Shifts in Climate Policy in Germany, South Korea, and the United States: The Impacts of Leadership, Political Polarization, and Policy-making

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Abstract

Over the past three decades, the issue of climate change has gained global attention. With the threat of climate change increasing and little progress being made on limiting the Earth's global temperature to two degrees Celsius as prescribed by the Paris Climate Agreement, the approaches that countries are taking to tackle climate change must be studied. Previous studies have explored the politics of climate change in various countries, but comparison between countries is rare (Watanabe 2004, Chung 2022).

The goal of this research was to explore the climate policies of Germany, South Korea, and the United States over the past two decades and explain the shifts or lack of shifts that each country has experienced. Climate policy consists of policies focused on mitigation and adaptation, which can include investments in renewable energies, building seawalls, and donating funds to developing countries. The research showed that while Germany's climate policy has remained relatively consistent, South Korea's and the United States' climate policies have shifted extensively. These shifts or lack of shifts were attributed to three domestic characteristics in each country: leadership, political polarization, and the policy-making process. In particular, consistent leadership, lower polarization, and a legislative approach to climate policy helps reduce shifts in climate policy approaches. Understanding the impacts a country's domestic political characteristics have on climate change policy can help understand the implications of changes in domestic politics like future presidential and legislative elections.

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Abbreviations

ACE - Affordable Clean Energy Rule
ACES - American Clean Energy and Security Act
AfD - Alternative for Germany
BAU - Business as Usual
BLM - Bureau of Land Management
CAFE - Corporate Average Fuel Economy
CAP - Climate Action Plan
CCAP - Climate Change Action Plan
CDU - Christian Democratic Union
CDM - Clean Development Mechanism
CCTI - Climate Change Technology Initiative
COP - Conference of the Parties
CO2 - Carbon Dioxide
CPP - Clean Power Plan
CRCCC - Committee for Responding to the Convention on Climate Change
CSU - Christian Social Union
DPK - Democratic Party of Korea
ECHR - European Court of Human Rights
EPA - United States' Environmental Protection Agency
EU-ETS - European Union's Emission Trading System
FDP - Free Democratic Party
FYP - Five Year Plan
GCF - Green Climate Fund
GGGI - Global Green Growth Institute
GHG - Greenhouse Gas
GNP - Grand National Party
Greens - The Green Party
IKEP - Integrated Climate and Energy Program
IPCC - Intergovernmental Panel on Climate Change
IRA - Inflation Reduction Act
JI - Joint Implementation
LCGG - Low Carbon, Green Growth
Left - The Left Party
MCCCC - Ministerial Conference on the Convention on Climate Change
NAP - National Allocation Plan
NCSD - National Commission on Sustainable Development
NDC - Nationally Determined Contribution
NEEAP - National Energy Efficiency Allocation Plan
NEPA - National Environmental Policy Act
NHTSA - National Highway Traffic Safety Administration
PCGG - Presidential Committee on Green Growth
PCSD - Presidential Commission on Sustainable Development
PPP - People Power Party

SAFE - Safe Affordable Fuel Efficient
SPD - Social Democratic Party of Germany
TMS - Targeted Management System
UNEP - United Nations Environment Programme
UNFCCC - United Nations Framework Convention on Climate Change
WOTUS - Waters of the United States

Chapter 1

Introduction

The Paris Climate Agreement laid out the groundwork for a comprehensive international plan to limit global warming to 2 degrees Celsius. In order to achieve that goal however, we must first understand the history of climate change action and examine what has been done to tackle the issue. By researching the past, we can recognize past failures and mistakes, understand trends and commonalities, and implement climate change policies that are effective. Climate change is a complex web of domestic and international action that is shaped by many characteristics such as domestic politics, global affairs, and international events. This research aims to explore one aspect of this puzzle, specifically the impact that a country's domestic politics has on its climate policy. In particular, the domestic characteristics refer to the country's leader, political polarization, and the policy-making process. Leadership is all about the actions and statements the head of state makes regarding climate change. Political polarization is concerned with the differences of opinions between the liberals and conservatives on climate change, and the policy-making process focuses on how climate policy is created and in what form, whether that be legislation or action taken by the executive branch. These three characteristics all impact climate policy in some way, resulting in shifts in some cases and stability in others.

Before explaining the three main variables for analysis, it is important to understand what progressive and regressive climate policy is in this paper, and what is meant by shifts or continuity in climate policy. Progressive climate policies are policies that are more pro-active on the issue of climate change. They deal with mitigation and adaptation by helping lower emissions faster and preparing for climate disasters. For example, a progressive climate policy would be a new subsidy for solar power installation, as that will likely lead to more solar power being produced and reducing the usage of fossil fuels and the release of greenhouse gasses. Progressive climate policies tackle renewable energy usage, electric vehicles, power plants, and more. Internationally speaking, progressive climate action could be attending more climate conferences, donating more to climate funds, and participating and ratifying international climate treaties. On the other hand, regressive climate policies, or non-existent climate policies, would be policies that do little to reduce emissions and may even increase emissions. This might include reducing regulations on emissions from power plants, or subsidizing coal power plants so that they remain in operation for longer. If a government no longer attends climate conferences or sends a meaningless delegation, that would also be considered a regressive climate action. Succinctly, progressive policies decrease greenhouse gas emissions (GHG emissions), while regressive policies either stabilize or increase them.

Shifts or continuity in climate policy is about whether climate policy remains relatively progressive or regressive over time, or whether it alternates between progressive and regressive as the government changes. An example of a shift would be if one President in South Korea pursued progressive climate policies, and then their successor decided that climate change was not a priority and implemented regressive policies. It can be from progressive to regressive, or from regressive to progressive. In extreme cases, it could even be from progressive to even more progressive, but that also represents continuity in climate policy in a sense. Continuity in climate policy would therefore be if successive governments implemented similar progressive or regressive policies, instead of completely changing the policy direction of the government.

The first domestic political characteristic of a country that impacts climate policy is its leader. This refers to the head of state, such as the President in the United States and South Korea, or the Chancellor of Germany. They are generally the person with the most political power in that country, who typically decides a large portion of the policy priorities and orders their cabinets and bureaucrats to create and implement feasible policy. Their statements and values can have tremendous weight in deciding a country's attitude towards an issue like climate change (Konisky, 2016; Kincaid, 2013; Schwerhoff et al., 2018). Specifically for climate change, leadership in this area means exploring their previous statements on climate change, whether they viewed climate policy as a priority during their administrations, and if they were active internationally on the issue of climate change by attending and speaking at international climate conferences. Are they a climate-denier or a climate advocate? Do they have a history of previous climate action? Was climate change policy high on the agendas of their administrations, or was it mostly ignored in favor of other policy areas? Did they attend the annual Conference of the Parties, engage in international coalition building on climate change, and create new global initiatives, or just ignore most international climate conferences, treaties, and negotiations? Combining all these aspects together gives a good sense of a leader's stance on climate change, and whether they pushed for more progressive climate policies or shifted climate policy in a negative direction.

Another domestic characteristic that shifts or stabilizes climate policy is political polarization. Political polarization according to the European Center for Populism Studies is the divergence of political attitudes towards ideological extremes (Political Polarization, n.d.). For this research, political polarization refers to the differences in the attitudes of the main political parties towards the issue of climate change and climate policy. Are the conservative and liberal parties at completely opposite ends of the spectrum when it comes to climate change? Or do they both support climate policies despite their ideological differences? Political parties tend to fall on opposite sides of the argument with regard to climate policy, with conservatives opposing climate action and liberals endorsing it (Ladrech & Little, 2019; Jensen & Spoon, 2011). But that is not the case across all countries, and there are many factors that influence a party's stance on climate change (Witajewska-Balt, 2018; Ladrech & Little, 2019; Jensen & Spoon, 2011). If the main parties disagree on climate policy, then that will likely lead to shifts in climate policy whenever control of the government switches to a different party. But if both parties hold similar views on climate policy and are not polarized on the issue, then the potential for continuity arises, with both parties implementing similarly progressive policies despite governmental change.

The final domestic characteristic that plays a role in the progression of climate policy in a country is the policy-making process. Each country has a different policy-making process, and that can make it easier or harder for a government to pass policies. The policy-making process might also result in different forms of policy, such as using executive action over legislation. This concept is most strongly demonstrated by the United States and President Obama's frequent usage of executive orders instead of legislation. Legislation also appears in different forms in different countries and undergoes different processes for creation. South Korea's legislative branch is unicameral, or only consists of one house, while both the United States and Germany have bicameral legislatures, or two houses. Germany is a parliamentary government, which generally makes it easier for the controlling party to pass its policies as it already controls a majority of the legislature. These differences all affect how climate policy is created and implemented in the three case studies, and can lead to shifts in climate policy or stability.

The three case studies that were chosen for this research were Germany, South Korea, and the United States. These countries were chosen because they share similar characteristics as developed countries with strong economies, and are also large emitters of greenhouse gasses over the past three decades. Unlike developing countries, who primarily focus on climate policies related to adaptation since their emissions are relatively low, this allows for analysis of mitigation policies or policies focused on lowering emissions. These three countries also have some important differences, which allows for comparison. They have different forms and structures of government and different levels of political polarization. Looking at these differences helps reveal which characteristics in the country contribute to the shifts or continuity in climate policy that are observed. Increasing the time of study also expands on previous research, which has primarily focused on specific eras in each case (Royden, 2002; Mez, 2012; Konisky, 2016). As will be demonstrated in the research, Germany represents the case study with the most continuity in climate change, while the United States represents the extreme case with frequent shifts. South Korea can be classified as a moderate case, with some shifts and some continuity in their policies across administrations and Presidents.

This research examines the climate actions and policies of Germany, South Korea, and the United States over the past three decades, and how these policies have shifted and changed over time. The research finds that leadership, political polarization, and the policy-making process all play a role in shifting or continuing climate policies across Presidents and governments, although to different extents in each case. For Germany, consistent leadership under Angela Merkel, a climate activist, along with little polarization between the two major parties and a focus on climate legislation, has led to consistently progressive climate change policies. On the other extreme, the United States has experienced frequent shifts in climate policy, with progressive policies under Barack Obama and Joe Biden, and back-sliding under Donald Trump. These shifts are exacerbated by extreme polarization and a complex legislative process that has made it difficult to pass climate legislation. Finally, South Korea represents a more moderate approach. It has experienced a few shifts in climate policy, but nothing as major as those seen in the United States. It has gone from a progressive approach under Lee Myung-bak to a regressive approach by Park Geun-hye, and back to progressive policies under Moon Jae-in. The approach under the Yoon administration has continued the carbon neutrality goal of President Moon, but with a focus on nuclear power as opposed to wind and solar energy.

The International Climate Regime

Climate actions and policy has its roots in environmentalism, a broad philosophy that advocates for protection of the environment. The environmentalism movement was something that first began in the early 1900s with conservation efforts like the work done by President Theodore Roosevelt who established many national parks and monuments in the United States. It was during the 1960s however, that the movement really began to grow, both in the United States and globally. Numerous publications in the 60s discussed the impact of modern society on the environment, like Rachel Carson's writings on the impact of pesticides in *Silent Spring* (Weyler, 2018). In 1963, the United States passed the Clean Air Act, giving the government the power to control air pollution (Bureau of Ocean Energy Management, n.d.). In 1969, environmental disasters gained attention in the United States when an oil rig in Santa Barbara, California blew out, spilling oil into the ocean (Thulin, 2019), and the Cuyahoga river caught fire from pollution (Boissoneault, 2019). The result of these disasters was nationwide attention on environmentalism, increased focus on what the U.S government was doing to combat pollution, and the creation of the Environmental Protection Agency. The movement grew into a nationwide protest on April 22, 1970, dubbed "Earth Day" where over 20 million Americans attended events at schools and community centers to advocate for increased environmental action. The increased awareness in the United States however, also translated into increased awareness and activism internationally.

The growing movement in the United States led to the first major international piece of environmental action: the 1972 United Nations Scientific Conference, or First Earth Summit. This summit was important as it laid the groundwork as the first major international meeting on environmental issues, and mentioned climate change for the first time. It laid out principles for environmental conservation and protection, and recommendations for international climate action. It also established the Governing Council of the United Nations Environment Programme (UNEP), the Environment Fund and the Environment Coordination Board, with main focuses on water resources, animals, forests, and renewable energy. The monitoring activities laid out in the first Earth Summit led to another instance of global action in 1985 with the Vienna Convention for the Protection of the Ozone Layer which aimed to decrease sulfur emissions by 30%. International environmental action accelerated in the late 80s as concerns over depletion of the ozone layer grew, with the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer being universally ratified. The international treaty aimed to regulate the production and consumption of 100 ozone depleting substances to protect the ozone layer from further damage (UN Environment Programme, n.d.). In 1988, the Intergovernmental Panel on Climate Change (IPCC) became the first body to identify climate change as an urgent issue. This resulted in the 1989 UN resolution where the general assembly gave the UNEP the power to begin preparing for negotiations on a framework convention for climate change, and in 1990, on the twentieth anniversary of the first Earth Day, the protest movement went global. Over 200 million people participated in 141 countries at events organized around the world, again increasing the attention on environmental issues and pushing the environment and climate change to the forefront of public issues (EarthDay, n.d.).

With international momentum on climate change growing and a 1990 report by the IPCC that discussed the science behind climate change and increasing urgency for action, the United Nations convened in 1992 at the United Nations Conference on Environment and Development, otherwise known as the Rio Earth Summit. The summit resulted in the Rio Declaration, a statement of 27 principles related to the environment and sustainable development (United Nations, 1992c). Agenda 21 was also adopted at

the summit, an action agenda for the UN and its member states to achieve global sustainable development by 2000 (United Nations, 1992b). However, arguably the most important product of the Rio Summit was the signing of the United Nations Framework Convention on Climate Change (UNFCCC), a new international treaty. The goal of the treaty was to achieve "stabilization of greenhouse gas concentrations in the atmosphere," but also included plans for future meetings, negotiations, and future frameworks and policy agreements to meet this key goal. Over 154 member states of the UN signed the treaty at the Rio Summit, and the treaty serves as the basis for all future climate agreements and treaties (United Nations, 1992a). By joining and ratifying the treaty, states acknowledge that climate change is an issue and agree to take action to reduce emissions. The convention also classifies states into three respective categories based on their economic development. There are developed countries (Annex 1), developed countries with financial responsibilities (Annex 2), and developing countries. Based on a country's classification, their responsibilities under protocols and future agreements are different, with developed countries generally holding more responsibility for reducing emissions than developing countries. A key statement in the convention is that signatories should act based on "common but differentiated responsibilities and respective capabilities." The convention also lays the framework for future negotiations by establishing the Conference of the Parties (COP) system, the negotiating process for climate policies. It established the secretariat of the UNFCCC to help run the COPs, which were the next major international event related to climate change.

The first Conference of the Parties took place in 1995 in Berlin, Germany. It was a significant event, as it was the first UN climate conference since the Rio Summit and countries were trying to set up an additional climate treaty that would have binding emission reduction targets. While COP-1 did not result in a final agreement, it did result in the Berlin Mandate, which set up future negotiations. The mandate stated that developing countries would make no new commitments, countries would exchange experiences related to climate change, and a new treaty would be drafted as soon as possible, potentially by 1997. This target was achieved at COP-3 in Kyoto, Japan, with the Kyoto Protocol addition to the UNFCCC. The Kyoto Protocol was significant as it was the first treaty that had binding emissions targets for Annex 1 countries. These targets were a 5.2% reduction in emissions by industrialized countries compared to 1990 levels over the period of 2008 to 2012. There were also three mechanisms included in the protocol, which were emissions trading, the Clean Development Mechanism (CDM), and Joint Implementation (JI). The emissions trading mechanism led to the creation of a global market for carbon, where countries could trade emissions to hit their targets. The CDM and JI helped stabilize the carbon market by allowing investment in sustainable development projects and the creation of joint implementation projects with developing countries respectively. While the Kyoto Protocol was widely supported internationally, the United States did not ratify the agreement, which will be explained later in the paper. The Kyoto Protocol officially came into force in 2005, but negotiations on its implementation continued at the COPs until 2001, when rules for meeting the emissions targets were established (Hampton, 2004). Without a treaty like the Kyoto Protocol, there would have been little incentive for developed countries to take action to lower their emissions. The next major climate conference with notable action is in 2007, a year before the beginning of the target period under Kyoto.

In 2007, the IPCC released a new synthesis report which increased global urgency on climate action after stating that human activities were the most likely cause for climate change (Intergovernmental Panel on Climate Change, 2008). At COP-13 in 2007, negotiations began for a successor to the Kyoto

Protocol, with more stringent targets. The COP resulted in the Bali Action Plan, which stated that a new climate agreement should be reached by COP-15 in Copenhagen, Denmark. However, at COP-15, a new treaty was not agreed, and the resulting Copenhagen Accord was disappointing in its commitment to climate change. Under the Accord, countries acknowledged that global temperature should be kept below 2 degrees Celsius, but there were no new emission targets. Developed countries also agreed to begin financing developing countries to mitigate and adapt to climate change. COP-16 results in the Green Climate Fund, a proposed $100 billion fund for developing countries. The Cancun Agreements also formalized the 2 degree target agreed at COP-15. However, COP-17 was where real traction began with the United States and developing countries like India and China all agreeing to take action to reduce their emissions. A plan was put in place to reach a new climate agreement by 2015 at the latest, and which would come into force in 2020. The parties to the Kyoto Protocol also agreed to extend it until 2017, ensuring that signatory countries would still be bound to reduce their emissions. The Kyoto Protocol was extended further until 2020 at COP-18 in Doha, but new countries including Japan and Russia refused, meaning that the agreement only accounted for 15% of global emissions. The next two COPs primarily focused on negotiations for a future climate agreement, which was eventually reached at COP-21 in Paris ("UN Climate Talks", 2023; "Achievements of the Conference of the Parties", n.d.).

