Spring 5-11-2024

Politicization and Economic Benefits of Renewable Energy

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POLITICIZATION AND ECONOMIC EFFECTS OF RENEWABLE ENERGY

by
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A thesis submitted to the faculty of The University of Mississippi in partial fulfillment of the requirements of the Sally McDonnell Barksdale Honors College.

Oxford
April 2024

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Abstract

With climate change posing an imminent threat to our planet, it has become an ever more prominent question as to how we can curve the effects of it. One of the most popular proposed solutions to curb emissions is renewable energy. With solar, wind, and other types of renewable energy sources, we could rely on energy sources that produce zero emissions. However, it has become a hotly debated issue in the media, especially in the United States. What my research does is examine and unpack themes in the rhetoric of conservative-leaning media outlets that speak against renewable energy, examine the potential economic benefits of renewable energy that have been noted in our country and in Germany, and then compare our renewable energy situation and progress to that in Germany. This research finds that there are indeed rhetorical criticisms from conservative news outlets that could affect public opinion of renewable energy, despite my research finding economic benefits to sustainability transitions, and that America could indeed benefit from them, despite the claims of news outlets in America.

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Introduction

In the words of the American climate investor Tom Steyer, “renewable energy is a clear winner when it comes to boosting the economy and creating jobs.” However, with the wealth of discourse both for and against the expansion of renewable energy infrastructure- and around climate policy as a whole- it can be difficult to discern whether it is truly beneficial for our economy. In my research, I have examined the rhetoric around renewable energy in American news outlets with conservative political biases, as well as analyzed the potential economic benefits of renewable energy. I also reviewed the further progress of sustainability solutions in Germany to compare them with the state of American sustainability transitions. Many other factors are also examined through the course of my research and will be discussed in greater detail throughout the following chapters.

This research is of great importance to me and to the United States for many reasons. As for myself, I grew up in an incredibly impoverished, rural part of Arkansas where many people adamantly support politicians who oppose the expansion and implementation of renewable energy, and in general, refuse to take efforts to fight climate change and take initiative for our environment. However, renewable energy technology and sustainable transitions could help turn around economically stagnant and declining regions such as the Arkansas Delta. There has recently been a proposed EV battery factory in Marshall County, Mississippi, which Governor Tate Reeves has been in staunch support of due to it creating an estimated 2,000 jobs. This factory will also pay an average of $66,000 a year to its employees. These factories are becoming more common in the United States as the government has incentivized car buyers with a $7,500

tax credit on cars with American-made EV batteries (Pettus, 2024). It is also important for the United States because while it only constitutes a fraction of the global population and land mass, it by far contributes the most to climate change and pollution, and by curtailing the United States' consumption and environmental footprint, it could make a serious positive impact on the environment. Because of climate change, we could face several negative impacts such as warmer temperatures, less food availability, and more severe storms just to name a few; our planet will be less inhabitable if at all if efforts are not taken to lower our effect on the environment around us (United Nations, n.d.).

In my research, I examine news articles that exhibit anti-renewable energy rhetoric, and I have taken note of the themes within those news articles as they discuss renewable energy, I have also highlighted the economic arguments that they make. Many times, these articles discuss the cost or use fear mongering, connecting sustainability transitions to a reliance on China, or an increase in electrical blackouts. I also address the prominent claims from the media with the economic successes and continuities that have occurred because of the vast sustainability transitions in Germany. I found that transitioning to renewable energy could benefit the United States' economy, and at the very least carry on a trend of continuity in terms of economic stability. While it is important to consider the differing variables between two different countries such as the United States and Germany, they are both two highly developed countries with large economies, at first and third largest economies by GDP in the world respectively (International Monetary Fund, 2023).

Background and Literature Review

In the 21st-century United States, it seems that every issue is becoming more and more divisive (Geiger, 2020), and climate change has not escaped that divisive nature. Renewable energy and environmental or climate issues are concepts that have not escaped this polarization, as it is one of many things that are often heavily debated upon partisan lines, with motivations on each side that can sometimes be traced back to very powerful and wealthy supporters. With this polarization, there is rhetoric around renewable energy, seemingly attempting to persuade Americans to follow their respective opinions (McCright & Dunlap, 2011). As mentioned, many of these arguments are circulating around economic rationales, and some with purely political agendas, with many right-wing sources saying things that may either cultivate skepticism or even entirely dissuade Americans from accepting renewable energy (Gustafson, et al., 2020). In this research, I looked at the pre-existing research to examine the varying claims- primarily the economic claims around renewable energy- and unpacked the rhetoric that could possibly be dissuading many Americans from adopting renewable energy.

This research is likely very important to the current energy situation in the United States, because they are relying predominantly on fossil fuels, which may be depleted. However, this depletion is not as much of a threat anymore, as fracking has become widespread in order to attain fossil fuels, and this poses an entirely different threat to our climate (Jackson, et al., 2014). With the introduction of fracking, climate change is now the main reason to focus on sustainability transitions, because even though we have minimal risk of running out of fossil fuels, they are incredibly damaging to the ecosystems and atmosphere around us, thus expediting

climate change; this expediting of climate change could pick up even more with the increased access to fossil fuels from fracking. With renewable energy, the United States can rely on energy that is simply that- renewable. It may not be perfect, but with more investment, research, and development, it could be perfected in the future (Nemet & Kamen, 2007). The United States has a complex relationship with climate policy, and even more specifically, renewable energy policy that can be traced back to the mid-to-late 20th century when nations around the globe began to realize the dire need for action to take more care of the environment; the start of the environmentalist movement as we know it today. This environmentalist movement started primarily because of toxic waste and pollution, but climate change and renewables became more prominent in the 21st century. In the 21st century, the United States has seen even more of a divide over the topic, as many politicians are vying for their respective beliefs, or for whatever lobbyist pays them the most money, with members of Congress earning over thirty million dollars from lobbyists in the oil and gas sector (OpenSecrets.org, 2023).

To understand the convoluted nature of renewable energy politics in the United States, one must first understand the history of renewable energy and climate movements in our country. The start of modern renewable energy policy in the United States is often considered to be the Public Utilities Regulatory Policy Act (PURPA) in 1978, to shortly before the article was published in 2004. PURPA, "required utilities to purchase power from small renewable generators and cogenerators (combined heat and power), known as "qualifying facilities." A lot of the successes seen with PURPA heavily depended on the individual states, with main producing 45% of its electricity with renewables by 2003, and California taking great advantage of expanding renewable energy with early PURPA contracts as well. However, the PURPA contracts became less attractive in the 1990s, as nuclear energy began to gain momentum in the

United States, and natural gas prices fell sharply, coupled with a decreased demand in energy in key states such as California, however, since the turn of the 21st century, there has been an increase in state-backed initiatives to promote renewable energy, which continues today. These are primarily through state-adopted Renewable Portfolio Standards (RPS), which at that time only 18 states and the District of Columbia have adopted (Martinot, et al., 2005). As of 2021, according to a brief from the National Conference of State Legislatures:

> "Thirty states, Washington, D.C., and two territories have active renewable or clean energy requirements, while an additional three states and one territory have set voluntary renewable energy goals. RPS legislation has seen two opposing trends in recent years. On one hand, many states with RPS targets are expanding or renewing those goals. Since 2018, 19 states, two territories, and Washington, D.C., have passed legislation to increase or expand their renewable or clean energy targets. On the other hand, eight states and one territory have allowed their RPS targets to expire. Montana repealed its RPS in 2021" (National Conference of State Legislatures, 2021).

As one can see, the United States initially made efforts for a holistic approach to cleaner energy with PURPA in 1978, however, there has been minimal pressure on elected officials and government agencies to continue maintaining standards, and much of the efforts have been made by individual states, while some states have made little to no effort. These standards are also important on a global scale, with international agreements such as the Paris Agreement being made stressing the need to curb emissions, which the United States dropped out of under the Trump administration (United Nations Climate Change, n.d.).

However, despite the polarization and even though we are still behind many other developed countries, the progress of renewable energy adoption in the United States is picking up. There are now fourteen states producing more than 30% of their energy from renewables, and the United States also generated almost 17% of its energy from solar, wind, and geothermal energy sources alone in 2022, up from just 5% in 2013. Wind energy production has risen 2.6 times since 2013 and solar has increased by nearly 12%, while electric vehicle sales and electric

charging infrastructure have increased by 10 and 18%, respectively. Also, with various energy efficiency technology improvements installed in 2021, 300 terawatts of energy will be saved through the buildings' lifetimes, which can power 28 million homes for a year (Neumann, 2023). It should also be noted that despite the polarization on climate change, renewable energy is not necessarily the most divisive issue in the United States. According to the Pew Research Center, many Americans on both sides of the political aisle actually support the growth of renewable energy, and as a matter of fact, they even back efforts to combat climate change. In fact, 60% of Republicans interviewed support expansion of wind farms, and 70% supported expansion of solar (Beshay, 2023). This is an example of the cognitive dissonance concerningThis is even more clear when one looks at the data concerning renewable energy consumption and production levels in red and blue states, as many red states are harnessing their renewable energy sources, primarily in the American West, and the average levels of consumption and production are relatively close between red and blue states. In fact, South Dakota, a very red state, consumed 43.1% renewable energy, and 90.1% of its produced energy was renewable (*U.S. Energy Information Administration - EIA - Independent Statistics And Analysis*, n.d.). This data is shown below in ***Figure 1***.

