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Insights on Cultural Worldviews and Public Support for Renewable Energy

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Research Report

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Abstract

We explore the relationship between cultural worldviews and support for renewable energy focusing on how individual worldviews of egalitarianism, individualism, hierarchy, and fatalism affect attitudes toward increasing solar and wind energy and decreasing fossil fuel usage. We find that egalitarianism is positively correlated with support for renewable energy and reducing fossil fuel consumption, while individualism is negatively correlated with these policies. Hierarchy emerges as a predictor of opposition to decreasing fossil fuels usage in the U.S. The cultural theory of risk provides a framework for interpreting these results, suggesting that an individuals' perceptions of the balance between nature and society shape their attitudes toward environmental risks, and therefore climate change mitigation strategies such as energy preference. This research demonstrates the importance of considering cultural worldviews when trying to understand the challenges and opportunities associated with energy transition.

1. Introduction

As the effects of climate change become increasingly noticeable, transitioning to low carbon or renewable energy is important for mitigating climate impacts and promoting sustainable consumption and production (IRENA, 2022). However, political polarization presents challenges for transitioning to renewable energy sources. Given the state of polarized American politics regarding energy preferences, it is paramount to examine attitudes toward sustainable energy sources, as climate change poses a significant and increasingly pressing threat to humans (IPCC, 2021).

Studies have investigated factors that influence perceptions of renewable resources and related policies in the United States, exploring factors that shape the public preferences for renewable energy, including political orientation, partisan affiliation, and cultural values (Bidwell, 2016; Boudet et al., 2016; McCright et al., 2016b). Other research shows that demographic factors such as age, gender, race, income, and education are significant predictors, with younger, female, more educated, and higher-income Americans generally expressing greater support for renewable resources and climate action (Bedle et al., 2023; Boudet et al., 2016; Drummond & Fischhoff, 2017; Hamilton, 2011). Despite these findings, research on effective climate communication and policy creation strategies remains inconclusive

(Dickinson et al., 2016), indicating that additional factors, such as cultural worldviews, may influence attitudes towards sustainable energy sources and the transition away from fossil fuels.

1.1 Wind, Solar, and the decreasing use of Fossil Fuels

Public perceptions of wind energy are generally favorable (Klick & Smith, 2010); however, support is notably lower among conservatives (Crowe, 2020) and those living near existing or proposed wind farms (Umit & Schaffer, 2022). This local resistance can significantly hinder wind project development (Isaksson & Gren, 2024; Kitzing et al., 2024).

Similar to wind energy, solar power enjoys widespread popularity (Carlisle et al., 2015). However, Republican support for solar projects decreases as proposals become more localized, potentially due to differences in underlying values (Carlisle et al., 2016). The election of Democrat state governors, compared to Republican governors is associated with increased solar energy development, although state-level economic factors also play a role (Bonnet & Olper, 2024). Some studies indicate that partisan divides extend to national support for solar energy (Crowe & Li, 2020), particularly with recent increasing political polarization. Scholars suggest that this ideological disparity may be attributed to the growing association of solar energy with the broader politics of climate change, especially due to the "green" labeling of solar energy and its potential to disrupt established fossil fuel industries (Schelly, 2015).

In line with widespread support for climate-friendly energy initiatives, most Americans favor decreasing fossil fuel usage (Hawes & Nowlin, 2022). However, natural gas is an exception, as the public perceives it to be more environmentally friendly than coal and oil (Hazboun & Boudet, 2021). These attitudes vary significantly by political orientation with conservatives viewing natural gas as more environmentally friendly than liberals and expressing less desire to reduce fossil fuel use (Funk & Hefferon, 2019; Hawes & Nowlin, 2022; Hazboun & Boudet, 2021). Support for continued fossil fuel consumption is also predicted by belief in the economic benefits of hydrocarbon energy (Schimpf et al., 2021; Hazboun & Boudet, 2021), a belief disproportionately held by conservatives relative to liberals (Chu & Yang, 2020).

