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Fossil fuels, employment, and support for climate policies

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H I G H L I G H T S

- Individual-level support for climate policy will depend on expected costs and opportunities.
- Data from three large-scale Norwegian representative opinion surveys are used.
- Those working in the oil/gas sector are less in favor of constraints on fossil fuel production.
- In the same group, support for renewables is similar to that of the population at large.
- Stimulating new avenues for employment is a necessary component of mitigation policy.

A R T I C L E I N F O

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A B S T R A C T

We know that the costs of implementing various climate change mitigation policies are not uniformly distributed across individuals in society, but we do not know to what extent this unequal cost distribution influences public support for these various policies. This study shows that cost distribution is an important explanation for variations in public support for various climate policies. Using individual-level data on industry of employment and support for a range of climate policies, we find that those employed in the fossil fuel industry are less likely to support climate policies that are particularly costly to their industry, but are as likely as everybody else to support policies with lower costs to the industry. This finding challenges the traditional bifurcation between climate change "skeptics" and "acceptors." Furthermore, we find that opposition to renewable energy by large fossil fuel producers and consumers, identified in the political economy literature, is not uniformly found among these companies' employees. The most important implication of this study for policy makers is that support for climate policies is sensitive to the compensation of exposed groups and stimulation of alternative avenues for employment.

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1. Economic interests and attitudes toward mitigation

To what extent do the costs and opportunities of different climate change mitigation measures affect policy support at the individual level? While there is close to full scientific consensus that emissions of greenhouse gases (GHGs) from human activities constitute a leading cause of climate change, and that such change represents a danger to human settlements, food production, and water supply (Battisti and Naylor, 2009), there is less political consensus on what types of policies and measures should be implemented to avoid its worst effects. Furthermore, which mitigation policies get implemented depends less on aggregate cost-benefit analyses than on patterns of organized interests and

notably on whether costs and benefits of policies are concentrated or diffuse (Aklin and Urpelainen, 2013; Hughes and Urpelainen, 2015; Meckling et al., 2015). Consequently, understanding the socio-economic foundations of policy support and opposition is important both for explaining which mitigation policies get implemented and for formulating successful policies in the future.

We argue that support for and opposition to various mitigation policies depend on specific, individual economic interest linked to each policy, and that consequently support and opposition may vary across different types of mitigation policies. This study thus fills two gaps in the literature. First, we provide a detailed analysis of the potential gains and losses from specific mitigation policies or policy proposals from the point of view of individuals working in the fossil fuel sector. Second, we examine variation in attitudes toward these policies among sector employees and the public at large, finding variation in support and opposition levels according to the potential costs and benefits of each specific policy.

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Traditional economic models of climate change mitigation assume a high degree of economic rationality and a benevolent planner aiming to identify optimal solutions (Clarke et al., 2009; Kriegler et al., 2014). More recently, economic models have emerged that seek to integrate national diversity in policy strength and policy timing (Tavoni et al., 2015). These studies may be useful for identifying new, non-intuitive policy solutions or optima, but lack firm grounding in the complex empirical world of interest politics.

The distribution of costs and benefits among various interest groups matters because the likelihood of passage and successful implementation often depends on the relative configuration of winners and losers from a policy. For example, the policy that made Germany a world leader in wind energy was only partly motivated by a wish to mitigate GHG emissions. Rather, a coalition of farmers, skilled workers from a declining shipbuilding industry, and politicians from economically depressed regions promoted the sector (Michaelowa, 2005). Importantly, the wind industry's ability to produce new jobs helped it overcome the opposition caused by its high costs.

Looking at the issue of renewable energy promotion in reverse, Aklın and Urpelainen (2013) suggest that OECD governments are less likely to support cleaner forms of power production when fossil fuels dominate the electricity sector, due to the political clout of incumbent producers. Furthermore, beyond industrial structure, the form of political interest representation matters for which types of climate policy get implemented (Hughes and Urpelainen, 2015). The impact of economic interests on climate policy support and opposition can for example be seen from the fact that members of the US Congress vote on climate legislation in a way that is predictable based on their districts' carbon intensity (Cragg et al., 2012). Similarly, the likelihood of US local governments developing mitigation plans is found to correlate negatively with the degree to which fossil fuel extraction plays a role in local economic activity (Zahran et al., 2008).