Red States	RE production	RE consumption	**Blue States**	RE production	RE consumption	**Swing States**	RE production	RE consumption
AL	8.3%	16.8%	**CA**	37.3%	16.5%	**CO (more D)**	31.8%	13.4%
AK	25.3%	4.0%	**CT**	3.2%	7.0%	**FL (more R)**	6.3%	7.9%
AZ	11.4%	11.8%	**DE**	2.4%	2.8%	**IN (more R)**	15.5%	7.1%
AR	8.0%	11.4%	**HI**	18.1%	13.5%	**IA (more R)**	69.8%	36.5%
GA	13.7%	12.0%	**IL**	15.6%	8.2%	**ME**	71.5%	38.0%
ID	71.6%	28.7%	**MD**	6.2%	5.5%	**NV (more D)**	32.7%	17.7%
KS	50.6%	24.4%	**MA**	30.9%	7.4%	**NH**	9.9%	17.3%
KY	7.3%	6.3%	**MN**	32.8%	16.5%	**NC (more D)**	15.1%	11.9%
LA	3.4%	3.4%	**MI**	11.7%	9.0%	**OH (more R)**	4.7%	4.4%
MS	3.0%	6.6%	**NJ**	4.3%	4.3%	**VA (more R)**	10.8%	7.5%

MO	11.8%	6.9%	**NM**	35.7%	15.2%	**US**	20.7%	12.3%
MT	39.2%	33.2%	**NY**	29.9%	14.0%	**Avg.**	26.8%	16.2%
NE	39.4%	23.5%	**OR**	61.3%	47.8%			
ND	41.6%	28.3%	**PA**	3.7%	6.4%			
OK	46.2%	21.4%	**RI**	14.3%	7.9%			
SC	6.0%	11.3%	**VT**	99.7%	31.7%			
SD	90.1%	43.1%	**WA**	61.9%	49.7%			
TN	13.5%	10.4%	**WI**	11.1%	10.7%			
TX	25.8%	8.5%	**US**	20.7%	12.3%			
UT	13.9%	7.5%	**Avg.**	26.7%	15.2%			
WV	9.7%	6.0%						
WY	18.8%	13.6%						
US	20.7%	12.3%						
Avg.	25.4%	15.4%						
More than avg.	Less than avg.	Higher than avg. prod. or consump., but not in both						

Figure 1. Comparison of renewable energy production and consumption levels between red, blue, and swing states in the United States. Data collected from the U.S. Energy Information Administration.

Because of this, one of the main reasons renewable energy is being held back from expansion in the United States is because of media bias and the rhetoric surrounding climate change, oil and gas politics, and renewable energy politics- likely because some media outlets are biased to support politicians that have received a great deal of financial support from big oil (McCright & Dunlap, 2011; Sobbrio, 2011).

Meanwhile in Germany, their history concerning renewable energy looks a bit different. Unlike the renewable energy efforts made in the United States, the German efforts have been defined by a rocky at best relationship with and perception of nuclear energy. According to Hake et alMuch of the current "Energiewende" movement has roots in movements well over forty years ago, starting with German university students violently protesting the implementation of nuclear energy. They explained this with a translated quote from an article by Jochen Roose:

> "In no other country was the environmental movement influenced so strongly by the conflict over the civilian use of nuclear energy as in Germany. Other topics of the environmental movement have come and gone: water protection, speed limits, dying forests, biodiversity, climate change. But nuclear energy was an issue that repeatedly led to large, often radical protests in the past" (Roose, 2010).

In 1980, the German Green Party (Die Grünen) was established primarily with the goal of ending all nuclear energy reliance in West Germany (after reunification, this party would then merge with Eastern green parties to form the Alliance 90/The Greens, or Bündnis 90/Die Grünen party that still exists and has a strong foothold in German politics today). The Chernobyl incident only further escalated anti-nuclear sentiments in Germany, with 86% of Germans supporting the eventual shut-down of nuclear power plants after this event. In the 1990s, Germany started to see more policy action in terms of renewable energy, with the passing of the Act on the Supply of Electricity from Renewable Energy Sources into the Grid (Stromeinspeisungsgesetz, StrEG), which "determined a duty of acceptance and required energy companies to pay a minimum price for third-party electricity generated from renewable energy sources in their areas of supply"

(538). In 1998, more change began to happen as the long-standing CDU/CSU/FDP coalition (Christian Democratic Union, Christian Social Union, and Free Democratic Party) was replaced by a SDP/Green (Social Democratic Party) coalition that was more in favor of environmentalist policy. Shortly after, there was already process made for phasing out nuclear energy, with a limitation on NPPs placed at maximum 32 years, and the following Act for the Orderly Termination of the Use of Nuclear Energy for the Commercial Generation of Electricity passed in 2002. Much of this was highly condemned and protested by opposition in the CDU/CSU and FDP parties. Also in 2002, the Renewable Energy Act (EEG) fixed feed-in tariffs for electricity from renewable sources. This changed in 2005, when a new coalition of CDU/CSU and SPD politicians was elected into the Bundestag, and it is led by Angela Merkel. During this period until around 2011, there was a distinct back-and-forth movement on nuclear energy, and the expansion of renewable energy, but with the prominence of the SPD, the CDU/CSU side of the coalition became more accepting towards renewable energy. In 2010, "Energiekonzept" was introduced by the government with large goals for climate relief and energy efficiency. Even more radical change came after the Fukushima accident in 2011; Chancellor Merkel introduced a "nuclear moratorium" only four days later, and thus, the process of shutting down nuclear power plants in Germany began. Since then, and especially following the election of the grand coalition in 2013, Germany amended the Renewable Energy Act to reduce feed-in tariffs for renewables and reduce goals for renewable energy production (Hake et al., 2014). However, after the publishing of this article, the International Energy Agency claims that Germany has made steps to re-up their goals and produce more electricity with renewables, as they have already surpassed their goals, saying:

> "Specifically, in the 2010 Energy Concept, the country aimed for renewables to account for 35% of gross electricity consumption by 2020 and overachieved this with 38% in

> 2018 and 44% in the first half of 2019. The German government initially planned to further increase the share of renewables in electricity to 50% by 2030, 65% by 2040 and 80% by 2050. But according to the new coalition agreement of March 2018, as affirmed by the climate cabinet, the government is now planning to speed up the growth, to reach a share of 65% renewable electricity by 2030 (contingent on a corresponding expansion in grid capacity)" (International Energy Agency, 2020).

As one can see, Germany was primarily motivated by a skepticism of nuclear energy, which in turn eventually motivated them to adopt clean energy. As a matter of fact, on April 15th, 2023 (while I was in Germany), the last nuclear power plants were finally shut down (Jordans, 2023). Also, it should be noted that in Germany there is an even stronger production and consumption of renewable energy than in the United States in terms of percentage. According to the Agentur für Erneuerbare Energien (Agency for Renewable Energy), the support has been consistently strong in Germany as they stated:

> "The AEE has been publishing a representative acceptance survey on the expansion of renewable energies for more than ten years. The approval rate has always been around 90 percent. In the current survey, which was conducted by the YouGov opinion research institute, almost nine out of ten citizens (86%) are in favor of greater use of renewable energies in Germany" (Agentur für Erneuerbare Energien, 2021; my translation)

The major German news outlet Tagesschau also showed an interesting outlook into the official German party platforms on climate change and renewable energy policy. While most other mainstream parties were supportive of renewable energy expansion to some degree, the far-right Alternativ für Deutshcland (Alternative for Germany; AfD) party stated, "They support the construction of the Nordstream 2 pipeline. It rejects a complete overhaul of the energy system to renewables" (tagesschau.de, 2021; my translation).

Conceptual Frameworks

In this research, I operate under the conceptual frameworks that people, especially in the United States, respond best to economic incentives, and that renewable energy transitions can bring about economic benefits that may encourage people to adopt it. These theories are highly discussed and supported by various scholars, and in this chapter, I discuss how these concepts are supported by the scholarly community, and how I add to the discussion.