Despite these apparent political divides, evidence suggests that conservatives are not universally opposed to renewable energy (McCright et al., 2016b). Certain moral and value-based framing approaches have demonstrated the ability to influence climate-related beliefs (Adger et al., 2017; Campbell & Kay, 2014). These findings highlight the need to account for ideological differences in energy preferences while considering underlying cultural values.

1.2 Cultural Worldviews

A useful way to understand risk perception is through the cultural theory of risk (Douglas & Wildavsky, 1982; Kahan et al. 2011), which elucidates individuals' perceptions, attitudes, and responses to environmental risks and climate change mitigation. The theory identifies four cultural worldviews: hierarchy, egalitarian, individualism, and fatalism, each characterized by distinct beliefs and values that contribute to unique perspectives on risk management and decision-making in reference to the natural world. Each of these worldviews varies in the ways in which individuals perceive the fragility or robustness of nature along with a framework for how humans believe they can or cannot affect the natural world, which is particularly relevant to the study of climate mitigation.

To better illustrate cultural worldviews, visual depictions are presented in Figure 1 which uses the analogy of a ball (or earth) balanced on various planes. Each worldview is located in a quadrant of the figure determined by degree of bonding (x-axis) and stratification (y-axis). Fatalism is characterized by higher stratification and lower social bonding (top left in the figure). As can be seen in the fatalist quadrant, the ball can roll anywhere with no real way of knowing how, why, or when. Someone scoring high in fatalism likely sees nature as capricious and unpredictable. In practical terms, it might be viewing nature as chaotic – which reduces incentives to become an active agent in one's own ecosystem. Individualism is depicted in the bottom left quadrant where both stratification and social bonding are low. Here the ball is nestled or cradled in a valley. Someone scoring high in individualism likely views nature as benign and resilient to human actions. These individuals likely perceive the earth as solid, timeless, and not easily affected by the actions of humans. Consequently, this worldview encourages individuals to act in ways that largely do not consider human ecological effects. The bottom right quadrant demonstrates egalitarianism which is characterized by low levels of stratification and higher levels of social bonding. Someone who scores high in egalitarianism most likely perceive nature as fragile and in a delicate balance with society, like a ball that can easily be tipped to roll down a hill. These individuals are likely to see their own actions are highly consequential to the natural environment. Hierarchy is represented in the top right quadrant and is characterized by both higher stratification and social bonding. People scoring high in hierarchy are generally comfortable with numerous rules and believe nature is manageable within certain thresholds. They may see the earth like a ball that is easily contained in a valley unless pushed too far.

