

Evaluating the Political, Social, and Economic Impacts of the International Fossil Fuel Divestment Movement

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Abstract

Climate change poses a global threat to vulnerable populations, ecosystems, and resources. It is well understood that combustion of fossil fuels is a major contributor to climate change, and that the world is at a threshold where immediate action is required in order to prevent the majority of the negative effects of climate change. The fossil fuel divestment movement seeks to address the source of the problem -- the fossil fuel industry -- by shifting investments away from fossil fuels and toward climate solutions such as renewable energy and sustainable agriculture. Institutions across the globe, including pension funds, insurance companies, faith-based organizations, and universities, have divested \$8.05 trillion away from the fossil fuel industry, citing moral, financial, and environmental reasons. The strength of the fossil fuel divestment movement comes from the fact that it is investor-driven, and does not rely on public policy to implement significant financial pressure on the fossil fuel industry. This paper will explore the growing fossil fuel divestment movement from an international perspective, and explore the impacts of the movement on environmental policy and the fossil fuel industry. Through evaluation of literature on anthropogenic climate change, including the most recent Intergovernmental Panel on Climate Change report, and through analysis of various fossil fuel divestment approaches, this paper will review the current international state of fossil fuel divestment while connecting it to the active fossil fuel divestment campaign at UNC Asheville. The growing fossil fuel divestment movement has made significant and tangible financial impact on the fossil fuel industry, and has helped transition global economies toward alternative energy sources. While international momentum is increasing in terms of public policy, the fossil fuel divestment movement presents an individual or institutional option for large-scale climate action in countries that are not developing progressive climate policy. The urgency posed by climate change requires comprehensive international attention from policymakers, the public, and organizations. The synthesis of policy and fossil fuel divestment efforts can substantially decrease global emissions and help transition away from fossil fuel energy practices.

1. Introduction

Climate change is globally recognized as posing a threat to vulnerable communities, agriculture, and ecosystem stability¹. The current fossil fuel dependency exhibited by society has yet to adapt to the emerging problems posed by climate change, and the scientific consensus surrounding climate change is that we must fundamentally change how we produce energy². Fossil fuel extraction and combustion is directly related to the changing and rising temperatures, and cannot continue to be used abundantly³. The long-term effects of climate change are not yet fully understood, but anthropogenic emissions are directly related to rising global temperatures, and must be cut dramatically for effective global climate action.

Although climate change encompasses many environmental effects such as changing global temperatures, rising sea levels, and increased severity of weather events, this paper will focus on the impacts of the fossil fuel industry on

global emissions, and how the fossil fuel divestment movement can help transition the world away from fossil fuel based energy practices. Over time, the cumulative effects of fossil fuel use have increased atmospheric concentrations of carbon dioxide and methane, which are the primary drivers of climate change. Atmospheric CO₂ concentrations already stand above 400 ppm, while 350 ppm was once considered the maximum safe threshold for reversible anthropogenically induced climate change⁴. According to the Intergovernmental Panel on Climate Change (IPCC), it is estimated that human activities have contributed to approximately 1.0°C of global warming above pre-industrial levels, and warming is expected to reach 1.5°C as soon as 2030 if immediate action is not taken to reverse the rate of current emissions. Considering a likely warming to 1.5°C, and possibly 2.0°C within the century, the question of prevention versus adaptation is an important consideration in the debate over how to best address climate change. Climate adaptation refers to the acceptance that some of the effects of climate change are inevitable, and social and economic practices must be shifted in order to address changing conditions⁵. However, this paper focuses on divestment as a strategy for bolstering mitigation efforts.

1.1 Climate Policy

The United Nations Framework Convention on Climate Change (UNFCCC), launched in 1992, marked the first global framework around climate change, establishing the Kyoto Protocol in 1997, which called for all countries to begin taking steps towards comprehensive climate action^{6,7}. A convention is an international agreement that can be signed or ratified by countries to which the convention or treaty pertains. Signing a convention implies intent to act accordingly to the convention's stipulations, while ratifying a convention binds the country to the convention. The Kyoto Protocol emerged from the 1st Conference of Parties (COP-1) of the UNFCCC, the first stage of which was ratified by all Annex 1 Parties to the UNFCCC except for the United States. Annex 1 countries are developed countries, including Germany, Norway, and the United Kingdom that are the focus of this thesis' case studies. In 2009, the Kyoto Protocol was reaffirmed and built upon by the United Nations in the form of the Copenhagen Accord⁸. The Copenhagen Accord emphasized that climate change represents one of the greatest challenges posed to society, and requires aggressive action, particularly from developed countries that are the highest emitters of greenhouse gases⁹. The Kyoto Protocol expired in 2012, and the Doha Amendment to the Protocol began the second commitment period from 2012-2020.

Additional international climate change agreements building on the UNFCCC include the Copenhagen Accord and the Paris Climate Agreement. More recently, the 2015 Paris Climate Agreement set forth new stipulations by which countries need to act in order to prevent global temperatures from exceeding 2° C¹⁰. Under the Paris Agreement, countries can set their own targets for emissions reductions, unlike the requirements of the Kyoto Protocol.

Although these documents are not legally binding, every country in the world signed onto the Paris Agreement, although the United States is currently working on leaving the agreement¹¹. Referred to as integrated strategies, these policy documents aim to provide a complete picture of the action that is required across vertical systems of government, and horizontal systems of society to enact meaningful change¹². While a general global commitment to climate action is understood, the framework by which countries enact the necessary steps to mitigate climate change is not yet clear as concrete national policies have yet to emerge.

1.2 Divestment

Divestment is defined as moving investments, typically from large institutions, away from industries as a strategy to promote social change¹³. Divestment can target any industry with negative social or environmental implications such as weapons, tobacco, gambling, or fossil fuels^{14,15}. For example, in the 1980's, university students in the United States pushed for their universities to divest from companies that supported apartheid in South Africa, demonstrating the power that finance can play in social campaigns¹⁶. The apartheid divestment movement marked an early successful divestment effort due to its instrumental role in shifting investor perspectives, and ultimately investments, against the racism displayed through apartheid. The fossil fuel divestment movement uses similar strategies to call investors to align their portfolios with their values while simultaneously helping fund a future that does not rely on fossil fuels.

The social power of the fossil fuel divestment movement has been pushed by students calling for their universities to divest endowments from holdings in fossil fuel companies. While the initial driving factor behind fossil fuel divestment was students, the movement has spread to other institutions such as faith-based organizations, insurance companies, governments, city pension funds, and healthcare organizations¹⁷. The lack of significant government action in regards to climate change, particularly by the United States, has initiated divestment advocates to turn toward the private sector in order to affect the financial and social pressure required for a global energy transformation^{18,19,20}.

The notion that fossil fuel reserves have become “stranded assets” in order for effective climate action has helped influence investors who did not divest purely on moral grounds^{21,22}. Stranded assets are fossil fuel reserves that can not be profitable in the future as a function of global transition to a low carbon economy. The movement does not rely on public policy or government action, providing momentum and power where there would otherwise be a void of action.

As of February 2019, total global fossil fuel divestment commitments totaled approximately \$8.05 trillion, calling into question the argument that divestment does not make meaningful financial impacts against the fossil fuel industry²³. Notable recent divestment commitments include: the Country of Ireland; the Norwegian Sovereign Wealth Fund²⁴; New York City²⁵; London²⁶; the University of California system²⁷; and in North Carolina, Warren Wilson and Brevard Colleges^{28,29}. Harvard University students also filed a lawsuit against the university in 2015 calling for fossil fuel divestment, citing “intentional investment in abnormally dangerous activities”³⁰.