As far as peoples' responses to economic incentives go, the literature has shown that if there is any effect from economic incentives to accepting a certain change, it's usually positive, meaning that most people that would be affected by the change would accept it if they have something to gain from it economically. This is made clear by Tietenberg (1990), who discusses how environmentalists often saw the economic incentives of fossil fuels that often hold power in much of the world to be the intrinsic enemy of environmentalism. However, he says that many environmentalists have embraced the idea of economic incentives, because if approached from the right angle, i.e. providing economic incentives, environmentalist transitions like adopting renewable energy can prevail. He then gives multiple examples as to how various incentives to adopt environmentally friendly habits and technologies have influenced people to work towards helping the environment, like this example where the New Zealand government bought out fishermen, so that they would leave the industry and protect the native fish population:

> "It wasn't long before a sufficient number of licenses were retired and the populations protected. Because the program was voluntary, those who left the industry only did so when they had been adequately compensated. Meanwhile, those who paid the fees realized that this small investment would benefit them greatly in the future as the populations recovered. (Tietenberg, 1990)."

While this specific example may be rather controversial and not the optimal means of promoting economic incentives, it is still a great example of just how influential an economic incentive can be, especially in terms of environmental betterments. It should also be noted that according to a 2020 study by Gustafson, et. al., "Among both Democrats and Republicans, the cost savings frame was the most effective frame at influencing Democrats' and Republicans' beliefs about renewables and the index of support for renewable energy," which could bring hope to the environmentalist movement considering most of the pushback is coming from the Republican side of the aisle. He also says, "Given the rapidly decreasing costs of renewable energy, this suggests that emphasizing lower costs is a promising and widely applicable communication strategy" (Gustafson, et. al., 2020; see also Bayulgen & Benegal, 2019). Other scholars challenged the pre-existing "crowding out" hypothesis around economic incentives, which had claimed that most incentives have a negative effect on research and development in most sectors. Instead, they found the opposite, saying that their results suggest the crowding-out effect was weak, if it existed at all. However, their research has shown that large government research and development initiatives have brought out higher levels of research and development in the private sector and in other federal programs (Nemet and Kamen, 2007, pp. 16-17). There are also relatively few, if not any sufficient recent studies on the economic effects of renewable energy in the United States, possibly due to our slow and lacking adoption of renewable energy technologies. However, there was a 1994 study by David Pimentel and others, and while being almost thirty years old, its conclusions could potentially be used to predict economic outcomes from an increase in the use of renewable energy.

Another concept that my research will be looking through the lens of is that renewable energy is beneficial for the economy, thus providing economic incentive within itself through

adoption and implementation. As this research tends to compare renewable energy efforts in the United States with those in Germany, it would be best to first look at the economic performance of renewable energy in a country wherein renewable energy is already vastly used: Germany. This is shown in detail in Blazejczak, et. al., the scholars claim that renewable energy has neutral, or even negative economic effects, coming to the following conclusion: "Our analysis suggests that these benefits can be obtained without sacrifices of income and net employment (Blazejczak, et. al. 2013)." In order to understand the economic issues, Nemet and Kamen stress the need for investment in the renewable energy sector as well as Wiser and Bollinger's Land-Based Wind Market Report. They also suggest that with the rapidly decreasing cost of renewables, that it could become a real competitor for fossil fuels, particularly with solar, saying "The once-wide gap between wind and solar PPA prices has narrowed considerably in recent years, as solar prices have fallen more rapidly than wind prices. With the support of federal tax incentives, both wind and solar PPA prices are now below the projected cost of burning natural gas in existing gas-fired combined cycle units. (Wiser, 2021, xi). Nemet and Kamen say the following:

> "A critical role for public sector investment has always been to energize and facilitate private sector activity. In fact, increasing energy R&D investment in the *private sector* by a factor of five or ten would not even rival what is seen in other high-technology sectors. From 1988-2003 the U.S. energy industry invested only 0.23% of its revenues in R&D. This compares to the period 1975-1987 when private sector R&D averaged 1.1%, peaking at 1.4% in 1978" (Nemet, Kammen, 2007, 14).

There is definitely a need for investment in renewable energy R&D, because it can affect the whole economy, and this trend can be seen throughout the economy wherever a new technology such as renewable energy is introduced. With these arguments, it is important to frame my research in a way that shows the economic incentive of renewable energy, primarily that its costs

are falling rapidly, and that through investing in renewable energy, one could affect the entire economy in a positive way.

In terms of politicization, I have drawn from the aforementioned Abel Gustafson article, because he discusses the importance of how we frame our arguments and discussions around renewable energy, as that could heavily sway the amount of polarization around it (Gustafson, et. al., 2020). This is where I contribute to the conversation around renewable energy because there is not much discussion around the politicization of renewable energy beyond statistical data from opinion polls asking for people's partisan opinions on renewable energy; most of the discussion around polarization that is related to renewable energy is focused on the broader picture of climate change.

In the 1990s, conservative politicians and media outlets utilized contrarian scientists to speak out against the mainstream scientific community, and that these ideals have polarized and stifled the public knowledge of climate change in the United States. It is stated that with both sides using the insight of "experts," it muddies the waters of truth, thus creating a more divided populace (McCright, Dunlap, 2011). This also further convolutes the issue when you take into account a growing distrust in political authority within the United States. There is also surprisingly minimal discussion that has synthesized the elements of political polarization with economic incentivization and implications around renewable energy.

Also in terms of polarization, I discuss the relative convoluted nature of the polarization itself, not just with specifically renewable energy, but with climate change issues as a whole. As one may notice, there is a lot of cognitive dissonance with how Americans approach the issue, because many Americans may be to varying degrees supportive of sustainable transitions, but they continue to vote for politicians that do not support those transitions, or they may for a

moment hear something negative on the news concerning climate change or sustainable transitions and have a further convoluted opinion of renewables. As I mention a few times in this thesis, there are generally these positive opinions on both sides of the spectrum (Beshay, 2023), yet cognitive dissonance often affects many readers, listeners, and subscribers to right-leaning media as they hear rhetoric against green policy. Because of cognitive dissonance, many voters in the United States may forego their own personal values to vote for people they may not agree with on certain issues due what they have absorbed from the media. This becomes even more pronounced when many media consumers may fall into an echo chamber where they only seek out media sources that confirm their biases instead of challenging them (Metzger et al., 2015).

It is also important to examine the forces driving this politicization around climate issues in the United States. This is thoroughly explained by Dunlap and Brulle (2020), who talk about the long-lasting efforts of big oil to channel messages throughout the media in order to keep money going to their pockets. They did this by funding contrarian scientists as early as the 1990s, even though many scientists within firms such as ExxonMobil had warned them about the impending threat of climate change and their immense role in the expansion of climate change. Many wealthy conservatives also formed front groups in order to push “free-market” ideas and promote the fossil fuel industry. Many firms in the auto, fossil fuel, and other industries heavily reliant upon fossil fuels formed a vast array of interest groups and associations that widely spread misinformation in the media, with ExxonMobil being at the forefront of the support for such groups. Conservative think tanks have also funded these contrarian scientists to publish books that deny climate change, the risks of climate change, and/or the need for sustainability transitions. These books are influential in their effect on the opinions of core party members/conservatives, voters, and media leaders. One noted manifestation of these publications

is that they often become vehicles for climate-denying narratives in the media. They have also spread beyond the United States, particularly to countries such as the United Kingdom and Canada that have strong conservative bases and powerful fossil fuel sectors (Dunlap & Jacques, 2013).

Methodology

To understand how right-wing media shapes public discourse on renewable energy, I conducted a qualitative analysis of interviews and news articles. My primary focus was on Fox News and Breitbart, two prominent right-wing outlets in the United States that consistently express skepticism towards renewable energy sources and sustainability transitions. This skepticism, I hypothesized, plays a significant role in politicizing the issue. To gather relevant articles, I employed a straightforward search strategy. I went to the respective websites of Fox News and Breitbart and utilized their internal search bars. By entering the term "renewable energy," I found a selection of articles, prioritizing those published in the last five years to capture the most recent trends in right-wing media discourse. Following the retrieval process, I analyzed ten articles from each outlet. My analysis focused on identifying the rhetorical strategies employed by these outlets. To do this, I implemented a color-coding scheme. This involved highlighting specific phrases, themes, and rhetorical tropes within the articles. By employing this visual approach, I was able to identify frequently used tactics and categorize them into larger thematic groups. This process allowed me to gain a deeper understanding of the dominant narratives surrounding renewable energy within right-wing media. This approach involves identifying recurring themes within the data through a coding process. In this case, my color-coding scheme served as my initial coding system. Once the themes were identified, I grouped them into larger "organizing themes" to reveal the broader narratives being constructed by these media outlets. This in-depth examination of right-wing media rhetoric forms the

foundation of my first chapter, titled "Examining Political Rhetoric Against Renewable Energy" (Attride-Stirling, 2001). This analysis can be seen below in **Figure 2**.