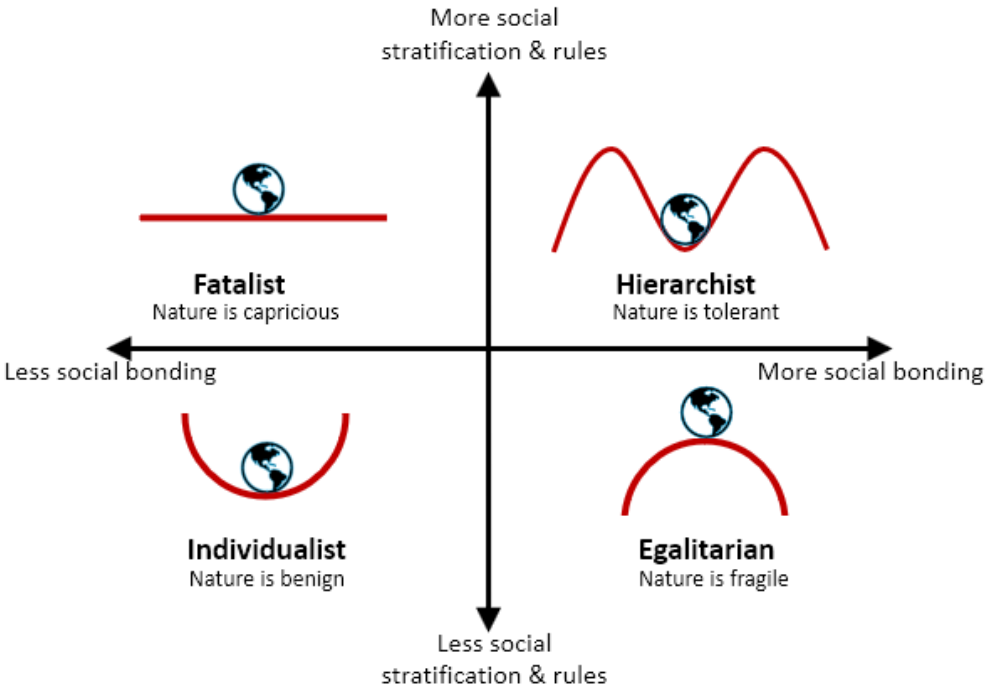

Figure 1: Cultural worldviews theory matrix demonstrating balance with nature (after Thompson, Ellis, and Wildavsky 1990).

It is likely that an individuals' cultural worldviews significantly influence their climate change risk perceptions and support for mitigation policies, including the adoption of renewable energy and the reduction of fossil fuel usage. Egalitarian worldviews perceive nature as fragile and in a precarious balance with society, and as such, have been associated with increased climate change risk perception and support for mitigation policies (Leiserowitz, 2006; Smith & Leiserowitz, 2014). In contrast, individualist worldviews see nature as benign and resilient to human actions – and ae accordingly correlated with decreased risk perception and opposition to policies that limit individual autonomy (Leiserowitz, 2006; Whitmarsh, 2011). Hierarchical worldviews view nature as tolerant of human activities (to a certain degree) and are linked to respect for expert-defined risks and support for solutions that maintain existing power structures (McNeeley & Lazrus, 2014)[1].

We extend these findings by examining the relationship between cultural worldviews and support for energy preferences, namely increasing solar and wind energy and decreasing hydrocarbon usage, while controlling for demographic, socioeconomic, political, and religious factors. By investigating the influence of cultural worldviews on support for specific energy policies, this study contributes to a growing body of literature on the complex interactions between cultural factors, risk perceptions, and preferences for climate change mitigation strategies but improves upon them by controlling for additional variables (Kahan et al., 2011; Chu & Yang, 2018; Lacroix & Gifford, 2018; Ballew et al., 2020).

In the following sections, we discuss our survey methods, data, and results, and explore the implications of our findings in relation to cultural worldviews. We hope to provide insights that can inform efforts to navigate the complex social dynamics surrounding the energy transition and ultimately contribute to the development of effective climate change mitigation policies.

2. Survey Methods

2.1 Data and Availability

Data for this study come from the SPEER23 Survey. SPEER23 is an online survey administered by the authors at the University of Oklahoma. The survey, conducted using the Qualtrics platform, approximated a nationally representative sample of 2,188 adults in the United States between May and June 2023. To ensure the sample accurately represented the U.S. population, quota-based sampling was employed, considering factors such as age, gender, income, education, race/ethnicity, and U.S. census region. The study procedures were thoroughly reviewed and approved by the University of Oklahoma Institutional Review Board under protocol #15823, ensuring compliance with standards and guidelines for human subjects research. For a comprehensive description of the data collection and sharing procedures, please refer to the full details in the survey report (Bedle et al. 2024).

2.2 Dependent Variables

Support for renewable energy policies was measured by asking respondents' level of agreement on whether the U.S. should increase or decrease use of solar power, wind power, natural gas, and oil. The exact wording of the question was as follows: "Please give your opinion on the following energy sources and technologies, and whether you would like to see less or more of each type in the overall energy mix

[1] There is little known about the link between fatalism and climate mitigation attitudes, however, we consider this worldview as well when analyzing energy preferences for a more robust study,

used at the regional and national level." The participants were given a six-point scale ranging from 'drastically decrease' to 'drastically increase,' and an option to note that they were 'unfamiliar with this technology.' For regression analyses, responses were recoded into binary variables of support where responses of "drastically increase" and "increase" are coded as (1) and responses of "slightly increase," "slightly decrease," "decrease," "drastically decrease," and "unfamiliar with this technology" are coded as (0). We use this coding scheme due to the high degree of preference for most energy sources (especially renewable sources).