There are several steps that a college or university needs to take to divest³¹. A first step that an institution takes may be divesting a portion of an investment portfolio or developing an investment policy that reflects their values, long-term financial needs, and investment principles by which they structure their investment portfolio. Institutional investment portfolios are structured differently based on the type of organization, and the spending targets of the portfolio. The asset allocation of a portfolio refers to which percentages of the market compose certain amounts of the overall account. For example, a conservative investor such as an endowment or foundation with specific long-term spending requirements may choose to invest in broad-based market funds that do not seek to maximize returns over a short period of time. Often, large institutions have such requirements, which leads them toward a wide degree of diversity over the market, which individual or smaller institutional investors often cannot achieve. University endowments are typically structured with a long-term, low risk asset allocation, and comparisons can be drawn between the degrees of exposure that universities have to certain components of the market³². A typical asset allocation with regards to the energy and natural resources component of the market is 5-10% across university endowments, and a large percentage of this asset class is fossil fuels³³.

This paper evaluates the relationship between climate policies in Germany, Norway, the United Kingdom, and the United States and institutional fossil fuel divestment commitments in those countries in order to further understand the role that divestment plays in addressing climate change. It also documents fossil fuel divestment efforts at UNCA. It is hypothesized that countries with more progressive climate policies will have higher rates of divestment due to cultural and political alignment of values with those presented through the fossil fuel divestment movement.

2. Methodology

This study used a mixed methods approach to assess current literature regarding fossil fuel divestment internationally, as well as key informant interviews with participants in an active divestment campaign at the University of North Carolina Asheville to provide examples of the processes that need to be undertaken in order for an institution to divest. A mixed methods study is one that combines quantitative and qualitative data in order to provide a more comprehensive analysis of the subject being studied³⁴. By observing the characteristics of successful notable fossil fuel divestment campaigns, this study compared such characteristics to an ongoing fossil fuel divestment campaign at the University of North Carolina Asheville. Analysis of the ongoing fossil fuel divestment campaign was conducted using key informant interview methodology to provide a comprehensive picture of all parties represented in the fossil fuel divestment debate in a public, state system liberal arts university. Case studies of fossil fuel divestment campaigns that have succeeded were then aggregated to ascertain whether there are common factors such as favorable policy, government, or culture, that allowed certain campaigns to succeed. These factors were assessed in the cases of Germany, Norway, the United Kingdom, and the United States in an attempt to determine a relationship between climate policy and divestment commitments.

2.1 Literature Analysis of Four Countries with Successful Fossil Fuel Divestment Initiatives

Four countries were selected for analysis of successful divestment campaigns: Germany, Norway, United Kingdom, and the the United States. Gofossilfree.org was used to quantify and characterize the types of institutions divesting as it is the largest database of divestment commitments, and includes a variety of institutions ranging from banks to faith-based organizations³⁵. I also collected, analyzed, and summarized peer-reviewed literature about divestment in Germany, Norway, the United Kingdom, and the United States, which is presented in both the introduction and results sections of this paper.

2.2 Key Informant Interviews at UNC Asheville

I conducted key informant interviews from 2015-2019 throughout the ongoing process of the UNC Asheville fossil fuel divestment campaign. Key informants are members in the UNC Asheville community who understand the history of processes of the fossil fuel divestment campaign³⁶. Informants were selected based upon understanding of the fossil fuel divestment campaign at UNC Asheville, and I conducted interviews in order to understand the perspectives of multiple parties involved in working on divestment³⁷. The purpose of the Sustainable Investing Working Group is to bring together students, faculty, and administrators to advance UNC Asheville's efforts towards investing sustainably through research, presentations, and outreach. Parties interviewed included students, faculty, staff, students, and community members in the Asheville area.

2.3 Case Studies of Successful Divestment Campaigns

I developed case studies of university fossil fuel divestment campaigns in the United States, particularly public university systems similar to the UNC system, to draw comparisons between the ongoing campaign at UNC Asheville, and campaigns that have already succeeded. A successful campaign is defined as a partial or complete divestment commitment by an institution that is recorded in the Gofossilfree index³⁸. To research these campaigns, I used direct sources from university publications, and student testimonies published in media pieces were incorporated to understand the processes that were undertaken in order to push forth a university divestment movement.

2.4 Participant Observation at UNC Asheville

Participant observation refers to a qualitative method of research in which the researcher spends time with individuals and observes their practices in order to provide a deeper understanding of the subject that is being researched³⁹. Students involved in the fossil fuel divestment campaign at UNC Asheville, including the author of this paper, have been central in the advancements in institutional attitudes at UNC Asheville regarding investing with purpose, and therefore provided valuable insights into the history of the campaign.

The fossil fuel divestment campaign at UNC Asheville was initiated in 2014, and is still active today in 2019. A timeline of activities and actions taken is presented in Figure 1. As fossil fuel divestment at universities is typically prompted by student action, the figure demonstrates many of the student actions throughout the course of the campaign, and shows gradual institutionalization of the process beginning with establishment of a student managed Environmental Social Governance (ESG) fund in 2016, and the creation of the Sustainable Investment Working Group in 2017. Through this working group, comprised of administrators, students, and faculty, UNC Asheville released a Request for Information (RFI) in December 2017, and a Request for Proposals (RFP) in October 2018 in order to move forward with contacting investment management companies with the ability to incorporate a divestment request as well as other sustainable investment services.