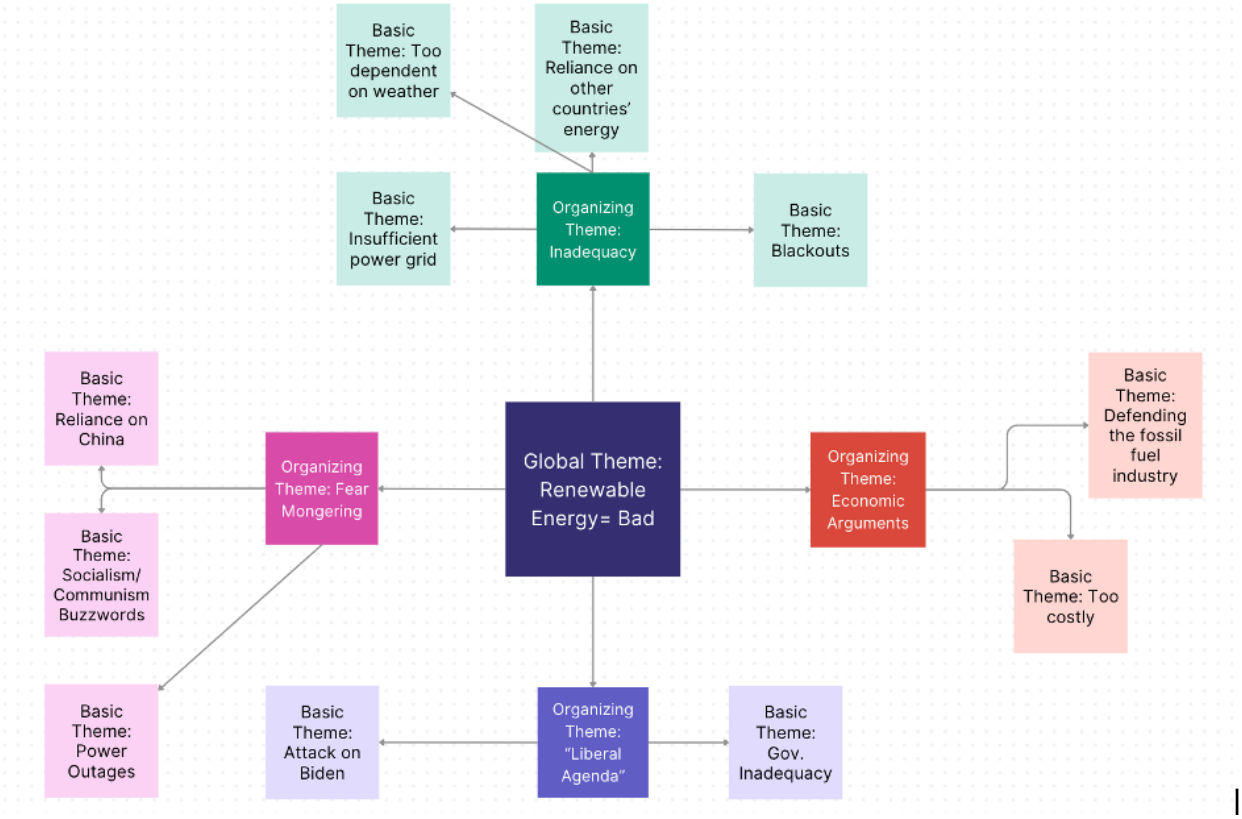

Figure 2, organization of themes according to the Atride-Stirling thematic analysis.

Following the media analysis, I dove deeper into public opinion by interviewing everyday Americans and Germans. This qualitative approach explored the language and rhetorical strategies employed in both the interviews and biased media reports to understand how they influence public opinion on renewable energy. Similar to the media analysis, I paid close attention to prominent economic themes within the interviews, such as cost, job market impacts, and efficiency. To gain a broader perspective, I interviewed four individuals: two Americans with opposing political views and two young German adults familiar with Germany's Energiewende, a national shift towards renewable energy. This selection allowed for a

comparative analysis. All four subjects were also close friends or colleagues, which helped in terms of gaining more honest or unfiltered opinions. The American interviews were compared to each other and to media trends to assess the influence of media rhetoric on their perspectives. The German interviewees provided a contrasting viewpoint, having grown up in the busiest parts of Germany's energy transitions. By analyzing both sets of interviews and comparing them to media narratives, I aimed to capture a more nuanced picture of public perceptions on renewable energy in the United States and abroad. This comparative analysis will be presented in the first chapter of my research.

To complement the data analysis of the media outlets and interviews, I examined various scholarly articles to explore economic trends related to renewable energy. This information helped to interpret the findings from the media analysis. In the second chapter, titled "Economic Implications of Renewable Energy," I analyzed scholarly articles to challenge the dominant media narratives. By delving deeper into the economic arguments used in the first chapter's news articles, I sought to deconstruct these narratives and answer key research questions. These questions included: "What political rhetoric is used against renewable energy in the United States?" and "How can we unpack that using evidence of economic benefits from the case of Germany?" This comparative approach aimed to provide a more nuanced understanding of the economic implications of renewable energy in the United States. This approach was furthered in the third body chapter, where I simply unpacked the history and process of Germany's sustainability transitions, which I completed by compiling information and historical text from scholarly articles.

Chapter I: Examining Political Rhetoric Against Renewable Energy

As anybody can see upon a glance at any American, German, Japanese, and many other countries' media outlets, renewable energy is a rather prominent topic of discussion. In the age of digital media at everybody's fingertips, and an age where any individual can draft and share their opinions- ranging from valid or absolutely extreme conspiracy theories- there is a vast array of rhetoric discussing and covering this topic. Renewable energy is not free from this problem. In fact, while polarization around sustainable transitions has been noticed around the world, it is markedly more prevalent in the United States (Bayülgen & Benegal, 2019). In this chapter, I examine various rhetorical trends against the expansion of renewable energy in the United States, as well as some examples from Germany, and analyze them in order to understand how the media is affecting the way America thinks- and votes- concerning renewable energy. Also in this chapter, I analyze four interviews- two with American citizens, and two with German citizens- to examine their perception of renewable energy, and if the media has affected their opinions and thoughts concerning the issue at hand. In the end, I unpack the connections between the opinions of these citizens of the United States and Germany with the trends in the media.

Media Analysis

As the media begins to focus more on climate and sustainability issues while also becoming more biased, these sustainability and climate issues have also become more polarizing. As mentioned, this politicization and rhetoric from the media outlets has resulted in a populace that is increasingly divided on the issue of renewable energy, even though most Americans

actually support sustainability transitions, it gets lost in the fog of rhetoric (McCright & Dunlap, 2011). Upon further analysis, the conservative-leaning news outlets have the most rhetorically loaded arguments against renewable energy, while most liberal-leaning media outlets in the United States remain relatively pro-renewable transitions, yet with less sensationalist or alarmist rhetoric. It should also be mentioned that in the early days of the environmental movement, there was bipartisan support for climate policy efforts, with the Republican Nixon administration even establishing the Environmental Protection Agency (EPA) via executive order (Adler, 2020). Because of this, between the 1970s and current times, there has been a notable shift in the rhetoric around environmental and climate policy issues.

Quite possibly the most common theme that occurred in the conservative news articles was to discuss the mere "ineffectiveness" of renewable energy technologies. This could be proven by more specific factors, such as renewable energy's reliance on weather, the increasing occurrence of power outages, the possibility of renewable energy making a state more dependent upon outside fossil fuels. With Fox News, this was the more common theme in many of their articles related to renewable energy policy. Out of the articles that I found, one of the most common things discussed was renewable energy's ineffectiveness due to its relation with causing power outages or energy shortages, especially in the colder or warmer months that may require more energy usage. This dialogue would often take a fear-mongering tone, as mentioned in an article by Michael Lee from July 4th, 2022, where he says:

> "'Every area of the U.S. could be in danger of experiencing power outages this summer amid a push to convert to renewable energy sources while taking traditional sources of power offline. I think the entire country is incredibly vulnerable, because the entire country is facing a huge energy shortage and I don't think there is any place that is truly safe,' Daniel Turner, founder and executive director at Power the Future, told Fox News" (Lee, 2022)

The interviewee from this article, Daniel Turner, as mentioned, is the director of Power the Future, which is a self-claimed pro-renewable energy interest group. However, according to their information page, Turner's father is a former Republican congressman representing New York, and in order to answer the question, "are you opposed to green and alternative energy?" their beliefs page states, "Not at all. Technology is amazing, and in time we are certain new and exciting methods of fulfilling our energy needs will be discovered. But, in the meantime, we are in need of reliable, cheap, abundant energy, and we think we need all forms to thrive" (*Power the future*, n.d.). Organizations like this are promoted as "experts," because they adhere to the environmentalist ideals that they are advocating against just enough to appeal to broader circles. The conservative movement against environmentalism has long since the 1990s promoted contrarian scientists that stand against mainstream acceptance of climate change to promote their ideals (McCright & Dunlap, 2011). This tone continues in various other topics of discussion concerning renewable energy, particularly with its reliance upon the weather, thus deeming it ineffective in the eyes of journalists at Fox News, with James M. Taylor flatly stating "When it comes to relying on wind power, sometimes the wind just doesn't blow" (Taylor, 2022). This is inaccurate discussion around renewable energy, because it does not consider a multitude of factors, such as the placement of these wind turbines in windier environments, how the turbines interact with wind, and it also does not even consider the myriad other sources of renewable energy and rapidly growing technologies in renewable energy (Pao & Johnson, 2009). In a Breitbart article, they include quotes from leader of the former Reform UK (the party that initiated Brexit), Nigel Farage, where he says, ""So to keep the lights on we're importing electricity from Europe. Isn't that genius?" he continued — possibly not entirely sincerely. "What if this cold spell goes on? What if Europe can't export us any electricity, any energy?"

