The Green Transition: Beyond the Capability of Democratic Government?

An Analysis of the Public and Private Actors concerned with US Climate Change Policy

Paulien van den Heuvel
s4494458

Bachelor's Thesis
Radboud University Nijmegen
English Language and Culture: North American Studies
June 2018

Supervisor: Dr. Markha Valenta

Abstract

This research project will analyze the key actors that are concerned with US climate change policy. Both actors from the public and private sector will be discussed including the government at federal and state level, corporations, investors and the citizens and consumers. The central question is what the role of the federal government is in climate change action and whether the democratic system is capable of handling a long-term societal challenge such as climate change.

Key terms: Climate change; Proactive business strategy; Intergovernmentalism; Energy transition; Stakeholders; Investors; Democratic government; Societal challenges

Table of Contents

Introduction

In 1987 the book "Uncommon Friends: Life with Thomas Edison, Henry Ford, Harvey Firestone, Alexis Carrel, and Charles Lindbergh" was published. In this book, James Newton describes a conversation between inventor Thomas Edison, car manufacturer Henry Ford, and tire manufacturer Harvey Firestone. Edison opens with a provocative remark about the possible exhaustion of energy resources: "We are like tenant farmers, chopping down the fence around our house for fuel, when we should be using nature's inexhaustible sources of energy - sun, wind, and tide" (as cited in (Newton, 1989, p. 31). Firestone, in turn, notes that fossil fuels such as oil, coal, and natural gas would not last forever. He turns his attention to wind powered energy because windmills have remained unchanged for centuries. Ford comments on the power of tides and wonders about further research in this area. Edison eventually says: "I'd put my money on the sun and solar energy. What a source of power! I hope we don't have to wait till oil and coal run out before we tackle that. I wish I had more years left!" (As cited in Newton, 1989, p. 31).

The transition towards a renewable energy source is inevitable and global efforts towards efficient, affordable and durable solutions are high on the agenda of different actors, ranging from public to private entities and from the regional to the international level. The Trump administration however, is voicing a different sound. Under the guise of improving the economy and creating jobs for Americans, Trump is actively rolling back Barack Obama's efforts to combat climate change and has promised to revive the coal industry.

Environmental issues and sustainability are key topics that our society is currently facing. The fact that we need to make adjustments in our daily habits is inevitable. Research and technology in this field is developing rapidly and it is clear that we are facing a matter that requires universal support do we want to succeed in a transition towards green energy and shrink our carbon footprint (Adger, 2009, p. 3). Amidst this move towards sustainability President Trump seems to be moving in exactly the opposite direction. The Trump administration is undoing clean energy initiatives implemented by Trump's predecessor, Barack Obama; Trump has declared to pull out of the Paris Agreement and is pursuing an "energy dominant" strategy which boosts the production and export of coal, oil, and natural gas (Schneider & Peeples, 2018, p. 2).

However, it has become clear that environmental protection does not solely depend on the regulations implemented by the federal government. There are other forces at play that are moving forward innovation in technology, business strategy, and investments. The federal government has little direct influence on the carbon footprint of its citizens. Subnational governments and businesses

stand closer to the people and have a larger impact on environmental progress. The influence works both ways. Green consumers drive companies to adopt a proactive environmental business strategy.

Of course, the President still has a significant impact on the development of climate change action. Administration policies can provide incentives that spur innovation. However, in the twenty-first century, the federal government is not the only actor on the sustainability stage. The drive for clean energy in particular, and sustainability more broadly, now comes from many directions.

The US has had a long history of corporations influencing government policies and vice versa. With regards to the subject of this thesis, the following literature is relevant.

In his book *Environmental Policy and Industrial Innovation*, David Wallace analyzes the development of environmental policies in 6 different countries, including the US. Through the examination, contrasts in how countries approach the topic of climate change become apparent. The transnational approach is also addressed through the analysis of case studies from the industrial sector. Wallace concludes that succes may be achieved when governments and private actors set feasible, long-term environmental targets which are set in a grounded regulatory system (1995).

In the article *Environmental Policy and the Bush Era: The Collision Between the Administrative Presidency and State Experimentation*, Barry Rabe analyzes the environmental policy during the Bush administration. The most relevant aspect of this article with regard to this research project is the description of the disagreement between federal and state government with regards to the topic of environmental protection. The federal government initially had high ambitions for an intergovernmental approach however, this idea was quickly dismissed and the administration opted for a centralized oversight. This switch was opposed by a number of states that were not willing to be pushed to the background but who wanted to pursue their own environmental initiatives (2007).

The article *Green Schemes: Corporate Environmental Strategies and their Implementation* addresses how pressure from stakeholders steer companies towards a proactive environmental approach. The reason behind this is that a sustainable business strategy leads to reduced costs, better quality, an improved image and the access to a wider market al of which eventually lead to higher profits. The article examines environmental strategies and how they are implemented in existing business structures. The companies Volvo, Polaroid, and Procter & Gamble are taken as case studies of different industries and their implementation process (1997).

The article *The social responsibility of international business: From ethics and the environment to CSR and sustainable development* written by Ans Kolk, gives an overview of how issues regarding social issues are historically addressed in international business literature. The article covers the

developments of the past 50 years and addresses three main themes namely: the environment; ethics, rights and responsibilities; and poverty and sustainable development (2016).

The article *Proactive corporate environmental management: A new industrial revolution* by Michael Berry and Dennis Rondenelli talks about the increase in the implementation of environmental protection strategies in corporations. Because of pressure from governments, customers and competitors, corporations are adopting a proactive environmental management style. The article discusses the influence of consumers and investors who are increasingly valuing the relationship between business performance and environmental protection. The article states that businesses that pursue responsible corporate strategies are more efficient and competitive, this because of influences from the public, investors and government regulations (1998).

Leading Change toward Sustainability by Bop Doppelt addresses change management, leadership, and sustainability with regards to reducing CO2 emissions. The book provides an overview of strategies that are used by corporations to adapt their business strategies to incorporate environmentally friendly tactics. The theories described in the book are illustrated with case studies from corporate and governmental institutions (2017).

The analysis of this literature shows that there is not one answer regarding climate change action. What is essential, however, is that the matter must be faced collectively with both the public and private sector involved. The different interests of the different actors, however, make it difficult to come to a consistent approach to climate change policy.

With this thesis I intend to give a comprehensive overview of the key actors that play a role in climate change action and that drive forward the research and development of renewable energy solutions. In the process of energy transition we can identify the following actors: the government, at federal and state level; the private sector, meaning companies and investors; and the citizens and consumers. The central theme of this thesis is the role of the federal government with respect to climate change. In other words, how a country handles long term societal challenges in a democratic society.

First, I want to determine what in general is regarded as the role of the government. Perhaps the most important role of the federal government is protecting its citizens against hazards which are too big or complex for individual citizens to handle themselves. Another responsibility of the government is to make sure that our public infrastructure is working properly and has a reasonable level of efficiency. Together with 97% of the scientists in the field, Obama believed that climate change poses a serious threat to society (Vaidyanatha, 2014). For this reason, the US, together with the governments of 195 nations, decided to sign the COP21 agreement in Paris. Trump does not believe

that global warming poses a threat. He seems to be basing his decisions on gut feelings and is ignoring the warnings from scientists, foreign governments and the public. Trump gives his voters the impression that he is putting their interests first, and most of these voters will have difficulty judging the pros and cons of his policies. Which interests is Trump serving: corporate interests in the fossil fuel sector such as that of ExxonMobil and employment for the workers in traditional sectors such as the coal and steel industry.

Many governments confirm that they have a role to play in preventing further global warming. This role consists of setting targets and monitoring whether the set targets are met, and if not, implementing policies that will result in reaching the set targets.

With respect to the public infrastructure in the US, the question is whether the infrastructure is in good shape. The quality and performance of the electrical power grid is typically a responsibility of the federal government (Vann, 2010, p. 7). The US energy infrastructure scored a D+ on its report card from the American Society of Civil Engineers (ASCE, 2017). The 2017 report suggest that the federal government and private sector should increase their spending by $2 trillion within the next 10 years to achieve a healthy infrastructure that is able to carry the US economy.

The question is essentially: to what extent is a democratic system suited to deal with long term challenges such as climate change? We have witnessed the rise of more populist style politicians in recent years, Trump being a good example of this trend. Populist parties thrive in general by addressing more short-term worries that exist at least with a part of the voters. Dealing with complex issues such as the energy transition appears not to be high on their priority list.

Here, I am using the general terms ‘public and private action on climate change’ for the combined efforts to limit emission of CO2 and greenhouse gases and to consequently scale up the harvesting of renewable energy in the US on the governmental side and on the side of companies and individuals. In this thesis I want to determine the key agents who are concerned in the public and private the sector with the topic and look at the impact of their action. First I will draw up an overview of the development of the climate change policies of the federal government. The focus will be on the actions of the Obama and Trump administrations. I will do an in depth research into the actions taken by the Trump administration and the implications these policies and budget cuts will have on addressing climate change. The most powerful actors are the federal government, state governments and large corporations and investment groups. I will only briefly address the role of the states on climate change action because unfortunately the scope of the research project does not allow for a thorough analyses of the the complex structure between federal and state government.

In the following chapters I will present a case study which will bring to light the role of each of these actors. I will analyze how big business is reacting to the environmental policies implemented by the Trump administration. Are they reacting by taking a stronger stance regarding sustainability and taking independent initiatives to stimulate the development of renewable energy or are they taking the passive example the government is giving as an excuse to also turn their back on the topic? Is "going green" merely a PR stunt or are corporations really taking steps toward a greener future?

For the case study I have chosen to evaluate the multinational footwear and apparel corporation Nike. I have chosen Nike because it is a company that sells besides clothing and footwear the image of a healthy lifestyle and a better world. The marketing of the brand is powerful and the company prides itself for its use of sustainable materials and production processes. Through this analysis of the company I want to determine what their stance is on the environment issue and what actions they are taking independent of government policy.

Furthermore I intend to determine to what extend the role of the government in funding green initiatives and research is taken over by private investors now the government has started to implement its massive budget cuts in the sustainable energy sector. I have chosen to take the Breakthrough Energy Coalition as an example of such an investment group because it is a group of highly influential and high net worth members spearheaded by Bill Gates. It is not only about the money but because these individuals are also meaningful figures with much power that strengthens their position. In the analysis I will take all three actors and attempt to determine what the effect is of the harsh political stance towards renewable energy on how corporation are addressing environmental matters.

The research I will conduct will have an evaluative function, aiming to confirm the hypothesis that the future of the development of sustainable energy harvesting is not solely determined by governmental policies but that there are other actors that will stimulate the development of alternative energy sources regardless of government policy. Eventually businesses answer to their stakeholders, hence it is them who can be most powerful in determining the future of green energy.

In this thesis I will attempt to answer the question: to what extent will the climate change policies of the Trump administration affect how businesses address environmental matters? I intend to determine what the role is of the federal government in the US with respect to climate change. Moreover, I want to raise the question: how to deal with long term societal challenges in a democratic society.

On the basis of an in depth literature review and analysis of study and business output, I will attempt to determine which powers are at play on the sustainability stage. I will examine research

surrounding government policies, from the US and internationally, business initiatives and investors. Furthermore, I will analyze business and investor statistics.

The harvesting of sustainable energy at large scale is a subject which is currently getting a lot of attention both in research, as well as in technology development. Much research has been done concerning the consequences of climate change, the transition towards green energy and the environmental policies and agreements that play in politics. Because of the contemporaneous nature of this topic and its direct effect on future energy security, research on this topic is highly relevant.