2.3 Independent Focal Variables

The cultural worldviews are asked on a 6-point Likert from strongly disagree to strongly agree, with the following wording:

- Hierarchy: I am more comfortable when I know who is, and who is not, a part of my group, and loyalty to the group is important to me. I prefer to know who is in charge and to have clear rules and procedures; those who are in charge should punish those who break the rules. I like to have my responsibilities clearly defined, and I believe people should be rewarded based on the position they hold and their competence. Most of the time, I trust those with authority and expertise to do what is right for society.
- Individualism: - Groups are not all that important to me. I prefer to make my own way in life without having to follow other peoples' rules. Rewards in life should be based on initiative, skill, and hard work, even if that results in inequality. I respect people based on what they do, not the positions or titles they hold. I like relationships that are based on negotiated "give and take," rather than on status. Everyone benefits when individuals are allowed to compete.
- Egalitarianism: My most important contributions are made as a member of a group that promotes justice and equality. Within my group, everyone should play an equal role without differences in rank or authority. It is easy to lose track of what is important, so I have to keep a close eye on the actions of my group. It is not enough to provide equal opportunities; we also have to try to make outcomes more equal.
- Fatalism: Life is unpredictable and I have very little control. I tend not to join groups, and I try not to get involved because I can't make much difference anyway. Most of the time other people determine my options in life. Getting along is largely a matter of doing the best I can with what comes my way, so I just try to take care of myself and the people closest to me. It's best to just go with the flow, because whatever will be will be.

See Table 1 for descriptive statistics for both dependent and focal independent variables.

Table 1. Descriptive Statistics (N=2188)

	Min	Max	Mean	S.D.
Dependent Variables				
Increase Wind Energy	.000	1.000	.675	--
Increase Solar Energy	.000	1.000	.735	--
Decrease Fossil Fuels	.000	1.000	.309	--
Focal Independent Variables				
Hierarchy	1.000	6.000	3.801	1.286
Egalitarianism	1.000	6.000	3.829	1.337
Fatalism	1.000	6.000	3.520	1.345
Individualism	1.000	6.000	4.161	1.289

2.4 Control Variables

To account for potential confounding factors and ensure the robustness of our findings, we include a comprehensive set of control variables known to influence environmental attitudes based on prior research. Political party affiliation and left/right orientation has consistently been identified as a strong predictor of attitudes toward climate change and climate action (Dunlap & McCright, 2016; Hornsey et al., 2016; McCright et al., 2016a). Therefore, we control for political affiliation and orientation to isolate the effect of cultural worldviews on energy preference.

In addition to political factors, we control for a wide range of socioeconomic and demographic factors that have been shown to influence attitudes toward environmental issues (Boudet et al., 2016; Drummond & Fischhoff, 2017; Hamilton, 2011; Krause et al., 2014; Miller et al., 2008; Cherry et al., 2014; Satterfield et al., 2023; Nielsen et al., 2022). These factors include mean-centered age (with a squared term when significant), sex, race, education, income, marital and parental status, religious service attendance, evangelical identity, biblical views, urbanicity, and US region.

By controlling for these variables, we can more accurately assess the unique contribution of cultural worldviews to energy preference. This approach allows us to disentangle the effects of cultural worldviews from other factors that may influence attitudes toward environmental risks and climate change mitigation strategies, providing a clearer understanding of the complex social and cultural dynamics at play.

3. Results

Table 2 reports logistic regression results for energy preferences. Model 1 reports results for increasing wind energy, Model 2 reports results for increasing solar energy, and Model 3 reports results for decreasing oil and gas energy. Hierarchy is unrelated to support for renewable energy but reduces the odds for supporting a decrease in oil and gas. For each one-unit increase in the hierarchy scale, the odds of supporting a decrease in oil and gas decrease by 12.8 percent. Egalitarianism increases the odds of supporting increasing renewable energy and decreasing hydrocarbon usage. For each one-unit increase in egalitarianism, the odds of supporting increasing wind energy, increasing solar energy and decreasing oil and gas energy sources, increase by 22.2 percent, 18.3 percent, and 11.1 percent, respectively. Fatalism is unrelated to energy preference. Finally, Individualism is related to all three forms of energy.