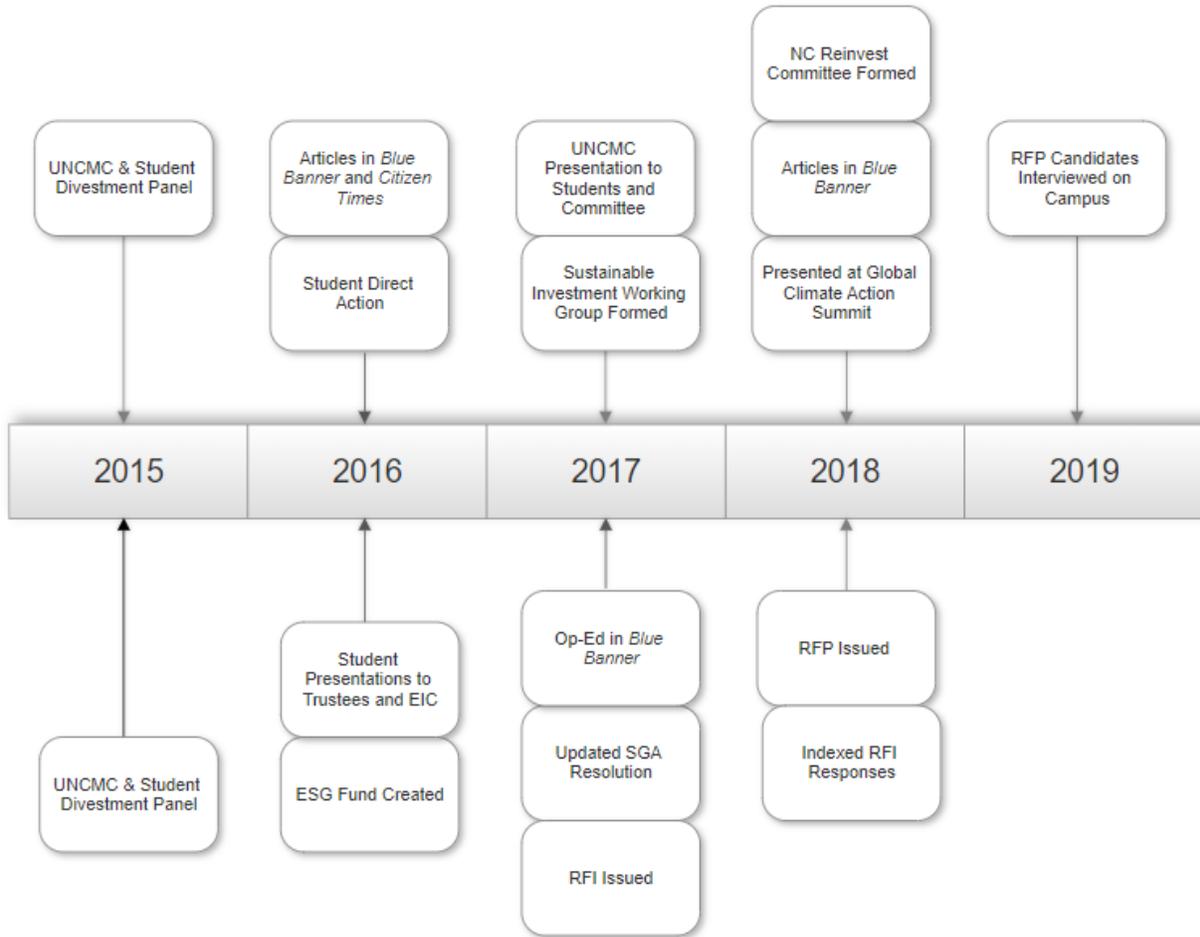


Figure 1. Timeline of fossil fuel divestment progress at the University of North Carolina Asheville.

A method when reviewing firm responses to a Request for Information (RFI) released by UNC Asheville consisted of indexing responses for favorable traits in a management company that can provide sustainable investment services to the university. Firms ranged from large companies with divisions that catered to client ESG or divestment needs to boutique firms that specialized in sustainable investing. Indexing assessed firm characteristics including transparency, experience managing higher education endowment portfolios, and returns data (See Figure 1). Varying weights (as percentages totaling to 1) were assigned to the criteria to provide multiple scenarios by which to evaluate respondents. One scenario, weighting 1, 3, 5, and 10 year returns equally with a heavy emphasis on consultation ability is shown in Figure 2.

	ESG Assets (Billions)	Higher Ed assets	Transparency?	Rating (3 is good) Consult?	Response Review Index	ESG Returns	Quantitative Index				Index	
Weight	0.05	0.2	0.25	0.5	0	1.00	1-year	3-year	5-year	10-year	1.00	1.00
							0.25	0.25	0.25	0.25		

Figure 2. Sample index used to evaluate firm responses to Request for Information released by UNC Asheville in December 2017.

The Board of Trustees at UNC Asheville is an important governing body that makes high-level campus decisions through a voting process. Members of the divestment campaign addressed the Board of Trustees at their meeting on 28 April 2017, where a speech was delivered to the trustees connecting the university’s mission with the moral and financial imperative behind fossil fuel divestment. As some of the Board of Trustees members are active on UNC Asheville’s Endowment Investment Committee, it was determined at this meeting that the committee would serve to follow up with the students’ request for divestment. In addition, myself and other members of UNCA Divest, were present at the Endowment Investment Committee meetings on the following dates: 28 November 2016, 27 June 2017, 26 October 2017, 19 April 2018, 13 December 2018, and 27 February 2019.

Students involved with the divestment movement at UNC Asheville have periodically reported to the Endowment Investment Committee on progress researching sustainable investing. Through 2017, the objective of student presentations to the Committee was to connect UNC Asheville’s mission to “incorporate economic, social, and environmental sustainability into our institutional practices and curriculum” with our investments in the fossil fuel industry, while referencing international initiatives for climate action stimulated by the Paris Climate Agreement⁴⁰.

In addition to internal efforts on engaging systems within UNC Asheville on fossil fuel divestment, effort was extended to peers and other institutions around the country in order to learn from successful divestment and sustainable investing initiatives. In Pittsburgh at the conference of Association for the Advancement of Sustainability in Higher Education (AASHE) and in San Francisco at a press conference as a part of the Global Climate Action Summit, presentations were given to audiences regarding the progress of the UNC Asheville divestment campaign, particularly addressing the fact that UNC Asheville is the first school in a public system in the Southeastern United States to take steps towards divestment (Table 1).

Table 1 - Events attended by the UNCA Divest campaign to learn from other successful campaigns and finance professionals

Divestment Event	Date	Location
Appalachian Energy Summit	July 30-August 1, 2018	Boone, NC
Global Climate Action Summit	September 12-14, 2018	San Francisco, California
AASHE Conference	October 2-5, 2018	Pittsburgh, Pennsylvania
SRI Conference	November 1-3, 2018	Colorado Springs, Colorado

The methodology described above was used to first gather information on international policy initiatives that may influence the activity of fossil fuel divestment campaigns in Germany, Norway, the United Kingdom, and the United States. These countries were selected for analysis based on notable divestment commitments such as those by the Norwegian Sovereign Wealth fund⁴¹, the City of Oslo, New York City, and London. In addition to notable divestment commitments, these countries have varying approaches to climate policy, and analysis of the relationship between divestment commitments and climate policies in these countries may provide insight as to how divestment supports formalized policy as an avenue for climate action. Following analysis of international climate policies, divestment successes were assessed in the respective countries. The results of this analysis were synthesized to determine relationships between policy initiatives at a country level, and divestment successes. Finally, the ongoing fossil fuel divestment campaign at UNC Asheville was compared to divestment campaigns at public university systems in the United States.

3. Results

3.1 Analysis of International Divestment and Policy Efforts

The fossil fuel divestment movement is a global, multifaceted movement that spans institutional bodies including higher education organizations, institutional firms, and governments. Total divestment commitments vary widely across Germany, Norway, the United Kingdom, and the United States (Table 2). Divestment commitments were

assessed on 15 March 2019, and based on the index provided by Gofossilfree.org as it is the largest database of divestment commitments by country. Within the European Union, overarching climate policy exists, but statewide variation of interior climate policy varies greatly, leading to different emissions reduction objectives and outcomes^{42,43,44}. In terms of per capita divestment activity, Norway and the UK are ahead of the United States.

Table 2. Total divestment commitments by country as of 15 March 2019

Country	Germany	Norway	United Kingdom	United States
Number of total Divestment Commitments	31	8	164	358
Country population (in millions)	82.8	5.3	66.0	327.2
Number of commitments per capita (per million)	0.4	1.5	2.5	1.1
GHG emissions (for the year 2017) Mt CO ₂ (Global Carbon Atlas 2017)	799	45	385	5270
GHG emissions per capita (Mt/million)	9.7	8.6	5.8	16.1

While considering divestment commitments in the selected countries is necessary in discussing climate action from a divestment and institutional standpoint, it is also necessary to evaluate international climate policies that influence how countries approach climate action.

Perhaps the most successful international emissions policy is the European Union Emissions Trading System (EU ETS)^{45,46}. Currently in its third phase, the EU ETS set emission reduction targets at 1.74% annually from 2013-2020, while capping emissions for the entire European Union as well as Norway, Iceland, and Liechtenstein⁴⁷. The EU ETS is distinct from other climate policies as it is a multinational framework, but gives states within the agreement the freedom to set internal emissions distribution practices.

