coverage of offshore wind energy development in the United States. For both cases, we found that developers and political officials were quoted most frequently, consistent with Gilbert et al. (2019) and Smythe (2024). Notably, another source that is typically viewed as both accessible and having expertise – government – was not quoted as frequently in coverage of these two cases. This is also a divergence from findings of other environmental media studies (Smith, 1993; Smith and Norton, 2013), although an important distinction is our division of political and government officials as separate entities (often with different goals). A potential explanation for the decline of government sources in media coverage may reflect a general downward trend in the public's trust in the government (Bell, 2023) – an important potential correlation for future research to explore. Additionally, trends in the politicization of science (Pellizzoni, 2011) suggest that political figures are increasingly commenting on science and environmental topics in the media, which could also explain the observed spike in political official representation in newspaper coverage of offshore wind.

Importantly, the top sources quoted differed between cases in this study. Developers were quoted most frequently in coverage of

Vineyard Wind, and political officials were quoted most frequently in coverage of South Fork. This may be due to several factors that emphasize the case-specific nature of environmental coverage. The South Fork project became a more politically contentious issue, as the question of where to site the cable landing on Long Island became a hot-button issue in local political elections. Meanwhile, with Vineyard Wind as the first large-scale offshore wind project in the United States, the developers of the project may have prioritized gaining media coverage to build public support and excitement.

While coverage of both Vineyard and South Fork quoted developers and political officials most frequently, political officials for Vineyard were more often representatives of the federal government, compared to local political officials in coverage of South Fork. Significant national attention to Vineyard as the first large-scale offshore wind project in the United States may account for the more frequent quotations from the federal government and developers. At the state government level, the state of Massachusetts invested heavily in promoting the offshore wind industry through incentives and vocal political support for state leaders. In addition, the federal government was likely more invested in the success of Vineyard Wind due to its potential to advance the industry as the first large-scale project in the United States. Vineyard Wind also went through a prolonged regulatory and permitting process as the first large-scale project, which likely led journalists to seek out the perspective of government regulatory officials. Additionally, while our content analysis revealed some local pushback against the Vineyard Wind project, South Fork was the target of significant local debate, offering a clear venue for journalists to include quotes from local political officials.

We also found that members of community groups tended to be less frequently represented (although this also differed by case), reflecting prior research on environmental media (Sandman, 1994; Suldovsky et al., 2018), However, we did not find that representatives of these stakeholders were absent from coverage. Particularly for coverage of South Fork, members of the community seemed to play an important role in media coverage, often serving as a foil for the pro-wind arguments, and emphasizing the debate and conflict that is often sought out in journalism (Boykoff, 2007). Importantly, impacts of offshore wind energy on fishing was a common economic risk discussed in media coverage, but members of the fishing industry were still quoted less frequently than developers and political officials.

It is also important to consider the prevalence (or lack thereof) of other stakeholder groups that are commonly active in debates on environmental issues. Notably, scientists and academics were under-represented in our sample of media coverage, compared to media studies of other scientific and environmental issues (Lyytimäki, 2007; Jönsson, 2011). This suggests that the discourse around offshore wind, at least in this context of these projects and the selected time period, focused less on scientific questions and more on policy, regulatory, and economic issues.

Beyond just representation, we found that framing strategies differed among different source categories and cases. Developers and political officials emphasized the benefits of the projects and offshore wind in general, especially in coverage of Vineyard Wind. This is not unexpected, as these groups tended to have the most (either financially or politically) invested in the success of the projects. As the most frequently quoted entities, the benefit frames being used by these entities likely influenced the overall framing of offshore wind in the media. Meanwhile, fishing and community groups more frequently used risk frames in their discourse, but they were featured less frequently in media coverage. Notably, the framing strategies used by community groups differed notably by case, suggesting that the perspectives furthered by these entities in the media is highly dependent on context in the offshore wind space. While our analysis was limited to traditional newspaper coverage, future research should investigate whether these entities are better represented through other forms of media such as op-eds or social media.

Despite notable differences in framing strategies between entities, we also observed overlapping framing strategies that suggest framing alignment and the potential emergence of discursive coalitions (Snow et al., 1986). Two examples are developers and political officials both emphasizing economic benefits of the two projects, and, for South Fork in particular, local political officials aligning with community members in highlighting the political risks of the project. The fact that both of these overlaps incorporate political officials but use differing framing strategies further suggests the need to consider the communication context on a project by project basis, and for future research to consider how local and state/national political officials form discursive coalitions differently, and/or how political orientation of elected officials may influence frames used.