Chapter 1 Government

1.1 Government

This chapter will be a detailed overview of the actions of the federal government on the topic of climate change. The Obama and Trump administration will be discussed to determine the effect that the federal government has on climate change policies and how the role of the federal government changes depending on who is in office.

According to David Wallace, can the long-term challenge of sustainable development be seen as "an opportunity for governments to make environmental policy more stable and less reactive" (1995, p. 18). An active government leads to a system in which innovation can thrive resulting in lower compliance costs. President Trump famously coined climate change as a "Chinese hoax" (Trump, 2012) and, with a republican majority in both Houses, he has the authority and the popular mandate to debunk this "myth". Like those who work or conduct research in the public health sector, climate change researchers and advocates have much to worry about. First, Trump has declared to pull America out of the Paris climate agreement (Trump, 2016). He wants to get rid of the Environmental Protection Agency and repeal environmental regulations which were implemented by Obama's executive orders (Davenport, 2016). Instead of focusing on the transition to a new energy source, Trump wants to promote the use and export of coal, gas and oil, the largest sources of pollution (Grunwald, 2016). If Trump succeeds in pulling out of the Paris Agreement and returning to coal-fired power plants, his administration could have long term impact on the environment at a global scale (USGCRP, 2017). Many of Trump's actions concerning climate change roll back Obama-era policies that aimed to limit environmental pollution, while others threaten to limit federal funding for science and protection of the environment.

1.2 Obama administration

"From the Climate Action Plan to investing in renewable energy and setting strong fuel economy standards and forging the historic Paris Climate Agreement, President Obama's unprecedented leadership on cutting carbon and greenhouse gas emissions will ensure a brighter future for our planet" (Anna Aurilio, DC Office Director). Barack Obama put the environment and combating climate change high on the agenda during his presidency. In his State of the Union address to congress in 2015, Obama said that he "believes that no challenge poses a greater threat to our children, our planet and future generations than climate change - and that no other country on Earth is

better equipped to lead the world towards a solution" (Obama, 2015). In 2011 Obama called for a national "clean energy" standard under which 80% of the nation's electricity would come from zero-carbon or low-carbon sources by 2035. In 2013 he floated an "Energy Security Trust" that would channel $2 billion over a decade in revenues from offshore oil-and-gas drilling into research to speed up development of transportation technologies like electric vehicles and biofuels. Efforts such as these put the US in a leading position in the global challenge of preserving the environment and transitioning to alternative energy sources. President Obama's accomplishments concerning the environment and combating climate change are impressive and numerous.

Even during the financial crisis, Obama invested in green energy. In 2009 Obama introduced the American Recovery and Reinvestment Act (ARRA) to aid Americans during the economic recession. The initial objective of the bill was to stimulate the job market but it also provided relief for industries hit by the recession, such as education, health and renewable energy. The White House has revealed that the ARRA included over $90 billion in subsidies for green energy (US Office of the Press Secretary, 2016).

Furthermore, the bill established tax credits for homeowners who made energy-efficient improvements to their house or for those who opted for an electric car (IRS, 2009). Obama also reserved $500 million for the Department of Labor to educate 'green-collar' workers. Besides this, the bill included funding for 180 energy manufacturing projects; the creation or expansion of 100,000 renewable energy projects across the nation by offering financing options; lower costs for many clean energy technologies, making them more competitive against fossil fuels and the weatherization of more than 1 million low-income homes to increase energy efficiency.

On July 29, 2011, Obama announced a fuel efficiency agreement with 13 leading car manufacturers to increase fuel economy from 29.7 miles per gallon to 54.5 miles per gallon for cars and light-duty trucks by 2025 (US Office of the Press Secretary ,2012). A White House spokesman declared that the "national program to improve fuel economy and reduce greenhouse gas emissions will save consumers more than $1.7 trillion at the gas pump and reduce US oil consumption by 12 billion barrels" (US Office of the Press Secretary, 2012). Bill Becker, executive director of the National Association of Clean Air Agencies said about the policy that "There is not another air-pollution-control strategy that we know that will produce as substantial, cost effective, and expeditious emissions reductions" (Associated Press, 2013). Becker said the rule would reduce pollution equal to taking 33 million cars off the road.

During a speech at Georgetown University on June 25th, 2013, President Obama announced his Climate Action Plan. He made it clear that we are the first generation to feel the effects of climate change, and we may be the last generation who can do something about it (McCarthy, 2013).

In June 2013, President Obama issued his Climate Action Plan which aimed at cutting nearly 6 billion tons of carbon pollution by 2030. The plan states that "climate changes represents one of the greatest challenges of our time, but it is a challenge uniquely suited to America's strengths" (The White House, 2013). The plan, consisting of a wide variety of executive actions, had three key pillars namely: cut carbon pollution in America; prepare the United States for the impacts of climate change; and lead international efforts to combat global climate change and prepare for its impacts (The White House, 2013).

On July 18, 2013, Obama appointed Gina McCarthy as administrator of the Environmental Protection Agency (EPA). Nicknamed Obama's "green quarterback", McCarthy has worked five years as head of Connecticut's Department of Environment Protection and 25 years as an environmental official in Massachusetts. For the Obama administration, McCarthy developed a federal emissions and air-quality standard which was supported both by the Democrats and Republicans.

The Clean Power Plan is the key environmental signature left by the Obama administration. The plan was first proposed by the EPA in 2014 and strives to reduce carbon dioxide emissions by 32% from 2005 levels by 2030 (The White House, 2015). This translates to 870 million fewer tons of carbon pollution. EPA says that this equals to the annual emissions form 70% of the nation's cars (EPA, 2014). The proposal "will protect public health, move the United States toward a cleaner environment and fight climate change while supplying Americans with reliable and affordable power" (EPA, 2014). The White House declared that with the Clean Power Plan, the US was the first nation to impose limits for mercury, arsenic and other toxic air pollution from power plants. Besides this, the policy requires states to meet specific carbon emission reduction standards based on their particular energy consumption (EPA, 2014).

Obama's Clean Power Plan has been paramount in moving towards environmental talks on the international level. It has lead to a historic collaboration between the US and China, global's two top polluters. In the 2014 agreement the two countries agreed to dramatic reduction in their greenhouse gas emissions. This agreement in turn paved the way for the 2015 Paris Agreement.

With the words "America is now a global leader when it comes to taking serious action to fight climate change. Frankly approving this project would have undercut that global leadership" (Office of the Press Secretary , 2015, Statement by the President) Obama rejected the construction of the 1,179-

mile Keystone XL pipeline on November 6, 2015. The pipeline that would run from Canada to the Texas Coast had become a symbol of the debate over climate change and fossil fuels. Supporters of the TransCanada proposal focus on the fact that the project was promised to create 9,000 new jobs. Obama, however, argued that the economic boost would not weigh up against the danger of an oil spill and the commitment to curb down the use of fossil fuels (Office of the Press Secretary, 2015).

The Obama administration played an important role in advancing international climate negotiations. In cooperation with the BASIC countries (China, India, South Africa and Brazil) the US drafted the Copenhagen Accord in 2009. In the accord 180 countries pledged their support to reduce greenhouse gases. The accord is similar to the Kyoto protocol but goes beyond its scope and emphasizes that we need "strong political will to urgently combat climate change in accordance with the principle of common but differentiated responsibilities and respective capabilities" (UNFCC, 2010).

The Paris Agreement of 2015 was also a result of Obama's efforts toward an international response to climate change. The agreement which 190 countries entered into is historic in that it includes both developed as well as developing nations that voice their commitment to address the issue of carbon emissions. Another international initiative was the Montreal protocol. With the Montreal protocol, the Obama administration succeeded in negotiating to phase down HFCs, potent greenhouse gases to protect the ozone layer (EPA, 2016).

To stimulate businesses to turn to a more environmentally friendly approach, the Obama administration initiated the American Business Act on Climate Pledge. The 81 companies across the American economy that have signed the agreement did so to voice their ongoing commitment to action on climate change and the strong outcome of the Paris climate negotiations. The participating companies have operations in all 50 states, employ over 9 million people, represent more than $3 trillion in annual revenue, and have a combined market capitalization of over $5 trillion (US office of the Press Secretary, 2015, Fact Sheet).

Altogether, the Obama administration has taken significant action towards a sustainable future. The Energy Information Administration (EIA) released its research note on how greenhouse-gas emission from the energy sector changed during Obama's presidency. In 2016, Obama's final year in office, carbon emissions for energy related activities fell 1.7%. Carbon emissions form the power sector fell by nearly five percent (EIA, 2016). When Obama took office in 2009, the US had only 1.2 gigawatts (GW) of solar capacity and 25 GW of wind capacity installed. Since then, there is nearly three times as much wind power, and solar power has increased by 2500% to 31GW (Sargent, 2017).

1.3 The Trump administration

On the first day of Donald Trump's presidency, the White House announced that Obama's Climate Action Plan would be eliminated. The announcement stated that the Obama administration's climate plans were 'harmful and unnecessary'(The White House, 2017, President Trump takes Action). In March 2017, Trump signed an executive order to officially nullify Obama's Clean Power Plan in an effort, it said of reviving the coal industry (The White House, 2017, Executive Order). The regulations the Obama administration implemented were aimed at cutting dependence on nonrenewable energy while taking steps to ensure a more environmentally safe world. Instead, Trump has declared to pursue an "energy dominant" strategy that promotes the use of coal, gas and oil and has implemented drastic budget cuts for science and the environmental policies.

When nominating members of his cabinet, Trump appointed Scott Pruitt as administrator of the EPA. On February 17, 2017, US Senate confirmed the appointment meaning Pruitt would lead the agency he had been frequently suing for about six years as Oklahoma's attorney general (Dennis, 2017). Considering his new position as protector of the environment it is noteworthy that as attorney general Pruitt led a 27 state lawsuit against the Clean Power Plan. This controversial appointment is not the only one in de Trump cabinet. President Trump appointed ExxonMobil CEO Rex Tillerson as secretary of state and named Rick Perry, former Governor of Texas, secretary of the Energy Department, an agency he once said he wanted to eliminate (Foran, 2016).

During his presidency, Obama had fought for 7 years to prevent the Keystone XL pipeline from being realised. Obama's argument at the time was that the project "would not serve the interest of the United States" (Office of the Press Secretary, 2015, Statement by the President). His main concern was the impact the fossil fuels would have on the environment claiming they would not outweigh the economic benefits. However, on March 24, 2017, the State Department under Trump granted its permission for the construction of the pipeline. The pipeline could have drastic consequences for animals, the environment and contamination of the drinking water in the nearby areas (Brady, 2017).

On March 28, 2017, President Trump signed an executive order on promoting energy independence and economic growth. The result of the order is to undo much of the work on climate change enacted by the Obama administration. The order aims to lessen the future costs of carbon emissions, reverse tracking of the federal government's carbon emissions, abolish the 2016 moratorium on coal leases on federal lands, and waive Obama's executive orders and memoranda aimed at helping the US prepare for the consequences of climate change (The White House, 2017, Executive Order). The order is the start of Trump's efforts to dismantle Obama-era's Clean Power Plan.

The Trump administration drastically altered the energy agenda, launching a 'Back-to-Basics' plan. This was announced by EPA administrator Scott Pruitt while he was visiting the Harvey Mine in Sycamore, Pa. with the words: "What better way to launch EPA's Back-to-Basics agenda than visiting the hard-working coal miners who help power America. The coal industry was nearly devastated by years of regulatory overreach but with new direction from President Trump, we are helping to turn things around for these miners and for many other hard working Americans" (EPA, 2017). The hard years Obama had fought for minimizing the use of coal and divert efforts to strengthen the green energy sector are quickly undone with the 'Back-to-Basics' plan. It is clear that Trump's efforts to protect the environment are mainly focused on economic growth and the creation of jobs, preferably in the coal industry.