The 2015 COP in Paris, France was the most significant international climate event since COP-3 in Kyoto. The COP resulted in the landmark Paris Climate Agreement, a climate treaty agreed by 196 countries including the United States, the European Union, China, and Russia. Under the agreement, countries agreed to limit the increase in global temperatures to 2 degrees Celsius above pre-industrial levels, and take steps to limit the increase to 1.5 degrees Celsius if possible. To achieve this goal, the agreement uses a bottom-up approach where countries themselves submit their emission reduction targets in Nationally Determined Contributions (NDCs). These NDCs are public, so the idea behind the agreement is that countries would see other countries making progressive pledges and make similar pledges themselves. This idea has been credited with securing the support of major emitters like the United States and Russia as they could choose their own targets rather than having it imposed on them. NDCs are scheduled to be updated every five years, gradually getting more progressive, although a country can choose to update its own NDC at any time. Also important is that all countries are included in the mitigation effort, not just developed countries like under the Kyoto Protocol. There is an additional key target in the accords, which states that emissions balance, or essentially net-zero emissions, will be reached from 2050 to 2100. Finance is also an important aspect of the agreement, with an agreement for $100 billion after 2025. However, there are no legally binding figures, but it includes increased efforts to improve climate finance (Falkner, 2016). The Paris Agreement was a major success in international climate action, as it secured the support of practically every country in limiting emissions and combating climate change.

At COP-23 and COP-24, there were more negotiations to handle the rules and implementation of the Paris Climate Agreement. At COP-24, countries agreed on the rules for emission reporting, but there were no new targets despite a dire IPCC report on the consequences of 1.5 degrees Celsius warming. The countries also failed to agree measures on a global carbon market which was discussed in Article 6 of the Paris Agreement. Those talks were pushed to COP-25, but there was still no major breakthrough on negotiations.

One other major event in 2019 was the UN Climate Action Summit in New York, where some countries announced updated targets for their emissions. However, the United States and China did not attend the summit, limiting its success. In 2021, countries were required to submit updated NDCs for the Paris Agreement, and most did, with over 100 new NDCs. The Glasgow Climate Pact, agreed at COP-26, was a first for international climate action as it discussed decreased usage of coal and reductions in fossil fuel subsidies. The global carbon market was also finalized, fulfilling the mandate nearly four years after negotiations had begun (Jackson, 2007; “UN Climate Talks”, 2023; “Achievements of the Conference of the Parties”, n.d.).

Chapter 2: Germany

Domestic Politics of Germany

Germany can be classified as a federal parliamentary republic with three branches of government. There are 16 German states, each with their own constitution, legislature, and government that manages some policy areas like education. However, the federal government serves as the binding organization over all state governments. The Executive branch in Germany consists of the German President, German Chancellor, and the Federal Cabinet and ministries. The President is a primarily ceremonial position, but has some important roles including signing legislation and representing Germany in foreign policy matters. Much of the power however, lies with the German Chancellor, who is elected by the German legislature. The Chancellor is in control of the government and its ministries, appoints the cabinet, and directs public policy. The Chancellor is also involved in international matters and foreign policy.

The German Legislative branch is bicameral, consisting of two houses. There is the Bundestag and Bundesrat. The Bundestag is the lower house and is the primary legislative body. It elects the Chancellor and is heavily involved in the passage of federal legislation. The Bundestag is elected nationally through a mix of direct constituency elections and proportional representation. This results in many parties getting representation in the legislature. One key rule in the Bundestag is that a party must gain five percent of the vote to receive representation. This prevents small parties from gaining single seats. As of 2021, there are 736 seats in the Bundestag. The Bundesrat serves as representation for the states, but is not as important in the legislative process. It still has a say in legislation, primarily to provide states with input on federal policy, but does not have a say in the election of the Chancellor. Finally, there is the judicial branch, whose highest court is the Federal Constitutional Court. It is involved in matters related to federal policy, the constitution, and disputes between states and the federal government. It is also independent from the federal government and state governments.

Since Germany's legislature is chosen through direct and proportional representation, this means that there are many parties represented. One of the most successful parties is the Christian Democratic Union (CDU) and Christian Social Union (CSU), who commonly merge into one large party after elections as the CDU/CSU. This is a conservative Christian party, and would be classified as center-right on the typical ideological scale. The next party is the Social Democratic Party of Germany (SPD), which is a center-left party. One of the more recent successful parties has been the Green party, commonly known as the Greens, which are the environmental party in Germany. The Green party is the typical coalition partner of the SPD. There is also the Left party, known as the Left, which is the communist party and most far-left party in Germany. They face opposition from every other party in Germany and have never been part of the government. There is the Free Democratic Party (FDP), which has been the common coalition partner of the CDU/CSU. They are pro-business and civil liberties, and would be classified as either center or center-right on the political spectrum. Finally, there is the Alternative for Germany (AfD), which has only become successful over the last decade in German politics. This is a populist, right-wing party that primarily focuses on immigration and nationalism. Like the Left, they have never been part of the government.

Climate Policy in Germany

Germany has often been credited with being one of the most progressive countries acting on climate change, enacting extensive climate policies that helped it reduce its emissions to a large extent.

Throughout the last 30 years, many political leaders and parties have played an important role in Germany's fight against climate change, none more so important than Angela Merkel of the Christian Democratic Union. Her 16 years in charge led to progressive international and domestic climate policy, including increasing renewable energy, enacting more ambitious climate targets, and negotiating a new international climate treaty. The work of Helmut Kohl (also of the CDU) and Gerard Schröder of the Social Democratic Party of Germany should also not be discounted, as they were responsible for the very first climate policies and targets in Germany. Finally, the recent government of the SPD, the Green party, and the Free Democratic Party has continued the progressive policies of Merkel. While looking at Germany, it can be seen that Merkel's leadership, the lack of polarization between the two main political parties, and the policy-making process all contributed to Germany's progressive approach on climate change which has made it one of the most successful developed countries at reducing its greenhouse gas emissions.

Climate Policy Pre-Merkel

Early climate change policy in Germany began to take shape in the 1990s under the governments of Helmut Kohl and Gerard Schröder. This period of time was important as international action on climate change began to accelerate, and these governments were responsible for negotiating the first international climate treaty. They were also effective at creating domestic climate policy, enacting policies that increased renewable energy and created frameworks for future policy options. However, most importantly, these governments set the first emission reductions targets for Germany, which propelled Germany to the forefront of being a progressive country on climate change.

Chancellor Kohl's First Climate Actions

Climate change rose in prominence as a key public issue during the 1980s, eventually leading to the government enacting its first climate policies in the 1990s. Before this period, Germany had been focused on environmental policy related to air pollution control (Weidner and Mez, 2008). The first explicit climate policy can be traced back to 1990, under the government of Helmut Kohl of the CDU/CSU. In 1986, he created the Ministry of the Environment in response to the Chernobyl nuclear disaster, and it was this ministry that was primarily responsible for Germany's early climate policies (Hatch, 2007). At the same time, the Bundestag created the Enquete Commission on "Preventative Measures to Protect the Earth's Atmosphere." The commission was responsible for sourcing all scientific knowledge related to climate change, with its reports stating consequences of global warming and potential actions. The commission called for a 30% reduction in carbon dioxide (CO2) emissions by 2005, while the Ministry of the Environment called for a 25% reduction of CO2 emissions based on the 1987 levels by 2005, both of which were extremely progressive at the time (Jänicke, 2010). The federal cabinet ultimately adopted the 25% target, but revised it in 1995. The new goal was a 25% reduction according to 1990 levels by 2005, since the reunification of Germany had complicated climate policy. The main priority of the government in the 1990s was the creation of a stable economic and political environment following the Unification Treaty in 1990, not climate policies. However, this announcement was made at the first climate conference in 1995, and thus attracted significant global attention and strengthened Germany's position on climate change (Weidner and Mez, 2008).

One consistent aspect of German climate policy has been its focus on increasing the share of renewable energy in the energy supply. The first climate policy focusing on renewable energy was the

1991 Electricity Feed Act. This law required utilities to purchase renewable energy to use, albeit at a subsidized rate, which made renewable energy more cost-affordable and appealing to the utilities. Other basic policies enacted during the Kohl government were the Waste Avoidance and Waste Management Act and the Ordinance on Heat Insulation. The Heat Insulation policy focused on improving building standards which would improve energy efficiency and reduce emissions (Hatch, 2007). Another method the government used to try to reduce emissions was entering negotiations and agreements with industry, which began in 1995. Negotiations resulted in the Declaration by German Industry and Trade on Global Warming Prevention, in which 15 industry associations agreed to reduce their GHG emissions by 20% by 2005. Further negotiations a year later ensured that the base year for the emission reduction would be 1990, not 1987 as originally agreed.

As previously stated, during this period, Germany was also active on the international stage regarding climate change. It joined the United Nations Framework Convention on Climate Change in 1993, and hosted the first ever Conference of the Parties in 1995 in Berlin. At the conference, Germany stated its updated emission reduction target. The conference also resulted in the Berlin Mandate, which aimed to have a comprehensive climate treaty negotiated by COP-3 in 1997. In the buildup to COP-3, the German government was instrumental in pushing for a stricter target, including an EU-wide 20% reduction. Ultimately, the EU agreed on a 15% reduction by 2010, with Germany being the brunt of emissions reductions (Mez, 2012). This translated to a 21% reduction target for Germany under the Kyoto Protocol (Jänicke, 2010).

These domestic and international actions sum up the approach to climate change that the Kohl government took during the 1990s when climate change gained more importance in the public and political spheres in Germany. Much credit should be given to Kohl and his commitment to beginning a climate change initiative in Germany, especially considering that he was dealing with German reunification after the collapse of the Berlin Wall in 1989. He was responsible for creating the Ministry of the Environment, which had not existed previously, and pushing the government into researching a feasible climate approach and adopting a emission reduction target for the first time. This also began a strong period of international German leadership on climate change, as first hosts of the annual COP and demonstrating strong international ambition on climate change. Their actions set Germany on a progressive path with ambitious targets, and their domestic climate policy of focusing on renewable energy would remain the approach taken by future governments.

A New Green Party Government

In 1998, federal elections took place, and the SPD won in a landslide victory, coming very close to a majority. The party was led by Gerhard Schröder, and won 298 seats, The CDU/CSU lost heavily after economic difficulties, including high unemployment, eroded their support. They only won 245 seats. The major surprise in the election was the success of the Green Party, who had only become a political force in 1983 when it won seats in the Bundestag for the first time. In this election, it won 47 seats, which combined with the SPD, resulted in a SPD-Green government for the first time since World War 2 (The Federal Returning Officer, 1998). It was the first time the Green Party had been in government, and this reignited interest in climate change and climate policy.

The new government continued the focus on renewable energies that had begun under Kohl, but with added emphasis and success. They immediately created the Renewable Energy Act which increased the tariffs for renewable energy, guaranteed these tariffs for at least twenty years, and incentivized utilities to use renewable energy over other energy sources like coal and natural gas. The tariffs for the energy was achieved through a consumer surcharge. The act also included the 100,000 Roofs Program which aimed to increase the production of solar energy (Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety, 2000). The Renewable Energy Act was extremely successful at increasing renewable energy, doubling the capacity of wind energy within a year. From 1998 to 2004, renewable energy increased from 5.2% of electricity to over 10%. The act's success led to the government announcing targets for renewable energy shares, with the goal of 12.5% renewable energy by 2010, 20% by 2020, and over half by 2050 (Mez, 2012). The new government also continued the voluntary agreements with industry, although they did push for updated commitments, which was a 28% reduction by 2005. The government also enacted its National Climate Protection Program in 2000, which outlined measures that the government would take to achieve its 25% target. This document included sector targets, measures to increase energy production from power plants, and the above-mentioned agreement with industry. The program also included plans to update every five years (International Energy Agency (IEA), 2017c).

One key policy proposal of the SPD-Green government was the introduction of a CO2 and/or energy tax. Proposals of a tax had been discussed as early as 1990, but economic opposition, as well as a lack of EU-wide implementation meant that little progress was made. That changed with the new government however, as they implemented a series of tax reforms that were more environmentally friendly and designed to reduce emissions. The tax reform introduced a new tax on electricity consumption (the consumer surcharge in the Renewable Energy Act), and increased taxes on petrol, diesel, natural gas, and other oils. Most of the revenue went towards economic policies, but 200 million euros were designated for renewable energy projects (Weidner and Mez, 2008).

As these two previous policies demonstrated, renewable energy was a big focus of the Schröder government, and this also carried over into the international stage. At the 2002 UN Summit on Sustainable Development, Schröder spoke strongly in support of renewable energy, and this was followed up by a 2004 conference on renewable energy in Bonn, the host city of the first COP (Jänicke, 2010). Again, this demonstrated how ambitious Germany was as a fully developed country, pushing for the transition to renewable energy when it was not a major concern for most developed countries. The government recognized that renewable energy would play a major role in lowering emissions, and tried to push the global community in that direction as well.

The policies listed above summed up the climate policies that the SPD-Green government took. While it did not seem like there was extensive action taken, the main success was the Renewable Energy Act, which was extremely successful. Like the Electricity Feed Act, it also set the groundwork for future policies on renewable energies, and future governments have amended the act to be more progressive. The ecological tax reforms were also progressive, although they fell short of being strictly a tax on CO2 emissions that would have had more of an impact on reducing emissions.

Merkel's Progressive Approach to Climate Change

Kohl and Schröder can be credited with putting Germany on the right track with regard to climate change policy, but it was under Angela Merkel that climate policy in Germany took off and gained momentum. As a strong climate advocate with an unpolarized government, Merkel pushed climate change as a priority during most of her time as Chancellor and put Germany to the forefront of domestic and international climate policy. She and her government implemented many climate policies, including a faster switch to renewable energy, a comprehensive adaptation plan for climate change, and the creation of a carbon neutrality law, among many other policies. The election success of Merkel and her party and her subsequent 16 years as Chancellor, represent a shift in Germany towards more progressive climate policies.

Climate Policy Under the First Grand Coalition

The 2005 election was a tightly contested battle between Angela Merkel of the CDU/CSU and incumbent Chancellor Gerhard Schröder and the SPD. The election was called earlier than usual as Schröder intentionally failed a vote of confidence after his party lost a state election and lost control of the Bundesrat, the upper legislative body in Germany. During the election, the CDU/CSU was viewed as the more popular party due to their commitment to tackle economic issues like unemployment, while Schröder was viewed as the more favorable party leader. This led to an intense and tight election, with the final results being the CDU/CSU winning 35.2% and the SPD winning 34.8%. The closeness of the results meant that neither party could govern outright without forming a coalition with the three other parties that had won seats. These three parties were the Free Democratic Party (FDP) with 9.8%, the Left Party with 8.7%, and the Green Party with 8.1% (The Federal Returning Officer, 2005). Normally, the CDU/CSU and FDP would form a coalition along conservative lines, and the SPD and Green Party would form a more liberal coalition. However, each group would still have required the support from another party to gain an absolute majority, and the Left Party refused to work with either side. Ultimately, negotiations over coalitions led to the creation of a "Grand Coalition", or partnership between the CDU/CSU and SPD. Angela Merkel would become Chancellor while the SPD would control 8 out of 16 cabinet seats, and the new government would pursue a mix of policy from both parties (Schmitt & Wüst, 2006). This government would continue the work of Schröder and push for more domestic and international climate action.

One of the first climate actions that the new government did was to join and participate in the European Union's Emission Trading System (EU-ETS), demonstrating a continuation of progressive climate policies despite the change in Chancellor. The EU-ETS was the first large-scale emission trading scheme in the world, and is viewed as a key pillar in EU climate policy. The system set an overall limit on the amount of emissions from power stations, industries, and aviation. During Merkel's first few years in office, the EU-ETS was in phase 1, which was its pilot phase. In this phase, only emissions from power stations and industry were covered, and the amount of allowances exceeded actual emissions. However, as a pilot program, it was still successful in preparing the EU for future phases (European Commission, n.d.). Germany played a role in the system by submitting its National Allocation Plan (NAP) for allowances and emissions. This plan determined the maximum amount of carbon emissions that the government would allow in the first period, which ran from 2005 to 2007 (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, 2004). This was followed by its second NAP in 2006 for the second period in 2008 to 2012. Under this plan, the government would allow for emissions

of 482 million tons of CO2. However, this plan faced strong opposition from the European Commission, who viewed it as being too lenient towards German industry. This position was further confirmed when the actual emissions data for 2005 was released, which was 474 million tons, so the proposed NAP would have allowed for more emissions than there actually were. The government submitted a revised number of 465 million tons, but that was rejected again by the EU who ended up approving an allocation of 453.1 million tons (Hatch, 2007). This highlights the challenges that Germany faced trying to balance the demands of industry within progressive climate policy. The EU commission was the body responsible for pushing Germany to be more progressive on this particular topic. However, despite this reluctance on the part of the government to reduce emissions through the EU-ETS, the other actions it took demonstrate its progressive stance on climate change.