Table 2. Binary Logistic Regressions for Energy Preference

	Model 1 O.R.	Model 2 O.R.	Model 3 O.R.
Cultural Worldviews			
Hierarchy	1.048	.995	.872 **
Egalitarianism	1.222 **	1.183 ***	1.111 ***
Fatalism	.964	.977	.955
Individualism	.896 **	.890 **	.921 *
Log likelihood	-1233	-1148	-1185
Psuedo R^2	.099	.092	.139

Model 1: DV = Supports Increasing Wind Energy; Model 2: DV = Supports Increasing Solar Energy; Model 3 = Supports Decreasing Oil & Gas Energy

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

**Note: Model includes controls for party affiliation, political orientation, age, sex, race, socio-economic status, family status, and religious variables*

preference. For each one-unit increase in individualism, the odds of supporting increasing wind, increasing solar, and decreasing oil and gas, decrease by 10.4 percent, 11 percent, and 7.9 percent, respectively. Visual depictions of predicted proportions for energy preferences are shown in Figure 2. A geographic breakdown of energy preferences is presented in Figure 3.

To summarize, we find that across the board, egalitarianism is the strongest predictor for increasing renewable energy and decreasing oil and gas. Individualism is related to reductions in all forms of energy sources. Hierarchy reduces the support for decreasing hydrocarbon usage but is unrelated to renewable energy preference. Finally, fatalism is not related to energy preference, which is consistent with expectations base on past literature.

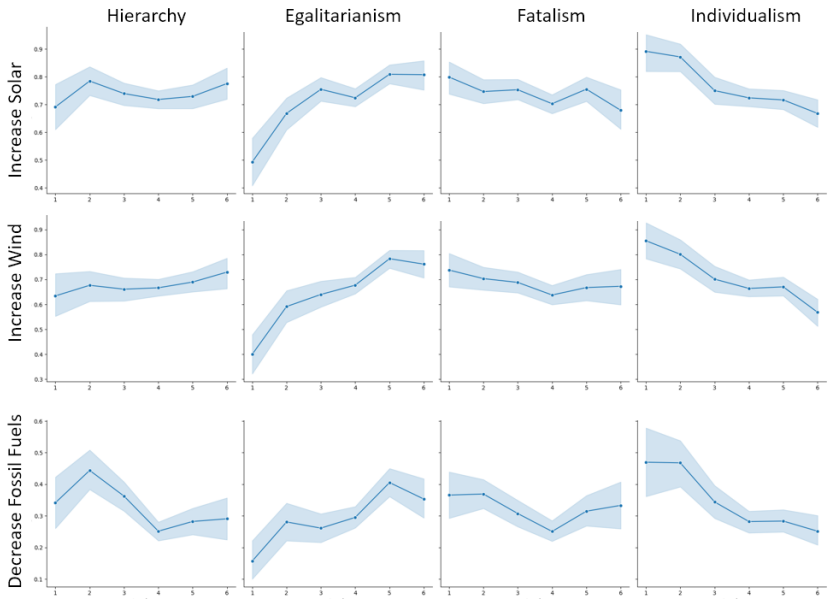

Figure 2: Average value with standard deviation for each cultural worldview and each energy type