In May 2017, the EPA dismissed several scientists who were part of the Board of Scientific Counselors, an 18 member advisory board that oversees the research of EPA scientists. An EPA spokesperson clarified that the dismissal allowed a more diverse pool of members, including industry representatives (Davenport, 2017). An example of such a representative is Albert Kelly, a former banker and until recently senior adviser at the EPA. Kelly has previously been fined for financial malfeasance and has no experience with environmental policy. Besides the dismissal of several scientists, about 700 EPA employees have been dismissed or resigned (Steinbuch, 2017). The result is that the agency will no longer be under the supervision of qualified scientists and experts but rather by industry representatives, hand-picked by the Trump administration.

The 2018 budget, titled "A New Foundation for American Greatness", calls for massive cuts in scientific research and multiple environmental programs aimed at protecting air and water quality (Department of the Interior, 2017). According to an analysis by the World Resource Institute, the EPA is the biggest victim of the proposal. The agency will face a cut of 31%, meaning a spending reduction of $2.7 billion and the loss of 3,2000 jobs (Thwaites, 2018).The proposed budget eliminates major programs to restore the Great Lakes, Chesapeake Bay, and Puget Sound. It ends the EPA's lead-risk reduction and radon detection programs and cuts funding for the Superfund cleanup program (Department of the Interior, 2017).

The action that aroused the most international attention was Trump's declaration to pull the US out of the Paris Climate Agreement. The Paris Agreement was the result of an international climate change proposal, for the most instigated by the US in 2015, in which 194 countries spoke out their promise to curb greenhouse gas emissions. Trump's announcement to step out of the climate deal was just days following the G7 Summit in Italy during which 6 member countries reaffirmed their commitment to the 2015 climate pact.

In October 2017, EPA administrator Scott Pruitt declared in a speech in Hazard, Ky, that he will sign a proposal that would eliminate the Clean Power Plan (Friedman, 2017). The Clean Power Plan was implemented in 2015 with the aim to curb the 2005 power sector carbon emissions by 32% by 2030. At the time companies and 27 states, including Pruitt as general attorney of Oklahoma, sued the EPA for its plan.

In December 2017, President Trump has announced that he has removed global warming from the list of US national security threats (The White House, 2017, National Security). The administration's national security policy reads: "US leadership is indispensable to countering an antigrowth energy agenda that is detrimental to US economic and energy security interests. Given future global energy demand, much of the developing world will require fossil fuels, as well as other forms of energy, to power their economies and lift their people out of poverty" (The White House, 2017, NS). With the introduction of the' energy dominance' strategy as foreign policy, Trump wants to situate the US as leading fossil fuel exporter (Grandoni, 2017). The Obama administration described climate change as "an urgent and growing threat to our national security" (NSS, 2015), referring to the effects climate change has on natural disasters and food and water conflicts. The Trump administration in turn, only sees climate change in the context of US energy policy (The White House, 2017, NS) and has even spoken out its doubts on the existence of climate change.

In January 2018, the nonprofit Environmental Data and Governance Initiative (EDGI) published a report which revealed that US government websites have been altered in the first year of Trump's presidency to eliminate the mention of climate change and global warming (EDGI, 2018). EDGI has monitored thousands of government websites since President Trump assumed office. The group noticed that apart from certain web pages being taken down completely, several pages have changed the word "climate change" by vaguer words such as "sustainability" or "resilience" (EDGI, 2018). Trump's actions have not only limited the access to reliable climate research from the public, also policymakers have been hindered in their access to data necessary to make science driven environmental management decisions (EDGI, 2018).

On January 25, 2018, the Trump EPA announced in a brief legal memo that it has abandoned the Clinton EPA policy "once in, always in" (OIAI) (EPA, 2018, Reclassification of Major Sources). The 1995 EPA policy was aimed to lock in reductions of hazardous air pollution from industrial sources under section 112 of the Clean Air Act (EPA). The consequence of eliminating the OIAI can lead to an increase of public health problems due to the increase in exposure to hazardous pollution. The former environmental justice head at EPA said in an interview on the matter: "They're really going to be killing people … You're going to have all types of public health problems" (Funes, 2018). Clean air director at the Natural Resources Defense Council (NRDC), John Walke, states:

"This is among the most dangerous actions that the Trump EPA has taken yet against public health … NRDC will fight this terrible decision to unleash toxic pollutants with every available tool" (NRDC, 2018).

In its Fiscal Year 2019 budget the Trump administration has announced radical cut back to US programs designed to study and mitigate the effects of climate change and research on renewable energy (Office of Management and Budget, 2018). The 2019 EPA budget reveals that the agency will be waiving its climate-change research program, several voluntary emissions-reductions programs, and Science To Achieve Results (STAR), a graduate fellowship program that funds environmental research (EPA, 2018, FY19). Apart from cuts in research the EPA will make cuts in environmental services. The budget of the Human Health Risk Assessment program, for instance, will be cut by nearly 40% (EPA, 2018, FY19). Besides the EPA, the White House plans to reject the Global Climate Change Initiative which received a fund of $160 million in 2017 (Office of Management and Budget, 2018). The main purpose of the initiative is to aid developing countries endure the impacts of climate change. Simultaneously, the FY2019 budget proposes an increase in spending on fossil fuels (Office of Management and Budget, 2018). The Department of Energy's budget requests an extra $281 million on fossil fuel research and development (Department of Energy, 2018).

In keeping his campaign promise to support the coal industry and calling into question US support for an international deal to fight global warming, Trump signed an order to undo Obama-era climate change regulations on March 28, 2017. His "Energy Independence" order is aimed at undoing Obama's Clean Power Plan that requires states to curb power plant emissions, one of the main actions taken by the US to meet its promise under the Paris agreement. Trump signed the order with the words: "I am taking historic steps to lift restrictions on American energy, to reverse government intrusion and to cancel job-killing regulations" (Trump, 2017).

Analyzing different studies by Climate Advisers (2018), Climate Interactive, (Johnston, 2017), and the Rhodium Group (Larsen et al., 2017) the effect of the changes made by the Trump administration can be determined. The studies suggest that under the Trump administration, US emissions in 2025 will range from 5.6 to 6.8 gigaton (Gt) carbon dioxide equivalent (CO2e). They suggest that under Obama's policies emission would have ranged from approximately 5.0 to 6.6 Gt CO2e. The studies all reveal that the emissions in 2025 will be higher than the US target of 4.8 to 5.9 GtCO2e which the country set as aim when signing the Paris Agreement. The studies show that additional actions need to be taken will the US meet its promise to cut carbon emissions in 2025 as it had set out to do when signing the Paris Agreement. Can states, companies and market forces counteract the Trump effect and close the gap the current EPA policies are creating?

When President Trump declared the US would be withdrawing from the Paris Agreement on June 1, 2017, over 2,500 governors, mayors and businesses joined the 'We Are Still In' campaign (Sampathkumar, 2017), affirming their promise to uphold the climate agreement. In the following chapter I will address the efforts of these groups on the subject of environmental policy and climate change to determine whether they can balance out the effect of the rollbacks made in climate policies made by the Trump administration.

Chapter 2 Environmental Actors

In his book *Environmental Policy and Industrial Innovation,* David Wallace states that countries that are successful in their approach regarding climate change have several characteristics in common. According to Wallace, it is essential to "establish a high quality, honest dialogue that does not compromise the independence of environmental policy-making from industry's special interests" (1995, p. 17). In other words, interaction between the public and private sector is crucial in effective climate change action.

According to Nathan Hultman of the Brookings Institution innovation and mass production have lowered the cost of clean energy technologies over the last twenty years in such a way that it is now capable of competing with fossil fuels (Hultman, 2017). Because of increased global cooperation in combating climate change, the cost of clean energy technologies is expected to fall even more in the coming decade. During a speech in Milan in May 2017, Obama said that the high level of investment in the clean energy sector is a good indicator of this (Gautheret, 2017).

David Livingston of the Carnegie Endowment for International Peace states that in 2016, 55% of global investment in the energy sector was in clean energy (Livingston, 2017). Many US clean energy experts are confident that current economic trends and new technologies will lead to the decrease of coal production and in turn reduce greenhouse gas emissions in the US. They claim that the administration's new energy policy will have minimal effect, considering regulations in the energy sector are increasingly set at the state and private level (Thompson & Bajaj, 2017). Business and investors are gaining more power when it comes to pushing an environmentally-friendly agenda. Stewart Patrick of the Council on Foreign Relations (CFR) says it is unlikely that the US business community will make long-term investments in dirty technologies, given the near-certainty that future US administrations will overturn Trump's policies to pursue a low-carbon future (Patrick, 2017).

Even though states and businesses will not be able to completely compensate for the Trump administration's environmental policy, Mark Muro of the Brookings Institution is positive that it will replace some of it (Crooks, 2017). Steve Cohen of the Earth Institute of the Columbia University agrees with this saying that the leadership of business and other influential people together with the rapid regional mobilization demonstrate that America's power is not restricted to Washington (Cohen, 2017). The targets set by the Paris agreement will probably not be achievable but state and business environmental efforts do have a positive influence on how the US is perceived by the international community so the nation will not have completely lost its leadership role on the subject by the time Trump's successor is in office.

2.1 State government

On the topic of climate change, subnational governments appear to have a different agenda than the federal government. Climate change was already the topic of a heated discussion during the Bush administration when states opposed the centralized authority of the executive branch and advocated an intergovernmental approach (Rabe, 2007, p. 414). States wanted to see a more active role in environmental policy than the federal government was pursuing. Little seems to have changed in this regard when observing the current situation.

When the Trump administration assumed office in 2017 and vowed to reverse Obama-era EPA regulations, many states declared to pursue their own climate strategies (Holden, 2017).

Especially Trump's decision to withdraw the US from the Paris Climate agreement was met with disapproving reactions from elected officials, including big-city mayors, and governors who pledged to pursue climate policies without the federal government. The United States Climate Alliance is formed by twelve US states and more than 300 cities who pledge to work together to achieve the Obama administration's targets under the Paris Agreement and the Clean Power Plan (United States Climate Alliance, 2015).

Trump's stance on climate and energy is not only condemned by Democrats, also Republicans such as the mayor of San Diego, Kevin Faulconer voiced his displeasure saying "San Diego remains as committed as ever to implementing our landmark Climate Action Plan and being a national leader in solar, renewable energy use, water purification and green job creation"(Kevin_Faulconer, 2017). Also Republican John Kasich, governor of Ohio expressed his disappointment in the Trump administration's climate approach saying: "Massachusetts is aggressively working to exceed the goals of the Paris Agreement on the state level, while growing our economy through clean energy innovation and environmental stewardship" (MassGovernor, 2017).

In September 2017, three governors of the United States Climate Alliance, Jerry Brown of California, Andrew Cuomo of New York, and Jay Inslee of Washington presented a new study by the research firm Rhodium Group that revealed that 14 alliance states were on track to meet their contribution of the Obama administration's pledge under the Paris agreement. The progress is for a large part achieved through local mandates regarding renewable energy and electric vehicles (United States Climate Alliance, 2017, p. 4).

Under the Paris Agreement, Obama had pledged that US greenhouse gas emission would fall 26 to 28% below 2005 levels by 2025. Despite the fact that Trump has rejected this promise, the report shows that based on policies that are already in place, the 14 states that are part of the alliance are on

course to ensure that their collective emissions will have fallen 24% to 29% by 2025 (USCA, 2017, p. 6).