3.1.1 Germany

Member states' climate policy contributions to the overarching EU climate policies play a more nuanced role in addressing national emissions. Germany and the United Kingdom have both led the European Union in phasing out nuclear energy, developing internal carbon taxes, and putting forth comparatively ambitious renewable energy goals^{48,49,50,51}. The balance of national institutionalization of top-down climate policies and voluntary horizontal innovation across states and cities is approached differently in the countries observed in this study. Germany's national energy policy *Energiewende*, not only influences government action, but resulted in Germany's largest electricity provider voluntarily shifting away from fossil fuel combustion in 2014 and focusing on renewable energy generation instead^{52,53}. Germany's decision to cut emissions by 40% compared to 1990 levels by 2020 requires multisectoral, market-driven action, and the decision of a top energy provider to transition to renewables reflects the national energy environment^{54,55}.

Although Germany is leading international climate action, the decision to shift away from nuclear energy production entirely by 2020 may increase reliance on fossil fuels in a country that is the world's top consumer of lignite coal, producing 45% of Germany's energy in 2014^{56,57}. This decision was also the result of the German government mandate banning nuclear energy after the Fukushima disaster.

German cities such as Frankfurt, Munich, and Stuttgart have all implemented long-standing climate initiatives such as renewable energy goals and building energy efficiency mandates that originated naturally as a result of international influence⁵⁸.

3.1.2 Norway

The Norwegian Sovereign Wealth Fund is an interesting case of divestment because it is the largest sovereign wealth, or pension, fund in the world, and is largely derived from Norway's petroleum surpluses⁵⁹. A sovereign wealth fund is a government-owned investment fund.

Norway presents another example of national progress on climate policy outside of path-dependent stipulations put forth by international frameworks such as the Kyoto Protocol⁶⁰. In Norway, climate science is considered to be authoritative by policymakers and citizens, resulting in straightforward national conversation about how to balance mitigation and adaptation or domestic action versus international action. Norway aims to reduce emissions by 30% of 1990 levels by 2020, and was the first country in the world to introduce a CO₂ tax for the fossil fuel industry⁶¹.

The culture of climate acceptance in Norway means that there is an abundance of voluntary horizontal climate action from cities, perhaps surprising in a unitized state where the centralized government is perceived to dominate policy innovations⁶². Horizontal action refers to action across cities or organizations that happens organically, rather than as a result of a top down policy initiative. Norway has a three-tier system of government, where local governments address local environmental issues, county governments manage local governments, and the national Ministry of Climate and Environment and Norwegian Environment Agency address climate adaptation measures and international policy issues⁶³. The culture of climate change acceptance may explain divestment action from the Norwegian Sovereign Wealth Fund which is managed by the government. The international view of climate action taken by Norway reflects the energy dynamic of the country, as 99% of their electricity production comes from hydroelectric generation, shifting emissions attention to buildings, transport, manufacturing, and notably, offshore petroleum drilling⁶⁴. This means that a large portion of Norway's climate action approach targets trade and policy relationships with other countries.

3.1.3 United Kingdom

The United Kingdom served as a model for climate legislation through passing the Climate Change Act in 2008, voluntarily binding itself to greenhouse gas reductions of 80% of 1990 levels by 2050^{65,66}. Although establishment of the Climate Change Act set international precedent by making emission reduction targets legally binding, uncertainty was expressed upon completion of the legislation as to the long-term viability of the act. A complicating factor in the case of the UK's continual commitment to climate policy, particularly measures set forth by the European Union, is the Brexit negotiations to withdraw the United Kingdom from the European Union⁶⁷. Although some have suggested that Brexit will not impact the ultimate carbon reduction goals, Brexit will almost certainly impact the path by which the ambitious goals are achieved⁶⁸. The path by which the UK addresses the Climate Change Act is a function of whether Brexit happens, and whether Brexit is a soft or hard withdrawal. A soft Brexit would maintain Single Market and European Economic Area membership, whereas a hard exit would result in the UK falling back on World Trade Organization guidelines for trade and interaction with international policies⁶⁹.

A large question that is unanswered when considering Brexit is whether Brexit will impact the UK's involvement in the EU Emissions Trading System (ETS), which has contributed significantly to carbon emissions reductions across the European Union. Withdrawal from the EU would remove the UK's commitment to renewable energy, decarbonization, and energy efficiency imperatives put forth by the EU, placing more autonomy on the UK government and market mechanisms for ensuring that climate change measures are met.

The absence of EU investments in UK businesses that foster compliance with EU frameworks for climate action may destabilize the progress put forth by the private sector in the UK. This absence of outside investments may also present an opportunity for divestment advocates to shift investments from fossil fuels to climate solutions, softening the Brexit destabilization⁷⁰.

Other examples of institutionalization of climate action within the United Kingdom include creation of the Department for Energy and Climate Change, as well as a Committee on Climate Change, both formed in 2008. Creation of centralized government bodies on climate change have sparked concern in the UK as to the longevity of such policies due to changes in leadership affecting the continuation of past initiatives⁷¹. A successful centralized approach that was influenced by the EU ETS is the United Kingdom's carbon tax on fossil fuel electricity production, put into place in 2013⁷². The United Kingdom's approach to climate policy seems primarily centralized although per capita divestment commitments were higher than compared countries (Table 2).

3.1.4 United States

In contrast to highly centralized government climate initiatives in the EU, the United States' nationwide policy initiatives are historically and currently less progressive than other international efforts, beginning with the US president's refusal to attend the UN Conference on Environment and Development (UNCED) in 1992, where the UNFCCC was launched, and subsequent refusal sign onto the Kyoto Protocol 2008⁷³. The United States has by far the most total divestment commitments out of the four countries examined (Table 2 and Figure 3), with 358 commitments across a multitude of institutional sectors but the least per capita. Considering the lack of nationwide climate initiatives that address standards put forth by the 2015 Paris Climate Agreement, in the US, fossil fuel divestment initiatives have blossomed from the bottom up as a method of addressing climate change.

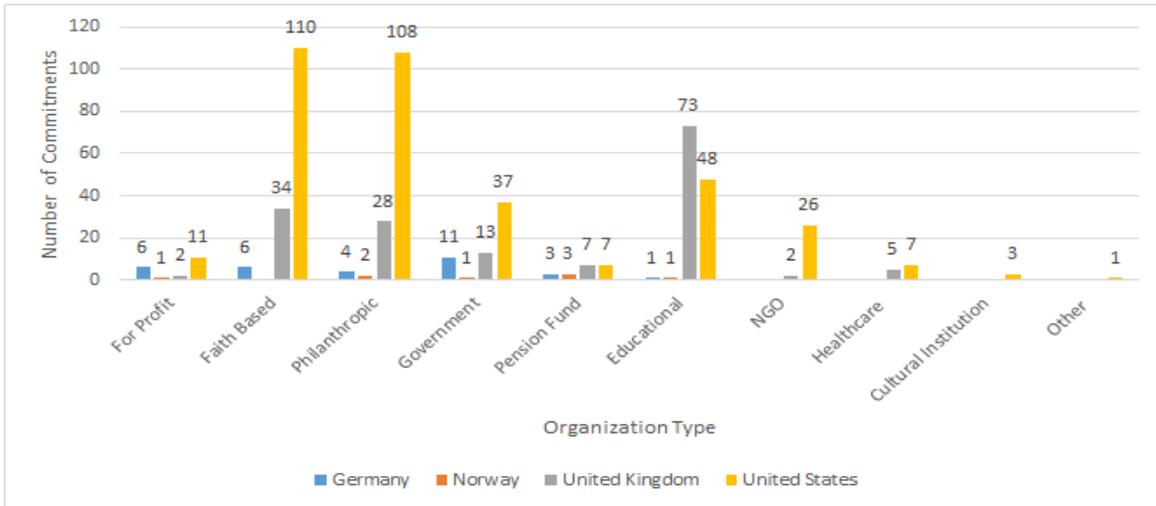


Figure 3. Total divestment commitments in Germany, Norway, UK, US.