Farage asked (Montgomery, 2024b). In this article, we see the use of a prominent political figure, thus establishing legitimacy to the audience, and this time they are emphasizing how they must rely on other countries' energy if they try to use renewables. There were also articles claiming that blackouts would happen more often under renewable energy, with one Fox News article saying, "California's electric grid faces years of potential blackouts and failure as state leaders continue pushing aggressive measures to transition to renewable energy sources, policy experts tell Fox News Digital" (Catenacci, 2023). There are a multitude of other statements across Fox News and Breitbart claiming the ineffectiveness of renewable energy, possibly because it is the easiest claim to pull, especially in a country that simply has not adopted enough renewable energy infrastructure for it to be sufficient to meet demand.

Another way that journalists from both outlets chose to dismiss renewable energy was to demonize it, whether it be with hyperbole, ridicule, or certain types of fear mongering. This is becoming a commonly recurring theme and tactic across the board with various conservative news outlets and politicians, be it in a speech, opinion article, or medium to get their message across. Quite possibly the greatest example of this type of rhetoric in the selected articles was a transcript from one of Tucker Carlson's discussions on the topic of renewable energy on Fox News, as he condemned the state of California, and federal politicians that were promoting renewable energy. It was here that he wrote off these politicians multiple times as "another cascade of unemployable morons." In this statement, he is projecting his own interests and opinions. He then goes onto other discussions about the ineffectiveness of renewables, and how the politicians pushing for it do not have the interests of the people in mind, and that it's essentially just a power grab; the government wants to control us by replacing fossil fuels with renewable energy. He then ends the article on this note:

> "This is the vehicular equivalent of digital currency. Electronic vehicles are a disaster for the energy grid, a disaster for the environment and a disaster for your personal autonomy. If this happens, it will represent the single biggest change in the way you and your family live in generations and yet no one's even talking about it" (Carlson, 2022).

This kind of rhetoric, while less common than, say, the "ineffectiveness" argument as mentioned earlier, is still prominent and is becoming more popular. This rhetoric works to normalize the dehumanization of people, and it takes away the credibility of important movements such as the sustainability movement with means that call the authority of science into question.

Below, **Figure 3** shows the frequency of various color-coded rhetorical fallacies and claims from the articles. There were a number of fallacies and arguments noticed, such as straw man fallacies, as well as economic arguments, emotional appeals, attacks on certain beliefs or politicians, and so on, with a total of 218 occurrences of all these arguments and fallacies detected across 40 articles. In fact, a handful of these articles essentially consisted entirely of one argument throughout the entire article, with one such article on Breitbart by Peter Caddle discussing the inadequacy of the British government in energy policy. Here, he discusses their government's inadequacies when they decided to place tariffs on high-carbon goods, claiming it will be bad for the British economy (Caddle, 2022). Another, which was an interview conducted by Fox News with Oklahoma Governor Kevin Stitt, carried on with fear-mongering about reliance on China if we turn to renewable energy, while also using emotional arguments about poor child labor laws in countries that supply the minerals for these utilities to back it up. They even further demonize renewable energy by making this statement, "However, renewables now comprise a relatively small portion of U.S. energy production, and nuclear reactors are also running, seemingly lessening such a risk — for the time being" (Kliegman, 2023). The aforementioned risk is a reliance on China.

Code	Frequency
Total Codes	218
Governmental Inadequacy; RE is a waste of time; pushing an “agenda”	28
Economic concerns	20
Power outage fear mongering	19
Strawman	19
Fear-mongering about reliance/relations with China/Russia/etc.	16
Fighting Democrats with their own rhetoric/causes	14
Outright attack	12
Emotional appeal	11
Hasty decisions/Lofty expectations	10
Renewables do not produce as much energy as fossil fuels/are reliant upon fossil fuels	10
Hyperbole/mentioning extreme situations to scare people	9
Emphasis on energy shortage; undertones that RE will not help	8
RE policy makes a state/country’s power grid insufficient	6
Dependency on weather	6
Biden ridicule	6
Comparison to Europe	6
Using quotes from liberal politicians out of context	6
Protecting the mineral industry	3
Renewables make you reliant on outside sources	3
“We’re the best!!!” Are we really, though?	2
Inflation fear-mongering	2
Spouting info without backing it up	1
Socialism	1

Figure 3

As one can see, there are frequent fallacious claims and/or arguments that appeal to much of the conservative, rural audience on these conservative news sources. At 218 occurrences, that means each of the forty selected articles contains on average at least five of these claims or fallacies, which can naturally have a lasting effect on the audience. With this research, it can be shown how much of the American public is so hesitant to adopt renewable energy and make sustainability transitions. It has also added to the polarized nature of current American politics, even if most Americans on both sides can get behind some form of sustainable transitions per the Pew Research Center (Beshay, 2023). In a way, it makes Americans on either side feel that they need to support one idea, even if they truly believe otherwise. It is shown in **Figure 4** from the Pew Research Center that with the rising prominence of inaccurate news stories that are funded by powerful corporations and people, there is a stark increase in favoring only one side of politics (Geiger, 2020).

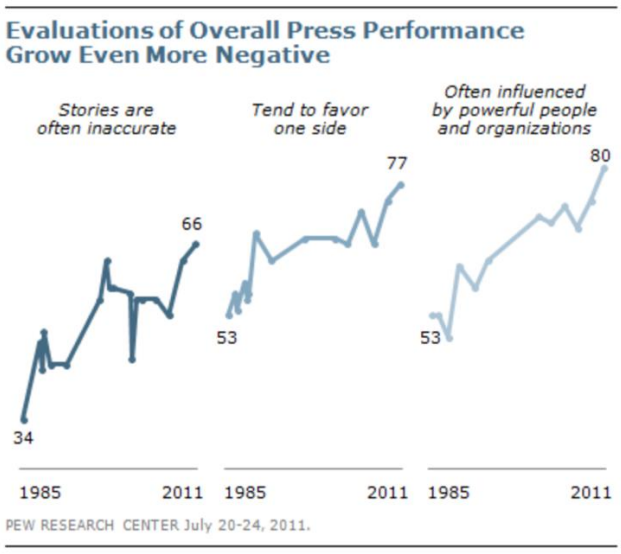

Figure 4, from the Geiger article of the Pew Research Center, showing a correlation between inaccurate news, funding from powerful people/organizations, and partisanship.

Interview Analysis

For this research, there were four subjects interviewed in order to gauge an in-depth opinion of an American, as well as German opinions on renewable energy, and to see if there is any correlation between what the media is feeding to the populace and what people believe. I assumed beforehand that the attitudes of these people would be reflective of those spouted out on the news outlets, however, there were some differing, almost indifferent opinions noticed. For this segment of the research, I assumed it to be important that the subjects were representative of "average" German or American citizens, constituting many of the common political attitudes of the respective countries' political climates. In order to define "average," I chose subjects that did not subscribe to extreme political beliefs, were naturalized, born-and-raised citizens of their respective countries, and that were not particularly "experts" on any of the topics concerning renewable energy or climate change. The two American subjects that I spoke to are whom I believe to be typical representatives of the average American conservative, and the average American liberal- particularly from rural Arkansas. The German subjects were both peers from my study abroad semester in Germany, and they both represent the overwhelmingly moderate (albeit a bit liberal by American standards, they are moderate on a global scale) population of Germany. In order to understand the German subjects, it is important to understand their backgrounds- one is from Thuringia (Thüringen), a more conservative state in former East Germany that is a notorious stronghold for the alt-right Alternativ für Deutschland (AfD) party, while the other subject is from the more liberal city of Berlin; they have more than likely heard vastly different dialogue and rhetoric around renewables in their respective upbringings. Thüringen is a stronghold for the AfD, as is much of former East Germany, with polls showing

higher-than-ever support in recent years, with *Die* Tageszeitung saying, “According to the study commissioned by Funke Medien, the AfD, which is considered to be securely on the far right in the federal state, has 34 percent support there” (Güler, 2024; my translation). Also, according to German the German political polling database, Wahlrecht, the AfD only has a 13% foothold in the Berlin state (Wahlrecht, 2024).It should be noted that outside of this formal research, I also brought up the topic multiple times in casual conversation with peers and colleagues, thus further gauging the opinions of everyday Americans and Germans.