Even though these numbers sound promising, it must be noted that the states that are part of the Climate Alliance only represent 36% of the population. This means that is it likely that the US will fall short of the targets set by the Obama administration. A 2017 analysis by the Rhodium Group estimates that with the new federal policies, the US is likely to reach a 15% to 19% reduction in greenhouse gas emissions by 2025 (Larsen et al., 2017, p. 1). Within the climate alliance, most of the efforts to date have focused on cleaning up electric grids. Collectively, emissions from electricity in the alliance states are expected to drop by half between 2005 and 2025, the Rhodium analysis found (Larsen et al., 2017, p. 4).

New technologies, such as higher quality batteries for storage of energy, are essential in the pursuit of shrinking a state's carbon footprint. Historically, the federal government has played a leading role in the research and development process of such technologies. Since Trump has proposed deep cuts in the federal budget for energy research this process is not expected to accelerate significantly over the coming four years. David Hart of the Information Technology and Innovation Foundation says: "I see state action as important, but ultimately, if we're serious about deep decarbonization, the federal government needs to get back involved" (Plumer, 2017).

Besides states being dependent on federal research funding there are other risks involved when states are left to their own devices. According to Christopher Clack, CEO of Vibrant Clean Energy, a software and services company aimed at universal, sustainable, and affordable electricity, the most efficient way to completely steer the US electricity system away from fossil fuels and towards renewable energy is through a national grid (Plumer, 2017). A grid is an interconnected network that distributes electricity from producers to consumers. By tackling the issue of grid storage nationally, it is possible to balance supply of electricity of wind and solar regions in the face of weather fluctuations. For this complex structure to be realized, the support of the federal government is required.

However, on a smaller scale states do have the capacity to affect change. William Buzbee, professor at Georgetown University states that many of the reductions in greenhouse gas emissions and clean energy innovations are the result of state initiatives. The federal government may have rolled back its environmental policies, it is very difficult for the government to prevent state governments from pursuing their individual climate and environmental agenda (Buzbee, 2016).

Former Mayor of New York City Michael Bloomberg who is currently a UN special envoy for cities and climate change, announced in early June 2017 that American states, cities and business

would work to meet the USA's targets under the Paris Agreement without the support of Washington (Crooks, 2017). Bloomberg has proposed a "parallel" pledge with which the US remains a member of the Paris Agreement, however, headed by business and states instead of the federal government (Tabuchi & Fountain, 2017). The pledge would officially indicate that together with the shift from the Obama to the Trump administration, the leadership in the fight against climate change has shifted from federal to lower levels of government, academia and industry.

Bloomberg has founded a charitable organization named Bloomberg Philanthropies which supports the environment, public health, the arts, government innovation and education through funding and advocacy. After Trump's declaration to exit the Paris Agreement, the organization declared it was prepared to donate $14 million over a two year time period (Wattles, 2017). This would exactly cover the amount the US was required to invest under the original Paris Agreement.

Together with California Governor Jerry Brown, Bloomberg started the initiative 'America's Pledge on climate change'. The pledge, also referred to as the "parallel" pledge, compiles and assesses the actions of states, cities and corporations in the US in order to curb their greenhouse gas emissions in line with the goals of the Paris Agreement. This collective action from leaders from all sectors in US society may not completely substitute for the rollback of environmental policies by the federal government. However, the pledge will have an effect on how the US is perceived by other nations on the subject of climate change. Some researchers say the collaborative efforts of the states, business and investors will trigger a "bottom up" approach to clean energy economy (Hart et al., 2017).

According to David Hart, Chad Smith and Mark Mura of the Brookings Institution, the commitment of individual US states and cities is the most important component of the US contribution to global climate action (Hart et al., 2017). Even though national governments are the legal parties to the Paris Agreement, subnational governments are also powerful stakeholders that can directly contribute to reaching the agreement's aims. Like nations, states and local governments can independently set emission reduction targets. The portal Non-State Actor Zone for Climate Action (NAZCA) is a platform on which stakeholders are made aware of such pledges by registering with the international community. Over 6,000 commitments by subnational governments from around the world have been registered on the NAZCA portal (NAZCA, 2018).

Initiatives that have the same structure and aim are the Compact of States and Regions (The Climate Group, 2017) and the Global Covenant of Mayors for Climate and Energy (GCMCE, 2018). Like America's Pledge, these initiatives set standards for subnational governments that remain committed to the Paris Agreement. According to the US Conference of Mayors over 1,000 US cities have adopted greenhouse gas emission reduction targets (US Conference of Mayors, 2018). The

Database of State Incentives at North Carolina State University reveals that 29 states and the District of Columbia have adopted requirements for the use of renewable energy resources for electricity generation (DSIRE, 2018). In fact, a report by the Brookings institute reveals that in many US regions the clean energy industry is becoming a crucial component of economic development (Muro et al., 2011). The job creation that the clean energy sector provides is key in this. Currently 2.7 million Americans are employed in the clean economy which reaches across a wide selection of industries ranging from manufacturing to public services (Muro et al., 2011). Especially for the middle class the clean economy creates more better paying jobs, especially in the metropolitan regions. The report notes that median wages in the clean economy are 13% higher than in other sectors.

The question is: how much can states effectively do about climate change without the involvement of the federal government? In theory, state governments have many ways in which they can cut greenhouse gas emissions without federal aid. States can require electric utilities to increasingly use renewable power, adjust building codes, enforce tougher efficiency standards on appliances and shape its transportation infrastructure. In an effort to move the market away from petrol, California, for example, has adopted new standards that require car manufacturers to sell more electric vehicles (California Air Resources Board, 2017, ZEV). In response to Trump's hard stance regarding climate change Jerry Brown, the Governor of California says: "We've got the scientists, we've got the lawyers, and we're ready to fight" (Ferner, 2016). Referring to Trump's threat to cut funding, Brown says: "If Trump turns off the satellites, California will launch its own damn satellite!"

When it comes to environmental standards and pioneer in green technology, no state matches California. In 1947, more than two decades before US Congress passed the Clean Air Act, California already enacted air pollution legislation. California's Air Resources Board has a lot of influence and has used its authority to stimulate the use of hybrid and electric cars (Leslie, 2017). Besides this, the state upholds the nation's strongest and most innovative building code, the California Green Building Standards Code (CALGreen Code). The code concerning sustainable construction is aimed at improving public health while reducing the negative impact of construction on the environment (DGS, 2017). Buildings constructed under the 2010 code have an energy efficiency of about 75% compared to pre-code buildings (Levinson, 2016, p. 2871).

California is the only US state that has a cap-and-trade program in place. With this market-place approach of trading emissions, the California government provides economic incentives in return for meeting pollution reduction targets. In 2016, the program earned $2.5 billion in revenue from emissions permits (CCI, 2016, p. 44). These proceeds are invested in California Climate Investments programs that are aimed at reducing greenhouse gas emissions.

The state also benefits from the thriving Silicon Valley technology industry. As a result, California is leading the way in developing inventions for electric and autonomous cars and "smart" electricity grid (Silicon Valley Leadership Group, 2018). Because of Silicon Valley's sustainability economy, California is still worldwide perceived as a valuable contributor in advancing sustainable technology and helping to create a renewable-based economy. Jules Kortenhorst, CEO of the Rocky Mountain Institute stated: "California plays an incredibly important role as pathfinder that plots out the course for the energy transition, climate change, and the environment in general," (as cited in Leslie, 2017).

In January 2017, California legislature hired Eric Holder, Obama's attorney general from 2009 to 2015, to represent the state in expected legal battles against the Trump administration. With this move California seems to be taking up the role Texas had during the Obama administration. During this time, Texas sued the federal government over 48 times, most of these suits were concerned with climate change and quality standards regarding air and water (Leslie, 2017).

California is set on pursuing its climate agenda despite the Trump administration. However, there are ways in which the federal government could hurt the state's initiatives, especially regarding funding. On several occasions, Trump has threatened the state with budget cuts as a result of California's stance on immigrant deportation. "If we have to, we'll defund" Trump told Fox News interviewer Bill O'Reilly. "We give tremendous amounts of money to California. California in many ways is out of control" (Taylor, 2017). The cutting of funding would pose a considerable threat to California's economy, which could lead to a budget crisis that would obstruct California's ambitious energy projects.

Fierce budget cuts for national laboratories, universities, and private companies could have a significant effect on California's renewable energy programs. The same goes for startup companies that are dependent on loan programs. Such green technology and innovation companies have a small chance of getting off the ground without aid from federal programs. Tesla, for instance, grew out of the loan guarantee program off the Energy Department.

Finally, the administration could force states to abandon its environmental plans by reducing or eliminating the federal tax credit system for renewable energy. However, this would likely be met with a lot of protest, also from Republican states that benefit from the credit system. Iowa, for example, is the state which invested most in wind energy. About one-third of the state's electricity is produced with the aid of the wind. Republican Senator Chuck Grassley of Iowa said that if Trump tries to cut the wind energy tax credit, "He'll have to do it over my dead body"(Lovelace, 2016)

It is expected that California and other alliance states can continue to pursue their environmental and energy policies despite the Trump administration's loud noise. This is partly because public utilities, which are at the heart of the transition towards sustainable energy, are traditionally under state and not federal control (Brennan, 2003, p. 4). Ralph Cavanagh, co-director of the Natural Resource Defence Council's energy program, clarifies that, "Renewables, energy efficiency, and the most important climate policy solutions going forward in the United States today are under the authority of state officials. The capital investment for clean energy isn't coming from the federal government - it's coming from the budgets of publicly owned and investor-owned utilities" (Leslie, 2017).

California will carry on its efforts to reduce greenhouse gas emissions. The 2006 Global Warming Solutions Act established regulations and market structures designed to lower California's emissions to 1990 levels by 2020 (California Air Resources Board, 2017, Bill 32 Overview). The state is not only on pace to meet this target, in 2016, the state's legislature approved an even more ambitious goal of reducing emissions by an additional 40% below 1990 levels by 2030 (CARB, 2017). Under the Trump administration, fossil fuel may be forced back in fashion, however, as climate change intensifies the consumers desire to use fossil fuel will decline, steadily dropping the cost of renewable energy which will gradually supplant fossil fuels. In that case, California will be in prime position to reap the benefits of its policies.

Initiatives by state governments are an important contribution in tackling climate change. However, the standards and regulations set by states are limited to state borders. Nevertheless state actions on climate change could influence proactive business strategies that have a wider reach.

2.2 Business

Over the last few months, US businesses have voiced their support for the US remaining in the Paris agreement. Some of the most vocal supporters of a stronger US climate change policy include major corporations such as Apple, Unilever, Ford, Walmart, Disney, Facebook, Google, Microsoft and Goldman Sachs. According to David Livingston of the Carnegie Endowment for International Peace program, American CEOs are more interested in pragmatism than ideology: "they welcome transparent, long-lived, and consistent policy action and do not appreciate sudden changes of direction" (Livingston, 2017).

Business has become a key influencer of global policy on climate change. Immediately following Trump's announcement to withdraw the US from the Paris Agreement, several large US based companies declared their support for the international pact and openly voiced their disappointment

their administration's decision. Just a month after Trump's announcement 57 companies, including 35 Fortune 500 companies pledged to commit to science-based targets that run in line with the goal of the Paris Agreement to keep the global temperature rise below 2 degrees Celsius (World Resources Institute, 2017). Despite Trump's efforts to roll back climate protection a report from America's Pledge reveals that US businesses affirmed their commitment to reduce emissions and invest in a clean energy economy (America's Pledge, 2018). The "We Are Still In" group currently consists of nearly half of America's largest companies who are committed to climate and clean energy targets. The companies are responding to climate change through a broad array of strategies spanning from a commitment to 100% renewable energy, to adopting science-based targets and setting green investment goals.