Perhaps a more comparable evaluation that accounts for the population differential among countries is per capita divestment commitments and GHG emissions (Figure 4).

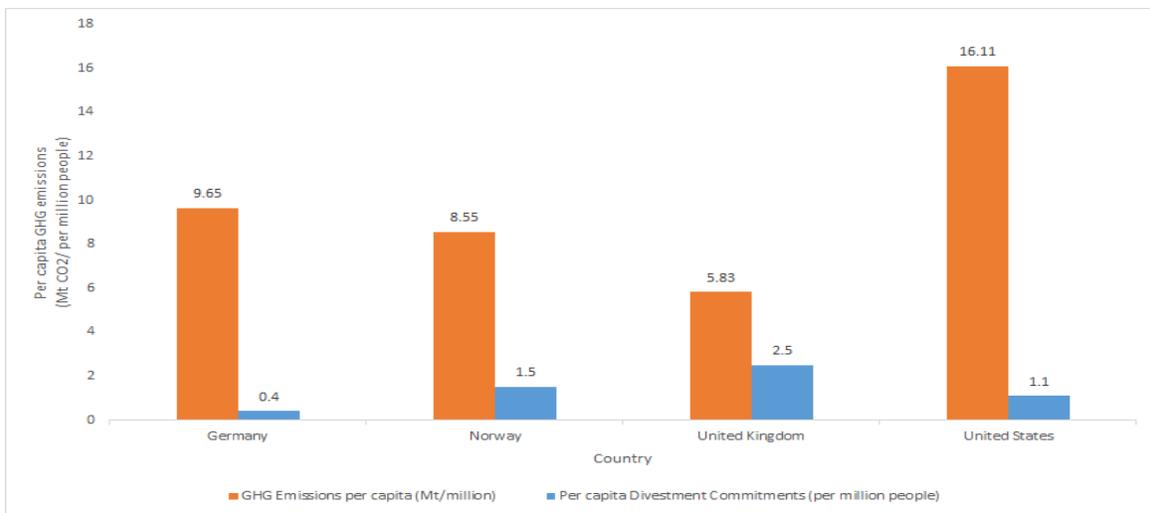


Figure 4. Per capita comparison of divestment commitments and greenhouse gas emissions.

3.4 Divestment Progress at UNC Asheville

The fossil fuel divestment campaign at UNC Asheville has been active since 2014, and is ongoing. While student momentum initialized the campaign primarily through direct action and interaction with other students, the movement has gradually become more institutionalized as a result of greater interaction between administrators, students, and the evolving sustainable investment process.

Following the formation of the Sustainable Investment Working Group in 2017, both an RFI and RFP were released by UNC Asheville on behalf of the working group. The intention of the requests was to solicit investment management companies with the experience to manage a portion of UNC Asheville's endowment sustainably, while assisting with drafting an investment policy for the university.

After indexing the initial candidates who responded to the RFI, and filtering through RFP respondents, UNC Asheville narrowed down top contenders for investment services in Spring of 2019. Currently, UNC Asheville is in the process of interviewing top candidates that resulted from the RFP process in order to move forward with selecting an investment company. Due to the public system relationship that UNC Asheville has with the overall UNC Management company in terms of pooled assets of the endowment, an outside investment company with sustainable investment experience was determined to be the most effective strategy for institutional divestment and sustainable management of UNC Asheville's endowment.

In addition to the advances at UNC Asheville through the Sustainable Investing Working Group, students have hosted engagement and educational events for other students on campus, met with the Chancellor, and published articles in the *Blue Banner*, the student newspaper at UNC Asheville⁷⁴. The student-run ESG fund, established in 2016, also serves to advance sustainable investing knowledge by allowing students to manage the \$10,000 fund.

Due to the structuring of the UNC System, which includes UNC Asheville, NC State, UNC Chapel Hill, Appalachian State University, and other institutions across the state, the student-led fossil fuel divestment campaign extends to those schools as well. Through the Reinvest NC Coalition, a statewide student organization active at UNC Asheville, UNC Chapel Hill, UNC Wilmington, NC State University, and Appalachian State University, students are targeting the whole UNC System's endowments for a divestment request. Totalling over \$6 billion, the assets of the UNC System are invested across many market asset classes, but 7.2% was invested in energy and natural resources as of 2018⁷⁵.

While UNC Asheville is taking the first steps in the UNC System towards divestment, other schools have expressed interest in the sustainable investing movement. NC State's \$50 M Park Foundation was established with a donor advisory to invest the fund in a socially responsible manner. The fund outperformed the returns of the UNC System's collective funds in 2017, and uses a unique manager selection framework to ensure that investments are sustainable as well as high-performing⁷⁶.

4. Discussion

There are many stakeholders that play a role in addressing local, state, country, and international attention to climate change. Even within the fossil fuel divestment movement, a diverse array of players exist in terms of who is taking action. For example, in 2018, Ireland pledged to remove all of its government investments from fossil fuels, marking the first countrywide fossil fuel divestment commitment⁷⁷.

Since no other countries as a whole have yet to divest from fossil fuels, it is clear that leadership on divestment comes from local governments or other sectors such as non-governmental organizations (NGOs) or private institutions. Germany, Norway, the United Kingdom, and the United States all vary greatly in terms of the structure of power across the country scale. Germany and the United States are both federations, meaning that a large portion of national power is designated to states, and the centralized government serves as a guiding presence^{78,79}. In contrast, Norway and the United Kingdom represent unitized states where the central government is formally granted power over local governments that do not have as much autonomy as they would in a federal government system.

The difference between these national government structures influences the implementation of top-down international policy initiatives such as the UNFCCC, or even EU policies. It has been found that access to organizations working with local governments on sustainability and climate change, provides cities with a higher capacity for climate action⁸⁰. An example of international horizontal climate action across cities is the Mayor's Climate Commitment. Formed in 2008, the Commitment helps provide a framework for cities to share climate action plans to achieve greenhouse gas reductions, review best practices, and create databases that can be referenced

globally⁸¹. As of October 2017, there were more than 7600 signatories to the commitment, demonstrating a transnational group that can monitor progress towards climate action.

4.1 Divestment Commitments

The fossil fuel divestment movement is becoming increasingly mainstream as investors begin to understand that fossil fuel reserves will become stranded assets if the world is to effectively address climate change^{82,83}.

The four countries examined for total divestment commitments were Germany, Norway, the United Kingdom, and the United States. When comparing divestment commitments across countries with varying populations, types of institutions, and types of government, it is difficult to draw exact comparisons based purely on numbers or percentages of institutional divestment commitments. It was hypothesized that total divestment commitments would be correlated to country climate policy, but the result proved to be the exact opposite.