The focus for much of German politics related to climate change during the 70s, 80s, and 90s was the Energiewende or energy transition. The overhauling of Germany's energy supply was a key topic of discussion under Kohle and Schröder, and Merkel was no different. One of the first climate policies the new government passed was the Energy Industry Act, a framework act designed to increase energy competition, enhance energy security, and increase the production of sustainable energy. A key aspect of this law was that the energy suppliers now had to label the sources of energy, which would increase transparency for consumers (Federal Ministry of Justice, 2005; Climate Change Laws of the World (Climate Change Laws), 2005). It also included provisions to increase access to renewable energy and increase energy storage. These measures were all designed to increase usage of renewable energy and help reduce emissions from energy sources. This was further supported by the Integrated Climate and Energy Program in 2007 (IEKP), which was Germany's response to the EU's attempts to create an integrated climate and energy policy. The program included 29 measures across a variety of topics, including the expansion of renewable energy, expansion of the biofuels market, and carbon capture and sequestration (Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety, 2007). The IEKP was conceived during cabinet meetings which ultimately came to be known as the Meseberg Decisions. This meeting also resulted in a greenhouse gas emission reduction target, which was 40% by 2020 (Jänicke, 2010). The program was approved by the Bundestag in December, 2007, and to accomplish the measures set out in the program, an initial package of 14 laws were drafted to contribute to the program. They included amendments to the Renewable Energy Sources Act, the Energy Industry Act, and the Biofuel Quota Act (IEA, 2014). Another policy related to energy was the Power Grid Expansion Act, which aimed to increase the rate of construction of new power grids in Germany. It laid out 23 high priority projects related to the future power supply, and contributed to Germany's energy policy (Nachmany et al., 2015a). A final domestic policy that was passed under the first Grand Coalition was the German Strategy for Adaptation to Climate Change, which was the first significant plan for adapting to climate change. The strategy is intended to improve knowledge, create transparency, improve participation, raise awareness, develop strategies to tackle adaptation issues, and improve coordination between involved actors (The Federal Government, 2008). This strategy was important as it laid the groundwork for future adaptation policies and began work on steps the government could and would take to prepare for climate impacts.

On the international level, one of the main policies of the German government was the creation of its International Climate Initiative or IKI. IKI is a government funded initiative for international climate action, primarily focusing on developing nations. The initiative focuses on four main areas, which are the

mitigation of GHG emissions, the adaptation to the impacts of climate change, the conservation of natural carbon sinks and reduction in deforestation, and the conservation of biodiversity. From its conception in 2008 until 2010, there was 120 million euros made available annually. Between 2008 and 2021, IKI has approved five billion euros for over 950 projects related to climate change and biodiversity. These projects have taken place in over 150 countries, demonstrating its large impact, especially towards developing countries (Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety, 2009; Organisation for Economic Co-operation and Development, 2023). Merkel and her government were also actively involved in discussions with industrialized countries, and was instrumental in getting emission targets agreed among leading emitting countries. This included negotiations at the 2007 G8 World Economic Summit, where the G8 (Germany, the United States, France, Italy, the United Kingdom, Japan, Canada, Russia, and the EU) agreed to try to reduce global CO2 emissions by at least half by 2050, primarily through a UN process that would also involve emerging economies like India and China (Cabinet of Germany, 2007). This set the stage for the 2007 Conference of the Parties in Bali, as countries like Germany wanted to negotiate a new climate treaty as a successor to the Kyoto Protocol. The main result of the conference was the Bali Road Map, a plan for a two-year negotiating process with the goal of adopting a new agreement by the COP-2009 (United Nations Framework Convention on Climate Change (UNFCCC), n.d.). Finally, there was Germany's role in climate negotiations within the European Union, which resulted in the 20-20-20 by 2020 EU policy agreement. This agreement includes targets of reducing GHG emissions by 20% by 2020 compared to 1990, increasing renewable energy consumption to 20%, and reducing primary energy usage by 20% (Prahl, 2014). This agreement was significant as it was applicable to the entire EU, not just a single country, but Germany went even further with the Meseberg Decisions and its commitment to a 40% reduction in GHG emissions.

These international negotiations represent the very strong leadership of Merkel when it came to climate change. She was skilled at negotiating and coalition building, which led to developed countries agreeing to climate change targets when there was no real incentive to do so. Germany's strong position as a global leader on climate change also contributed heavily in its ability to get other developed countries to make climate agreements. As a developed country, Germany was pushing further and further ahead of other developed countries with its progressive climate policies, and putting itself on the forefront of both domestic and international climate change action. This gave it strong negotiating power in climate talks, and likely contributed to other developed countries accepting climate commitments like the G8 agreement and EU 20-20-20 policy agreement.

The first four years of Merkel's leadership under the grand coalition mixed domestic and international climate policy to an effective degree. While there was initial reluctance towards the EU-ETS, the IEKP and Meseberg Decisions were a significant step in committing Germany to an achievable reduction target with policies to back up the target. The government was also active internationally, pushing other countries to be more active on climate change and adopt more progressive measures.

A Traditional Conservative Government's Climate Policy

The 2009 Federal election in Germany again saw the main competition between the CDU/CSU and SPD. Merkel remained as the head of the CDU/CSU, while the head of the SPD was Merkel's foreign minister, Frank-Walter Steinmeier. Merkel enjoyed high approval ratings prior to the election, and the

possibility of another Grand Coalition resulted in a campaign that many viewed as “boring” (Chu, 2009). The election however, resulted in a large loss for the SPD at the gain of the FDP, the usual coalition partner of the CDU/CSU. The CDU/CSU won 239 seats, while the SPD only won 146 seats, a loss of 76 seats compared to 2005. The pro-business FDP meanwhile, won 93 seats, up from 61 seats (The Federal Returning Officer, 2009). The strong showing of the FDP and the poor results for the SPD meant that another grand coalition was unlikely, and ultimately, Merkel formed a coalition with the FDP that ensured she would remain as Chancellor. This coalition was more in line with traditional coalitions, as the CDU/CSU and FDP generally share similar policy views. The result was a new center-right government headed by Merkel.

Climate policy under the new government continued on a similar path to the prior government, which is not surprising given the continuity in leadership under Merkel. Domestically, the government focused extensively on its energy policy, which was viewed as its main policy area that would reduce emissions. The main policy related to climate change that the new government created was their “Energy Concept” or the Energy Concept for an Environmentally Sound, Reliable and Affordable Energy Supply. The policy outlined the steps that the government would take to transition Germany’s energy supply towards one that was more secure, environmentally friendly, and efficient. The concept outlined additional targets for emissions reductions and increases in renewable energy in accordance with the previous targets agreed during the Grand Coalition. The pathway for emissions reduction was 55% by 2030, 70% by 2040, and an 80% to 95% reduction by 2050. For renewable energy, the targets were 30% by 2030, 45% by 2040 and 60% by 2050 (Federal Ministry of Economics and Technology & al., 2010). The strategy outlined many possible actions and scenarios that the government could and should take, including expansions of wind and bio energy, improved energy efficiency, and upgrades to the energy grid. But most importantly, it was the first significant policy strategy under the new government that demonstrated that they were still committed to the emissions targets and policies of the prior coalition. It represented a long-term approach from the government on environmentally-friendly energy.

The Energy Concept was supported by new acts and amendments to laws that would help achieve the targets that the strategy laid out. One of the major policy changes under the government was a reversal of Germany's view on nuclear energy. Under Schröder, nuclear power was due to be phased out by 2022, but this was delayed when Merkel amended the Atomic Energy Act, delaying the removal of nuclear power by another 12 years. However, the original ban on new nuclear power plants still remained in effect. This still represented a shift in climate policy under the government, who viewed nuclear power as an important tool before switching to a renewable energy system (Federal Office for the Safety of Nuclear Waste Management, 2024). Building on the extension to nuclear power, the Energy and Climate Fund Act created a fund from excess profits from nuclear power plants. This fund was to be used for actions related to the Energy Concept and transition towards renewable energy (Climate Change Laws, 2010a). The Grid Expansion Acceleration Act also intended to help achieve the renewable energy targets by expanding and changing grid infrastructure to increase renewable energy. The act built upon the Power Grid Expansion Act by decreasing the amount of time required for review and approval for projects (Climate Change Laws, 2011b). These three acts were the main policies that the government created in order to achieve its Energy strategy and the targets for emissions and renewable energy that were set. However, international events in 2011 would lead to another shift in government energy policy.

In 2011, the Fukushima nuclear accident occurred when an earthquake and tsunami hit Japan, shutting down the energy grid to the nuclear plant and preventing the plant from cooling its nuclear reactors. This led to the nuclear cores melting, releasing contaminants into the environment and once again raising concerns about the safety of nuclear power (World Nuclear Association, 2024). In Germany, the nuclear disaster started intense debate over the government's recent decision to extend the lifetime of Germany's nuclear plants by another 12 years, and led to a drastic government u-turn. Three days after the incident, the government put all nuclear reactors on moratorium, essentially shutting them down while tests and measures were taken to ensure their safety. Merkel herself stated that Fukushima "changed her attitude" towards nuclear energy (Thalman & Wettengel, 2021). The government amended the Atomic Energy Act further in August 2011, getting rid of the extension and reimplementing the proposed 2022 phaseout that was originally passed. Additionally, eight nuclear power plants were immediately taken off the grid and not allowed to resume operations (Federal Office for the Safety of Nuclear Waste Management, 2024). The u-turn also meant that the government had to rethink its strategy for energy again, as nuclear power had been viewed as a short-term alternative while the infrastructure for renewable energies were built. This led to the government passing a legislative package called the Energy Package, or Energiepaket (Jacobs, 2012). This included an amendment to the Renewable Energy Sources Act, which updated the law with the new targets for renewable energy as laid out in the Energy Concept. These were 35% by 2020, 50% by 2030, 65% by 2040, and 80% by 2050 (IEA, 2016a). The amendment also included 50 million euros for a new research and development program focused on storage solutions for solar power (Climate Change Laws, 2012). The legislative packet also included the Adaptation Action Plan of the German Strategy for Adaptation to Climate Change which was the successor to the Adaptation to Climate Change Act (2008). The adaptation plan included four key areas: providing knowledge, enabling, and informing, the creation of frameworks, details on activities for which the Federal government is responsible, and international responsibilities (The Federal Cabinet, 2011). The u-turn on nuclear power was significant in that it pushed the government to adopt stronger targets for renewable energy. However, it was also a major political misstep as it was a significant policy shift in a short period of time, which damaged Merkel's standing on climate change.

While domestically, Germany was focused on its energy supply, internationally, the focus was on negotiating a successor to the Kyoto Protocol. The Bali Road Map in 2007 had laid out a process for creating a new climate treaty to be finalized at COP-15 in Copenhagen. Merkel was also pushing for more commitment from major countries like the United States and China to be more active on climate change. A month before the conference, she gave a speech to the U.S. Congress urging them to pass a climate law, and was also personally involved in intense negotiations at the conference itself as she tried to hash out a deal with developed countries. The Copenhagen conference ultimately failed in its goal of negotiating a new treaty however. The resulting Copenhagen Accord acknowledged that global temperatures should be kept below 2 degrees Celsius, but included no binding emission targets for countries unlike its predecessor (Vidal et al., 2009). Despite Merkel's earlier international successes at getting climate agreements from the EU and G8, she was unable to corral her fellow leaders towards a new agreement, and the results of COP-15 are viewed as a major failure by scientists, activists, and developing countries. Without a new climate treaty, the Kyoto Protocol would remain the only binding treaty on climate change and international action on climate change would remain limited.

The successes of Angela Merkel's second term as Chancellor on climate change were more mixed compared to her previous government. While the Energy Concept, its updated targets, and accompanying laws represented important steps by the government towards transitioning towards an energy system more reliant on renewable energy, the extension of nuclear power and subsequent u-turn was a political blunder and damaged Merkel's credibility. The failure of COP-15 at Copenhagen, while not Merkel's fault, was also a significant step in the wrong direction on climate change, as the conference represented a big opportunity for a new, more progressive international climate treaty that was not taken. In this term, domestic climate policy was relatively successful, while international climate policy was not as successful.

Another Grand Coalition

The 2013 federal election offered another opportunity for Merkel to cement her chancellorship as leader of the CDU/CSU. Like the 2009 election, the results were unexpected, as the final results only led to four parties being represented in the Bundestag for the first time since 1987. Despite its extremely strong result in 2009 and being a part of the government over the previous four years, the FDP failed to secure enough votes over the five percent electoral requirement, ensuring that they would not be represented in the Bundestag. This failure was attributed to poor leadership, a political blunder over taxes, and a rise in the popularity of the Alternative for Germany (AfD) party (although it too fell short of the threshold). Their seats were split between the CDU/CSU and SPD, with both parties increasing their seats compared to 2009. The CDU/CSU won 311 seats, while the SPD won 192 seats. The Green party and the Left won 63 and 64 seats respectively (The Federal Returning Officer, 2013). Since the FDP was not represented and the CDU/CSU were just short of a majority, there were only a few options for a coalition government. The SPD, Greens, and the Left could form a coalition, or the CDU/CSU and SPD could form another grand coalition. However, a government with the Left party was highly unlikely due to its extreme liberal policies, which left a grand coalition as the only real option (Bollier, 2013). To determine whether the SPD would join the coalition, they held a vote with their party members, in which 76% of members voted to enter the agreement (Aljazeera, 2013). This resulted in Merkel's third term as Chancellor and second in charge of a grand coalition.

As part of their coalition agreement, the two parties outlined some of their proposed climate and energy policies that they would pursue over the next four years. This included a commitment to the 40% GHG reduction by 2020 target and a goal to amend the Renewable Energy Act further, pushing the share of renewable energy up to 40% to 45% by 2025 and 55% to 60% by 2035. The second commitment was reached in 2014 when the Renewable Energy Sources Act was passed. This included the updated targets above, an 80% target for renewable energy by 2050, and new targets for expanding capacity for solar energy, wind energy, and biomass. The new act also got rid of the feed-in tariff that had existed, and required producers of renewable energy to directly market their renewable energy sources in order to receive a market premium (Federal Ministry for Economic Affairs and Climate Action, 2014). To support their commitment to the emissions target set by the previous grand coalition, the government also created and enacted its Climate Action Programme 2020, which would serve as its main climate strategy to help achieve the target. The program includes nine components designed to reduce emissions: emissions trading, mitigation in electricity generation, the National Action Plan on Energy Efficiency, climate-friendly building and housing strategy, action in the transport sector, action to reduce emissions in industry, waste management, and agriculture, the government's role in demonstrating best practices,

research and development, and consultation and awareness raising. Under each of these components, the program also lists specific actions the government will take in that area. For example, the program proposes a reform of the EU-ETS to get rid of surplus allowances, incentives for energy efficient vehicles, and updated research focuses (Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, 2014). One of the main components of the 2020 Programme was the National Energy Efficiency Action Plan (NEEAP) which itself contained three main policy areas: efficiency in buildings, incentivizing energy efficient business models, and improving individual responsibility for energy efficiency. Measures in these three areas were intended to help Germany reduce its energy consumption by 20% by 2020 and 50% by 2050 (IEA, 2017b). Domestically, the Climate Action Programme 2020 was seen as a major step towards achieving the 40% emission reduction goal. However, international climate action at that point had still been lagging far behind what Germany was accomplishing.

In 2015, however, the 21st Conference of the Parties resulted in a new international treaty on climate change. After the failure at COP-15, COP-21 was seen as the next opportunity to secure a new international climate treaty, and Merkel and her government were crucial to negotiations. At the Petersburg Climate Dialogue in May 2015, Merkel announced Germany's intentions to double its climate finance from two billion euros in 2014 to four billion euros by 2020. This move was meant to ramp up pressure on other industrialized nations ahead of the conference, and again demonstrate Germany's strong ambition on international climate action (International Institute for Sustainable Development (IISD), 2015). And during negotiations at the COP itself, Merkel was said to have been key to ensuring that Russia's President, Vladimir Putin, would not try to block any potential deal (Harvey, 2015). The result of negotiations was the Paris Climate Agreement which was viewed as a landmark treaty on climate change and the successor to the Kyoto Protocol. Under the agreement, signatory countries agreed to take measures to reduce GHG emissions to limit global temperatures to 2 degrees Celsius above pre-industrial measures, and aim to keep temperatures below 1.5 degrees Celsius. The agreement also called for developed countries to help developing countries with climate finance, adaptation, and mitigation. To ensure that countries are taking measures to tackle climate change, they are required to submit climate action plans, called Nationally Determined Contributions every five years. Germany, as part of the European Union, submits a EU-wide NDC that contains an emissions target that the regional organization as whole will try to achieve. In 2015, the EU submitted its intended NDC, which included an emissions reduction target of 40% by 2030 compared to 1990 levels (European Commission, 2015). This was formally communicated to the UN in its first NDC once the climate treaty was ratified by the EU in October 2016. The creation of the Paris Climate Agreement and ratification marked a significant shift in international climate action, and led to further climate policies being enacted by Merkel's government.

In 2016, after the ratification of the Paris Agreement, Germany's domestic climate policy came under scrutiny, particularly regarding the government's proposed next steps on climate policy. The Climate Action Plan 2050, the government's long term strategy on climate change, resulted in intense debate, especially over the role of coal. In particular, the Ministry of the Environment and Ministry of the Economy repeatedly clashed over a coal phaseout and sector emission targets, with leaks of the documents also complicating development of the plan (Amelang et al., 2016). Ultimately, the final plan approved by Merkel and her cabinet is one of compromise between the two ministries. It reaffirmed the 80% to 95% target set by the government in 2010, and includes reduction targets by 2030 for the energy, buildings, transport, industry, and agriculture sectors, which amount to a total decrease of 55% by 2030.