The textile production is one of the most polluting industries. It produces 1.2 billion tonnes of CO2e a year which is more than the emissions of international flights and maritime transport combined (Ellen Macarthur Foundation, 2017). The World Resources Institute estimated that the apparel sector is responsible for about five percent of global greenhouse gas emissions (Bauck, 2017). The amount of pollution depends on the type of material that is produced. Cotton is one of the textiles that requires the most water for its production. It requires 2,700 liters of water to produce one cotton t-shirt (WWF, 2013). That is the equivalent of the water consumption of a person for two and a half years. While the production of synthetic materials requires less water, the production of textiles such as polyester emit higher greenhouse gas emissions. In 2015, the textile production of polyester resulted in over 706 billion kg of CO2e (Kirchain et al. 2015). It is clear that the apparel sector needs to adjust its business model if it wants to remain viable in tomorrow's market and many apparel companies are taking action to contribute to a more sustainable production process.

How these companies translate these targets into real change I will analyze in this section. I will do this by taking the company Nike as an example. Nike is not only known for their trademark signature "Just do it", the company is also known for its efforts to counteract the effects of climate change through several projects. Nike is praised to be one of the top climate-friendly companies (Zabarenko, 2007) because of its numerous initiatives, including investment programs, research in materials and recycling. Nike is also one of the companies that signed the "We Are Still In" pledge in 2017. "We are deeply disappointed by the recent shift in climate policy. Nike believes that climate change is a serious global threat and that the world will need to radically redesign industrial systems and economies in order to enable a low-carbon growth economy," stated a Nike spokesperson. "We will continue to honor the core commitments of the American Business Act on Climate Change Pledge, including reaching 100% renewable energy in all Nike owned or operated facilities around the world by 2025, participating in the US Department of Energy's Better Buildings Challenge and

advancing materials innovation globally" (Chan, 2017). The company announced that it hopes to completely reshape its manufacturing process to be a "closed loop," eliminating all waste products (Kaufan, 2016).

Because the public eye is increasingly focused on the importance of environmental protection, the move to take a leading role in helping the industry towards a cleaner future is increasing its popularity among its consumers. Because of its significant market share and brand power, Nike has considerable power in affecting consumer behaviour.

The transition a company like Nike makes to reach its climate targets happen gradually in stages. First, the company explores ways of improving their internal operations. Following this, the company will look at efforts to reduce value chain emissions. Because a company like Nike works together with many smaller production companies during the production process, the actions Nike will take regarding cutting back emissions will have a positive ripple effect across a wide circle of companies.

I chose Nike because the company is an example of a business that is making conscious environmental decisions on four different levels: on the level of internal operations, production, value chain and investments.

Nike recognizes that climate change is posing a great challenge to businesses. Especially a business that is dependent on resources and stable energy supply for their production. Because of this Nike is not only actively moving toward 100% renewable energy but is also investing in science and technology aimed at recycling and new materials.

The first stage of addressing the internal operations means that companies focus on energy efficiency and renewable energy in their strategies. Nike is part of the RE100 collaboration, an initiative by the Climate Group and CDP to bring together influential businesses that are committed to using 100% renewable energy by 2025. The aim of the collaboration is to accelerate the transformation of the global energy market and aid the transition toward a net-zero economy (the Climate Group, 2018).

By making changes in the production process, Nike can affect change not only in its own factories but across the entire apparel industry. For the manufacturing of its footwear, Nike increasingly uses synthetic materials as these are less dependent on weather conditions compared to cotton. Besides this, the company is the largest obtainer of organic cotton, of which the production process is environmentally friendly. With regards to their use of leather, Nike has stopped working with leather from cattle raised in the Amazon rainforest. According to a Greenpeace study, the cattle industry in the Amazon rainforest causes 80% of the deforestation of the region (Salge, 2015). With regards to its aim to minimize water and electricity usage, Nike has entered into a partnership with a

Dutch industrial equipment firm, DyeCoo. With the collaboration, Nike will introduce a new production process in its factories which will reduce energy use by 60% and eliminate the need for water during the dyeing process of fabric (Korosec, 2013).

Apart from carefully selecting its natural resources, Nike is a large investor in research towards the development of alternative materials. In a collaboration with NASA, USAID and MIT Climate CoLab, Nike is developing innovative materials that are produced with minimal environmental impact (Nike, 2015). Research done by MIT's Materials System Laboratory on the global impact of materials on climate change reveals that creating and processing materials are significant contributors to global greenhouse gas emissions. The production of materials by the apparel industry is expected to consume nearly 1 billion kWh of electricity every year. " Through this collaboration with Nike, the MIT Climate CoLab can help kick-start the conversation around materials by galvanizing our global community to start to tackle this immense challenge," says Professor Malone, Principal Investigator and Founder of the MIT Climate CoLab project. "The Climate CoLab is harnessing the power of collective thinking to solve some of the world's toughest challenges and develop solutions to drive a new shared understanding that, ultimately, can enable transformative change" (Nike, 2015). Collaborations like these do not only benefit Nike's environmental targets, it has a positive effect on the apparel production sector in general. The company has designed a metric called the Nike Materials Sustainability Index with which it upholds both its own as well as its vendors to ensure sustainability practices across the supply chain (Kennedy, 2012).

Besides its focus on the innovation of new materials, Nike is a big supporter of recycling. In May 2018, the company revealed that 75% of all their products contained recycled materials (Nike, 2018). The materials are waste products of the manufacturing process. The company introduced a special program for the recycling of materials named Nike Grind. The program reuses manufacturing scraps, plastic bottles and used shoes, collected through its Reuse-A-Shoe program. These materials are processed so they can be used as material to produce new shoes (Kaufman, 2016).

Nike launched line of sustainable shoes named Nike Considered. The shoeline is designed with the objective to primarily use materials that can be found within 200 miles of the Nike factory. This measure has significant effects on the environment with regards to transportation emissions. The 16/17 business report shows that the line also reduces solvent use by over 80% in comparison with other Nike products (Nike, 2017). The leather used for the shoeline is from a tannery that recycles wastewater to ensure toxins are kept out of the environment and the products are colored with the use of vegetable-based dyes. Besides this, the products of the Nike Considered line consists of hemp and polyester (Andersen, 2015). Nike Considered is one of the companies key production efforts to reduce waste and eliminate the use of chemical substances.

Besides the change Nike is creating within its own business, the company's influence reaches far beyond its own perimeter. Through its process of moving towards a more conscious and sustainable production method, the company is influencing other apparel businesses and consumers.

Nike's environmental efforts have a significant effect for environmental protection along the value chain. Rick Ridgeway, chair of the Sustainable Apparel Coalition (SAC) commented on Nike's environmental actions: "The largest and most influential corporations in apparel and footwear together with leading environmental and social organizations have voluntarily engaged in this collective effort because they recognize the opportunity to get in front of the growing need to measure and manage the environmental and social impacts of their products"(as cited in Wang, 2012).

A way through which businesses can share their knowledge to further their efforts towards a more environmentally friendly production process is the new standard of environmental performance for the global apparel and footwear industry. SAC aims to "reduce the environmental and social impact of apparel and footwear products sold around the world" (Radhakrishnan, 2015).

2.3 Investors

Not only in the business but also in the finance sector climate change has moved up on the agenda. "Green finance" has moved from the margins to the mainstream of global markets. A report by Bloomberg New Energy Finance revealed that the green global energy sector will receive almost $5.1 trillion in investments by 2030 (Bloomberg, 2015). Given the anticipated spending spree in the green energy sector, investor who choose to "go green" could see their holdings grow along with the demand for energy. A report by Bloomberg New Energy Finance revealed that the green global energy sector will receive almost $5.1 trillion in investments by 2030 (Bloomberg, 2015). The study also showed that by that year, renewable energy sources will account for over 60% of the 5,579 gigawatts of new generation capacity and 65% of the $7.7 trillion in power investment. According to the study, by 2030, solar and wind capacity will have risen from 3% to 16% (IEA, 2017).

"We need to adapt to the climate change that is already affecting the planet, and develop new tools that will keep the problem from getting worse" (Gates, 2017). The federal government, however, is moving in the opposite direction which brings forth the question: can we see Bill Gates, and like-minded billionaires, as the alternative symbol of leadership?

Historically, the federal government took upon itself a leading role in the research and development of sustainable technology. However, governments are not in the position to make high risk investments as funds for the energy sector are limited, especially under Trump. For this reason, people who are willing and able to take the risk to fund breakthrough energy companies are required

to take a leading role to ensure we do not have to give up our energy usage while preserving the environment.

On the topic of climate change, Bill Gates stated: “We need an energy miracle … a massive amount of research into thousands of new ideas - even ones that might sound a little crazy - if we want to get to zero emissions by the end of this century … Within the next 15 years … I expect the world will discover a clean energy breakthrough that will save our planet and power our world” (Gates, 2016). In 2015 Bill Gates founded the Breakthrough Energy Coalition, a group of high net investors who invest their private capital in initiatives that are aimed at cultivating breakthroughs in the green energy sector. The group consists of more than twenty tech and finance billionaires with a combined capital of $170 billion who are willing to invest in companies that are working on zero-carbon emission energy solutions that are scalable and marketable. The projects the coalition invests in are focused on clean energy and zero-emission energy production. Bill Gates called the Breakthrough Energy Coalition the private sector interpretation of Mission Innovation, the 2015 initiative in which twenty-two member countries and the European Commission committed to accelerate clean energy innovation between 2015 and 2020 to make clean energy globally accessible and affordable. The United States was a member of the mission under the Obama administration, however, it is likely that the Trump administration will undo the commitment.

In 2016, the fund named Breakthrough Energy Ventures grew out of the coalition, the members of which committed to yearly investing at least $1 billion to the research and development of new energy technologies over the following ten years (Delaney, 2016). Among the members of the group are former Mayor of New York, Michael Bloomberg, business magnate Richard Branson, and Amazon founder Jeff Bezos. The University of California is the only institutional investor and has partnered with the group to provide research facilities and resources. The goal of the group of investors is to generate a financial return on the investments which are expected to have significant impact in reducing greenhouse gas emissions. Besides their influence through the investment of large capital, the members are influential because of their prominent position in the business world which gives them a powerful role as many companies follow their lead. Through their influence the group promotes clean tech innovation.

With the access to large capital the members of Breakthrough Energy Ventures are able to go where other investors are afraid to take a chance. The focus of the group is on companies with big ideas that have the potential to reduce global greenhouse gas emissions. Projects like these often go underfunded because breakthrough ideas take decades to perfect and scale. Only investors like the members of the coalition have the funds to invest in such long term projects (Mui, 2017). The group

is investing their money in long term projects because as they say “it is critical not just to respond to today’s circumstances but also anticipate tomorrow’s needs” (Breakthrough Energy Ventures, 2018).

The investments the group is focusing on are high risks which, if successful will have a high impact on the future of energy security and the cutting of carbon emissions. Breakthrough Energy Ventures are targeting long term projects in the development of grid-scale storage, liquid fuels, mini grids, alternative building materials and geothermal power. With initiatives such as the coalition and Breakthrough Energy Ventures, Gates furthered his pursuing an ambition regarding the transition towards clean energy, and has moved the task of funding research projects from public to the private sector.

The comfortable lifestyles we lead depend on a huge amount of energy. The aim of Breakthrough Energy Coalition is to ensure that everyone is able to enjoy a good standard of living, “including basic electricity, healthy food, comfortable buildings and convenient transportation, without contributing to climate change” (BEV, 2018). To achieve this goal of affordable clean energy, the group combines scientific research with risk-tolerant capital. With their long term investments technology and energy companies have the resources to accelerate the development of market-oriented energy solutions.