In the United States, a country with less progressive climate policy, total divestment commitments totaled 358, while in Norway where climate policy leads across the four studied countries, divestment commitments totaled only 8, although per capita commitments totaled 1.5 in Norway as opposed to 1.1 in the United States. Although a small country sample size was used for this study, perhaps countries with less advanced climate policy initiatives foster more grassroots climate action as a result of necessity, actualized through movements such as fossil fuel divestment. Per capita divestment commitments show no noticeable correlation with country policy, as Norway and the United States lead in per capita commitments, followed by the United Kingdom and Germany.

Research has suggested that the traditional “state” may not be capable of serving purposes beyond itself due to entrenchment within capitalist economic tendencies⁸⁴. Climate action is often perceived by countries as action that is beyond the states’ immediate interests, delaying effective public policy in those countries. While this may have been demonstrated through international confusion regarding frameworks posed by the Kyoto Protocol, the horizontal adoption of smaller scale climate commitments such as the Mayor’s Climate Commitment, and bottom-up initiatives like fossil fuel divestment demonstrate opportunities for large scale impacts of collective, subnational action. Divestment presents a market and societally driven avenue for state transition away from fossil fuel dependency while addressing international climate risk considerations^{85,86,87}.

Fossil fuel divestment at UNC Asheville has been catalyzed by many students, and institutionalized in a way that brings together administrators, faculty, and students. A campus-wide conversation was necessary at UNC Asheville due to the complexity by which a university invests and manages their endowment, and the fact that UNCA is part of the larger UNC system.

When approaching an institution of any size with a request such as divestment, understanding the systems of power within the institution is essential to approaching action in a meaningful way. At UNC Asheville, several organizations previously mentioned are relevant to the fossil fuel divestment movement. The Board of Trustees, Endowment Investment Committee, faculty, administrators, and student body are all relevant parties with valuable inputs as to what the institution values and the pathways that should be pursued to get to the goal of divestment.

5. Conclusion

The state of climate action globally is dynamic and uncertain in the face of a scientifically imposed deadline of 2030 for successful climate mitigation efforts -- before climate adaptation becomes the globally recognized norm for climate action⁸⁸. International frameworks have tried to create systems for the major carbon emitting countries to take accountability for their share of climate change by establishing carbon reduction goals, renewable energy mandates, and incentivizing transnational cooperation towards big picture climate agreements. In the presence of overarching climate reforms on the international scale, countries, cities, and institutions are also unraveling how their input factors into global climate action. Though many policies and programs have been brought forth, such as the EU Emissions Trading System, the UK’s Climate Change Act, or the Mayor’s Climate Commitment, there is still much uncertainty as to how tangible carbon reduction goals will be met in the face of a still growing fossil fuel industry.

Historically, collective action has proven more effective in creating change than detached efforts, and the fossil fuel divestment movement demonstrates a global movement that has marked significant financial and social impacts against the fossil fuel industry. The true power of bottom-up initiatives like fossil fuel divestment comes from filling in the gaps presented by international climate frameworks by transitioning investment away from fossil fuels and toward climate solutions. Examples of universities currently pursuing sustainable investing and divestment such as UNC Asheville are becoming more abundant as institutional investors realize that aligning one’s investments with

one's values can be financially viable, while posing less long-term risk. Unexpectedly, this study concluded that there is not a significant correlation between progressive climate policy in countries and their rates of fossil fuel divestment commitments, suggesting that the relationship between the different tiers of climate action is more complex than immediately apparent.

The solution to effectively addressing climate change is not clear, but a multi-tiered system by which all the players in the climate movement, regardless of size, act in conjunction with one another is necessary. Individual country commitment to international frameworks posed by the UNFCCC and other bodies will have to be more seriously assessed, and major carbon emitters such as the US have a responsibility to address emissions regardless of which sector of the country the action comes from. As demonstrations of the success of sustainable investing and divestment grows, and recognition that fossil fuel assets must become stranded for fruitful climate action, the practice of shifting investments away from fossil fuel companies towards those who are providing climate solutions will likely become normalized. This critical window for climate action poses an unprecedented call for global players to cooperate toward a goal larger than themselves, but simultaneously poses an historic opportunity for a transition to a liveable future.

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7. References

1. IPCC. 2018. Global warming of 1.5°C: Summary for Policymakers. Switzerland: IPCC. https://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf
2. Huber, M. T., & McCarthy, J. (2017). Beyond the Subterranean Energy Regime? Fuel, Land use and the Production of Space. *Royal Geographical Society* 42 655–668, doi/10.1111/tran.12182/ful
3. Heede, R. (2013). Tracing anthropogenic carbon dioxide and methane emissions to fossil fuel and cement producers, 1854–2010. *Climatic Change*, 122(1-2), 229-241. doi:10.1007/s10584-013-0986-y
4. Veron, J., Hoegh-Guldberg, O., Lenton, T., Lough, J., Obura, D., Pearce-Kelly, P., . . . Rogers, A. (2009). The coral reef crisis: The critical importance of. *Marine Pollution Bulletin*, 58(10), 1428-1436. doi:10.1016/j.marpolbul.2009.09.009
5. Klausen, J. E., & Szmigiel-Rawska, K. (2017). The Rabbit and the Tortoise. Climate Change Policy Development on the Local Level in Norway and Poland. *Transylvanian Review of Administrative Sciences*, (52E), 38-58. doi:10.24193/tras.52e.3
6. Rosen, A. M. (2015). The Wrong Solution at the Right Time: The Failure of the Kyoto Protocol on Climate Change. *Politics & Policy*, 43(1), 30-58. doi:10.1111/polp.12105
7. United Nations Framework Convention on Climate Change., Secretariat. (n.d.). *Kyoto Protocol*. Bonn, Germany: UNFCCC.
8. (2009). Copenhagen Accord. United Nations, United Nations Framework Convention on Climate Change (UNFCCC). <https://unfccc.int/resource/docs/2009/cop15/eng/107.pdf>
9. Eckersley, R. (2015). National identities, international roles, and the legitimation of climate leadership: Germany and Norway compared. *Environmental Politics*, 25(1), 180-201. doi:10.1080/09644016.2015.1076278
10. The Paris Agreement. (22 October 2018). Retrieved from <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>
11. Zhang, H., Dai, D., Lai, H. et al. (2017) U.S. withdrawal from the Paris Agreement: Reasons, impacts, and China's response. *Advances in Climate Change Research*, 8(4), 220-225. doi:10.1016/j.accre.2017.09.002
12. Casado-Asensio, J., & Steurer, R. (2015). Bookkeeping rather than climate policy making: National mitigation strategies in Western Europe. *Climate Policy*, 16(1), 88-108. doi:10.1080/14693062.2014.980211
13. Hunt, C., & Weber, O. (2018). Fossil Fuel Divestment Strategies: Financial and Carbon-Related Consequences. *Organization & Environment*, 32(1), 41-61. doi:10.1177/1086026618773985
14. Apfel, D. C. (2015). Exploring Divestment as a Strategy for Change: An Evaluation of the History, Success, and Challenges of Fossil Fuel Divestment. *Social Research*, 82(4) 913-937