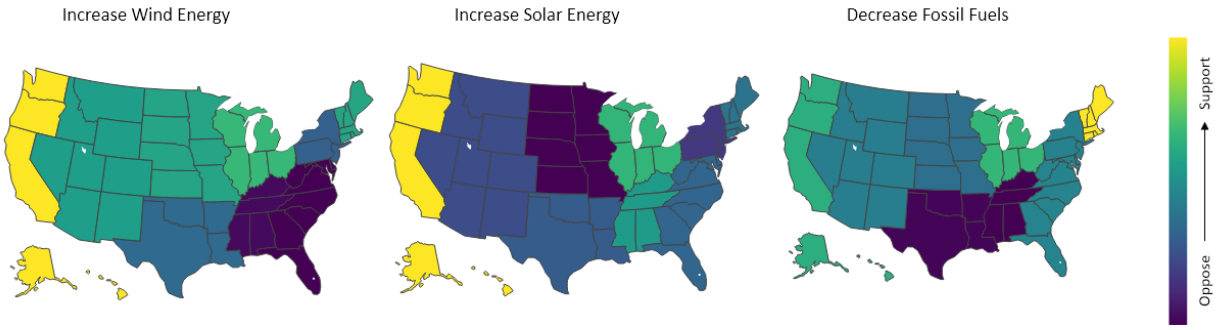

Figure 3: Map across the nine US Census divisions for energy support.

4. Discussion and Conclusion

4.1 Egalitarianism and support for renewable energy:

Interpreting survey results requires considering the role of humans in nature for each worldview. Our findings demonstrate that higher egalitarianism correlates with preferences for increasing solar and wind energy and decreasing fossil fuel usage, which is consistent with the literature. Leiserowitz (2006) found that Egalitarianism was consistently associated with increased risk perception and support for climate change mitigation policies at national and international levels. Similarly, Smith and Leiserowitz (2014) noted that Egalitarianism significantly correlated with heightened climate change risk perception. Lacroix and Gifford (2018) also discovered that Egalitarian worldviews were linked to weaker perceived barriers to energy conservation behavior.

The cultural theory of risk can explain these findings, suggesting that egalitarian-minded individuals view nature as fragile and in a delicate balance with society (McNeeley & Lazrus, 2014). This worldview aligns with the perception that climate change poses a significant threat to the natural world, leading to greater support for renewable energy and reducing fossil fuel usage.

4.2 Individualism and opposition to renewable energy:

Individualism acts in opposition to egalitarianism, with strong Individualism resulting in less support for increasing energy transition technologies such as solar and wind, and greater support for maintaining fossil fuel usage. This finding is supported by the literature. Leiserowitz (2006) observed that support for carbon tax policies decreased as individuals became more individualistic. Kahan et al. (2011) found that hierarchical individualists grew more skeptical of climate change risks as their science literacy increased, suggesting a conflict between their worldviews and the implications of climate change.

The cultural theory of risk explains that Individualist-oriented individuals perceive nature as benign and able to recover from human actions (McNeeley & Lazrus, 2014). This perspective may lead to less concern about the impacts of climate change and greater resistance to policies that limit individual autonomy, such as regulations on fossil fuel usage. Furthermore, Individualists may view potential government regulations to address climate change as a greater risk to their way of life than climate change itself (Camberdella et al., 2020).

4.3 Hierarchy and opposition to decreasing fossil fuels

Interestingly, the hierarchical worldview is only significant in its opposition to decreasing fossil fuels. While the literature does not directly address this specific relationship, some studies provide insights that may help explain this result. McNeeley and Lazrus (2014) note that hierarchical worldviews see nature as tolerant of human activities to a certain degree, which could explain why hierarchy was a significant predictor for opposition to decreasing oil and gas usage in our study.

Moreover, Lacroix and Gifford (2018) found that more hierarchical participants perceived stronger barriers to pro-environmental behavior, with Hierarchical worldviews being most strongly correlated with the denial barrier component. This suggests that individuals with Hierarchical worldviews may be more resistant to changing the status quo, particularly when it comes to established industries like fossil fuels.

The hierarchical structure of American society and its dependence on fossil fuels may also play a role in this finding. Hierarchists respect expert-defined risks and support solutions that maintain existing power structures (McNeeley & Lazrus, 2014). Given the entrenched nature of the fossil fuel industry in the U.S. economy and its influence on policy, individuals with hierarchical worldviews may be more inclined to support the continuation of fossil fuel usage to preserve the current social and economic order.

In conclusion, our survey demonstrates that the cultural theory of risk provides a framework for understanding how Egalitarianism, Individualism, and Hierarchy shape attitudes towards renewable energy and fossil fuels. Future research could further explore the specific mechanisms through which these worldviews influence energy preferences and how this knowledge can be applied to develop effective climate change communication and policy strategies.

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