When speaking to the two American subjects, there were a lot of interesting themes that were shared in common Primarily, with both subjects, there was a clear undertone of disillusionment with the United States government and its current political culture. Both subjects mentioned that they simply do not trust the American government anymore, and feel less and less as though they can identify with their respective political parties. Both of the subjects interviewed for this research were from my rural hometown in the state of Arkansas, and growing up, I knew both of them to be extremely staunch in their political positions, with one leaning more conservative, and the other leaning more liberal. However, they both claim today to feel less liberal or conservative, but purely as political outsiders. This has resulted in more or less of an “I just don’t care anymore because there’s nothing I can do” attitude in the subjects, including in many other Americans that I have discussed the topic with. This attitude, despite a lot of the rhetoric being pumped out by the media, has carried over with energy policy. The more conservative subject even went as far as to say, “I just don’t know what to believe anymore. I don’t really identify as a Republican anymore because everything’s just gotten so crazy.” However, there were still slight partisan motivations evident with both subjects, as the conservative subject was still slightly hesitant towards the idea of renewable energy, bringing up

concerns around cost and effectiveness. Meanwhile, the more liberal subject was supportive of the idea of renewable energy. My more liberal subject also said, “we even tried to figure out how to get those solar panels on our house from the government, but I don’t think we qualified.”

The Germans, on the other hand, posed some very different opinions and ideas from those of the Americans. In general, the Germans were much less apathetic, and tend to trust their government far more than Americans do. I spoke with two German university students, both of which had more similar opinions than the two American subjects; this is a bit more common in Germany, as they tend to be less polarized than Americans (Boxell, Gentzkow, and Shapiro, 2020). The interesting thing about both interviewees is that as mentioned, they displayed much more trust in their respective government, but they also had a more collectivist attitude, saying many things along the lines of “our government wants to help us out,” or “we all just want to make a better country for the next generations to come,” instead of the more individualistic, survival of the fittest approach of many Americans. With the subject who grew up in the AfD-dominated state of Thüringen, they spoke of hearing more rhetoric against renewable energy, with most conservative regional media outlets pulling desperate arguments such as how the windmills are “unattractive” for the landscape, or how they are dangerous for the birds. Meanwhile, the subject from Hanover/Berlin spoke of minimal opposition to renewables in the local media- in fact, there was minimal discussion of it in general as if it was just assumed to be the thing to do.

It is very interesting to analyze the differences between American and German approaches to renewable energy. America still has broad leaps to make before the public fully embraces renewable energy. It is also clear that the American government needs to build trust from the American populace as well, because many Americans are struggling to trust the

American government in today's political climate. The polarization rampant throughout the United States today has really contributed to this disillusionment with the government, and in order to rebuild much of this trust, we need to help curtail some of this polarization (McCright & Dunlap, 2011).

Chapter II: Economic Implications of Renewable Energy and Addressing the Rhetoric Against Renewable Energy

As mentioned, one of the many rhetorical attacks on renewable energy is towards its alleged economic harm. Whether or not this is true can be somewhat difficult to holistically discern, as renewable energy is a relatively new form of gathering and producing energy, however, there are multiple signs and events that we can refer to with the implementation of renewable energy in other countries that may be accurate predictors of future economic benefits or harm caused by renewable energy. In this chapter, I will examine various scholarly articles and opinions concerning renewable energy and its effects on the economy, particularly the American economy, by using pre-existing economic studies on the issue. It will also address various other rhetorical claims against renewable energy by journalists.

Another topic that will be briefly discussed in this chapter is a comparison to the German situation, although that will mainly be left for the next chapter. Since Germany is a leader in renewable energy implementation, their economic changes as a result of renewable energy will be discussed as a means of understanding the economic effects at hand. Overall, the goal of this chapter is to reflect on rhetorical devices used against renewable energy, primarily loaded with economic arguments, and contextualize them with the pre-existing findings of the academic community. This is important for the discussion around renewable energy, because much of what is being said in the media is not based in scholarly truth, but in fallacy and agenda politics.

One of the main arguments against renewable energy is whether we are ready to move away from fossil fuels. Through the media analysis, there were some articles arguing that due to renewable energy's shortcomings, states and nations were having to outsource their energy to

fossil fuel sources in other countries or re-utilize their original non-renewable energy sources. Some also based their arguments around the hypocrisy in renewable energy policy, with some renewable energy sources such as wind turbines, requiring diesel to run the massive motors in the power source, which was only based on an isolated event in Scotland in which they used diesel engines to keep the turbines from freezing. Wind turbines are generally not propelled by diesel engines, but in almost all cases by wind alone (Montgomery, 2024a) (Pao & Johnson, 2009). The implied incompetency of renewable energy is also evident in a Fox News article, where they says "California also imports more electricity than any other state in the U.S., receiving between 20%-30% of its supplies from mainly fossil fuels out-of-state, EIA data shows," further highlighting the supposed incompetence of renewable energy (Catenacci, 2023). Many other articles also harked on renewable energy's mere inability to sustain the massive power grid in the United States (Caddle, 2024b; Carlson, 2022; Gillespie, 2022; Lee, 2022; Taylor, 2022). In order to examine this trend, I have looked through scholarly articles and reports to glean what the academic community considers to be the case on reliability of energy under renewables, and the perceived demand for fossil fuels. While this is not concretely an economic argument, with economic terminology focused on "cost," "employment," and so on being utilized in the journalists' discussion and dialogue, it should be noted that the "why should we leave fossil fuels in the first place?" argument has many economic implications, as the source of our energy as a whole can heavily influence the economy. This is because obviously, energy fuels all of our commerce, production, and workforce, and how we harness, utilize, and what kind of energy we use can directly impact our economy.

It should be noted that while there were plenty of economic arguments, they were much broader topics with which it would be difficult to categorize them into more specific categories

such as cost, employment, and so on; there were no specific arguments concerning actual gross domestic product, income distribution, and deeper, more thorough economic variables. This is probably because those variables may be considered a bit above the head of most common citizens around the world; the average person tuning into the daily news is most likely perceived to be concerned primarily with the direct effects on their wallet, hence the focus on cost. There were several journalists from both Fox News and Breitbart who stated their concerns relating to the economic benefits of renewable energy, and often claimed that it would entail a negative, or even disastrously negative impact on the American economy, with most of these arguments relating to the immense cost barriers the American government and taxpayers would have to break through in order to adopt more advanced or entirely renewable energy sources. An example of this is a Breitbart interview with Ohio Senator J.D. Vance, where Vance says:

> "Artificially inflating energy costs through "climate change" regulations drive up the cost of domestic manufacturing and make the U.S. less competitive a place to do business, Vance highlighted. He added, "The energy piece is in some ways the most important part of the entire manufacturing conversation, because the thing you see when energy gets more expensive is we pay more at the pump, right? The cost of electricity in our homes goes up, but 40 percent of our power is used by American manufacturers"" (Kraychik, 2021).

My research shows that while it is true that renewable energy will be a costly and arduous process for our large country to adopt due to how deeply entrenched fossil fuels are in our society, however, it will most likely be beneficial in the long run. This is because renewable costs are continuously decreasing, and with the impending effects of climate change, it could be dangerous to keep relying primarily on fossil fuels. Also, relating to cost, it should be noted that the Land Based Wind Market Report has reported that the cost of implementing wind energy has gone down significantly over the last fifteen years, with wind energy averaging out at around $1,800 /kW, and dropping to $750-850 /kW in 2021. The cost of solar technology is also going down, with predictions that it may even be profitable to use solar without the use of government

incentives (Kaschub, et al., 2016). There are now also cheaper alternatives such as Power Purchase Agreements (PPAs), where there are minimal up-front costs for the purchaser in order to obtain clean energy (Wiser, et al., 2021). Below in **Figure 5**, we see the rapidly falling prices of renewables compared to various non-renewable sources.

Figure 5, from *Visual Capitalist*, shows the changing and decreasing prices of renewables compared to non-renewables.