While the plan does not include a date for a coal-exit like previous drafts did, it does note that reducing coal is a necessary step while also taking into account the economic consequences of reducing coal. The plan also includes goals to improve carbon sequestration, strengthen economic incentives like taxes, and improve energy standards (Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, 2016). While the passage of the Climate Action Plan 2050 was a positive step for climate policy, the initial drafts of the plan were much more ambitious. It included a deadline for a phaseout of coal and a timetable for making all cars in Germany emission free, both of which were scrapped from the final document after facing opposition from the economic ministry and other state and regional governments (Amelang et al., 2019). The Climate Action Plan 2050 was not the only climate policy passed by the government in 2016 and 2017 however. The Offshore Wind Energy Act aimed to increase the capacity of offshore wind generation to 30 gigawatts and 70 gigawatts by 2045, while the Renewable Energy Sources Act was amended further to introduce public sales for renewable energy projects (Climate Change Laws, 2016). This was designed to boost investment in these areas from companies, as energy-producing utilities could sell their renewable energy at an auctioned price (IEA, 2016b). These climate policies were on a smaller scale compared to the 2050 Plan, but were more concerned with the Energy Concept that the government had set out, and aimed to continue Germany's transition towards a fully renewable energy system.

The Third Grand Coalition

In 2017, there was another election which saw the CDU/CSU and SPD suffer large losses compared to the previous election. Angela Merkel remained as the leader of the CDU/CSU, and with the CDU/CSU still remaining as the largest party, Merkel was likely to become chancellor for a fourth consecutive term. The CDU/CSU won 246 votes, a decrease of 65 compared to 2013, while the SPD only won 153 votes compared to 193 in 2013. Their losses were the gains of the FDP and AfD, who were new parties present in the Bundestag compared to 2013. The FDP regained its political power after its failures in 2013, securing 80 seats, while the AfD, a right-wing populist party, won 94 seats to become the third largest party. The Left and Greens secured 69 and 67 seats respectively (The Federal Returning Officer, 2017). While the SPD initially rejected forming another coalition with the CDU/CSU, the two parties eventually agreed to form another grand coalition, albeit six months after the election results. However, the losses that both parties suffered meant that this was Merkel's smallest majority, as she reached the threshold required by just nine votes (Schlee, 2018). This tight majority meant that future climate policy would require intense negotiation and compromise in order to pass through the Bundestag.

One of the key parts of the coalition agreement between the CDU/CSU and SPD was that they would enact a law that guaranteed compliance with the government's 2030 climate targets. This was achieved in 2019, when the government enacted its Climate Action Program 2030 and the Climate Action Law (Klimaschutzgesetz) after facing increasing public pressure including the Fridays for Future student protests. The Climate Action Program 2030 came about after negotiations within Merkel's government and her appointed "climate cabinet", a group of government ministers relevant to climate change. The program includes many measures designed to achieve the 55% reduction goal for 2030, which would require reducing Germany's carbon emissions from 866 tons per year to 563 million tons by 2030. The sector targets for transport, building, agriculture, industry, and energy remain the same as they were in the 2050 plan, but one major policy included in the new strategy was the introduction of carbon pricing. This primarily applied to the transportation and building sectors and imposes a price of 25 euros per ton with

multiple price increases over the next seven years, eventually rising to 55 euros per ton by 2025. The revenue generated by the tax will be used for adaptation measures or given directly to German citizens as climate compensation (Appunn & Wettengel, 2023). Another major policy shift was the introduction of a deadline for coal power, with the government planning on ending coal production by 2038 at the latest. This was supported by the Act to Reduce and End Coal-Fired Power Generation (2020) which explicitly stated reductions in coal generation and the eventual deadline for complete decommissioning (IEA, 2021c). One of the biggest emission sectors in Germany is the transportation sector, and the 2030 plan includes subsidies for electric vehicles, increasing in charging stations, investments in public transport, and allowances for local, state, and regional governments to set their own vehicle standards for public transport. Measures in the agriculture sector include new regulations on fertilizer and a higher focus on reforestation, while in the industry sector, the government planned to collaborate with companies to improve production processes to reduce carbon footprints. The program also includes many other smaller scale measures and strategies that will be undertaken, taking the total cost of the program to a three digit billion euro sum. These measures will help to achieve the emission reduction targets for each sector with the ultimate goal of 55% reductions by 2030 (Wehrmann, 2019; The Federal Government, n.d.-a).

The 2030 Program was created in the fall of 2019, and to further support Germany's commitment to climate change, the government announced its intention to become carbon neutral. At the UN Climate Summit, the German government announced its updated goal of becoming carbon neutral by 2050, a significant commitment (United Nations, 2019). This was further supported by the EU endorsing climate neutrality by 2050 as its climate goal in December 2019 (European Commission, 2023). To cement the goal of carbon neutrality into law, the government passed the Climate Action Law, which ensures the carbon pricing system laid out in the 2030 program will be met. The law also solidifies Germany's carbon neutrality goal and its prior emission targets, including the 2030 target of a 55% reduction. This was significant as it was Germany's first ever "Climate Law", a piece of legislation that codified its emission targets into legislation and made them legally binding. These two pieces of policy were the most significant domestic climate policies that Merkel passed during her last term as Chancellor. They codified the emissions targets in legislation, and stated the strategies and measures that the government would take over the following years to achieve the goals that her previous governments had set (Appunn & Wettengel, 2023). There was an additional climate policy that her government passed early on in its term, which was the Cleaner Air Programme, a billion euro program designed to improve air quality in German cities and towns. Funds were directed towards measures like electrifying urban transport and replacing diesel buses. A further five hundred million euros were allocated in December 2018 (The Federal Government, 2018). However, the scope and scale of the 2030 program far surpassed this policy easily in its progressive nature.

There was one other major event during Merkel's term that had an impact on her domestic climate policy, which was a judicial ruling by the country's highest court. On April 29, 2021, the German Federal Constitutional Court ruled that the ground-breaking Climate Action Law was unconstitutional. This ruling was because the law did not state specific emission reduction targets beyond 2030. According to the court, this violated the government's responsibility to protect the basic fundamental rights of young people and future generations against the risks posed by climate change (Desmedt et al., 2021). This forced the government to revise the law in accordance with the court ruling, resulting in a new climate action law. This law included an updated target of emission reduction by 65% by 2030, 88% by 2040, and

reaching carbon neutrality by 2045. The revised law also included tougher updates to the sector emission targets and updated plans for new sector and economy-wide targets for the 2030s by 2024 and the 2040s by 2034 (IEA, 2023). This final revision was the last major climate policy that occurred during Merkel's term, albeit it was a positive change. However it is important to note that this policy was not brought about by the government, but by the judicial branch within Germany. This is important as it demonstrates the other avenues for climate policy to be enacted, as a progressive judicial system can push the government to enact progressive climate policy similar to what occurred in Germany.

There was little international climate action that Germany participated in as well during Merkel's last term, as the big push for a major climate treaty had already been achieved with the Paris Climate Agreement. Germany's participation mainly occurred within the European Union and its regional climate policy. This included a push by Germany for the organization to adopt a stricter target for emission reductions. In December 2020, Merkel and the European Council pushed for a new target of 55% reductions by 2030, which member states eventually agreed to. This is codified in the EU's updated NDC which is submitted to the UN (European Commission, 2023). The European Climate Law is created later in 2021, which puts the updated target into legally binding legislation as well as the commitment to carbon neutrality that was agreed two years earlier (European Union, 2021). Finally, at the G7 summit in 2021, Merkel announces Germany's intention to increase its climate financing from four billion euros to six billion euros annually by 2025, another substantial increase (Dirkx, 2023). Ultimately, these would be the last actions on international climate policy that Merkel would achieve as Chancellor after more than 16 years of being considered an international leader on climate change.

In 2018, Merkel announced her intention to not seek reelection as leader of the CDU/CSU and would end her time as Chancellor after the 2021 election. The period from 2017 to 2021 would be her last years as Chancellor, during which time climate policy in Germany took a significant jump forward. The 2030 Climate Programme and updated Climate Action Law were major steps that the government took towards achieving the emission reduction targets that it had set out. While international climate action had slowed post Paris Climate Agreement, Germany's domestic approach did not, and Merkel's work on climate can be seen through the commitment to carbon neutrality by 2045 and her pushes for progressive climate action.

Merkel as the "Climate Chancellor"

One of the main reasons that can help explain Germany's progressive approach to climate change is the leadership of Angela Merkel. Her role as head of the government can be heavily credited towards Germany's progressive policies and targets that were set during her Chancellorship. To understand Merkel's role as a climate leader, however, it is important to understand her career before becoming Chancellor. One of the most important things to understand is that she was a scientist before getting into politics. She studied physics at university in 1973, worked as a researcher at the Academy of Scientists in Berlin, and earned her doctorate in 1986. After this, she became engaged in politics and served as Minister of the Environment from 1994 to 1998. During this time, she held the first Conference of the Parties in 1995 in Berlin, resulting in the first international climate action. In 1997, she also negotiated the Kyoto Protocol, the first international climate treaty with binding emission reductions. As can be seen, before her chancellorship, Merkel had a long history of involvement with climate change and climate policy. As a scientist, she understood the science behind global warming, and was instrumental in

negotiations at the first climate conference and first climate treaty. These experiences set the stage for continued climate action during her 16 years in office.

As can be seen through her chancellorship, Merkel was an extremely active leader on climate change. Under her leadership, Germany passed extensive climate policies that focused on renewable energy, adaptation to climate change, and emissions reductions. She pushed her government to enact increasingly progressive targets for emissions reduction, beginning with the 40% target in 2007 and ending with the carbon neutrality commitment in 2021. Merkel really shone when it came to international climate action, as her skills as a negotiator led to her brokering many compromises and agreements with other nations on climate action. She was able to commit the G8 towards a climate target commitment, was crucial in the buildup of climate negotiations prior to the Paris Conference in 2015, and during the conference itself, helped dissuade Russia from blocking the treaty. She would not accept other countries throwing skepticism on climate change, saying in 2007 that she would not accept scientific findings being "watered down" by President George W. Bush, who himself was much less progressive on climate change. Her support for the European Council's updated GHG targets in 2020 gained the support of other member states who were skeptical of increasing the targets. These actions all demonstrate her climate leadership, as her actions put Germany on the path towards almost achieving the GHG targets, and put the country on the forefront of international action on climate change. Climate change was a key priority throughout all her governments. Her extensive climate policies, both domestically and internationally, led to her being dubbed the "Climate Chancellor" by the German media, a name which she earned through all her action on climate change (Thalman & Wettengel, 2021). Finally, Merkel was Chancellor for four terms, or 16 years in total. This is an extremely long period of time for a leader to be in charge of a country, but it is also important as it allows for continuity of policy over a long period of time. The government can maintain the same approach without having to worry about political upheaval caused by a changing government. This helps explain why there were not as many major shifts in German climate policy under Merkel as might be seen in other countries.

Another important factor that definitely contributed to Merkel's success at gathering international support and commitments was the progress that had already been made in Germany by Kohl, Schröder, and Merkel, especially in the late 2000s and early 2010s. For climate change, much of the onus on reducing emissions has been placed on developed countries since they are primarily responsible for global warming through their industrialization. In the Kyoto Protocol, the binding targets for emission reductions were placed on developed countries, not developing countries. Since the 90s, Germany has been engaged in progressive climate action, committing to its first reduction target all the way back in 1990, much earlier than most countries. It has always been ahead of other countries when it comes to climate policy, and this has given the German government strong credibility in international climate negotiations. When combined with Merkel's climate activism and strong negotiating skills, Germany has been able to obtain climate agreements and commitments from other high-emitting countries like the United States, China, and the EU, and pull other developed countries in the same direction as Germany.

It is important to note that while Merkel can be strongly commended for her commitment to the fight against climate change, there were instances during her chancellorship where climate policy took a back seat and was not as important. This can be seen in the EU's negotiations over CO2 emission standards for cars, in which Merkel pushed for less stringent rules in order to protect the German car

industry. Another example of this is her protection of the coal industry, as a law which resulted in the decommissioning of coal as a power source only came into effect in 2020, despite attempts to accomplish something similar during previous years. These two instances demonstrate that while Merkel was an extremely progressive climate activist, there were periods where industrial and political interests ensured that less progressive climate policy would be taken. Despite this however, Merkel's overall legacy on climate change is extremely positive, and Germany's extremely progressive approach to climate change can be heavily credited towards her leadership domestically and internationally (Thalman & Wettengel, 2021).

Cooperative Parties and a Lack of Polarization

Another reason that helps explain Germany's progressive stance towards climate policy is that German society and politics are not polarized, especially regarding climate change. Studies have shown that voters in Germany are not as polarized when it comes to politics, with many voters classifying themselves as "centrists" during Merkel's time in office. This has led to the two biggest parties being the CDU/CSU and SPD, which can be classified as center-right and center-left respectively, while the most progressive and right-wing parties like the Left Party and AfD have been left out of government. The proportional representation system in German politics has also helped decrease polarization, as it means that multiple parties can gain representation within the Bundestag, and voters do not have to just vote for two main parties, but have multiple options (Hudde, 2024; Tschotschel, 2023). With polarization not playing as big a role in German politics as it does in other countries, this has meant that consensus on issues like climate change has been easier to reach. Members of other parties do not hate each other, and compromise is easier to reach because they are not as far apart on issues. This is especially true during Merkel's time as Chancellor, when 12 of her 16 years were in charge of a "Grand Coalition" or coalition between the CDU/CSU and SPD. Since Germany is also a parliamentary system, compromise is especially important when it comes to coalition governments, as any failed votes can trigger votes of no confidence and result in new elections and/or governments. Due to this, the CDU/CSU and SPD had to reach agreements on the climate policies that they were going to pursue, or else their government would likely collapse. As stated previously, politicians and the public were also in general agreement on climate change, wanting to take action to tackle the issue. This made it easier for the government to enact more progressive policy and helped contribute to the progress that can be seen in Germany's action on climate change. Since 12 of the 16 years during Merkel's Chancellorship were under a grand coalition too, this was again another instance of continuity. The fact that both parties were in government for much of the same time meant that political change in Germany did not occur as frequently, and this meant that climate policy was pursued progressively during these periods.

The Policy-Making Process in Germany

One final explanation for why climate policy in Germany has been so progressive and remained relatively stable during Merkel's tenure was the way that policy is made in Germany. Legislation in Germany is done through a complex method involving three main political bodies: the government, the Bundestag, and Bundesrat. Most legislation is initially created by the government, although the Bundestag and Bundesrat can also create legislation. The Bundesrat then drafts an opinion piece on the legislation before it is submitted to the Bundestag. In the Bundestag, the bill undergoes deliberation in committees before amendments can be made, where it then receives a full vote. The bill then goes back to the Bundesrat, which has three options. It can approve the bill, at which point it becomes approved by the

minister, Federal Chancellor, and President and becomes law. The Bundesrat can object to a bill, which be overturned by the Bundestag, or it can submit the bill to a Mediation Committee, which will attempt to resolve conflicts between the two bodies. After resolution, the bill then goes through the same process of Bundesrat confirmation before becoming a law (Bundesrat, n.d.).

Germany's approach to climate change has involved a mix of legislation, government strategies, and government programs. Together, they have resulted in a progressive approach to climate change that has been effective at achieving the targets that the government has stated. However, some of these targets and policies pre-2019 were not legally binding. Instead, they were stated as the government's goals and upheld through the various frameworks of policies and strategies. This changed in 2019 with the Climate Action Law, which enshrined the 2030 emission reduction target and carbon neutrality goal in law. This made the targets legally binding, and ensured that even if future administrations, however unlikely, decided to deviate away from the climate policies adopted by Merkel, they would still be bound to the targets as they were laws. It is also important to note that some of the policies were also enshrined in law, like the Renewable Energy Sources act, and these have ensured that some effective climate policies had legal standing. For example, the Renewable Energy Sources act included the provision for feed-in tariffs, which strengthened the credibility of the policy. Germany's approach to climate change, specifically in more recent years which have combined legislation and programs into an overarching climate approach have ensured that the measures, policies, and targets set by Merkel and her government will be continued by future governments.

Climate Policy in the Post-Merkel Era

The 2021 federal election was a monumental election in German politics. For the first time in 16 years, Angela Merkel would not be involved and the Chancellor of Germany would be a new person. The election resulted in a three-party coalition between the SPD, the Greens, and FDP. With the Greens as a governing party for the first time in 16 years, hopes were high that climate change would again be high on the agenda of the government, and that momentum would be continued to reduce Germany's emissions.

The Green Party's Return to Power

During the 2021 election, climate change came to the forefront when extensive flooding hit Europe during the summer. Germany in particular was hard-hit, with nearly two hundred people losing their lives, which forced the prospective parties to focus on promising climate measures. CDU/CSU candidate Armin Laschet promised to "accelerate climate measures," while SPD candidate Olaf Scholz said that Germany must do "everything to stop global warming" (Schnee, 2021). The focus on climate change translated to a stronger showing for the Greens in the election, as voters viewed action on climate change as a priority. The election resulted in the CDU/CSU winning 197 seats, while the SPD had their best result since 2005 and won the most seats at 206. The Greens performed very strongly, winning 118 seats, while the FDP and AfD also performed well, winning 91 and 83 seats. Finally, the Left only won 39 seats (The Federal Returning Officer, 2021). With these results, a three party government coalition was viewed as the most likely outcome, as the CDU/CSU and SPD had ruled out another grand coalition prior to the election. The Green party and FDP were viewed as the kingmakers, while the SPD was viewed as the most likely partner given its victory margin. Ultimately, a traffic-light coalition government was formed with the SPD, the Greens, and FDP, with SPD leader Olaf Scholz becoming the new Chancellor (DW, 2021a).