Economic interests also influence public opinion related to climate change at the individual level. One study conducted in the US, Germany, France, and the UK shows that the carbon intensity of an individual's employment sector correlates negatively with individual support for participation in international climate cooperation (Bechtel et al., 2014). More generally, employment in oil and gas extraction in Norway has a negative effect on individuals' propensity to agree that climate change constitutes a threat (Tvinnereim and Austgulen, 2014). By contrast, a German study shows that individuals who display skepticism toward climate science are less likely to support renewable energy, but finds no association between employment type or unemployment and climate skepticism (Engels et al., 2013). Thus, there is evidence that distributive concerns influence attitudes toward climate policy, but these attitudes have so far been of a unidimensional kind, ranging from general opposition to general support.

The political economy literature suggests that different policy proposals should garner different levels of support according to their respective expected costs and benefits to specific groups. Notably, broad-based mitigation policies such as carbon taxes often produce concentrated costs to well-organized groups such as fossil fuel companies, while producing diffuse benefits to the population at large. As a consequence, Meckling et al. (2015) argue that policies that promote selected "green" industries with new sources of employment and future lobbying potential are more likely to succeed in the long run than more universal carbon taxes or caps. These results also imply a potential differentiation of public opinion whereby individuals tied to fossil fuel producers (e.g., the oil and gas industry) or consumers (e.g., coal-fired power plants) should oppose policies producing concentrated costs to their sector while supporting or showing indifference to policies

with more diffuse costs to their industries.

A number of studies examine the public's willingness to support different climate policy proposals, yet no study has to our knowledge attempted to explain variation in support across policies with reference to economic interests. Policies evaluated in these surveys may range from renewable energy support via building energy efficiency to gasoline taxes (Krosnick and Malinnis, 2013); some studies also gauge the public's willingness to pay for various kinds of climate policy (Aldy et al., 2012; Kotchen et al., 2013). A clear tendency across this research is that proposals involving support for renewable energy garner more support than tax increases. Yet few studies exist that seek to explain variation across individuals for different types of proposals. Indeed, in some cases (e.g., Smith and Leiserowitz, 2014), the various policy proposals are combined in an index, underlining the fact that attention is concentrated on general rather than specific policy support.

The political economy of climate change mitigation implies that different types of policies should have different levels of support also at the individual level. Our present study asks specifically how individuals employed in the fossil fuel industry evaluate a set of mitigation policies with different effects on their economic interests in the form of employment prospects.

Distributional concerns have an additional potential for solving a problem in the study of public perceptions of climate change. Recent research casts climate change as a complex issue, in relation to which people tend to base their views on cues from their peer groups or from trusted sources such as selected political leaders (Kahan et al., 2012; Malka et al., 2009). Once established, this strain of studies find that motivated reasoning – by which "people routinely seek out and accept evidence that supports their existing views, while ignoring or discounting disconfirming evidence" (Whitmarsh, 2011) – makes the selected views more resilient. However, it remains unexplained where these group opinions and identities originate. Economic interests may play this role as a first mover.

Our study uses data from a nationally representative survey in a country where a substantial share of the working-age population has a direct interest in the fossil fuel industry—Norway. Here, about eight per cent of the workforce are employed in oil and gas production or closely related industries (Eika et al., 2010); others estimate up to 13% (Blomgren et al., 2015). The high fossil fuel share of total employment means that there will be enough respondents in this category in a national poll to produce statistically meaningful results – no oversampling of the sector is needed.

The IPCC divides policy instruments into economic instruments (taxes, tradable allowances, and subsidies), regulatory approaches, information programs, government provision of public goods and services, and voluntary actions (Somanathan et al., 2014 Table 15.2). Key sectors are energy, transport, buildings, industry, forestry/land use, and human settlements/infrastructure. Notable policies include subsidies for renewable energy (Blyth et al., 2009), cap-and-trade for electricity and heavy industry emissions (Tvinnereim, 2013), emission or fuel economy standards in transportation and buildings, and measures to protect tropical rainforests.

Our classification of policy proposals differs from the established literature as we discern between policies based on detailed analysis of their expected effects on people working in the fossil fuels industry. For example, limits on new oil and gas exploration is classified as negative for fossil fuel employment because fewer wells will be drilled. By contrast, support for geothermal energy may produce new employment opportunities for individuals and companies already specializing in drilling. An intermediate position may be occupied by cap-and-trade, which imposes a price on GHG emissions but which could be seen as more flexible for the oil and gas industry, given high abatement costs, than outright regulation or a high CO₂ tax.

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