Another notable finding is that while environmental advocates were not frequently quoted in media coverage, environmental frames remained common. This suggests that environmental framing was captured in the discourse strategies of other entities. This offers an interesting question for future research – if environmental frames are co-opted by other entities, what are the implications both for environmental advocates and environmental causes? While in some contexts this could signal issue expansion and the importance of environmental causes to other stakeholders, there also runs a risk of misrepresentation or greenwashing. Future research in environmental communications may want to evaluate trends in the changing roles and perceptions of environmental advocates in the media.

An implication of this research is that who is quoted in the media – and how they frame an issue – may have an impact on how the public perceives an issue. Prior literature on agenda setting and media framing suggests that how an issue is presented in the media can inform public perceptions of issue importance and public attitudes on the issue. While we do not test public attitudes in this study, measuring which entities are featured may help explain the formation of public opinion on this topic, building on the agenda-setting role of media (McCombs and Shaw, 1972; Atwater et al., 1985; Weaver, 1994). The heavy reliance on political and corporate sources in media coverage of offshore wind is also potentially in conflict with recent trends in public trust in these sources (Webster, 2018; Holmes et al., 2022). Future research should investigate how the public trusts these sources as messengers about offshore wind and renewable energy, compared to generally declining levels of political and corporate trust among Americans. Additionally, particularly with the polarization of media in recent years (Liedke and Gottfried, 2021), it would be helpful for future researchers to consider how the partisan leanings of different news outlets may shape which sources are cited in articles about offshore wind.

While helpful in elucidating how different entities are incorporated (or not) into media coverage of offshore wind in the U.S., the scope of this study limits the conclusions we can draw and

opens the door for future research in this area. Importantly, this study represents a snapshot in time. We include newspaper articles published 2013–2022 (and of these, took a random sample of 150 articles), when construction for both projects had just begun and neither wind farm was operational. The topics of discourse, as well as the key stakeholders involved, varied at different stages of the planning, permitting, and construction process for these projects (Diamond et al., under review). Prior research also notes that both the entities quoted in the media and the frames emphasized tend to vary over the course of an environmental conflict (Brown et al., 2020). Given this, the findings of this study should be interpreted cautiously, recognizing that it only reflects the initial stages of development of the nascent offshore wind industry in the United States, and focuses on just two projects. Tracking ongoing media coverage as the industry expands will be important to providing a full picture of the characterization of these projects in the media.

Although the focus of this study is limited to two offshore wind projects in the United States, it could set a foundation for future research on the role of media sources in conferring legitimacy and expertise both in other renewable energy/emerging technology industries, and to the offshore wind industry outside the United States. Studies of media coverage of offshore wind in Europe have primarily focused on framing techniques used in coverage, less so on the sources quoted and how that may influence perceptions of expertise and legitimacy (Heidenreich, 2016; Schmidt, 2017). Comparing how entities are incorporated differently in media coverage of offshore wind across countries or regions would be particularly insightful and would expand the relevance of these findings. Similarly, it would be interesting to compare the entities quoted in coverage of other renewable energy and emerging technology topics at similar points of development, to understand what trends may be unique to offshore wind, and what may be more universal in media coverage of renewable energy technologies.

Another significant question coming out of this research is that of causality. Is the predominance of developers quoted in newspaper articles a journalistic choice, or a true reflection of who is most active in the discourse on offshore wind? Prior literature has shown that entities, particularly those with significant resources to dedicate to the effort, use tools such as public relations and media relations to attract media attention to advance their framing and messages. In this case, what role do the public and media relations efforts of industry play in how frequently these entities are quoted in the coverage? Similarly, does this reflect a lack of access to trained media spokespeople for smaller/less resourced stakeholder groups? Future research should consider how organizational communication influences the overall discourse on offshore wind, as well as the fora for quotes. How does that influence what entities have a platform to share their views, and which are left out of the conversation?

Representation in the media is important as it can elevate certain perspectives and issue framings over others, as well as signal who in a given issue area has expertise. In this study, the imbalance of representation of developers and political officials, compared to local community groups, Tribes, or the fishing industry, may confer legitimacy and expertise unequally. Additionally, our findings show that different stakeholder groups use different framing strategies, with developers and government officials emphasizing the benefits of offshore wind, and members of the fishing industry and many community members using discourse that emphasizes the risks of the nascent industry. These findings set a foundation for furthering our understanding of how media coverage may play an important role in guiding perceptions of who, and what arguments, guide the conversation and debate around this highly contentious emerging issue.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Author contributions

ED: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. ND: Data curation, Formal analysis, Investigation, Methodology, Visualization, Writing – original draft, Writing – review & editing. TS: Conceptualization, Funding acquisition, Writing – review & editing. DB: Conceptualization, Funding acquisition, Writing – review & editing.

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Conflict of interest

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Supplementary material

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