With the Green party becoming the second largest party in the government and holding key cabinet positions, there were high hopes that more progressive climate policy would be on the agenda of the government. And in the coalition deal that the three parties announced, that seemed to be the case. The deal included plans to phase out coal by 2030, increase renewable energy to 80% by 2030, and increase rail transport and electric vehicles (DW, 2021b). The government immediately set out policies aimed to achieve the renewable energy target as well, initiating mass revisions of previous energy policies. These included changes to the Renewable Energy Sources Act, the Offshore Wind Energy Act, the Energy Industry Act, as well as other smaller energy-related legislation. The revisions aim to increase the speed at which renewable energy projects are undertaken by expediting approval and planning processes. The revisions also include a measure that two percent of federal land must be made available for wind energy projects, increases the auction prices for renewable energy sources, and accelerates grid expansion projects (The Federal Government, n.d.-b). These measures were supported by the 2022 Immediate Climate Action Programme which included eight billion euros for climate measures. The program also lists additional measures in the industry, energy, transport, buildings, and agriculture sectors (Climate Change Laws, 2022). One important global event that contributed to the acceleration of climate policy apart from the new government is the Russian invasion of Ukraine in 2022. Since Russia is a large exporter of energy in Europe, Germany was a large importer of energy from Russia, and the war subsequently threatened Germany's energy supply. The embargo of Russian oil by the EU and United States further threatened Germany's energy supply, which drastically accelerated the government's energy policies and required them to focus more on expanding their domestic energy production. This led to the reactivation of some coal plants to replace Russian energy, although their reactivation has been dated till 2024.

Climate policy has continued in 2023 and 2024, although it remains to be seen whether the government will continue with its progressive climate change approach. Legislation has been drafted to ensure that coal power plants will be phased out sooner than 2038, hopefully by 2030, and the government has been working on its 2023 Climate Action Programme as its strategy for climate measures in 2023 (Federal Ministry for Economic Affairs and Climate Action, n.d.; Popp, 2023). The government also plans on revising the Climate Action Law to be more progressive, but negotiations have yet to take place. Taking into account the Russia-Ukraine war, the approach of the new government towards climate must be commended, as they have taken advantage of the international situation to pass extensive energy policy which will increase the share of renewable energy. If the government can continue these types of policies with its annual climate programs and phaseout of coal, then the 2030 target and 2050 carbon neutrality targets will still be within reach.

Chapter 3: South Korea

Domestic Politics of South Korea

Like the United States and Germany, South Korea's government consists of three branches under a mixed presidential and parliamentary system. The executive branch consists of the President, his ministers, and government ministries. The President is elected in a national election, and serves one five-year term. They are the head of state and government, and are responsible for execution of domestic and foreign policy. The President can also veto legislation, and appoints the Prime Minister with legislative approval. Unlike Germany and the United States, however, South Korea's legislature is unicameral, or only one house, called the National Assembly. There is majority and proportional representation and each member serves for four years. The National Assembly enacts and amends laws, approves the budget, and ratifies treaties among other responsibilities. There are 300 seats in the national assembly, 253 of which are constituency seats and 47 of which are proportional representation.

In South Korea, there are two important courts in the Judicial branch. There is the Supreme Court, which is the highest court and rules over all legal matters, and there is the Constitutional Court, which reviews the constitutionality of laws passed by the National Assembly. There have been no court cases heard by either the Supreme or Constitutional Courts related to climate change however.

South Korean political parties often undergo changes and merges depending on the domestic politics. If a party performs poorly, it might rebrand or merge with another party, which means that parties are frequently changing their names, merging, or dissolving. The proportional representation in South Korea also means that many parties may win seats. However, unlike Germany where the six parties all have sizable representation due to the five percent rule, South Korea has many parties that have a single representative seat. Generally, two political parties have retained a majority of seats in the National Assembly: a center-left and center-right party. Right now, those parties are the Democratic Party of Korea (DPK) and the People Power Party (PPP). The DPK would be classified as center-left, while the PPP would be classified as being on the right of the ideological spectrum. The PPP were preceded in Korean politics by the Saenuri party and the Grand National Party, while the DPK were preceded by the Democratic Party. There are two other parties in Korea that have more than five seats in the National Assembly: the Democratic Alliance of Korea, which is an alliance of three center-left to left-wing parties, and the Justice Party, another center-left party focused on social justice issues.

Climate Policy in South Korea

Climate policy in South Korea has experienced many shifts since the 1990s as the country has developed and governments have changed. Climate policy first began under President Kim Dae-jung whose focus on Climate Action Plans was continued by Roh Moo-hyun. The first major shift occurred under President Lee Myung-bak, whose progressive Low Carbon, Green Growth vision served as the template for future climate policy and put Korea on track for extensive climate policies. Climate policy stagnated during Park Geun-hye's Presidency, as she mainly continued the policies that Lee created without enacting her own new policies. When Moon Jae-in came into office, however, the COVID-19 pandemic gave him the opportunity to enact an extensive Green New Deal and put Korea on the path towards carbon neutrality, another extremely progressive shift. The leadership under Lee and Moon played a particularly prominent role in the progressive shifts South Korea experienced, as did the lack of extreme polarization and policy-making process which made legislation easier to create. Looking at these

three factors help explain how South Korea has gone from a high-emission country towards a path of carbon neutrality.

First Implementation of Climate Policy under Kim

Climate policy in South Korea first appeared under centrist President Kim Dae-jung, who served as President from 1998 to 2003. In 1997, the Kyoto Protocol was agreed as the first major international treaty that included binding GHG emission reduction targets for developed countries. At this time, South Korea was still classified as a non-Annex I country and was not beholden to any mandatory targets. However, since Korea was still a large emitter of greenhouse gasses, and was relatively industrialized for developing countries, international pressure was high for the government to take action on climate change. In the 1997 presidential election, Kim Dae-jung won a tightly contested election after numerous failed previous campaigns. His government included responding to the United Nations Framework Convention on Climate Change (UNFCCC) and energy policy in the list of its top one hundred priorities when entering office, which led to the creation of the Ministerial Conference on the Convention on Climate Change (MCCCC) under the Prime Minister. There were nine ministers on the committee and its goal was to create a climate policy that would reduce GHG emissions, but not damage the economy. The MCCCC was responsible for creating South Korea's first climate policy which was the first Climate Action Plan (CAP). The first CAP was for the period of 1999 to 2001 and had four policy areas: reduction of greenhouse gasses, reduction of perfluorocarbons, hydrofluorocarbons, and sulfur hexafluoride, development of flexible mechanisms, and creating the foundation for GHG emission reductions. The CAP included 14 projects and 36 sub-projects under these four areas, mainly focusing on GHG reduction (Yun & Yoon, 2016). Despite its limited scope and scale, the first CAP was extremely significant as it was the first comprehensive climate policy that South Korea had created and set the tone for future climate action.

The MCCCC was reformed into the Committee for Responding to the Convention on Climate Change (CRCCC) in 2001, another Prime Ministerial committee. The new committee contained 20 members, including 12 ministers, and was focused on responding to the UNFCCC, developing the Comprehensive Action Plans for the UNFCCC, cooperating internationally on GHG reduction, creating climate infrastructure, and educating the public. However, the main goal was the development of the CAPs, and the CRCCC was responsible for creating Korea's second CAP under Kim. The second CAP contained five policy areas, including improving UNFCCC negotiation, the development of technologies focused on GHG reduction and energy, developing GHG reduction measures, setting the foundation for implementation of the Kyoto measures and a GHG inventory, and encouragement of public participation. This CAP included 84 sub-projects, a vast increase compared to the first CAP, and also included new policy areas that broadened the scope of the CAP (Yun & Yoon, 2016).

One other minor event relating to climate change that occurred during Kim's Presidency was the creation of the Presidential Commission on Sustainable Development (PCSD), which was tasked with beginning to formulate a National Strategy for Sustainable Development. Protection of the environment was one of the core pillars of sustainable development, so this was another instance of the beginning of climate policy under Kim. However, sustainable development became more of a priority under the next President.

The creation of the two committees responsible for climate policy and the two CAPs were very significant in South Korea despite their limited size. They represented the first progressive policies that the government created to tackle climate change, and given Korea's high emissions, were very important in demonstrating that Korea would take future action regarding the climate. It established a precedent for future climate policy which future Presidents would enact, such as President Roh.

President Roh's Vision for Sustainable Development

In the 2002 presidential election, Roh Moo-hyun was the successor to Kim under the rebranded Millenium Democratic party. He won the election by roughly three percent, overcoming the conservative candidate. Once again, climate change was not an issue for the public and politicians, as they were more focused on relations with North Korea and the United States at the time (The Guardian, 2002).

Climate policy continued under Roh much in the same way as it was under Kim in the years previously. The CRCCC continued with its implementation of the CAPs it had developed, and created a third CAP in 2005 for the years of 2005 to 2007. The third CAP included three policy areas, which were the promotion of GHG reductions in specific sectors, establishing a plan for adaptation to climate change, and establishing a plan for carrying out the UNFCCC. The CAP included 14 projects and 90 subprojects dedicated to these three policy areas, and unlike previous CAPs, included a defined funding amount which was 16.6 trillion won. The specified funding amount was important compared to previous CAPs as it laid the groundwork for the projects listed and ensured that they would be adequately funded. The third CAP was succeeded by the fourth CAP for 2008 to 2012, and had two similar policy areas as well as one new area. The three areas were the establishment of GHG reduction targets including short-term targets by sector and long-term national targets, creation and implementation of a climate change adaptation plan, and securing technology to reduce GHGs. There were 19 projects, which included focuses on renewable energy and transportation, but unlike the third CAP, there was no amount of funding specified (Yun & Yoon, 2016). These were the two main climate plans that were created during Roh's Presidency, and like Kim, while small in scale, they were still relatively significant in being the first steps on climate change that Korea had taken. One other initiative undertaken by Roh that was not explicitly climate change related, but concerned the environment, was the push towards a more sustainable development plan.

Sustainable development had been a goal of the United Nations since the 1990s when the Rio Agenda 21 on sustainable development was agreed in 1996 (United Nations, n.d.-a). Sustainable development involves the protection of the environment through various measures while also developing economically. In 2005, Roh announced "A National Vision for Sustainable Development", which aimed to continue South Korea's strong economic growth while "maintaining balance among economy, society and the environment." Since 2000, a National Strategy for Sustainable Development had been in the works, created by the Presidential Commission on Sustainable Development that Kim created. This was further supported by the National Commission on Sustainable Development (NCSD), which prepared bi-annual reports on sustainable development progress. There were five main areas under the President's vision, with the key ones relating to the environment being the integration of economic growth and environment, and creating an eco-friendly economic structure. There were 48 tasks under the vision, such as the establishment of a sustainable energy supply and establishment of national climate change policies (Chung & Hwang, 2006). The vision was enshrined in law with the Framework Act on Sustainable Development (2007) which provided the legal basis for all policies relating to the sustainable

development and committed the government to achieving the goals that the act laid out (United Nations, 2016).

While the Sustainable Development vision was commendable, it was not a comprehensive plan for tackling climate change, and the third and fourth CAPs remained limited in their ability to actually reduce GHG emissions. President Roh should still be credited with continuing the work of his predecessor and the trend of tangible climate policy, and the vision for Sustainable Development would serve as the precursor for the large shift in climate policy that would occur under the next President.

First Progressive Shift under Lee

While President Kim can be credited with creating and enacting South Korea's first climate policies, President Lee Myung-bak was the first to create and implement a comprehensive approach to climate change. Lee took this crucial step during a time of economic uncertainty and when South Korea was under increasing pressure from the international community over its high emissions.

Lee's Low Carbon, Green Growth Vision

Lee Myung-bak won the 2007 presidential election with the largest victory margin since 1987, giving the conservative Grand National Party (GNP) the Presidency for the first time in ten years (Chosun, 2007). His campaign primarily focused on revitalizing economic growth, as it had slowed to averaging a modest three to five percent after achieving extremely high growth in the previous two decades (Bank of Korea, 2015). His landslide victory emphasized the public's dissatisfaction with the progressive parties, which was further emphasized in the 2008 legislative elections (Snyder, 2008). The election resulted in the GNP having 153 seats out of 299, an outright legislative majority which would make it easier for the Lee and the GNP to create and pass policies.

With this political outlook for Lee's term, he turned his focus towards economic growth and development. During his campaign, he promised to enact his "747" plan, which aimed to increase growth to seven percent annually, improve per-capita GDP to 40,000 USD, and make South Korea the seventh largest economy in the world. However, the global recession in 2008 forced the government to alter its plans for general economic recovery, and a new national vision for economic growth was announced in August 2008. This vision was President Lee's Low Carbon, Green Growth plan, a national approach to growth for the next 60 years, supported by a Green New Deal that was announced in January 2009. The Green New Deal was announced to respond to the economic downturn caused by the global recession and focused on creating jobs and setting the foundation for future green growth. The stimulus included 50 trillion won ($42 billion) spent on nine projects and 27 subprojects between 2009 and 2012, 80% of which was focused on environmental initiatives (International Labour Office, 2010; Watts, 2009). The Green New Deal was one of the first steps towards a low-carbon, green growth future that Lee envisioned, and set the stage for a national plan for achieving that goal.

The Low Carbon, Green Growth Vision was a major shift in South Korea, not just in terms of the economy, but in the overall approach the government took regarding the direction of its policies. The vision was a shift away from quantitative growth towards qualitative growth and contained three main components: new eco-friendly growth engines for the economy, enhancement of the quality of life, and increased contribution to international climate efforts. Lee described the plan as "sustainable growth" to

"reduce greenhouse gas emission and environmental pollution" while also creating "new growth engines and jobs" when it was first announced (Ahn et al., 2011). To implement the new vision, Lee created the Presidential Committee on Green Growth (PCGG) in February 2009. The committee's mission was to discuss, decide, and enact policies relating to low carbon, green growth, the national strategy for green growth, the basic plan for coping with climate change, the basic plan for energy, and the basic plan for sustainable development (Korea Law Translation Center (KLT), n.d.-b). There were fifty members on the committee which was headed by the Prime Minister and another member, and included three subcommittees and a taskforce. The subcommittees were on green growth and industry, climate change and energy, and green life and sustainable development, while the task force had six teams on policy planning and coordination, energy policy, climate change policy, green technology and industry, green life and sustainable development, and international cooperation (LCGG Act). The PCGG replaced the CRCCC that Kim and Roh had used as the main climate policy making body. For the rest of Lee's term, the PCGG would be the main policy-making body for climate change in South Korea.

The PCGG formally announced the National Strategy for Green Growth up to 2050, as well as the First Five-Year Plan for 2009 to 2013 to help achieve the National Strategy. The National Strategy was the strategy for the LCGG vision and contained similar pillars to the ones Lee announced in 2008: mitigation of climate change and energy independence, creation of new engines for economic growth, and improving quality of life and enhancing international standing. It was rooted in the goal of increasing economic growth, but through sustainable development that would improve the well-being of the population and help South Korea lower its carbon emissions and adapt to climate change. The first Five-Year Plan (FYP (2009)) was the main policy tool the government enacted to achieve these goals. Under the three objectives stated above, the FYP laid out ten sub-objectives to be reached. Under the climate change objective, there was effective mitigation of greenhouse gas emissions, reduction of the use of fossil fuels and enhancement of energy independence, and strengthening the capacity to adapt to climate change. Under the growth objective, the plan called for the development of green technologies, the "greening" of existing industries and promotion of green industries, the advancement of industrial structure, and engineering a structural basis for the green economy. Finally, the final objective was about greening the land, water and building the green transportation infrastructure, bringing green revolution into daily lives, and becoming a role model for the international community as a green growth leader. Over five years, the plan included 50 large projects and 387 sub-projects, with a total investment of 107.4 trillion won ($89.5 billion) (Presidential Commission on Green Growth, n.d.). This roughly accounted for two percent of South Korea's GDP at the time and represented a significant investment on the part of the government towards decreasing emissions and adapting to climate change. The five-year plan incorporated many aspects of the fourth CAP that had been developed, but was much more comprehensive and large in scale (Yun & Yoon, 2016). With both the National Strategy and first Five-Year Plan, Lee pushed the government towards a much more progressive climate policy approach that would put climate change at the forefront of the government's agenda and push South Korea to be much more active on climate change. However, these were not the only climate-related events and policies that occurred during Lee's Presidency.

Two other major events that occurred during his term built further upon the National Strategy for Green Growth. The first was the passage of the Framework Act on Low Carbon, Green Growth (2010) which officially enshrined the LCGG vision and National Strategy into law. The act legally established

the principles and objectives of LCGG, the role of the PCGG, the National Strategy for Green Growth, and other various plans, policies, and principles. Article IV of the act outlined many future policies that the government would take to achieve a low-carbon society, including expansions of renewable energy, carbon disclosures by industry, and a cap-and-trade system. Crucially, the Framework Act was a law that ensured that the Low Carbon, Green Growth vision would be South Korea's main approach to climate change for the future and that climate policy would not shift regressively if future administrations did not feel as progressive on climate change as Lee. The strength of the Framework Act was increased by the Enforcement Decree of the Framework Act on Low Carbon, Green Growth, which held the government responsible and would ensure that the policies and plans laid out in the original act would be achieved by current and future governments (KLT, n.d.-a). The Framework Act serves as the umbrella law that combines all climate policy into one comprehensive law on green growth. Another key step that South Korea took was stating an emission reduction target at COP-15 in Copenhagen. During the summit, the government announced its intention to reduce emissions by 30% below its business-as-usual (BAU) levels by 2020, or roughly a four percent decrease compared to 2005. This was significant as South Korea became the first non-annex I country to announce a voluntary reduction target of that size and within a time frame, representing the government's commitment to fighting climate change. This target would become binding when it was added as an amendment to the Enforcement Decree on LCGG in 2011, ensuring that the target was part of the law and not just a political statement (Ministry of Government Legislation, n.d.). To achieve this reduction target, Lee and his administration set about enacting many of the policies that were proposed in the Framework Act.