Bill Gates announced the founding of the coalition in 2015 during the Paris summit. Because of the global attention for the historic moment of climate change talks, the announcement of the initiative was met with great support and media attention. We are all more than aware of Trump’s actions regarding the Paris agreement. How the transition from the Obama to the Trump administration has affected the coalition is unclear. In an interview with Recode, Bill Gates has said that energy breakthroughs are still possible, even under President Trump. “No matter what happens to the energy R&D budget, we are going to go out and find ideas that are out there” (Fried, 2016) he says.

It should be noted that none of Bill Gates’ ‘energy miracles’ are miraculous enough to solve climate change by itself. The efforts of Breakthrough Energy Ventures are merely a small percentage of finding solutions to the dangers of climate change. However, the efforts of the world’s richest man stand in sharp contrast to the actions of the world’s most powerful man (Mui, 2017). This could hint at a shift in leadership regarding actions towards climate change from the public to the private sector. Of course initiatives such as Breakthrough Energy Ventures will not be able to solve the issues regarding climate change on their own, however, such groups are signaling to the market that investments in climate change innovation will continue and likely increase regardless of who is in office.

2.4 Analysis

Trump might be fighting for the jobs of US citizens in traditional sectors such as coal and steel industries, the fact is that this might have a small effect in the short run. The number of jobs that can be created in new sectors such as in the renewable energy sector will in the long run be far more numerous.

In some sectors market parties will have no difficulty in delivering their contribution. A good example of this is Nike: its customers value the perceived quality of the products in terms of the selection of materials with good sustainability characteristics, ethical ways of dealing with factory workers, environmental policies etc. Marketing campaigns put substantial emphasis on sustainability, so it is clear that consumers are valuing these aspects.

In other sectors it's less straightforward to convince the customer of the value of sustainable products or services. A good example is the cost price of airline tickets. Someone might enjoy the 'environment-friendly' statement that popular products from, for example, Nike express. At the same time not that many people openly express their concern with the extremely low cost price of airline tickets, although most people who buy these tickets know very well that costs of airline flights are not taking into consideration a full and realistic compensation of the amount of CO2 produced on the way.

An important aspect of the energy transition is the energy provision security. The character of wind and solar power means that the supply of energy is not constant and not exactly predictable. For solar the supply varies considerably over seasons. In terms of supply security this means that storage of large quantities of energy needs to be provided in combination with a more volatile energy generation based on fossil fuels. To achieve this, coordination by the government is required together with structural investments in the public infrastructure such as in the electrical power grid.

What is the role of companies and investors in the energy transition? The same as usual: creating value for their stakeholders: the customers, shareholders and society via taxes. In the 'fossil age' the companies merely 'pumped' the energy sources. In order to do this, companies had to deal with governments of the countries who 'owned' the resources. Throughout history, there have been many wars between parties in order to claim ownership of those resources. The US as well has a long history in the Middle East in pursuit of securing oil supply for the US economy. This has resulted in a very high level of economic activity for the fossil energy sector, bringing in considerable funds to the government via taxes. The positive thing of renewable energy is that ownership of resources such as solar and wind cannot be claimed. Renewable energy is a more decentralized form of energy which offers investment opportunities to companies and citizens alike. Tax income for the government is

however greatly reduced in comparison to fossil energy supply, while additional investments in the power grid need to be financed from public funding.

Renewable energy sources can provide the lowest generation costs provided that sufficient scale is achieved. In the coming years fossil fuels will become more expensive because it will become more complex and consequently expensive to mine them. Solar panels, however, are produced in large industrial manufacturing plants. These operations guarantee a continuous cost reduction with growing production scale. Over the last 35 years, solar panels have proven to be 24% more cost effective with each doubling of worldwide production capacity (IEA, 2017).

Greentech companies can earn a lot of money by developing innovative energy systems. In many cases these US companies are based in California where a dynamic technology and investment climate can be found.

The government has a role of guaranteeing a transparent competition between fossil fuels and renewable energy. Currently the 'public cost' of producing CO2 is not being expressed in financial means. Only a broadly supported international CO2 pricing mechanism, negotiated by the governments of leading economic powers, can provide a level playing field between different energy sources and between the various regions in the world.

With respect to public infrastructure, the US has one advantage: the condition of the current electrical power system is not extremely good (ASCE, 2017) which means that this could be a good time to invest in modernization of this system. Investing, however, now in the 'old infrastructure' will make it economically more difficult to modernize in the coming years.

It has proven to be extremely difficult to uphold long-term policies in a democratic system. For this reason, it would be most efficient if the federal government would take on the task of supplying a structure, through infrastructure and open dialogue, in which the government, businesses, and investors can efficiently work together.

Conclusion

Even though the man in the most powerful position in America is pursuing an energy dominant strategy emphasizing the use and production of fossil fuels, businesses and investors remain focused on sustainable development. You can wonder whether the president of the US still is the most powerful position. Today we learn that politics can be a lot of 'Hollywood acting' and very limited real action. The positive conclusion that I can draw is that the president of the US is not extremely dominant given the fact that many different actors are still taking their responsibility, on the other side, the central government certainly has a role to play, specifically in the area of funding research and development and in keeping the public infrastructure in good shape.

Trump's policies are without a doubt delaying the energy transition in the US. The federal government is most probably not earning much additional money in the short term as a result of focus on the fossil energy sector. To compensate for the current delay an aggressive acceleration is needed in the future. The competitive position of the US renewable energy companies is not supported by current federal government policies. Despite this fact, many private companies, such as Nike in this project used as an example, do see chances to pay their contribution as they see the rising interest of their customers in sustainable products.

This means that despite Trump's policy, action against climate change is increasing in the United States. Perhaps not at the rate it would have done if a different administration was in office, but a complete revival of the coal mines will not happen again in this age. It is clear that policies only take us so far, the market takes the development of sustainable energy further.

Where the Obama administration put in place some of the most ambitious climate action policies, even instigating an international approach to tackle climate change, the Trump administration is rolling back nearly every Obama-era policy regarding the environment and green energy.

Actions by the Trump administration such investing to revitalize the coal industry and withdrawing the US from the Paris Agreement were met with global dismay. It was at this point that many American states, businesses and investors pledged to uphold their commitment in furthering climate solutions and cubing their greenhouse gas emissions. Unlike the four year term in which the White House operates, businesses and investors set long term mission statements. It would not be viable for a business to change its direction every four years.

The process of achieving renewable energy sources that are accessible, durable, and affordable takes time. Especially the search for an "energy breakthrough" is a project that will take decades of research, development and marketing. Such long term research traditionally cannot be financed by the

private sector alone; it is the strategic long term collaboration between private and public sector on a topic such as climate change that can create a meaningful impact. It is essential that long-term targets and agendas are set to maximize efficiency. The national government has proven to be too unpredictable to be a leading actor in this. With every four years a new wind in the White House, a consistent approach regarding the future of energy and environmental sustainability is difficult to uphold. One could even state that the central government is an untrustworthy partner and is neglecting its role to protect its citizens from danger.

Companies, whether they are small or multinational enterprises, are responding to their stakeholders' interests. More and more business are realizing that money can be earned by 'acting green'. They cannot afford to ignore environmental impact of their products because their customers are becoming increasingly aware. The actions states, businesses and investors are taking regarding climate change is also of importance when considering the place of the US in the global commitment towards a more sustainable future.

With this research project I have attempted to reveal that the future of sustainable energy is not only dependent on the federal government but rests on a broad array of actors. Actors that are driving innovation in technology, corporate strategy, public engagement and investments.

The eventual power is in the hands of the green consumer who simultaneously happens to have the power to vote for who should run the federal government.

Works Cited

Adger, N., & Jordan, A. (2009). Sustainability: exploring the processes and outcomes of governance. *Governing Sustainability*, *3-31.*

Andersen, M. (2015). *How Nike's Considered Line Changed the Company for Good.* Retrieved from https://solecollector.com/news/2015/04/the-history-of-nike-considered

America's Pledge on Climate Change. (n.d.). Retrieved June 14, 2018 from https://www.americaspledgeonclimate.com

AP. (2013). EPA to propose rule to clean up tailpipe pollution. *CBS News.* Retrieved from www.cbsnews.com/news/epa-to-propose-rule-to-clean-up-tailpipe-pollution/

ASCE. (2017). *America's Infrastructure Report Card.* Retrieved from https://www.infrastructurereportcard.org/

Aurilio, A. (2017). Celebrating President Obama's Environmental Legacy. *Environment America*. Retrieved from environmentamerica.org/news/ame/celebrating-president-obama's-environmental-legacy

Bauck, W. (2017). *The Fashion Industry Emits as Much Greenhouse Gas as All of Russia.* Retrieved from https://fashionista.com/2017/09/fashion-industry-greenhouse-gas-climate-change-sustainability

Berry, M., & Rondelli, D. (1998) Proactive corporate environmental management: A new industrial revolution. *Academy of Management Perspectives*, *12, 2, 38-50.* https://journals.aom.org/doi/abs/10.5465/ame.1998.650515

Bloomberg. (2017). *New Energy Outlook 2017.* Bloomberg New Energy Finance. Retrieved from https://about.bnef.com/new-energy-outlook/

Brady, H. (2017). 4 Key Impacts of the Keystone XL and Dakota Access Pipelines. *National Geographic*. Retrieved from news.nationalgeographic.com/2017/01/impact-keystone-dakota-access-pipeline-environment-global-warming-oil-health/

Breakthrough Energy Ventures. (2018). Retrieved from http://www.b-t.energy/ventures/

Brennan, T. (2003) State and Federal Roles in Facilitating Electricity Competition: Legal and Economic Perspectives. *Resources for the future.* Retrieved from https://sites.hks.harvard.edu/hepg/Papers/Brennan_state.federal.roles.elec.restruc_4-03.pdf

Buzbee, W. (2016) Dismantling Climate Rules Isn't So Easy. *The New York Times.* Retrieved from https://www.nytimes.com/2016/12/08/opinion/dismantling-climate-rules-isnt-so-easy.html

California Air Resources Board (2017) *Zero Emission Vehicle (ZEV) Program*. Retrieved from https://www.arb.ca.gov/msprog/zevprog/zevprog.htm

California Air Resources Board (2017) *Assembly Bill 32 Overview.* Retrieved from https://www.arb.ca.gov/cc/ab32/ab32.htm

California Department of General Services (2017) *CALGreen Code for Schools and Community Colleges.* Retrieved from http://www.dgs.ca.gov/dsa/Programs/progSustainability/greencode.aspx

California Climate Investments (2016) *California Climate Investments Using Cap-and-Trade Auction Proceeds. Retrieved from* https://arb.ca.gov/cc/capandtrade/auctionproceeds/cci_annual_report_2016_final.pdf

Chai, Qimin et al. (2017). The gap report of global climate change mitigation, finance, and governance after the United States declared its withdrawal from the Paris Agreement. *Chinese Journal of Population Resources and Environment.*

Chan, S. (2017). *Nike Issues Statement on Donald Trump's Withdrawal from Paris Climate Deal*. Retrieved from https://www.hollywoodreporter.com/news/nike-issues-statement-donald-trumps-withdrawal-paris-climate-deal-1009765

Climate Action Tracker. (2017). *Country Assessment: USA*. Retrieved from climateactiontracker.org/media/documents/2018/4/CAT_2017-11-06_CountryAssessment_USA_8fXxIrP.pdf

Climate Advisers. (2018) *Impact Overview.* Retrieved from https://www.climateadvisers.com/trumpbacktracker/