15. Franta, B. (2017). Litigation in the Fossil Fuel Divestment Movement. *Law & Policy*,39(4), 393-411. doi:10.1111/lapo.12086
16. Soule, S. A. (1997). The Student Divestment Movement in the United States and Tactical Diffusion: The Shantytown Protest. *Social Forces*, 75(3), 855. doi:10.2307/2580522
17. Henriques, I., & Sadorsky, P. (2018). Investor implications of divesting from fossil fuels. *Global Finance Journal*,38, 30-44. doi:10.1016/j.gfj.2017.10.004
18. Bergman, N. (2018). Impacts of the Fossil Fuel Divestment Movement: Effects on Finance, Policy and Public Discourse. *Sustainability* 10, 2529; doi:10.3390/su10072529
19. Clapp, C. S., Alfsen, K. H., Torvanger, A., & Lund, H. F. (2015). Influence of climate science on financial decisions. *Nature Climate Change*,5(2), 84-85. doi:10.1038/nclimate2495
20. Henriques, I., & Sadorsky, P. (2018). Investor implications of divesting from fossil fuels. *Global Finance Journal*,38, 30-44. doi:10.1016/j.gfj.2017.10.004
21. Bergman, N. (2018). Impacts of the Fossil Fuel Divestment Movement: Effects on Finance, Policy and Public Discourse. *Sustainability* 10, 2529; doi:10.3390/su10072529
22. Dietz, S., Bowen, A., Dixon, C., & Gradwell, P. (2016). 'Climate value at risk' of global financial assets. *Nature Climate Change*,6(7), 676-679. doi:10.1038/nclimate2972
23. Divestment Commitments. (2019). Retrieved from <https://gofossilfree.org/divestment/commitments/>
24. Rimmer, M. (2016). Investing in the Future: Norway, Climate Change, and Fossil Fuel Divestment. doi:10.31235/osf.io/ag3k7
25. Milman, O. (2018, January 10). New York City plans to divest \$5bn from fossil fuels and sue oil companies. Retrieved from <https://www.theguardian.com/us-news/2018/jan/10/new-york-city-plans-to-divest-5bn-from-fossil-fuels-and-sue-oil-companies>
26. LDN_gov. (2018, March 26). Mayor calls for boroughs to ditch fossil fuel investment. Retrieved from <https://www.london.gov.uk/press-releases/mayoral/mayor-calls-for-boroughs-to-divest-pension-funds>
27. Regents meeting begins with fossil fuel divestment discussion. (2018, May 23). Retrieved from <http://www.dailycal.org/2018/05/23/regents-meeting-begins-fossil-fuel-divestment-discussion/>
28. Linthicum, B. (2015, October 23). Guest columnist: Warren Wilson College joins global divestment movement. Retrieved from <https://www.citizen-times.com/story/opinion/contributors/2015/10/23/guest-columnist-warren-wilson-college-joins-global-divestment-movement/74455694/>
29. Brevard College Commits to Fossil Fuel Divestment. (2017, February 07). Retrieved from <https://brevard.edu/brevard-college-commits-to-fossil-fuel-divestment/>
30. Franta, B. (2017). Litigation in the Fossil Fuel Divestment Movement. *Law & Policy*,39(4), 393-411. doi:10.1111/lapo.12086
31. Humphreys, J. (2013). Institutional Pathways to Fossil-Free Investing. *Tellus Institute*, 1-37
32. Trinks, A., B. Scholtens, M. Mulder, and L. Dam. (2018). Fossil Fuel Divestment and Portfolio Performance. *Ecological Economics* 146: 740-748.
33. UNC Management Company. (2018). Annual Report for the UNC Management Fund. <https://uncmc.unc.edu/files/2019/01/FY-2018-UNCIF-Annual-Report-FINAL.pdf>
34. Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative & mixed methods approaches*. Los Angeles: SAGE.
35. Divestment Commitments. (2019). Retrieved from <https://gofossilfree.org/divestment/commitments/>
36. Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative & mixed methods approaches*. Los Angeles: SAGE.
37. Lavorel, S., Colloff, M. J., Locatelli, B., Gorddard, R., Prober, S. M., Gabillet, M., . . . Peyrache-Gadeau, V. (2019). Mustering the power of ecosystems for adaptation to climate change. *Environmental Science & Policy*,92, 87-97. doi:10.1016/j.envsci.2018.11.010
38. Divestment Commitments. (2019). Retrieved from <https://gofossilfree.org/divestment/commitments/>
39. Laurier, E 2010, 'Participant Observation'. in N Clifford, S French & G Valentine (eds), *Key Methods in Geography*. 2nd edn, Sage Publications, London, pp. 116-130.
40. Mission. (2019). Retrieved from <https://strategicplan.unca.edu/mission>
41. Smith, C., & Smith, C. (2019, March 08). Norway's Sovereign Wealth Fund Is Divesting From Oil and Gas Stocks Because Crude Prices Are Too Low. Retrieved from <https://www.barrons.com/articles/norway-sovereign-wealth-fund-divests-oil-gas-stocks-51552057140>
42. Eckersley, R. (2015). National identities, international roles, and the legitimation of climate leadership: Germany and Norway compared. *Environmental Politics*,25(1), 180-201. doi:10.1080/09644016.2015.1076278