One of the first climate policies that the Lee administration enacted was the First Energy Master Plan (2008). The plan was focused on three pillars: energy efficiency, energy security, and the environment. The plan set out a goal of 11% renewable energy in the energy portfolio by 2030, as South Korea had heavily relied on fossil fuels in the past and renewable energy usage at the time was minimal (Nachmany et al., 2015b). Another policy that the administration enacted was the Act on the Creation and Facilitation of Use of Smart Grids, which aimed to create smart grids to improve green growth by improving the technology in power grids to ensure efficient energy generation and usage. Under the act, the government created a master plan for smart grids to ensure the act would be implemented (Climate Change Laws, 2011a). The National Strategic Plan for Climate Change Adaptation 2011-2015 was made to ensure that South Korea would be adequately prepared for climate change disasters and be able to adapt to future environments and conditions caused by climate change. The plan involved coordination and cooperation between 13 government agencies on 87 projects relating to climate change adaptation. There were ten different focuses: public health, disaster management and infrastructure, agriculture, forestry, marine and fisheries, water, eco-system, climate change monitoring and projection, adaptation business and industry, and publication, education and international cooperation. Some examples of the projects included in the plan include efforts to reduce forest fires, establish responses to floods and droughts, and identification of climate change-sensitive species (Nachmany et al., 2015b; Climate Change Laws, 2010b). These acts were all initially conceived during the creation of the Low Carbon, Green Growth vision, but creating separate acts and enforcement decrees for each provision allowed for the government to go more in-depth on each specific policy. They each tackled an area of climate change that affected South Korea, as the Energy Master Plan and Smart Grid Act would help improve Korea's energy supply, and the Strategic Plan for Adaptation would help prepare the country for the adverse effects of climate change.

Another key policy area that Lee decided to act on was the emissions from industry, mainly from industrial companies and energy companies. To manage emissions from domestic companies, the Korean Emissions Trading Scheme or K-ETS was announced in the Framework Act and later implemented in 2015. Before the K-ETS however, the government also used the Targeted Management System (TMS) to help prepare the business sector for the eventual implementation of the K-ETS. The TMS annual mandatory reporting against firm-specific reduction targets from companies that would be included in the K-ETS, giving them adequate time to prepare their internal processes for dealing with the eventual K-ETS. The TMS also gave the government valuable data on industry emissions which would allow them to set the cap and permit allowances under the K-ETS. The TMS went into effect in 2012, and lasted until 2015 when it was replaced by the K-ETS. The K-ETS was enabled in the Act on Allocation and Trading of Greenhouse Gas Emissions Allowances in 2012, and a Master Plan was conceived to lay out the implementation of the system. The K-ETS is a cap-and-trade program where the government set a national cap on emissions and allowed companies and organizations to trade credits and permits for emissions. Sectors under K-ETS management included power generation, industry, buildings, transport, aviation, and waste (Asian Development Bank, 2018). In 2016, there were 603 entities that were under emissions management, and this grew to 684 by 2021. Under the K-ETS, there were three phases: 2015-2017, 2018-2020, and 2021-2024, with each phase having a different cap and allocation. In Phase 1, the cap was 1,687 million tons of CO2, while permits were allowed to be done freely to ensure a smooth transition to the system. The goal was that by phase 3, ten percent of permits would be auctioned and a smaller cap would be implemented, ensuring that emissions were decreasing (International Carbon Action Partnership, 2023). The K-ETS was a major policy under Lee, as South Korea became only the 2nd country in Asia to have its own cap-and-trade program. At the time of its implementation in 2015, it was the second largest carbon market in the world, just behind the European Union, and represented a significant step on the part of Lee and the administration towards achieving the 30% reduction target set out in 2009. It was an extremely progressive policy by the government and would remain so for future administrations.

Finally, there were three major international climate actions and events that South Korea played an important role in during Lee's term. The first was the establishment of the Global Green Growth Institute (GGGI), an intergovernmental organization based in South Korea that helps developing countries' promote green growth strategies that combat economic problems with sustainable and environmentally-friendly solutions. The organization currently has 48 member states as of 2024, and has been recognized as a key organization in helping developing countries implement their own climate policies (Global Green Growth Institute, 2018). Another major international climate moment that demonstrates South Korea's progressive shift on climate change during Lee's Presidency was the hosting of the Green Climate Fund, the international climate finance fund. The LCGG framework and development of the GGGI helped South Korea win the competition to host the GCF. Finally, the hosting of the G20 summit in 2010 and resulting leadership declaration and document demonstrated Korea's commitment to tackle climate change on the international stage. During the summit, green growth was a frequent topic of discussion, and the declaration mentioned sustainable growth, support for developing countries, and commitments to fight climate change. These three events signaled Korea's shift towards becoming an international leader on climate change, as pushed for by the Lee administration.

While the successes of Lee's climate policies have been heavily mentioned above, it is also important to mention some of the criticism that his administration faced, specifically accusations of "greenwashing" and the Four Rivers Major Restoration Project. Greenwashing is the idea that an individual, company, or country is misleading others to believe that they are doing more to protect the environment than they actually are. The Four Rivers Project was a key aspect of the Green New Deal, accounting for nearly 37% of the funding in the initiative. However, the project is mainly land-development related, not climate change specifically. The project involves the construction of 16 new dams, fixing damaged dams, and restoring river banks, which would improve water quality and prevent water shortages (Card, 2009). However, critics of the project stated that it would destroy habitats, wetlands, and overall lead to a worse environment. Ultimately, the government conducted an Environmental Impact Assessment through various ministries that concluded that the project would not have harmful environmental impacts provided mitigation took place, but this assessment took place before the project plans were finalized (Yoon et al., 2011). The project was finished in 2011, but has consistently faced criticism and review. The project demonstrates the accusations of greenwashing that Korea has faced as a high greenhouse gas emitting country. The project was funded by the Green New Deal, which was supposed to fund climate change initiatives, but likely had harmful impacts on ecosystems and the environment.

President Lee's term as President started a major shift in South Korea away from pure economic growth towards more climate-aware growth. His Low Carbon, Green Growth vision was instrumental in pushing South Korea towards a more progressive climate policy approach, and the various acts and laws created by his government were all progressive climate policies that helped reduce emissions. The Framework Act was particularly important in ensuring that these climate policies, including the vital K-ETS, would withstand political cycles, and the 30% reduction target in 2009 represented a significant step for the country.

Lee as South Korea's First "Climate President"

Part of South Korea's success in shifting to more progressive climate policy can be attributed to the leadership of Lee Myung-bak, who pushed for extensive climate policy. Before his Presidency, Lee had had previous experience in climate policy, but on a more local level. When he was mayor of Seoul, he removed a heavily-trafficked highway and restored the Cheonggyecheon stream that ran through the city, protecting the environmental area (Harvard University, n.d.). This success led to him being named one of the "Heroes of the Environment" by Time Magazine in 2007 (Walsh, 2007), and this focus on climate action was something he continued on into his Presidency (CNN, 2008). Climate policy before Lee had been relatively small in scale and ineffective. The CAP's created by Kim and Roh were important in that they were the first plans on climate action in South Korea, but they could by no means be considered a comprehensive approach to climate change. Lee changed all of that however, with his Low Carbon, Green Growth vision. For the first time, Korea had a definitive, comprehensive national climate policy that could guide the country towards reducing its greenhouse gas emissions. The vision was unprecedented in Korea, as the country had mainly been focused solely on economic growth without concern to the environment before Lee. Lee however, coupled those two ideas together, which not only increased support for the idea, but achieved two key goals of his administration with one main policy. Lee's commitment to climate action was demonstrated through his opening remarks at the 2009 UN Climate Summit, when he called climate change "one of the most serious challenges of our time" and said that

countries must “act now.” During this speech, he also took the instrumental step of setting a emissions reduction target with a deadline for Korea, becoming the first non-Annex I country to do so (Myung-bak, 2009). This was also extremely important, as it demonstrated Korea’s new intention to become a climate-conscious country and global leader on climate change. No developing country had set such an ambitious goal with a timeframe before Korea, but Lee did so. This goal was also announced at the COP-15, which was considered a vital conference on climate change in which potentially the successor to the Kyoto Protocol would be agreed. While this did not occur, the importance of Korea’s global announcement at the most important climate conference since Kyoto cannot be understated. Lee also spoke at the 2010 East Asia Climate Forum, where the GGGI was officially launched and Lee called climate change humanity’s “gravest threat”. Lee’s role as South Korea’s first “climate” President is therefore extremely important in explaining why climate policy shifted so progressively under him. He pushed the government to enact his LCGG vision and become the first developing country to adopt a very ambitious emissions target, setting the stage for future climate policy under his successors.

Political Polarization in South Korea

Another reason that helps explain why climate policy shifted so progressively under Lee is the lack of polarization at the time in Korea. Lee was a conservative politician, running under the Grand National Party which at the time was the main conservative party in Korea. Typically, when it comes to the environment and the ideological left and right, climate activism is more associated with the left whereas prioritization of the economy is the focus of the right. Since Lee was a conservative, it would be expected of him to focus his priority on the economy and not the environment. At the time however, South Korea was not as polarized as most countries, so the divide between conservatives and liberals was not as strong. This meant that they often agreed on policy direction, but not on policy implementation. This was crucial with the formulation of the LCGG vision, as it was both an environmental and economic policy, which meant that it gathered support from both sides. By integrating climate policy with economic policy, Lee was able to appease both conservatives and liberals, and with their ideological divide being not as strong, the LCGG vision had strong support. This integration can also be seen as a credit to Lee’s leadership skills, as combining the two areas into one policy set a precedent for future Presidents, which can be seen through President Moon’s approach to climate change. The lack of extreme polarization in Korea meant that compromise on policy areas was more likely, which made it easier to create and pass important climate policy like the LCGG Framework. By combining climate policy with economic policy, Lee was also able to increase support from across the ideological spectrum as the LCGG vision achieved the goals of both conservatives and progressives with one comprehensive plan (Cho et al., 2023).

Policy-Making in South Korea

While Lee was instrumental in pushing for the Low Carbon, Green Growth vision, and putting South Korea on the path towards progressive climate policy, the policy-making process in South Korea meant that the climate policies enacted were stronger and more durable to political change. In South Korea, policy-making is primarily done through the executive and legislative branches. The executive branch consists of the Presidency, their cabinet, and 23 ministries. The legislative branch consists of the National Assembly, the main law-making body in Korea which has 300 members, 253 of which are elected from local constituencies and the remaining via proportional representation. Together, these two bodies create climate policy.

The legislative process in South Korea is complex, although not as complex as the process in the United States since there is only one legislative body and not two. In Korea, the executive branch is the body that starts the legislative process. Any central agency, whether that is a ministry or committee, can draft and submit a bill for consideration. The bill then undergoes various reviews and consultations by other bodies, including other ministries, the Ministry of Government Legislation, and the State Council (Cabinet). After getting approval and signatures from the State Council and Prime Minister, the President then signs the bill, before it is submitted to the National Assembly. The bill then undergoes review in the relevant National Assembly committee, before getting voted on by the entire body. The Ministry of Government Legislation then drafts a final version of the bill which the National Assembly votes on, before the President, Prime Minister, and State Council all re-sign their support for the bill, at which point it becomes law (Korean Legislation Research Institute, n.d.; Korea.net, n.d.).

Practically all of the climate policies enacted under Lee were done through legislation via the Framework Act or smaller, more specific laws. Similarly to Germany, climate policy is primarily done through legislation, which means that it is less likely to undergo significant shifts as administrations change. Compared to the United States, where climate policy is primarily done through executive action, it can be seen that climate legislation is much more durable to political cycles than executive action. Another key aspect of the policy-making process that explains the continuity among Presidents is the contents of the laws themselves. Many of the plans included provisions that they were to be reviewed and updated every five years. This is why under Park and Moon, there were updates to the Climate Adaptation Plan and Master Energy Plan, among others, which ensured that the climate policies that Lee enacted would be continued by future governments. Since Lee's climate policies were secured through legislation, they were durable and resistant to political change, ensuring that future administrations would also be beholden to the mandates and measures laid down by the laws. This forced future Presidents to either continue enacting Lee's policies even if they disagreed with his approach, or to pass their own policies that were more progressive. Both of these instances can be seen in the approaches of the next two Presidents: Park, who favored continuity and mainly followed Lee's approach, and Moon, who started the major shift in Korean climate policy.

Continuity with Small Shifts under Park

Conservative politician Park Geun-hye was elected as Lee's successor for the Presidency in 2013, continuing the Saenuri Party (formerly the GNP) political dominance. She campaigned on the platform of economic recovery as South Korea was still suffering the effects of the Great Recession with high unemployment and slow growth (Ministry of Foreign Affairs, 2012). When she entered office, her administration set five national targets: creative economy centered on job creation, customized employment and welfare, lifestyle with creative education and culture, safe and integrated society, and establishing the base for the age of happy reunification. Her vision of a "creative economy" was her highest priority, as it was seen as the way to revitalize the Korean economy and lead to high employment, higher growth, and less poverty (Chung & Lee, 2022). Unlike the Lee administration, who placed the economy and climate change together which allowed the administration to pursue more progressive climate policy, creative economy did not focus on climate change. In Park's inauguration speech, she described the creative economy as "the convergence of science and technology with industry," (Yoon, 2013). This demonstrated how climate change was not as high a priority for the Park administration and represented a decrease in importance of the LCGG vision. This was further emphasized by the

transferring of the PCGG to the Prime Minister's office where it was subsequently renamed the Green Growth Committee, representing its decreased importance. However, since the climate policy passed by Lee's administration was enshrined as legislation under the Low Carbon, Green Growth Framework Act, Park's administration was still bound to continue many of the climate policies that had already been enacted.

One climate policy that Lee enacted that Park continued was the creation of a second Master Energy Plan, updating the first plan that was created in 2008. The second plan focused on six key areas: energy policies focused on demand management, the building of a distributed generation system, increasing energy while balancing environmental and safety concerns, enhancing energy security and energy supply stability, establishing a stable supply for each energy source, and using public opinion to shape energy policy. Under each of these main tasks, the plan also listed objectives, main-tasks, and sub-tasks, going in-depth on what the administration wanted to achieve (Ministry of Trade, Industry, and Energy, 2014). Another policy approach Lee implemented that Park continued was the use of five-year plans to dictate climate policy for the period of 2014 to 2018. The second plan had four objectives: improving green technology and business development, addressing climate change and reorienting energy policy towards energy independence, raising quality of life through increased emphasis on environmental performance, and increasing international cooperation and negotiation. These objectives were similar to the three objectives laid out in the first plan, but the first objective on green technology and business development was more focused on the priorities of Park, as she was more economically-driven than environmentally (Jones, 2015). The Park administration also released the second Climate Change Adaptation Plan for 2016 to 2020. The updated plan had 87 projects across 10 sectors, which included the 7 sectors in the original plan. The updated version also added projects on climate change monitoring and projection, business and industry adaptation, and publication, education, and international cooperation (The Government of the Republic of Korea (ROK), n.d.-b). Finally, the K-ETS implementation was also continued under Park's administration, coming into effect in 2015. The development and subsequent implementation of these plans and the K-ETS signifies the continuation of the climate policies adopted under Lee despite climate change's decreased priority under Park. Despite Park's aversion to significant climate change policy compared to Lee, the structure of his climate policies which required reviewing and updating every five years meant that the Park administration had to comply and resulted in new, more applicable policies.

As stated previously, the Low Carbon, Green Growth vision that Lee implemented took backstage during Park's Presidency, even though she still continued many of the policies within the strategy. That being said, new climate policy did not go missing completely under Park, but she just went about it in a different approach. Since Park had campaigned on revitalizing economic growth, one of her key policies that she enacted in 2014 was the Action Plan for Future Growth Engine. The plan outlined nine strategic industries and four base industries that the government believed would increase economic growth. Smart vehicles, disaster and safety management smart systems, and new and renewable energy hybrid systems were three industries included in the plan that focused on climate change mitigation and adaptation. Park's approach to climate change involved promoting economic industries that helped achieve emission targets and low carbon policies rather than passing climate policy outright.

On the international level, Park was also active, pushing South Korea as an international climate leader. In 2014, South Korea pledged $100 million to the Green Climate Fund (GCF) at the United Nations Climate Summit, a sizable donation. The 2015 COP represented a significant push on the part of South Korea and the world towards international cooperation on climate change. Park herself attended the summit, and South Korea announced an updated nationally determined contribution of 37% GHG emission reduction below business-as-usual levels by 2030. The Paris Climate Agreement was agreed at the conference with South Korea signing the treaty and ratifying it in November 2016, a month before it officially came into effect (The Government of the ROK, 2017). Korea's support of the treaty was important because Korea was still a large emitter of greenhouse gasses and the international community was still strongly pushing for Korea to be more active on climate change. By signing and ratifying the treaty, Korea did just that, signaling to the rest of the world that it would try to reduce its emissions. A year later, Korea along with the EU and 7 other developed countries pledged $23 million to the Climate Technology Center and Network, an organization that promotes the transfer of environmental technologies to developing nations, again demonstrating the administration's commitment to international cooperation on climate change. The updated emissions reduction target, ratification of the Paris treaty, and increased climate funding represented a strong commitment from the Park administration and South Korea towards climate action, despite her initial shift away from Lee's progressive climate policies. The updated target led to a small acceleration in the creation of climate policy during the remainder of Park's time in office.

In 2016, after the Paris Agreement was created, Park's administration shifted towards pushing climate policy in order to achieve its reduction goal that it set the year previously. The government released its Basic National Roadmap for Greenhouse Gas Reductions by 2030 which detailed how Korea would achieve its target by sector. The roadmap stated that South Korea must reduce its CO2 emissions by 315 million tons below 2013 levels, which would be achieved through reductions in the energy, industry, buildings, and new energy sectors (carbon capture and electric vehicles). These four sectors would account for 59% of the reduction, while remaining industries and international efforts and offsets would account for the rest (International Carbon Action Partnership, 2016). Park's commitment to the emissions target was further solidified when the government amended the enforcement decree on the Framework Act on Low Carbon, Green Growth, to include the updated target, ensuring that future administrations would also be held accountable for the same target.