Cohen, S. (2017) We'll Always Have Paris: Trump's Impact on the Climate Agreement. *State of the Planet - Columbia University.* Retrieved from http://blogs.ei.columbia.edu/2017/06/05/well-always-have-paris-trumps-impact-on-the-climate-agreement/

Crooks, E. (2017) US states form alliance to meet Paris climate commitments. *Financial Times*. Retrieved from https://www.ft.com/content/27c5bad2-4895-11e7-919a-1e14ce4af89b

Cummis, C., & Akapian, Y. (2017). Major U.S. Businesses Have Pledged to Act on Climate. Here's What That Looks Like. *World Resources Institute.* Retrieved from http://www.wri.org/blog/2017/11/major-us-businesses-have-pledged-act-climate-heres-what-looks

Davenport, C. (2016). Donald Trump Could Put Climate Change on Course for 'Danger Zone'. *The New York Times*. Retrieved from https://www.nytimes.com/2016/11/11/us/politics/donald-trump-climate-change.html

Davenport, C. (2017). EPA Dismisses Members of Major Scientific Review Board. *The New York Times.* Retrieved from www.nytimes.com/2017/05/07/us/politics/epa-dismisses-members-of-major-scientific-review-board.html?_r=0

Delaney, K. (2016). Bill Gates and investors worth $17 billion are launching a fund to fight climate change through energy innovation. *Quartz*. Retrieved from https://qz.com/859860/bill-gates-is-leading-a-new-1-billion-fund-focused-on-combatting-climate-change-through-innovation/

Dennis, B. (2017). Scott Pruitt, longtime adversary of EPA, confirmed to lead the agency. *The Washington Post.* Retrieved from www.washingtonpost.com/news/energy-environment/wp/2017/02/17/scott-pruitt-long-time-adversary-of-epa-confirmed-to-lead-the-agency/?noredirect=on&utm_term=.a87d9c12fed3

Department of Energy. (2018). *FY 2019 Budget Request.* Retrieved from www.energy.gov/sites/prod/files/2018/02/f48/Energy%20Department%20FY%202019%20Budget%20Fact%20Sheet.pdf

Department of the Interior, Office of Management and Budget. (2017). Budget for the Fiscal Year 2018. "America First: A Budget Blueprint to Make America Great Again." Washington, DC: U.S. The White House. Retrieved from https://www.whitehouse.gov/wp-content/uploads/2017/11/2018_blueprint.pdf

Department of the Interior, Office of Management and Budget. (2018). *Efficient, Effective, Accountable, An American Budget*. Fiscal Year 2019. Washington, DC: U.S. The White House. Retrieved from https://www.whitehouse.gov/wp-content/uploads/2018/02/budget-fy2019.pdf

Doppelt, B. (2017) *Leading Change toward Sustainability: A Change-Management Guide for Business, Government and Civil Society.* Abingdon-on-Thames: Routledge.

DSIRE (2018) *Renewable Portfolio Standards.* Retrieved from http://www.dsireusa.org/resources/detailed-summary-maps/

EDGI. (2018). Changing the Digital Climate. *Environmental Data & Governance Initiative*. Retrieved from envirodatagov.org/wp-content/uploads/2018/01/Part-3-Changing-the-Digital-Climate.pdf

EIA. (2016). US energy-related CO2 emissions fell 1.7% in 2016. *US Energy Information Administration.* Retrieved from www.eia.gov/todayinenergy/detail.php?id=30712

Ellen Macarthur Foundation. (2017). *A New Textiles Economy: Redesigning Fashion's Future.* Retrieved from https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Full-Report.pdf

EPA. (1994). *Summary of the Clean Air Act.* www.epa.gov/laws-regulations/summary-clean-air-act

EPA. (2014). Our Clean Power Plan Will Spur Innovation and Strengthen the Economy. *The EPA Blog*. Retrieved from blog.epa.gov/blog/2014/06/our-clean-power-plan-will-spur-innovation-and-strengthen-the-economy/

EPA. (2016). *International Actions - The Montreal Protocol on Substances that Deplete the Ozone Layer.* Retrieved from www.epa.gov/ozone-layer-protection/international-actions-montreal-protocol-substances-deplete-ozone-layer.

EPA. (2017). EPA Launches Back-to-Basics Agenda at Pennsylvania Coal Mine. *EPA News Releases*. Retrieved from www.epa.gov/newsreleases/epa-launches-back-basics-agenda-pennsylvania-coal-mine

EPA. (2018). *Fiscal Year 2019, Justification of Appropriation Estimates for the Committee on Appropriations.* Retrieved from www.epa.gov/sites/production/files/2018-02/documents/fy-2019-congressional-justification-all-tabs.pdf

EPA. (2018). Reclassification of Major Sources as Area Sources Under Section 112 if the Clean Air Act. *Office of Air and Radiation*. Retrieved from www.epa.gov/sites/production/files/2018-01/documents/reclassification_of_major_sources_as_area_sources_under_section_112_of_the_clean_air_act.pdf

Ferner, M. (2016) Jerry Brown Blasts Donald Trump's Proposed Attack on Climate Science:'We're Ready to Fight'. *Huffington post.* Retrieved from

https://www.huffingtonpost.com/entry/jerry-brown-donald-trump-climate-change_us_5851a720e4b0ee009eb52598

Foran, C. (2016). Will Rick Perry Promote Science at the Department of Energy? *The Atlantic*. Retrieved from www.theatlantic.com/politics/archive/2016/12/rick-perry-energy-secretary-trump/510506/

Fried, I. (2016). Bill Gates insists we can make energy breakthroughs, even under President Trump. *Recode.* Retrieved from https://www.recode.net/2016/12/12/13925564/bill-gates-energy-trump

Friedman, L., & Plumer, B. (2017). EPA Announces Repeal of Major Obama-Era Carbon Emission Rule. *The New York Times*. Retrieved from www.nytimes.com/2017/10/09/climate/clean-power-plan.html?smid=tw-nytimes&smtyp=cur

Funes, Y. (2018). The EPA Wants to Regulate Factories Like Your Local Dry Cleaners. *Earther*. Retrieved from earther.com/the-epa-wants-to-regulate-factories-like-your-local-dry-1822461438?utm_medium=sharefromsite&utm_source=Earther_twitter

Gates, B., & Gates, M. (2016) 2016 Annual Letter, If you could have one superpower, what would it be? *Gates Notes.* Retrieved from https://www.gatesnotes.com/2016-Annual-Letter

Gates, B. (2017). 4 signs of progress on climate change. *Gates Notes.* Retrieved from https://www.gatesnotes.com/Energy/progress-on-climate-change

Gautheret, J. (2017) Obama relativise la portée de l'action climatosceptique de l'administration Trump. *Le Monde.* Retrieved from https://www.lemonde.fr/climat/article/2017/05/10/obama-relativise-la-portee-de-l-action-climatosceptique-de-l-administration-trump_5125515_1652612.html

Global Covenant of Mayors for Climate & Energy (2018) Retrieved from https://www.globalcovenantofmayors.org/

Grandoni, D. (2017). The Energy 202: Trump administration has new energy buzzword. *The Washington Post*. Retrieved from www.washingtonpost.com/news/powerpost/paloma/the-energy-202/2017/05/25/the-energy-202-trump-administration-has-new-energy-buzzword/5925c045e9b69b2fb981db8a/?utm_term=.6fe6739c545c

Grunwald, M. (2017). Trump's Love Affair with Coal. *Politico Magazine.* Retrieved from https://www.politico.com/magazine/story/2017/10/15/trumps-love-affair-with-coal-215710

Hafstead, M. (2017). On Trump, Paris, and Greenhouse Gas Emissions. *Resources for the Future*. Retrieved from www.rff.org/blog/2017/trump-paris-and-greenhouse-gas-emissions

Hart, D., Smith, C., & Muro, M. (2017) How states and localities can limit the fallout of Trump's withdrawal from Paris. *Brookings.* Retrieved from https://www.brookings.edu/blog/the-avenue/2017/06/02/how-states-and-localities-can-limit-the-fallout-of-trumps-withdrawal-from-paris/

Holden, E. (2017) Even before formal death knell, Clean Power Plan is history. *E&E News.* Retrieved from https://www.eenews.net/stories/1060048857

Hultman, N. (2017) As Trump Weighs Paris Climate Agreement, 6 ways the world has changed. *Brookings.* Retrieved from https://www.brookings.edu/blog/planetpolicy/2017/05/12/as-trump-weighs-paris-climate-agreement-6-ways-the-world-has-changed/

International Energy Agency. (2017). *Solar leads the charge in another record year for renewables.* Retrieved from https://www.iea.org/publications/renewables2017/

IRS. (2009). *Energy Incentives for Individuals in the American Recovery and Reinvestment Act*. Washington, 8DC: U.S. Retrieved from www.irs.gov/newsroom/energy-incentives-for-individuals-in-the-american-recovery-and-reinvestment-act

Johnston, E. (2017). Analysis: US Role in the Paris Agreement. *Climate Interactive*. Retrieved from www.climateinteractive.org/analysis/us-role-in-paris/

Kaufman, C. (2016). Nike is Now Making Most of Its Shoes from Its Own Garbage. *Huffington Post.* Retrieved from https://www.huffingtonpost.com/entry/nike-recycled-shoes_us_5733436fe4b0bc9cb048b398

Kennedy, B. (2012). *Nike innovates its way to zero discharge.* Retrieved https://www.greenbiz.com/blog/2012/05/03/nike-innovates-zero-toxic-discharge

Kevin_Faulconer (2017, June 1) "San Diego remains 100% committed to leading on environmental protection. Cities will lead the way" [Twitter Post]. Retrieved from https://twitter.com/kevin_faulconer/status/870408862322401282?lang=en

Kirchain, R., Olivetti, E., Reed Miller, & Greene, S. (2015). *Sustainable Apparel Materials*. Materials System Laboratory, Massachusetts Institute of Technology, Cambridge, MA. Retrieved from http://msl.mit.edu/publications/SustainableApparelMaterials.pdf

Kolk, A. (2016) The social responsibility of international business: From ethics and the environment to CSR and sustainable development. *Journal of World Business, 51, 1, 23-34.* https://www.sciencedirect.com/science/article/pii/S1090951615000632

Korosec, K. (2013). Nike's Waterless Dye factory Cuts Energy Use 60%. *Environmental Leader.* Retrieved from https://www.environmentalleader.com/2013/12/nikes-waterless-dye-factory-cuts-energy-use-60/

Larsen, K., Larsen, J., Herndon, W., Mohan, S., & Houser, T. (2017). Taking Stock 2017: Trump's Regulatory Rollback Begins. *Rhodium Group.* Retrieved from rhg.com/research/trumps-regulatory-rollback-begins/

Leslie, J. (2017) In the Face of a Trump Environmental Rollback, California Stands in Defiance. *Yale Environment 360.* Retrieved from https://e360.yale.edu/features/in-the-face-of-trump-environmental-rollback-california-stands-in-defiance

Levinson, A. (2016) How Much Energy Do Building Energy Codes Save? Evidence from California Houses. *American Economic Review, 106, 10, 2867-2894. http://faculty.georgetown.edu/aml6/pdfs&zips/BuildingCodes.pdf*

Livingston, D. (2017) The Strategic Consequences Behind Trump's Paris Agreement Decision. *Carnegie Endowment for International Peace*. Retrieved from http://carnegieendowment.org/2017/04/26/strate%0Agic-consequences-behind-trump-s-parisagreement-%0Adecision-pub-68781

Lovelace, R. (2016) Grassley: Trump will eliminate wind energy 'over my dead body'. *Washington Examiner.* Retrieved from https://www.washingtonexaminer.com/grassley-trump-will-eliminate-wind-energy-over-my-dead-body

MassGovernor (2017, June 2) "Governor Baker Issues Statement Regarding Massachusetts Joining the U.S." [Twitter Post]. Retrieved from https://twitter.com/massgovernor/status/870763089414803456?lang=en

Maxwell, J., Rothenberg, S., Briscoe, F., & Marcus, A. (1997) Green Schemes: Corporate Environmental Strategies and their Implementation. *California Management Review, 39, 3, 118-134.* http://journals.sagepub.com/doi/pdf/10.2307/41165902

McCarthy, G. (2016). One Year Later: Climate Action and the Clean Power Plan. *The EPA Blog*. Retrieved from blog.epa.gov/blog/2016/08/climate-action-and-the-clean-power-plan/

Mui, Chunka. (2017). Bill Gates Trumps Donald Trump at Pivotal Leadership Moment. *Forbes.* Retrieved from https://www.forbes.com/sites/chunkamui/2017/12/19/bill-gates-trumps-donald-trump-at-pivotal-leadership-moment/#1f9f7bb83a54

Muro, M. Rottweil, J., & Saha, D. (2011) Sizing the Clean Economy: A National and Regional Green Job Assessment. *Brookings.* Retrieved from https://www.brookings.edu/research/sizing-the-clean-economy-a-national-and-regional-green-jobs-assessment/

National Security Strategy. (2015). *National Security Strategy*. Washington, DC: U.S. The White House. Retrieved from nssarchive.us/wp-content/uploads/2015/02/2015.pd

NAZCA (2018) *Global Climate Action*. Retrieved from http://climateaction.unfccc.int/

Newton, J. (1989) *Uncommon Friends: Life with Thomas Edison, Henry Ford, Have Firestone, Alexis Carrel, and Charles Lindbergh.* San Diego: Harcourt Brace Jovanovich.

