The Extractive Industries and Society xxx (xxxx) xxx–xxx

Contents lists available at ScienceDirect

The Extractive Industries and Society

journal homepage: www.elsevier.com/locate/exis

Original article

"Why are we being punished and they are being rewarded?" views on renewable energy in fossil fuels-based communities of the U.S. west

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ARTICLE INFO

Keywords:
Fossil fuels
Community
Renewable energy
Public perception
Just transition

ABSTRACT

Renewable energy has emerged as one of the predominant means for addressing global climate change, as well as a remedy for energy workers and communities displaced by declining fossil fuels industries. However, little is known about how individuals living and working in fossil fuels-dependent communities perceive renewable energy and the low-carbon transition. To investigate this, semi-structured interviews were conducted with forty-five community representatives in 2016 in two energy-dependent areas in the state of Utah − one dependent on coal mining and electricity generation and one dependent on oil and natural gas extraction. Findings indicate that representatives overall had negative views of renewable energy development, driven mainly by the perceived threat to the existing local economy, the feeling that renewable energy was incongruent with local identity, and anger about policy incentives favoring renewables. These findings suggest that even though renewable energy development may offer an economic boost to declining fossil fuels-based communities, it may still be rejected in these places. The article concludes by weighing the implications of these findings under the 'just transitions' framework, which argues that the clean energy transition must address the plight of individuals and communities hit hardest by the shift away from fossil fuels.

1. Introduction

Addressing the problem of dangerous global climate change (Hansen et al., 2013) requires significant reductions in the amount of fossil fuels burned across major energy sectors. Incorporation of renewable energy technologies into the electricity production system is a key method for reducing greenhouse gas emissions, and growth in renewable energy capacity around the globe has been dramatic (IEA, 2017). This trend, while supporting climate change mitigation, bears ramifications for communities and workers employed in fossil fuels extraction and energy production industries.

Many point to renewable energy manufacturing and electricity production as the logical replacement for fossil fuels workers and local economies dependent on energy extraction. Recent news stories cite uplifting statistics, including reports that in the United States there are currently twice as many solar jobs as there are coal jobs (Korosec, 2015), and that wind energy jobs are close to outweighing coal jobs (US DOE, 2017). According to a Department of Energy report released in early 2017, while the number of both natural gas jobs (398,235) and oil jobs (515,518) remains higher than any one renewable energy sector, the number of solar, wind, and bioenergy jobs together (606,222) outnumber oil, gas, and coal (US DOE, 2017). These numbers appear to bode well in terms of replacement jobs for declining fossil fuels communities and the affected workforce, but little is known about how these communities are responding to the prospect of renewable energy as an alternative source of economic opportunities. Though nationally representative surveys in the United States indicate a high level of public support for renewable energy (Leiserowitz et al., 2017a), tensions may be especially high in fossil fuels-dependent communities that feel increasingly vulnerable as the clean energy transition progresses.

This paper explores local views on renewable energy in two fossil fuels-dependent areas in Utah − one dependent on coal mining and coal-fired electricity generation, and the other dependent on oil and gas extraction. The questions driving this research are: 1) How do residents of fossil fuels-based communities perceive renewable energy generally? 2) How receptive are these individuals to the prospect of renewable energy development in their area, especially with relation to the local economy? 3) Are there notable differences in attitudes towards renewable energy based on which energy resource the community depends on (coal or oil/gas)?

Findings are based on analysis of semi-structured interviews with forty-five individuals representing a variety of local sectors across two study sites. Overall, findings indicate significant barriers to social acceptance of renewable energy in these fossil fuels-based communities, largely stemming from respondents' concern that renewable energy itself would 'wipe out' the local economy, leading to even greater

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https://doi.org/10.1016/j.exis.2018.05.001
Received 19 January 2018; Received in revised form 30 April 2018; Accepted 1 May 2018

population loss and community decline than is already happening. Additionally, respondents believed that policy mechanisms driving renewables unfairly favored clean energy while 'punishing' fossil fuels. Furthermore, though some respondents indicated general support for renewable energy, it was by and large perceived as incongruent with local identity, largely because it was viewed as part of a liberal political agenda. Perceptions varied between study sites, with respondents in the coal-dependent study site exhibiting more negative views overall toward renewable energy than those in the oil and gas-dependent area.

2. Public response to renewable energy development and policy

Research on public attitudes toward renewable energy has found widespread support amongst the general public (Greenberg, 2009; Klick and Smith, 2010; Leiserowitz et al., 2017a; Stoutenborough et al., 2015; Truelove, 2012). However, renewable energy development is often opposed at the local level, in communities adjacent to proposed or constructed facilities (Bell et al., 2013, 2005). The research examining opposition suggests contestation commonly arises from aesthetic and place-based concerns (Devine-Wright, 2011; Olson-Hazboun et al., 2016; Phadke, 2011), upset that the local community does not have a voice in how or where such systems are developed (Bohn and Lant, 2009; Haggett, 2011; Leitch, 2010; Pasqualetti, 2011), and misgiving about the distribution of benefits and the burdens (Garcia et al., 2016; Haggerty et al., 2014; Ottinger, 2013). To date, research has not focused explicitly on the influence that economic dependency on fossil fuels extraction or production may have on public attitudes toward renewable energy. Various aspects of economic dependency on fossil fuels may influence public attitudes toward renewable energy. These are reviewed below, followed by brief discussion of the role of political ideology in attitude formation with regard to renewable energy.