Climate policy under Park Geun-Hye was a mixed bag. On the one hand, climate change decreased in priority initially, as Park focused more on economic growth. The Low Carbon, Green Growth vision was not as important to Park and was relegated to the Prime Minister's jurisdiction. However, the structure of the Framework Act on LCGG and many of the climate policies passed by Lee meant that Park still had to review and update many of the climate policies he passed which she did. Park did not completely ignore climate change domestically too, pushing her Action Plan for Future Growth Engines which included some measures designed to mitigate climate change through environmental technology. She was also active internationally, increasing Korea's financial commitments to international climate action, and signing and ratifying the Paris Climate Agreement, ensuring that South Korea was fully committed internationally to fighting climate change. With the ratification of the treaty, Park also updated Korea's emissions target, which was a progressive step, and the roadmap to achieve the new target was an important step Park took. In summary, while Park was not as progressive as Lee in pushing

South Korea in a whole new direction on climate change, she did continue the progress that he began and made sure that Korea remained active on climate change, both domestically and internationally.

Another Progressive Push by Moon

Lee Myung-bak can be credited with implementing the first progressive, unified approach to climate change in South Korea. This approach was largely continued during Park Geun-hye's Presidency with a few deviations towards more economically-focused policies. Under Moon Jae-in, however, South Korea again experienced another progressive shift in climate policy. Due to international circumstances and a three-fifths majority in the National Assembly, Moon pushed Korea towards a climate policy that was more ambitious than Lee, resulting in a target of carbon neutrality.

Moon's Green New Deal

In March 2017, President Park was arrested and charged with abuse of power and bribery, after being impeached and removed from office. Due to her removal, the scheduled presidential election was moved forward and held in May. The Democratic Party nominee was Moon Jae-in, a former lawyer and bureaucrat under Roh, and due to Park's impeachment, the election was a landslide victory for Moon who won 41% of the vote and nearly two times the amount of his closest challenger (Statista, n.d.). This was the first time a Democratic Party candidate had won the Presidency for ten years since Roh, so hopes were high that liberal President would take a more proactive stance on climate change than Park.

During the first two years of his Presidency however, there was little action taken by Moon to tackle climate change. This was due to his party only having a plurality of seats in the National Assembly, not an outright majority, which meant it needed the support of other parties to pass policy. One of his successes was fulfilling his campaign promise to enact a policy to increase renewable energy (The Korea Herald, 2017). The government created the Renewable Energy 3020 Plan in 2017, which aimed to increase the renewable energy share to 20% by 2030 by implementing renewable portfolio standards for energy suppliers, increasing solar usage in agriculture and buildings, and raising funds for renewable energy projects (IEA, 2020). This energy policy was further supported by the 8th Basic Plan for Electricity Supply and Demand, which included a reduced use of coal and nuclear energy and attempts to reduce energy demand (Ministry of Trade, Industry, and Energy, 2017). Additionally, Moon continued the policies that Lee and Park had enacted, including creating the Third Master Energy Plan for 2020 to 2040 in 2019 (Ministry of Trade, Industry, and Energy, 2019). The new plan called for an increase in renewable energy to 30% to 35% by 2040, which was a massive increase from the current share of 7.6% in 2017. The government also planned to increase the number of electric vehicles in use, including 8.3 million electric and 2.9 million hydrogen vehicles by 2040. The policy also reiterated the coal and nuclear phaseout that was originally specified in the 8th Basic Plan for Electricity Supply and Demand. However, that was all that Moon was able to accomplish during the first two and a half years of his Presidency. There was little original policy and he mainly maintained the status quo that Lee had begun with some more ambitious goals for renewable energy.

A major shift in climate policy occurred in 2020 with the COVID-19 pandemic and subsequent response which had major political implications. COVID-19 appeared in Korea at the beginning of 2020. While Korea had a high number of cases, the government implemented a comprehensive program of testing, contact-tracing, and quarantine, which meant that the country avoided widespread lockdowns and

fatalities were lower than the global average. The government's response was widely praised by the public and World Health Organization, and this contributed greatly to the Democratic Party's prospects in the legislative elections that were held in April 2020 (McCurry, 2020a). In the election, the Democratic Party won 180 out of 300 seats, which gave the party a three-fifths majority which would make it much easier for Moon and the party to pass their policies. The pandemic also caused an economic slowdown as the world grappled with rising cases and deaths, which slowed trade and economic activity. During 2020, Korea's economy contracted 0.9%, which albeit modest compared to the rest of the world, still represented a sharp decline from previous years (Stangarone, 2022). To combat the downturn, Moon, with his new supermajority, passed a massive stimulus package of 160 trillion won, the Korean New Deal. The Korean New Deal consisted of two main parts, the Digital New Deal and the Green New Deal, which primarily focused on environmental measures. The Green New Deal was the key policy that Moon implemented, but like Lee, he coupled climate policy with economic policy. His government specifically stated how many jobs each of the measures of the Green New Deal would create, making it easier to gain support. The Green New Deal focused on three key areas: green infrastructure, renewable energy, and fostering green industry, and went in-depth on various projects in the areas as well as funding. There was 30 trillion won for green infrastructure projects, including making public buildings zero-energy, while 35 trillion won went towards renewable energy generation. The policy aimed to increase renewable energy generation to 26.3 gigawatts by 2022 using 4.5 trillion won, with projects such as developing 13 new test sites for wind energy. Finally, there was an investment of 7.6 trillion won towards green industry, including increasing the number of clean factories and the promotion of leading businesses in the green industry (The Government of the ROK, 2020a; Ministry of Economy and Finance, 2020). Combined, these projects are expected to account for 20% of the reduction target and represent a significant progressive policy push from the Moon administration. The Green New Deal however, was not the only significant climate action that Moon would take during his Presidency.

In 2020, carbon neutrality had become the goal of many countries, including the European Union and Japan. South Korea similarly followed suit in October 2020, when Moon announced in a speech that Korea would achieve carbon neutrality by 2050 (McCurry, 2020b). In December, the 2050 Carbon Neutrality Promotion Strategy was announced by the government in response to the Paris Agreement's recommendation that all countries adopt a Long-term low greenhouse gas Emission Development Strategy (LEDS). The strategy outlined five key areas to achieve carbon neutrality. They were expanding the use of renewable energy across all sectors, improving energy efficiency, deploying carbon removal and other green technologies, scaling up the circular economy to improve industrial sustainability, and enhancing carbon sinks. The strategy also outlined goals for specific sectors, including the energy, transport, agriculture, and building sectors (The Government of the ROK, 2020b). The commitment to carbon neutrality also led to a new GHG emission reduction target, which was a decrease of 24.4% compared to the 2017 level by 2030. Previous targets had been compared to the business-as-usual measure, while this new target was solely based on absolute emission amount, a more transparent measure designed to demonstrate Korea's commitment to reducing emissions (The Government of the ROK, 2021). To successfully achieve carbon neutrality, the 2050 Carbon Neutrality and Green Growth Commission was created under the President, and was given power to oversee the direction of carbon neutrality. The commission consists of both public and private sector experts and deliberates and decides the major policies and plans for carbon neutrality. The major action undertaken by the commission was the creation and enactment of the Framework Act on Carbon Neutrality and Growth to Respond to the

Climate Crisis (KLT, 2021). This law replaced the Framework Act on Low Carbon, Green Growth, and serves as the legally-binding basis for achieving carbon neutrality which will guide future administrations. The commission also further updated Korea's Nationally Determined Contribution in 2021, setting an emissions reduction target of 40% from the 2018 level by 2030. By setting this goal, the government believed it would provide a path towards carbon neutrality and demonstrate Korea's ambition towards carbon neutrality (The Government of the ROK, 2021). The switch to carbon neutrality represented a major progressive shift in climate policy in South Korea and was orchestrated by Moon's administration. Before the shift, South Korea was under international pressure as despite the progress made by Lee, emissions were still high. The announcement of carbon neutrality however, demonstrated Korea's strong ambition on climate change, and the enactment of the Carbon Neutrality Law ensured that future administrations would be bound to continue progressive climate policies to achieve that goal.

There were also smaller climate policies that the government undertook after the carbon neutrality commitment, both domestically and internationally. The Third National Climate Change Adaptation plan was developed for the period of 2021 to 2025, and included another 232 measures that the government would take to ensure adaptability to 84 climate risks (Lee et al., 2022), and the third phase of the K-ETS began in 2021, covering 74% of total emissions in Korea (International Carbon Action Partnership, n.d.). Internationally, Moon was extremely active, attending various conferences and summits and demonstrating Korea's climate ambition to the world. At the 2021 Leaders Summit on Climate hosted by U.S. President Joe Biden, Moon announced Korea's strengthened NDC and the government's halting of using public funds to finance overseas coal plants. At the 2021 G7 and G20 summits, Moon again touted Korea's Carbon Neutrality plan and implementation, demonstrating Korea's plan to the world. At COP-26, Moon attended and spoke about the domestic measures that Korea was taking, as well as its updated NDC. Finally, Korea joined the Global Methane Pledge in 2021, an international initiative to help reduce global methane emissions (Chung & Lee, 2022). These actions demonstrate Korea's commitment to carbon neutrality through both domestic and international measures, and the major shift that took place during Moon's administration.

While the first few years under Moon were quite barren when it came to climate policy, the COVID-19 pandemic offered up the perfect opportunity for a major shift in climate policy, which he took. With a new legislative majority and increased demand for financial stimulus, the Green New Deal was already a progressive policy move by Moon to increase renewable energy and reduce emissions. The Carbon Neutrality commitment however, represented an even more significant shift by Moon, as it put Korea on the path towards progressive policy for future administrations and set an ambitious target for the country to meet. This was backed up by domestic and international action, including climate policies focused on emission reduction, participation in international climate commitments, and updated NDCs to the UN. Moon's administration represented the most significant shift in climate policy since Lee and his push towards carbon neutrality is just as important as Lee's initial Low Carbon, Green Growth vision.

Moon's Leadership on Climate

One of the main similarities between Moon and Lee which can help explain why climate change policy shifted so dramatically during their Presidencies is that Moon was an active leader on climate change, particularly during the second half of his Presidency. South Korea had been moving steadily along its Low Carbon, Green Growth trajectory and its emission reduction target that Park had enacted.

There was little domestic pressure for a new approach to climate change, although international pressure was still high on South Korea due to its high emissions. Moon could have been content to continue the policies that Lee had first begun and continued his vision, but he decided to create his own national vision on climate change, the carbon neutrality vision. He backed this up with the Framework Act on Carbon Neutrality, as well as updated emission reduction targets to help achieve that goal. He was extremely active internationally, touting Korea's commitment to carbon neutrality at multiple COPs, climate summits, and G7 and G20 meetings, pushing Korea to the forefront of international climate action. Moon should be credited for being an active leader on climate change and not accept the status quo. He pushed for more progressive policies, and when the opportunity arose for him to enact those policies, he did so. Like Lee, Moon's leadership was key to putting South Korea on a new path towards even more progressive climate policy and ensuring that carbon neutrality would be the goal of future Korean Presidents.

A Democratic 3/5ths Majority

Another reason that climate policy experienced such a large shift during Moon's Presidency was his party's success in the 2020 legislative elections. During the 2016 legislative elections, Moon's Democratic Party won a plurality of seats, but did not have an outright majority as did the Saenuri party. This resulted in a hung parliament with the People Power Party, a right-wing party, holding 38 decisive seats and playing kingmaker (International Foundation for Electoral Systems, 2016). This made it difficult for Moon to pass policies, as legislation that he wanted to enact would require the support of either the Saenuri party or People Power Party, both of whom differed ideologically with him and his party. While political polarization is nowhere near as extreme as it is in the United States, polarization between left and right voters and elites has been increasing, which has made compromise between major parties more difficult. The results of the 2020 legislative election were extremely important then, in that they gave Moon's party 180 out of 300 seats in the National Assembly, or a supermajority. This result was vital to Moon's policies, as it meant that he longer had to rely on the support of the opposition parties to pass his legislation. The 180 seat count meant that the legislative process could be fast-tracked, meaning that a bill could theoretically be passed in as quickly as 330 days. The 180 mark also meant that the filibuster, a tool for opposition parties to kill legislation through endless debate, could be overcome and limited to just 24 hours (Dayoung, 2020). This effectively meant that Moon could enact legislation relatively easily as long as his own party supported him, which is exactly what happened. With his new supermajority, Moon was able to pass the Carbon Neutrality Framework, update Korea's NDCs, and pass other smaller climate policies like the Adaptation Plan, with very little legislative opposition. Therefore, the high polarization was not a significant barrier to climate policy due to the Democratic Party's legislative majority.

The Carbon Neutrality Framework

The most significant piece of climate policy that Moon enacted during his Presidency was committing South Korea to becoming carbon neutral by 2050. This was accomplished through the Framework Act on Carbon Neutrality and Green Growth to Respond to the Climate Crisis which has become the most important piece of climate legislation in South Korea. The Framework Act is so important because it enshrines the concept of carbon neutrality into law, making it extremely difficult for future administrations to overturn the mandate. By providing the legal basis for carbon neutrality, Moon's administration has ensured that at the bare minimum, carbon neutrality will be the goal of future administrations up until 2050 or until a future government passes an even more progressive climate policy

goal. This has been seen with the policies of Moon's successor, Yoon, who despite his ideological differences to Moon, has continued the policy of carbon neutrality. Many of the other climate policies that Moon enacted were also pieces of legislation, such as updating the Energy Master Plan and Renewable Energy Plan 3020, which again ensures that the measures laid out in these laws are more likely to be achieved. As will be demonstrated through analysis of the United States' approach to climate policy, climate legislation is a much more powerful tool as it is more durable to political change and longer-lasting whereas climate action done solely through the executive branch is more flimsy and susceptible to change by future governments. Since the majority of Korea's climate policies are enacted by legislation, Korea's climate policies are much more robust and will be continued in the future until they are replaced by more progressive policies.

Yoon's Approach to Climate Change

In the 2022 presidential election, Yoon Suk Yeol of the conservative People Power Party, won in the closest presidential election in South Korean history. Climate change was not a key voter priority during the election, with economic recovery, unemployment, and gender inequality being the main voter concerns (Bicker, 2022). Climate change was also not a topic during the election for the candidates, although the nuclear phaseout commenced by Moon was highly debated. Yoon advocated for the increase of nuclear energy as he viewed it as the only way that Korea would achieve carbon neutrality. When coming into office, Yoon did exactly that, including the abandonment of the nuclear power phaseout in the list of his government's 110 national priorities. Also included in this list was the support of core industries in zero emission vehicles, renewable energy, the hydrogen industry, and carbon capture, utilization and storage. Yoon has also continued support for the Presidential Commission on Carbon Neutrality and Green Grow enacted by his predecessor, and has ordered the commission to establish a GHG Reduction Implementation Roadmap and a Basic Plan on National Carbon Neutrality and Green Growth (Kim, 2023). While the climate policy enacted by Yoon has been relatively minimal so far, Yoon's administration is still in its relative infancy so there is still adequate time for another progressive shift. As Lee and Moon both demonstrated, the international and economic context plays an important role in providing the opportunity for significant climate policy, and climate policy can come into effect late in a President's term just like it did under President Moon. With nearly three years remaining of Yoon's Presidency then, it remains to be seen whether he will be as progressive in climate policy as Lee and Moon, or just continue the work of his predecessors without any significant changes like President Park.

Chapter 4: The United States

Domestic Politics of the United States

The domestic politics of the United States are complex, with many different parts of government. There are three branches of government: the executive, legislative, and judicial branches. The United States government is a federalist state, meaning that powers are split between the federal government and state governments. The powers of the federal government are denoted in the Constitution, while all remaining powers are given to the states. This gives the states strong power in determining its own policies. The Executive Branch is the branch of the President, Vice-President, and executive departments. The goal of the Executive branch is to enforce the laws of the country. The President serves for four-year terms with a maximum of two terms, and is responsible for implementing and enforcing laws, foreign policy, and the armed forces. The President can also veto legislation passed by Congress, and has the power to pass executive orders which are directives that decide the operations of the federal government. Specifically related to climate policy, the Environmental Protection Agency (EPA) is an independent government agency whose administrator or head typically serves in the presidential cabinet.

The Legislative Branch is referred to as Congress and is where laws are created and passed. The lower house of Congress is the House of Representatives and has 435 members, while the upper house is the Senate, and has 100 members. The legislative process involves the drafting, debate, and passage of laws. A bill must be approved by both houses of Congress and then signed by the President to become law. If the President vetoes a bill, then Congress can override their veto with a two-thirds vote. Among other responsibilities, Congress also controls taxation and government spending. The final branch is the Judicial Branch, which interprets the laws of the United States. It consists of federal courts and the highest court, the Supreme Court. The Supreme Court has nine justices, appointed by the President and Congress for life. The Supreme Court is meant to remain politically impartial and its decisions can affect policy, laws, and government operations.

In terms of political parties, the United States has two main political parties: the Democratic Party and the Republican Party. Due to the main voting system of the United States being the winner-take-all system where seats are given to the majority winner, other third parties are rarely successful in elections and rarely gain seats in Congress. The Democratic Party can be described as the more liberal, leftist party on the typical ideological spectrum, while the Republican party is the more conservative and on the right side of the spectrum. They often have differing opinions on issues and policies and have grown more divided recently.