Another research article also showed that in years as early as 2015, renewable energy sources were already cheaper than fossil fuels in the United States and many other G20 countries, before external and CO_2 costs were even factored in (Ram, et al., 2018) It should also be noted that there have been some efforts within the United States to adopt renewable energy that have actually been very successful, and they have either driven or taken advantage of the rapidly decreasing

prices of renewable energy. For example, the state of California started the California Solar Initiative, which has cut the price of solar energy in California in more than half, from almost 10$/Watt to arou\nd $5/Watt. This can be seen in **Figure 6** below:

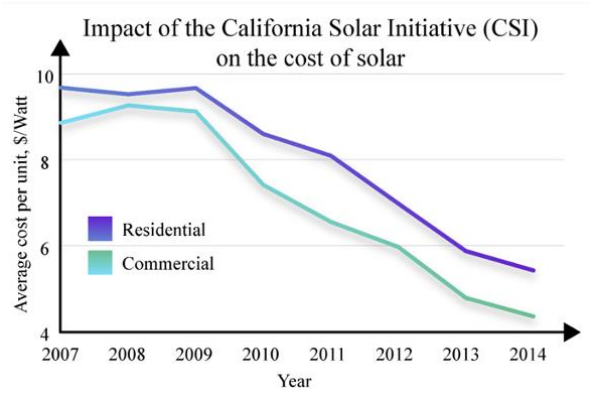

Figure 6, from Tabassum, et al. article titled Solar Energy in the United States: Challenges and Future Prospects

The solar Investment Tax Credit that was introduced in 2006, which has helped the solar market grow by over 10,000% in the United States, created jobs and brought billions of investment dollars into the U.S. economy (Tabassum, et al., 2021). Oftentimes regarding the economy, many argue about how many jobs we would lose in the fossil fuel industry if our energy sector is overtaken by renewables. According to the United Nations, there would be a net gain of nine million jobs as we lose five million jobs in the fossil fuel sector, but then gain fourteen million jobs in the clean energy sector. This is because fossil fuel is far more capital intensive than labor intensive, whereas clean energy will rely more on labor (United Nations, n.d.-b).

Another trend that was noticed frequently in the media articles that implies certain economic importance is the often-used fear-mongering arguments regarding China. This most likely comes from a protectionist or competitive point of view, China is often currently seen as our primary opposition in terms of military, economic, and other forms of development. This can

be seen in a Breitbart article by Jack Montgomery on a scenario in the United Kingdom when he says:

> "Most of the others have literally been destroyed by dynamite," he went on, referencing the extensive demolition of mothballed coal plants across the United Kingdom under successive Conservative (Tory) Party prime ministers obsessed with a net zero green agenda of little interest to their core supporters, and of little consequence to global carbon emissions at a time when Communist China has been commissioning new coal plants by the hundreds" (Montgomery, 2022).

There was also mention of skepticism towards the potential reliance on China for the rare earth minerals that are used in many renewable energy technologies, as mentioned in the J.D. Vance interview from Breitbart (Kraychik, 2021). China has surpassed the United States in terms of renewable energy investment, and they are also rapidly enacting policies to support its growth (Steeves, Ouriques, 2015). Because of this, the United States may want to make more efforts to adopt renewable energy in order to keep up with the People's Republic of China. Even better, this may be a chance for the United States to foster friendlier relations with China in order to provide better energy security for both of us and the rest of the world, as according to Steeves and Ouriques, the United States and China are two of the greatest threats to global energy security with our vast amounts of consumption.

As one can see, the variables involved with adopting renewable energy could potentially provide a "give and take" situation of sorts for Americans, as we see with the Germans paying more for energy but getting a higher GDP overall. However, it should be noted that with such new and consistently evolving technology as renewable energy, it can be difficult to predict the absolute future of America's energy production and economic impacts as we decide to make more definitive transitions away from fossil fuels. This message echoes clearly through much of the pre-existing research that I have examined from the past ten to fifteen years. There has also been much discussion that implies much of the benefits we may reap from renewable energy are

heavily dependent upon certain other factors, primarily private investment. This is clear in Blazejczak's article, where he and other scholars make it very prevalent that in order for the best outcome on the consumers' end, there must be more private investment (Blazejczak et al., 2014). Nemet and Kamen also highlight the dire need for investment, because before the past two years, there was a steady decline in investment, which in turn negatively affects the investment for research and development in all other sectors (Nemet & Kamen, 2007). There is a need for more investment, however, has shown that in more recent years beyond the writing of the Nemet and Kammen article, there is once again increasing investment in energy research and development (Bennett, 2023).

As one can see, much of the rhetoric around renewable energy is misleading and divisive. While it is true that the process of transitioning to a 100% fossil fuel-free energy system will be a lengthy and drawn-out process, it is a worthwhile process for the United States in the long run. As one can see, renewable energy could potentially supply jobs, provide growth in GDP, among many other benefits to our economy. Referring to my conceptual framework that renewable energy will provide the economic incentives necessary to foster a more welcoming attitude towards renewable energy in the United States, it is possible that we could see economic benefit, but at certain costs. However, with these economic incentives, such as rapidly decreasing costs, creation of jobs, it could become easier for Americans to accept this new technology and for it to become more mainstream in the energy mix.

Chapter III: Bundesrepublik Deutschland vs. the United States of America

As mentioned throughout this paper, part of my research will focus on the differences between renewable energy policies, outcomes, and effects in Germany to those in the United States. In the spring and summer of 2023, I was granted the opportunity to study abroad in Mainz, Germany for four months, and I gained a perspective of energy policy and opportunities in the renewable world during my time there. Germany has long been a pioneer in environmental policy and renewable energy adoption process (Cunningham, 2017), and I could see that everywhere- as I took my daily walk through the rapeseed fields that were dotted with wind turbines, and the constant sight of wind turbines on the side of the train tracks and the Autobahn. This was a stark contrast from my home in the United States, particularly between the states of Arkansas and Mississippi where I spend the majority of my time, where the fence rows between the cotton fields are entirely absent of wind turbines for as far as the eye can see.

To those unfamiliar with German environmental and energy policy, Germany has championed renewable energy development through their trademark "Energiewende" ("energy turnaround") movement. This has been a largely successful campaign, with Germany's renewable energy resources producing 51.6% of the net energy (Amelang, 2023), compared to just 20% in the United States (USDE Office of Energy Efficiency and Renewable Energy, 2023). In Germany, this percentage is up almost double from 10 years ago in 2013, where around 25% of the energy generated was from renewables (Amelang, 2023). These numbers only show a small share of the vast differences between the United States' and Germany's efforts to attain lower greenhouse gas emissions, and adopt more renewable energy technologies. In this chapter, I will be discussing and examining the various differences and similarities between renewable

energy action in the United States and Germany. These differences may be seen in attitudes, social movements, their respective economies, and policy. I will also discuss in greater depth the progress, including the potential successes and/or failures, of German renewable energy efforts. The ultimate goal of this chapter is to further understand the German context of renewable energy efforts, and to see if there is anything that we can learn in America in our delayed efforts to adopt greener technologies.

As noted in the background chapter of my research, Germany has a vastly different approach to renewable energy than that of the United States. Germany has taken a much more collectivist approach toward sustainable transitions, and its populace has played a much larger part in pressuring their elected officials to pass legislation on the topic that they see fit (Martinot, et al., 2005). Germany has also taken a much wider approach to implementing their policies, as it is much less dependent on the states, but more on the federal government, where the United States has left a lot of the major decision making to the states. A great difference is also highlighted, as they even write off the aforementioned reasons as insufficient, where they highlight the differences in governmental structures between Germany and the United States arguably played one of the largest roles in their diverging paths towards renewable energy attainment. In Germany, they have a parliamentary system that is much more predictable policy-wise, and while they experienced a similar tug-of-war over funding for renewable energy research and development funding, it was nowhere near the volatility of that in the United States government. Laird and Stefes conclude their discussion with the following conclusions, saying that the United States' renewable energy policy did not make many advancements until roughly 15 years after the Gulf War, which was very different from Germany. Also, the volatile subsidies hampered both the development of new technologies, as well as the employment of existing

ones, and since renewable energy did not take off in the U.S. like it did in Germany, policymakers could almost ignore it. Renewable energy also lacked serious political clout in the United States because the manufacturing sector for renewable energy parts and technology did not take off like it did in Germany. Other barriers in the United States also included the political culture, with the fragmented nature of issue advocacy making renewable energy advocates much less effective in the United States. The desire for market-friendly policies in the United States also built up political barriers that subsidies for renewable energy would need to jump over (Laird & Stefes, 2008). As one can see, there are vast differences between the German and American approaches, however, in recent years (especially under the Biden administration), there have been increased efforts towards renewable energy transitions, and a study by the Congressional Research Service has shown that since the Laird and Stefes article was published almost fifteen years ago, renewable energy R&D funding has slowly, but surely increased in the United States (Congressional Research Service, 2018).