2.1. Economic dependency on fossil fuels

Economic reliance upon the fossil fuels sector may be an important driver of perceptions about renewable energy. Several studies have demonstrated that employment in the fossil fuels industry is related to energy and climate policy attitudes at both the individual and collective levels (e.g. Boudet et al., 2016; Cragg et al., 2012; Mukherjee and Rahman, 2016; Tvinnereim and Ivarsflaten, 2016; Zahran et al., 2008). Residents of communities that are economically dependent on fossil fuels may be more supportive of these industries than the public at large, and they may also feel particularly threatened by the societal shift toward clean energy. Even if individuals themselves are not employed in the local fossil fuels sector, it would be reasonable to expect they would support fossil fuels if they live in a community where such industries prop up the local economy and provide family-wage jobs for friends and neighbors (Freudenburg and Davidson, 2007). There is evidence for this idea at various scales of analysis (Boudet et al., 2016; Gravelle and Lachapelle, 2015; Mukherjee and Rahman, 2016; Kriesky et al., 2013; Jacquet, 2012; Rabe and Borick, 2011; Stedman et al., 2012; Theodori, 2009).

Several studies have highlighted how local leaders and individuals in energy-dependent communities are often very supportive of continued extractive activities, even though they regularly experience negative impacts characteristic of this type of industry, including 'boom and bust' cycles of job and population growth and loss, long-term poverty, and impacts on environmental and public health (Ceresola and Crowe, 2015; Freudenburg, 1992). Energy-dependent communities are often economically vulnerable, and thus allegiance to existing or proposed fossil fuels development is based on hopes for economic development (Silva and Crowe, 2015). Local economic vulnerability can stem from factors such as geographic isolation from larger population centers, isolation from transportation routes, lack of economic diversity, population loss and 'brain drain' (Mayer et al., 2018), and lack of access to workforce education and training opportunities. Additionally, energy-dependent communities tend to be 'overadapted' to certain types of industries and skills, making it difficult to envision and implement changes as larger economic and production systems shift around them (Gramling and Freudenburg, 1992). These types of structural economic vulnerabilities often translate into continued support for the types of industries that have driven the economy in the past (namely, fossil fuels extraction and energy production).

2.2. Local economic identity

Local support for fossil fuels industries may also be a product of local identity, formed around a locally dominant industry such as oil drilling or coal mining (Bell and York, 2010; Ceresola and Crowe, 2015; Dampier et al., 2014; Evans and Phelan, 2016; Silva and Crowe, 2015; Lewin, 2017). Ceresola and Crowe (2015) found in their study of individuals living near the New Albany shale that "…proponents use their histories within a town and experience with extractive industry to frame shale development positively…proponents consider themselves tied into their communities in ways that make the only logical decision to be supportive of shale development" (p. 81). Likewise, Evans and Phelan (2016) argue that "…coal mining has provided material well-being and led to particular habitual, institutional, and discursive formations in the region that have formed 'mining' identities of individuals and communities" (p. 332). Bell and York (2010) found the same to be true in coal communities within Appalachia, where strong community identity and related cultural associations were strongly tied to historic economic reliance on the coal industry.

These dynamics of culture and identity may also influence how individuals in energy-dependent communities perceive renewable energy, though there is very little research on this topic. Though reliance on fossil fuels is clearly tied to continuing support for fossil fuels-based industries, few if any studies have examined how this is related to support for or opposition to development of other energy sources. In one study, Goldfarb et al. (2016) found that individuals living closer to coal-fired power plants were more supportive of policies encouraging the growth of renewable energy than individuals living farther away, which the author attributes to heightened concerned about pollution from these plants. No other studies on this topic were located, indicating a pressing need for more research. On one hand, residents of fossil fuels-dependent areas may feel threatened by renewable energy and the low-carbon transition. On the other hand, residents of these places are could benefit from renewable energy development through construction jobs, lease payments to landowners, and increased local tax revenue.

2.3. Political ideology and support for the free market

Political ideology and political party affiliation are strongly related to public opinion about energy in general (Boudet et al., 2016, Boudet et al., 2014; Cacciatore et al., 2012; Clarke et al., 2016, Delshad and Raymond, 2013; Goldfarb et al., 2016; Larson and Krannich, 2016; Mukherjee and Rahman, 2016). Political conservatives often support fossil fuels over other energy sources because of concerns about job losses, support for industries reliant on cheap fossil fuels, and support for free-market ideology. Conversely, political liberals often oppose the development of fossil fuels due to environmental concerns, including concerns about global climate change (McCright and Dunlap, 2011). A partisan divide sometimes appears in the case of renewable energy, with individuals who identify as Democrats or politically liberal being generally more supportive of renewable energy (Carlisle et al., 2015; Goldfarb et al., 2016; Hess et al., 2016), and with the divide over *policies* supporting emerging cleaner energy technologies widening between political leaders over the last decade (Goldfarb et al., 2016). However, recent nationally representative surveys have found a high level of support for renewable energy amongst both Republicans and Democrats in the United States (Leiserowitz et al., 2017a). This