Nike. (2015). *MIT Climate Colab and Nike Call for Materials Innovation to Combat Climate Change.* Retrieved from https://news.nike.com/news/nike-inc-and-mit-climate-colab-materials-innovation-to-combat-climate-change

Nike. (2017). *Maximum Performance Minimum Impact.* Fiscal Year 16/17 Sustainable Business Report. Retrieved from https://s1.q4cdn.com/806093406/files/doc_downloads/2018/SBR-Final-FY16-17.pdf

Nike. (2018). *Did you know 75% of all Nike Products Contains Recycled Material?* Retrieved from https://news.nike.com/news/sustainable-innovation-air-bag-manufacture

NRDC. (2018). NRDC: EPA to Allow Greatest Rise of Hazardous Air Pollutants in US History. Retrieved from www.nrdc.org/media/2018/180125-0

Obama, B. (2015). *Remarks by the President in State of the Union Address.* State of the Union. Washington, DC: U.S. The White House. Retrieved from https://obamawhitehouse.archives.gov/the-press-office/2015/01/20/remarks-president-state-union-address-january-20-2015

Patrick, S. (2017) Trump's Catastrophic Climate Decision Imperils the Planet - and Hastens American Decline. *The Council on Foreign Relations.* Retrieved from https://www.cfr.org/blog/trumps-catastrophic-climate-decision-imperils-planet-and-hastens-american-decline

Plumer, B. (2017) How Can U.S. States Fight Climate Change if Trump Quits the Paris Accord? *The New York Times.* Retrieved from https://www.nytimes.com/2017/09/20/climate/paris-climate-accord-trump.html

Rabe, B. (2007) Environmental Policy and the Bush Era: The Collision Between the Administrative Presidency and State Experimentation. *Publius: The Journal of Federalism, 37, 3, 413-431.* https://academic.oup.com/publius/article/37/3/413/1919429

Radhakrischnan, S. (2015). *The Sustainable Apparel Coalition and the Higg Index.* Springer Science & Business Media: Singapore.

realDonaldTrump. (2012, Nov 6). "The concept of global warming was created by and for the Chinese in order to make U.S. manufacturing non-competitive." [Twitter Post]. Retrieved from twitter.com/realdonaldtrump/status/265895292191248385

Salge, O. (2015). Take Amazon destruction off my plate! How leading Brazilian slaughterhouse cut its ties to deforestation in the Amazon rainforest. *Greenpeace.* Retrieved from http://www.greenpeace.org/archive-international/en/news/Blogs/makingwaves/amazon-slaughterhouses-deforestation/blog/53066/

Sampathkumar, M. (2017).US cities and companies declare 'we are still in' Paris Agreement despite Trump. *Independent.* Retrieved from www.independent.co.uk/news/paris-agreement-trump-us-cities-still-in-defiance-coalition-a8047086.html

Sargent, R. (2017). President Obama's Renewable Energy Legacy. *Environment America*. Retrieved from environmentamerica.org/blogs/environment-america-blog/ame/president-obama's-renewable-energy-legacy

Schneider, J., & Peeples, J. (2018). The Energy Covenant: Energy Dominance and the Rhetoric of the Aggrieved. *Frontiers in Communications*. Retrieved from https://www.frontiersin.org/articles/10.3389/fcomm.2018.00005/full

Silicon Valley Leadership Group (2018) *Environment*. Retrieved from http://svlg.org/policy-areas/environment/

Steinbuch, Y. (2017). Inside the mass exodus at the EPA. *New York Post.* Retrieved from nypost.com/2017/12/22/hundreds-have-quit-the-epa-since-trump-took-office/

Tabuchi, H. & Fountain, H. (2017) Bucking Trump, These Cities, States and Companies Commit to Paris Accord. *The New York Times*. Retrieved from https://www.nytimes.com/2017/06/01/climate/american-cities-climate-standards.html?hp&action=click&pgtype=Homepage&clickSource=story-heading&module=b-lede-package-region&region=top-news&WT.nav=top-news&_r=0

Taylor, H. (2017) Trump to Fox News: I may defund California as 'a weapon' to fight illegal immigration. *CNBC.* Retrieved from https://www.cnbc.com/2017/02/05/trump-threatens-to-defund-california-in-fight-against-sanctuary-cities.html

The Climate Group (2017) *Annual Disclosure*. Retrieved from https://www.theclimategroup.org/Annual-Disclosure

The Climate Group. (2018). *RE100*. Retrieved from https://www.theclimategroup.org/RE100

The United States Conference of Mayors (2018) *Mayors Climate Protection Center.* Retrieved from https://www.usmayors.org/mayors-climate-protection-center/

The White House. (2013) *The President's Climate Action Plan*. Washington, DC: U.S. Retrieved from https://obamawhitehouse.archives.gov/sites/default/files/image/president27sclimateactionplan.pdf

The White House. (2015). *Climate Change and President Obama's Action Plan.* Washington, DC: U.S. Retrieved from obamawhitehouse.archives.gov/node/279886

The White House. (2017). *National Security Strategy.* Washington, DC: U.S. Retrieved from www.whitehouse.gov/wp-content/uploads/2017/12/NSS-Final-12-18-2017-0905.pdf

The White House. (2017). *President Trump Takes Action to Expedite Priority Energy and Infrastructure Projects.* Washington, DC: U.S. Retrieved from www.whitehouse.gov/briefings-statements/president-trump-takes-action-expedite-priority-energy-infrastructure-projects/

The White House. (2017). *Presidential Executive Order on Promoting Energy Independence and Economic Growth.* Washington, DC: U.S. Retrieved from www.whitehouse.gov/presidential-actions/presidential-executive-order-promoting-energy-independence-economic-growth/

Thompson, S., & Bajaj, V. (2017) The Green Energy Revolution Will Happen Without Trump. *The New York Times.* Retrieved from https://www.nytimes.com/interactive/2017/06/20/opinion/green-energy-revolution-trump.html

Thwaites, J. (2018). US 2018 Budget and Climate Finance: It's Bad, but Not As Bad As You Might Think. *World Resources Institute*. Retrieved from www.wri.org/blog/2018/03/us-2018-budget-and-climate-finance-its-bad-not-bad-you-might-think

Trump, D. (2017). *Statement by President Trump on the Paris Climate Accord*. Washington, DC: U.S. The White House, Rose Garden. Retrieved from https://www.whitehouse.gov/briefings-statements/statement-president-trump-paris-climate-accord/

United Nations. (2009) *Report of the Conference of the Parties on its fifteenth session*. Copenhagen: United Nations Framework Convention on Climate Change. Retrieved from https://unfccc.int/resource/docs/2009/cop15/eng/11.pdf

United States Climate Alliance (2015) *States United for Climate Action.* Retrieved from https://www.usclimatealliance.org/

United States Climate Alliance (2017) *2017 Annual Report: Alliance States Take the Lead*. Retrieved from

https://static1.squarespace.com/static/5936b0bde4fcb5371d7ebe4c/t/59bc4959bebafb2c44067922/1505511771219/USCA_Climate_Report-V2A-Online-RGB.PDF

United States, Office of the Press Secretary. (2012). *Obama Administration Finalizes Historic 54.5 MPG Fuel Efficiency Standards.* Washington, DC: U.S. The White House. Retrieved from obamawhitehouse.archives.gov/the-press-office/2012/08/28/obama-administration-finalizes-historic-545-mpg-fuel-efficiency-standard

United States, Office of the Press Secretary. (2015). *Fact Sheet: White House Announces Commitments to the American Business Act on Climate Pledge.* Washington, DC: U.S. The White House. Retrieved from obamawhitehouse.archives.gov/the-press-office/2015/10/19/fact-sheet-white-house-announces-commitments-american-business-act

United States, Office of the Press Secretary. (2015). *Statement by the President on the Keystone XL Pipeline*. Washington, DC: U.S. The White House. Retrieved form obamawhitehouse.archives.gov/the-press-office/2015/11/06/statement-president-keystone-xl-pipeline.

United States, Office of the Press Secretary. (2016). *Fact Sheet: the Recovery Act Made the Largest Single Investment in Clean Energy in History, Driving the Deployment of Clean Energy, Promoting Energy Efficiency, and Supporting Manufacturing.* Washington, DC: U.S. The White House. Retrieved from obamawhitehouse.archives.gov/the-press-office/2016/02/25/fact-sheet-recovery-act-made-largest-single-investment-clean-energy

U.S. Global Change Research Program. (2017). *Climate Science Special Report: Fourth National Climate Assessment*, *1.* Washington, DC: U.S. Retrieved from https://science2017.globalchange.gov/

Vaidyanathan, G. (2014) How to Determine the Scientific Consensus on Global Warming. *Scientific American.* Retrieved from https://www.scientificamerican.com/article/how-to-determine-the-scientific-consensus-on-global-warming/

Vann, A. (2010) The Federal Government's Role in Electric Transmission Facility Siting. *Congressional Research Service.* Retrieved from https://fas.org/sgp/crs/misc/R40657.pdf

Wallace, D. (1995) *Environmental Policy and Industrial Innovation*. Retrieved from https://www.taylorfrancis.com/books/9781351382922

Wang, W. (2012). Top Ten Sustainability Initiatives of Nike. *Clean Tech.* Retrieved from http://cleantechies.com/2012/02/13/top-ten-sustainability-initiatives-of-nike/

Wattles, J. (2017) Michael Bloomberg: I'll make sure UN gets $15 million it needs for Paris agreement. *CNN Money.* Retrieved from http://money.cnn.com/2017/06/02/news/michael-bloomberg-trump-paris-climate/index.html

WWF. (2013). *The Impact of a Cotton T-Shirt.* Retrieved from https://www.worldwildlife.org/stories/the-impact-of-a-cotton-t-shirt

Zabarenko, D. (2007). Canon tops list of climate-friendly companies. *Reuters.* Retrieved from https://www.reuters.com/article/environment-climate-companies-dc-idUSN1840883720070619