43. Gillard, R. (2016). Unravelling the United Kingdom's climate policy consensus: The power of ideas, discourse and institutions. *Global Environmental Change*, 40, 26-36. doi:10.1016/j.gloenvcha.2016.06.012
44. Kollenberg, S., & Taschini, L. (2016). Emissions trading systems with cap adjustments. *Journal of Environmental Economics and Management*, 80, 20-36. doi:10.1016/j.jeem.2016.09.003
45. Ellerman, A. D., Marcantonini, C., & Zaklan, A. (2015). The European Union Emissions Trading System: Ten Years and Counting. *Review of Environmental Economics and Policy*, 10(1), 89-107. doi:10.1093/reep/rev014
46. Rosen, A. M. (2015). The Wrong Solution at the Right Time: The Failure of the Kyoto Protocol on Climate Change. *Politics & Policy*, 43(1), 30-58. doi:10.1111/polp.12105
47. Ellerman, A. D., Marcantonini, C., & Zaklan, A. (2015). The European Union Emissions Trading System: Ten Years and Counting. *Review of Environmental Economics and Policy*, 10(1), 89-107. doi:10.1093/reep/rev014
48. Climate Change Performance Index 2018. (2018, December 07). Retrieved from <https://www.climate-change-performance-index.org/climate-change-performance-index-2018>
49. Eckersley, R. (2015). National identities, international roles, and the legitimation of climate leadership: Germany and Norway compared. *Environmental Politics*, 25(1), 180-201. doi:10.1080/09644016.2015.1076278
50. Ellerman, A. D., Marcantonini, C., & Zaklan, A. (2015). The European Union Emissions Trading System: Ten Years and Counting. *Review of Environmental Economics and Policy*, 10(1), 89-107. doi:10.1093/reep/rev014
51. Gillard, R. (2016). Unravelling the United Kingdom's climate policy consensus: The power of ideas, discourse and institutions. *Global Environmental Change*, 40, 26-36. doi:10.1016/j.gloenvcha.2016.06.012
52. Kiyar, D., & Wittneben, B. (2015). Carbon as Investment Risk—The Influence of Fossil Fuel Divestment on Decision Making at Germany's Main Power Providers. *Energies*, 8(9), 9620-9639. doi:10.3390/en8099620
53. Zimmermann, K., Boghrat, J., & Weber, M. (2015). The epistemologies of local climate change policies in Germany. *Urban Research & Practice*, 8(3), 303-318. doi:10.1080/17535069.2015.1051379
54. Casado-Asensio, J., & Steurer, R. (2015). Bookkeeping rather than climate policy making: National mitigation strategies in Western Europe. *Climate Policy*, 16(1), 88-108. doi:10.1080/14693062.2014.980211
55. Eckersley, R. (2015). National identities, international roles, and the legitimation of climate leadership: Germany and Norway compared. *Environmental Politics*, 25(1), 180-201. doi:10.1080/09644016.2015.1076278
56. Eckersley, R. (2015). National identities, international roles, and the legitimation of climate leadership: Germany and Norway compared. *Environmental Politics*, 25(1), 180-201. doi:10.1080/09644016.2015.1076278
57. Ellerman, A. D., Marcantonini, C., & Zaklan, A. (2015). The European Union Emissions Trading System: Ten Years and Counting. *Review of Environmental Economics and Policy*, 10(1), 89-107. doi:10.1093/reep/rev014
58. Zimmermann, K., Boghrat, J., & Weber, M. (2015). The epistemologies of local climate change policies in Germany. *Urban Research & Practice*, 8(3), 303-318. doi:10.1080/17535069.2015.1051379
59. Rimmer, M. (2016). Investing in the Future: Norway, Climate Change, and Fossil Fuel Divestment. *Environment, Climate Change, and International Relations*. 206-225. doi:10.31235/osf.io/ag3k7
60. Rosen, A. M. (2015). The Wrong Solution at the Right Time: The Failure of the Kyoto Protocol on Climate Change. *Politics & Policy*, 43(1), 30-58. doi:10.1111/polp.12105
61. Eckersley, R. (2015). National identities, international roles, and the legitimation of climate leadership: Germany and Norway compared. *Environmental Politics*, 25(1), 180-201. doi:10.1080/09644016.2015.1076278
62. Klausen, J. E., & Szmigiel-Rawska, K. (2017). The Rabbit and the Tortoise. Climate Change Policy Development on the Local Level in Norway and Poland. *Transylvanian Review of Administrative Sciences*, (52E), 38-58. doi:10.24193/tras.52e.3
63. Klausen, J. E., & Szmigiel-Rawska, K. (2017). The Rabbit and the Tortoise. Climate Change Policy Development on the Local Level in Norway and Poland. *Transylvanian Review of Administrative Sciences*, (52E), 38-58. doi:10.24193/tras.52e.3
64. Eckersley, R. (2015). National identities, international roles, and the legitimation of climate leadership: Germany and Norway compared. *Environmental Politics*, 25(1), 180-201. doi:10.1080/09644016.2015.1076278
65. Gillard, R. (2016). Unravelling the United Kingdom's climate policy consensus: The power of ideas, discourse and institutions. *Global Environmental Change*, 40, 26-36. doi:10.1016/j.gloenvcha.2016.06.012
66. Farstad, F., Carter, N., & Burns, C. (2018). What does Brexit Mean for the UK's Climate Change Act? *The Political Quarterly*, 89(2), 291-297. doi:10.1111/1467-923x.12486
67. Farstad, F., Carter, N., & Burns, C. (2018). What does Brexit Mean for the UK's Climate Change Act? *The Political Quarterly*, 89(2), 291-297. doi:10.1111/1467-923x.12486
68. Scott, A. (2016, September). Brexit: Implications for Climate Change Commitments. *ODI Briefing*.
69. Farstad, F., Carter, N., & Burns, C. (2018). What does Brexit Mean for the UK's Climate Change Act? *The Political Quarterly*, 89(2), 291-297. doi:10.1111/1467-923x.12486

70. Farstad, F., Carter, N., & Burns, C. (2018). What does Brexit Mean for the UK's Climate Change Act? *The Political Quarterly*, 89(2), 291-297. doi:10.1111/1467-923x.12486
71. Gillard, R. (2016). Unravelling the United Kingdom's climate policy consensus: The power of ideas, discourse and institutions. *Global Environmental Change*, 40, 26-36. doi:10.1016/j.gloenvcha.2016.06.012
72. Ellerman, A. D., Marcantonini, C., & Zaklan, A. (2015). The European Union Emissions Trading System: Ten Years and Counting. *Review of Environmental Economics and Policy*, 10(1), 89-107. doi:10.1093/reep/rev014
73. Rosen, A. M. (2015). The Wrong Solution at the Right Time: The Failure of the Kyoto Protocol on Climate Change. *Politics & Policy*, 43(1), 30-58. doi:10.1111/polp.12105
74. Shadburne, S., Smith, J., Haddock, M., & Elliott, L. (n.d.). UNCA Divest. Retrieved from <http://thebluebanner.net/tag/unca-divest/>
75. UNC Management Company. (2018). Annual Report for the UNC Management Fund. <https://uncmc.unc.edu/files/2019/01/FY-2018-UNCIF-Annual-Report-FINAL.pdf>
76. Lorin, J. (June 4, 2018). NC State Built a 'Responsible' Fund That's Outperforming Its Main Portfolio. Retrieved from <https://www.bloomberg.com/news/features/2018-06-04/outperforming-fund-at-nc-state-s-endowment-is-also-sustainable>
77. Sengupta, S. (2018, July 12). Ireland Moves to Divest From Fossil Fuels. Retrieved from <https://www.nytimes.com/2018/07/12/climate/ireland-fossil-fuels-divestment.html>
78. Klausen, J. E., & Szmigielska-Rawska, K. (2017). The Rabbit and the Tortoise. Climate Change Policy Development on the Local Level in Norway and Poland. *Transylvanian Review of Administrative Sciences*, 52(E), 38-58. doi:10.24193/tras.52e.3
79. Zimmermann, K., Boghrat, J., & Weber, M. (2015). The epistemologies of local climate change policies in Germany. *Urban Research & Practice*, 8(3), 303-318. doi:10.1080/17535069.2015.1051379
80. Aylett, A. (2015). Institutionalizing the urban governance of climate change adaptation: Results of an international survey. *Urban Climate*, 14, 4-16. doi:10.1016/j.uclim.2015.06.005
81. Kona, A., Bertoldi, P., Monforti-Ferrario, F., Rivas, S., & Dallemand, J. F. (2018). Covenant of mayors signatories leading the way towards 1.5 degree global warming pathway. *Sustainable Cities and Society*, 41, 568-575. doi:10.1016/j.scs.2018.05.017
82. Bergman, N. (2018). Impacts of the Fossil Fuel Divestment Movement: Effects on Finance, Policy and Public Discourse. *Sustainability* 10, 2529; doi:10.3390/su10072529
83. Dietz, S., Bowen, A., Dixon, C., & Gradwell, P. (2016). 'Climate value at risk' of global financial assets. *Nature Climate Change*, 6(7), 676-679. doi:10.1038/nclimate2972
84. Eckersley, R. (2015). National identities, international roles, and the legitimation of climate leadership: Germany and Norway compared. *Environmental Politics*, 25(1), 180-201. doi:10.1080/09644016.2015.1076278
85. Kona, A., Bertoldi, P., Monforti-Ferrario, F., Rivas, S., & Dallemand, J. F. (2018). Covenant of mayors signatories leading the way towards 1.5 degree global warming pathway. *Sustainable Cities and Society*, 41, 568-575. doi:10.1016/j.scs.2018.05.017
86. Rimmer, M. (2016). Investing in the Future: Norway, Climate Change, and Fossil Fuel Divestment. *Climate Change, and Fossil Fuel Divestment*. 206-25. doi:10.31235/osf.io/ag3k7
87. Seidman, G. W. (2015). Divestment Dynamics: Mobilizing, Shaming, and Changing the Rules. *Social Research: An International Quarterly*, 82(4), 1015-1037.
88. IPCC. 2018. Global warming of 1.5°C: Summary for Policymakers. Switzerland: IPCC. https://www.ipcc.ch/site/assets/uploads/sites/2/2018/07/SR15_SPM_High_Res.pdf