It is also important to examine the economic implications of renewable energy expansion in Germany, as this is something that the United States could potentially use as inspiration for its own sustainable transitions. For example, the renewable energy sector should create jobs, and this is something that has happened in Germany. From 2004 to 2012, the number of employees in the renewable energy sector more than doubled from 150 thousand to around 400 thousand, and has hovered around there since. However, these jobs have dwindled as Germany has come closer to establishing a stable footing on renewable energy, and these jobs are now depending on developing countries as they adopt renewable energy, so that they can hopefully use German exports. This is because as these countries may not have the means to produce their own renewable energy technologies, Germany can produce it for them, and as long as these

technologies are still in demand, there will be jobs in Germany for people to produce them (Lehr & Ulrich, 2017). According to the Berlin Energy Transition Dialogue of 2022, the growth of renewable energy has also caused job growth in other industries, especially construction, as the modernization of buildings in Germany has become a very lucrative industry creating 900,000 jobs.

The report also shows that module costs for solar have decreased by 90%, and because of learning curves, economies of scale, and commercialization, solar parks cost 75% less than in 2006. Also, the investments in renewable energy have grown drastically, reaching $47 billion in 2021, and in 2022, the administration announced $200 billion in investments to go through 2026, and these investments are shown to help the economy. The growth of renewable energy has also been great for small businesses and economically stagnant or declining rural areas, as more than 40% of renewable energy power capacity is owned by. (Agentur für Erneuerbare Energien, 2022). This trend of revitalizing economic growth in rural areas through renewable energy is also shown through the use of decentralized renewable energy. This is where a region or district has its own renewable, self-sufficient power grid off of a centralized, nationwide power grid, and it is shown to be more efficient and cheaper, all the while spurring economic growth and self-sufficiency. This has been championed in some rural areas of Germany (Klagge & Brocke, 2012). There are many economic benefits that come with renewable energy, and especially with the potential to help spur economic growth in rural areas and give farmers and small business owners their own energy sources, this is something that could potentially appeal greatly to the American population.

As one can see, Germany has had many successes in their sustainable transition efforts. On many accounts, it has shown to provide economic benefits, and it negates many of the

rhetorical claims made in the United States and in other biased media sources. In fact, renewable energy has been very effective and reliable, contrary to some claims on certain news outlets, and in 2022, in the midst of an energy crisis, there was actually a decreased amount of blackouts (Meza, 2023), and as a matter of fact, it has some of the lowest blackout rates in Europe (Hockenos, 2021)! My research shows that in the case of Germany, renewable energy is not quite the bogie-man that many news outlets portray it to be. It is important to note that the United States and Germany are very different countries, however, this research, and research on other cases in varying countries has shown generally positive economic outcomes with the introduction and implementation of renewable energy (Ram et al., 2018).

Discussion

In order to understand my research, it is imperative to tie together many of the main ideas and themes within each part, and understand how they interact with my research questions. Through my research, I have found some rather interesting themes and trends in the American and German sustainable transition efforts (or lack thereof), and the United States has some catching up to do.

First, in the United States there is actually pretty broad support across citizens of both parties for some form of sustainable transitions (Beshay, 2023), however it is more of a problem concerning the rhetoric being projected from right-wing news outlets, and the deeply partisan divide on many issues, with this particular divide at its root being heavily fueled by money from the oil and gas lobby (OpenSecrets.org, n.d.), and subsidies toward the oil and gas industry lying at a steady $600 billion in 2013 (Coady, et al., 2017). Typical of many American political and economic trends, the elite that spend their money on certain things, such as fossil fuels, usually sways our country in the same direction, and their influence is clearly seen projected on the news outlets, as they claim renewable energy to be "ineffective," and write off green policies as some sort of "agenda" that is harmful to our country.

As my research shows, however, we can learn from other countries, in this case particularly Germany, and their successes. Overall, in cases in and out of Germany, the cost of renewable energy is shown to be more accessible and attainable than ever, with costs in Germany alone going down 75% since 2006 for solar plants (Agentur für Erneuerbare Energien, 2022), and that's just one of several examples. The cost of wind energy has also gone down over 50% through the course of a 15-year period (Kaschub, et al., 2016). It has also been proven that

renewable energy can provide jobs, as well as spur growth in other industries, especially construction as the industry grows and the need to construct and install renewable energy infrastructure and technology becomes more prominent, with the industry also being far more labor-reliant than the fossil fuel industry (Lehr & Ulrich, 2017). Lastly, it has been shown to be beneficial to farmers, rural areas, and small businesses, which ironically would benefit the vast majority of Americans that are the most adamantly opposed to renewable energy (Agentur für Erneuerbare Energien, 2022).

Overall, renewable energy has been proven time and time again to be a reliable, effective, and efficient source of energy for nations around the world. In fact, it has even been effectively implemented in certain states like South Dakota or California (*U.S. Energy Information Administration - EIA - Independent Statistics And Analysis*, n.d.) (Tabassum, et al., 2021), which are respectively both strongholds for the Republican and Democratic parties, which could also be beneficial in convincing the American population on both sides to embrace sustainability and renewable energy. This goes back to my conceptual frameworks, which states that people will respond positively to economic incentives, and thus be more willing to adopt new ideas and technologies (Tietenberg, 1990). For example, the cost of renewable energy has been rapidly declining for the past decade and could be more attainable for Americans. The United States has also been shown to already have cheaper renewable options as opposed to non-renewable options even before the CO_2 and external costs are accounted for (Ram, et al., 2018).

As far as the implications of this research go, it should spur conversation concerning the expansion of renewable energy in our country, and also hopefully spur the bipartisan efforts. As mentioned, most Americans on both sides (even while many vote for politicians that oppose it and may repeat things that they have heard from said politicians), actually favor certain efforts to

combat climate change and make sustainability transitions, although it may look different on either side. The difference between many Republicans and Democrats according to the Pew Research Center is that they often differ in their approaches to sustainability transitions, with Republicans still valuing oil and gas, and worrying more about cost, while Democrats focus more on joining in international efforts, and they frame things from more of a climate change perspective (Beshay, 2023).

However, despite these underlying supportive attitudes for renewables, the media has a clear effect on what conservative voters think. As one can see, there is indeed plenty to discuss, and plenty to absorb from the media, concerning the issue of renewable energy. The conservative media in the United States is clearly making broad efforts to depict renewable energy as a negative force on the economy, and the United States as a whole. It's also highly likely that many conservatives are simply not considering energy or climate policies when they go to the polls. In fact, this is shown in another Pew Research poll, which shows Republicans are currently focused most on dealing with immigration, terrorism, and the economy, with climate issues prioritized by only 12% of Republicans polled (Beshay, 2024). This is yet another reason to consider economic framings when promoting renewable energy and sustainability transitions. However, as one can see, even in a vastly disillusioned American population, these messages are seeping into the American subconscious, especially in rural, impoverished, conservative circles that could benefit the most from the implementation of renewable energy. Americans could take inspiration from the Germans, who put more emphasis on holding their government more accountable, thus providing policy outcomes that can benefit the populace more.

Conclusion

With the threat of climate change and its consequences ever looming in the horizon, it is of the utmost importance that we take more action to combat our emissions and make sustainable transitions. There are clear and evident economic benefits to renewable energy, which could hopefully convince Americans, and more importantly the corporations and elites that have the most sway with political decisions, to make the transition to renewables and leave fossil fuels in the past. This should not be a seamless or relatively easy transition, but with effort, investment, and support, this can become a very attainable reality, especially in the United States. With the vast amount of capital in the United States and even more land for development of resources, this could happen in the near future if people are willing to get on board. This is an advantage that we have over most countries, especially a smaller, more densely-populated country such as Germany, as we are the biggest economy, and one of the biggest countries by land area.

In this research, I have found that there are many themes among conservative-leaning news outlets in the United States that promote negative opinions and discourse around sustainability transitions, and that these can be harmful to the growth of renewables in America. I have also found that while most Americans on either side do support environmentally friendly policies, it's all convoluted or de-prioritized for some voters by rhetoric on the news and understandably more pressing issues in our country. I have also found that there will be economic benefits with renewable energy, primarily because the cost of renewable energy has gone down exponentially in the United States, even becoming less than that of fossil fuel

sources. It will also supply several jobs for our country, and more than make up for the shock of the loss of fossil fuel jobs (United Nations, n.d.-b).

With this research, I hope to influence policymakers and citizens alike to take a stand for conservation, environmental policy, and change in our country regarding how we consume and produce our resources. We have a media bias issue at hand that is portraying environmentally friendly and sustainable policy and politicians in a negative light, and this research is a reminder that taking care of our environment is indeed not a bad idea, and that even more importantly, it can benefit our businesses and the economy in the long run. These efforts can be made at the local, state, federal, or even national level in order to promote these changes and spark discussion on the issue. Hopefully we can learn from the successes of other countries such as Germany and start making more sustainability transitions.

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