Climate Policy in the United States

The United States' approach to climate change has undergone many complex shifts over the past three decades as the country contended with social, political, and economic challenges. With changing administrations and representatives, increasing political polarization, and a complex and contentious policy-making process, climate policy within the United States has swung back and forth between progressive and regressive action. Beginning with Bill Clinton's commitment to the Kyoto Protocol to George W. Bush's more economically friendly approach and through Barack Obama's administration's push for clean power plants, the United States has experienced significant changes in its approach to tackling climate change. However, there has not been a more pronounced and sudden shift than when Donald Trump emerged on the political stage. Since his Presidency, climate policy has shifted drastically with his deregulatory approach contrasting strongly against Joe Biden's recommitment to tackling climate

change. Like Germany and South Korea, analysis of the shifts that the climate policy in the United States has undergone reveals the important role that leadership, polarization, and policy-making play in a country's approach to climate policy and change.

Climate Policy in the Pre-Trump Era

Recently, climate policy in the United States has experienced drastic shifts brought about by the extreme behavior and personality of Donald Trump. Before Trump's candidacy, however, the United States' approach to climate change was relatively stable with only slight shifts due to the differing ideologies of Republicans and Democrats. This has resulted in two periods of U.S. climate policy: the pre-Trump era, where climate policy underwent gradual shifts as Presidents changed, and the Trump era, where climate policy has drastically changed between administrations. The pre-Trump era concerns the climate policy of Clinton, Bush, and Obama, and shows how there was a certain level of consistency in the approach of all three despite their ideological differences.

Clinton's Approach to Climate Change

Coming into office as the first Democratic President in 12 years following Presidents Reagan and Bush, hopes were high that climate change would be high on the agenda of Bill Clinton. With strong environmentalist Al Gore as Vice-President and a Democratic majority in both the House and Senate, environmentalists believed that the government could take definitive action on climate change (Royden, 2002). Initially, this was the case. In 1993, Clinton announced his administration's commitment to reduce GHG emissions to 1990 levels by 2000, and to achieve this goal, the government announced its Climate Change Action Plan (CCAP) which had 44 initiatives to tackle emissions including energy efficiency standards and programs with industry (Clinton, 1993). With his announcement committing the United States to an achievable GHG emission reduction target, Clinton took the initiative and tried to put the United States on a progressive approach to tackle climate change. Unfortunately for Clinton and environmentalists, the United States had recently suffered a recession in 1990 and 1991 and was still in the process of recovering during Clinton's first term. Despite having a majority in Congress, legislators were skeptical of passing meaningful legislation for fear of hurting the economy further. Clinton's proposal of an energy tax did not garner enough support in Congress and with the CCAP requiring $1.9 billion in funding, creating meaningful climate policy was difficult, especially when Republicans took control of Congress in the 1994 midterms (Royden, 2002). The ideological differences between the two parties meant that with the Republican majority, it became extremely difficult for Clinton to push for any of his policies, especially climate ones. With legislative gridlock, climate policy could now only be achieved through the Executive branch.

With legislative action out of the question, Clinton's administration switched its focus to international action and agreements. The first major event was the first Conference of the Parties (COP) in 1995. While there were no binding agreements at the first COP, countries did agree to work together to adopt a future legal instrument to ensure that Annex I parties were required to adopt national policies to mitigate climate change and limit emissions (IISD, 1995). As an industrialized country that was a member of the Organisation for Economic Co-operation and Development, the United States was considered an Annex I party and would be required to comply with future agreements if they were ratified. At COP-2, the United States made further commitments on the international stage, throwing its support behind a

legally binding agreement on emissions reduction (IISD, 1996). This was a very big step from the Clinton administration and demonstrated the U.S.' goal of being a world leader on climate change (Cushman Jr, 1996). While the United States announced its support for an agreement, it also had some objectives that it wanted to achieve that would drastically impact future international negotiations. The first objective was that targets would be realistic, while the second objective was that solutions would be market-based and flexible. The final goal was to ensure that the agreement would help "continue progress by all nations" in the future, essentially stating that it wanted developed and developing countries to take action to limit emissions in the future (Royden, 2002). At COP-2, countries also agreed to speed-track negotiations on a legally binding agreement to be announced at the next COP, setting the stage for COP-3 in Japan.

With its objectives in mind, the White House increased its focus on a proposal for COP-3 in Kyoto, Japan. White House officials discussed the topic with environmental and industry groups, while simultaneously negotiating with other countries to gain support for a U.S. proposal that achieved its three objectives. However, the United States' attempts to achieve a binding agreement were further complicated by Congress when it passed the Byrd-Hagel Resolution, which stated that the President could not sign an international climate treaty if it did not require developing countries to reduce emissions as well (S. Resolution 98, 1997). This resolution contended with the key mandate of the COP-1 agreement which said that developing countries would not be put under a legally-binding agreement. Attempting to balance domestic and international pressures, Clinton revealed the United States' official proposal to COP-3 in October 1997. The proposal had a goal for industrialized nations to reduce emissions to 1990 levels between the years 2008 and 2012 using flexible mechanisms, while also stating that the United States would not assume a binding commitment unless key developing countries also did so (Rochelle, 1997). Clinton also announced his Climate Change Technology Initiative (CCTI), a significant investment in tax cuts and research to encourage energy efficiency and increases in renewable energy. Some examples under the initiative included tax credits for fuel-efficient vehicles and wind and biomass energy (The White House, n.d.-a). With this speech, Clinton in detail outlined his hopes for United States' climate policy over the next decade which aimed to achieve all his administration's objectives while appeasing industry, domestic politicians, and other countries.

The negotiations in Kyoto finished on December 11, 1997, resulting in the Kyoto Protocol. Under the agreement, industrialized countries agreed to reduce emissions by five percent between 2008 and 2012 below 1990 levels with the United States agreeing to a seven percent reduction. The agreement also allowed for emissions trading, meaning that countries that could reduce emissions cheaply could sell emission credits to countries with higher costs. Another aspect of the agreement was the Clean Development Mechanism, which allowed developed countries to use emission reductions generated by projects in developing countries as credits toward their targets. This mechanism was seen as one of the first steps toward getting developing countries involved and reducing their emissions (Myclimate, 2024). However, the United States did not achieve its goal of securing participation from key developing countries like China and India, as a proposed article of the agreement allowing countries to voluntarily take on a binding target failed. Despite the success of reaching the first comprehensive climate agreement, the failure to secure participation from developing countries meant that Clinton would struggle to gain domestic support for ratification (IISD, 1998). Members of Congress openly opposed the ratification of the Protocol, citing concerns over the non-participation of developing countries and the impacts of binding targets on the economy, specifically the energy sector (Cushman Jr., 1997). Gaining support for

Kyoto became even more difficult after Clinton's affair with Monica Lewinsky which prevented Clinton from pushing for any domestic and international policies (Royden, 2002). Despite domestic opposition, the Clinton administration signed the Kyoto Protocol a day after COP-4 where Argentina voluntarily agreed to a binding emissions reduction target (Hovi et al., 2012). The administration now turned its focus toward ratification. Domestic opposition to Kyoto was exemplified by the introduction of the Energy and Climate Policy Act of 1999, which included many of Clinton's policies, but rejected Kyoto's targets until developing countries agreed to targets themselves (H.R. 3384, 1999). It is important to note the similarities between this bill and Clinton's policies, demonstrating how Congress acknowledged climate change, was not opposed to action on climate change, but provided an alternative, slower approach compared to the Kyoto Protocol. Clinton and Congress were still at odds, however, making it extremely unlikely that any climate policies would be enacted before the end of his term.

By the time of the election in 2000, the Kyoto Protocol had still not been ratified and many of Clinton's climate policies were struggling to gain support in Congress. Despite putting climate as a high priority on his agenda, his approach was beset by legislative gridlock and Congressional opposition. His two major climate policies, the CCAP in 1993 and the CCTI in 1997 faced funding challenges every year. While the creation of the Kyoto Protocol represented a major success on the international stage, the failure to ratify it was a significant defeat for Clinton's administration. However, the United States was still instrumental in the negotiations, and the treaty was still ratified by 160 other countries, representing a very positive step in the right direction towards tackling climate change. Clinton's climate policies can be seen therefore as both successes and failures.

Changes Under Republican Bush

In the 2000 presidential election, Republican candidate George W. Bush defeated Clinton's Vice President, Al Gore in a highly contentious election. As a Republican, climate change was not a high priority for Bush, who focused more on social and economic issues. However, that is not to say that climate change was completely ignored by Bush, but rather put on the backburner. During his first term, he did accomplish creating some policies that combated climate, and he was still relatively supportive of climate science, setting a GHG emission reduction goal in 2002. However, in his second term, the Bush Administration's commitment to climate change decreased further due to industry lobbying. This led to some intense censoring of climate science and a strong commitment to fossil fuels, a regressive shift from the approach of Clinton.

Arguably the biggest climate action that Bush will be remembered for is his rejection of the Kyoto Protocol, effectively ending the chance that the United States would join the climate treaty. While the Senate had rejected approving the treaty in 1999, environmentalists still had hoped that the treaty would one day be ratified. In 2001 however, Bush ended that hope as he instructed the state department to initiate the process of withdrawing the United States from the treaty and stated that his administration had "no interest" in implementing the treaty (Borger, 2001). This was a big disappointment for international climate action as reducing GHG emissions would be difficult if the largest emitter was not legally-bound to achieve a set reduction as the United States would have been under Kyoto. While Bush rejected the Kyoto Protocol, he did found the Asia-Pacific Partnership on Clean Development and Climate which brought together the United States, Australia, South Korea, Japan, Canada, China, and India over public-private sector partnerships on clean energy and created 8 task forces covering a variety of climate

topics (IEA, 2021a). While nowhere near as important as the Kyoto Protocol, this partnership was significant in that it demonstrated that the Bush administration had not completely forsaken international climate action and was still willing to work with other countries on climate policy. At the end of his term in 2008, the administration also pledged to give $2 billion to Climate Investment Funds to help developing countries combat climate change, another important international climate initiative.

Domestically, the Bush Administration used the Environmental Protection Agency to implement some climate policies aimed at reducing pollution and emissions. In 2002, Bush announced his goal to reduce GHG emission intensity in the economy by 18% by 2012. While not an ambitious target, it still represented a commitment on the part of the administration to tackle climate change. One step it took to achieve this goal was a revision of the corporate average fuel economy (CAFE) standards for light trucks. In 2003, the NHTSA set a modest increase in fuel economy to 22.2 miles per gallon for light trucks built after the year 2007 (National Highway Traffic Safety Administration (NHTSA), 2003). The 2005 Clean Air Interstate rule was another policy the EPA used to reduce emissions. Under the rule, 28 eastern states were required to make reductions in the emissions of sulfur dioxide and nitrogen oxides (Environmental Protection Agency (EPA), n.d.). This was an important climate policy under Bush as it was one of the first attempts by the EPA to regulate GHG emissions. The 2007 Supreme Court ruling Massachussettes vs the EPA upheld this rule and officially gave the EPA the power to regulate GHG emissions under the Clean Air act (Massachusetts et al. v. Environmental Protection Agency et al., 2007). These two policies were very important as they would help determine the future President's approach to climate policy. The use of the EPA to regulate GHG emissions and the first revision of the CAFE standards were two things that Obama did during his Presidency to combat climate change, so Bush did set the initial precedent for using executive action to combat climate change.

On the legislative front, Bush and Congress were able to pass two bills relating to energy that had some climate initiatives. The Energy Policy Act of 2005 included a tax credit for electric vehicles, subsidies for renewable energy sources, a requirement for federal buildings to draw a certain amount of power from renewable energy sources, and improved loans for innovative technologies that focused on cleaner energy. The act also included support for the coal industry, however, including $200 million annually for clean coal initiatives (H.R.6, 2005; IEA, 2021b). Another bill focusing on energy was the 2007 Energy Independence and Security Act, which had some more important climate policies. One measure in the bill was a national fuel-economy standard of 35 miles per gallon for passenger cars, a further revision of the CAFE standards. The bill included measures to improve energy efficiency in lighting, appliances, and buildings, and a mandatory Renewable Fuel Standard that required fuel producers to use 36 billion gallons of biofuel by 2022 (H.R.6, 2007; IEA, 2017a). These two pieces of legislation represented important steps in the United States' attempts to tackle climate change. They aimed to increase renewable energy usage and the revision of the CAFE standards was another important precedent in improving vehicle efficiency to reduce emissions. Many of the initiatives in these two bills would be further improved upon during Barack Obama's Presidency.

Another large impact that the Bush administration had on climate change was the energy policies it pursued, which was mainly driven by Bush's Vice President Dick Cheney and the fossil fuel industry. Bush's energy policies began with the creation of the National Energy Policy Development Group (NEPDG), which was tasked with finding a solution to the United States' heavy energy dependency. The

taskforce was headed by Dick Cheney who became very involved in the work of the group. The result of the NEPDG was the National Energy Policy, which stated that the United States should aim to increase global oil production and eradicate any obstacles to United States' procurement of oil. The report was influenced by meetings with over 300 energy industry leaders, including leaders at BP and Exxon Mobil who are both major oil companies. Environmental concerns were hardly touched, with a single meeting taking place with environmentalists after the policy was drafted. Considering that this policy came into effect when international consensus on climate change was just beginning to gain momentum through the Kyoto Protocol, Bush and Cheney's recommitment to petroleum instead of shifting towards greener energy solidified United States' energy policy for the near future and continued the United States' high emissions (Roberts & Downey, 2016).

While Bush can be partially blamed for these policies, most of the responsibility for the United States' reliance on fossil fuels belongs to Dick Cheney. Before officially being announced as Bush's Vice-President for the election, Cheney served as CEO of Halliburton Company, an American multinational oil corporation that is heavily invested in oil operations around the world. While Cheney had resigned before becoming Vice-President, there was an extremely large conflict of interest with him helping decide the administration's energy policy. With the United States committing to petroleum, Cheney likely benefited greatly from this decision, as did other energy companies and leaders who had close ties to him. Cheney's opposition to climate change can be further exemplified by two major instances during Bush's second term, in which Cheney likely played a significant role (Walke, 2007).

While Bush did take some action on climate change and passed some climate policies, his administration's approach to climate change took a turn during his second term when his administration was accused of pressuring scientists to limit discussion on climate change and actively changing scientific reports to censor climate change. In 2007, during a Congressional hearing, his administration was accused of removing references to climate change and pushing government climate scientists to avoid using the terms "global warming" and "climate change," (Goldenberg, 2007). This drastically reduced the credibility of the administration's actions on climate change, as it appeared that there had been active attempts to reduce the push for climate policy. Despite the climate policies discussed above, these accusations demonstrated that Bush did not view climate change as a priority and were generally opposed to climate policy as it worked against their interests. A similar instance occurred over testimony by the U.S. Centers for Disease Control, in which Cheney's office reportedly edited out any mentions of the health consequences of pollution (Schor, 2008). This was further exemplified by the role that the energy industry played in lobbying the government for decreased climate action. In 2005, documents were leaked that showed that ExxonMobile, one of the most powerful oil companies in the world, had pressured government officials into rejecting the Kyoto Protocol, and that some government officials thanked the company for its work on deterring climate change policy (Vidal, 2005). These two instances show that the Bush administration's approach to climate change was a double-edged sword. On the one hand, they did enact some climate policies that set the precedent for future presidential climate policy. On the other hand, the leaks of documents and accusations of cover-ups demonstrate the administration's opposition to extensive climate policy and show why Bush rejected the Kyoto Protocol and failed to implement effective policy to reduce GHG emissions.

Obama's Push for Progressive Action

Like Clinton 16 years earlier, Barack Obama's victory in the 2008 election was seen as a major victory for environmentalist groups that would hopefully result in a major push for progressive action on tackling climate change. During his campaign and after winning the election, Obama proposed a reduction in carbon dioxide emissions of 80% by 2050 and an investment of $150 billion over ten years in clean energy (Obama, 2007). The general belief within the domestic and international community was that Obama would be a very progressive President on climate change, pushing the United States back to the forefront after a lackluster approach during Bush's time in office. Similarly to Clinton however, Obama ran into two key problems that severely limited his ability to push for legislative climate policy: an economic recession and a hostile, Republican-controlled Congress.

By the time Obama came into office in 2009, the Great Recession was in full swing, leading to high unemployment, steep drops in housing prices and the stock market, and a 4.3% drop in gross domestic product (Duggan, 2023). Climate change was the least of people's worries, who were more concerned about their economic well-being than rising emissions. Due to the recession, Obama had to put his progressive policies to the side and focus on pulling the United States out of economic turmoil. Like Lee in South Korea though, he was able to use the recession to push for some climate policy. The passage of the American Recovery and Reinvestment Act is often credited with ending the recession in the United States. It was an investment of $789 billion in tax cuts, infrastructure, and health initiatives, but more importantly for climate change, it included $90 billion in clean energy initiatives. This included money for grid modernization, energy efficiency, and carbon capture and sequestration, and created more than 80,000 clean energy jobs within the first year of its implementation (Romer, 2010). However, compared to South Korea, this was nowhere near as comprehensive a climate policy as Lee's Low Carbon, Green Growth. With a Democratic majority in Congress too, the recession provided Obama with a very good opportunity to push for a new environmentally-friendly economic approach like Lee, but one which he was unable to take.

The chance of legislative climate policy disappeared in 2010 when Republicans took control of the House of Representatives and the subsequent gridlock meant that any climate action that Obama wanted to take would have to be done through his administration. There were attempts to pass legislation such as the American Clean Energy and Security Act (ACES, 2009) and the Clean Energy Standard Act (2012) which would have created a cap-and-trade system and required utilities to source more renewable energy respectively (H.R.2454, 2009; Cornell Law School, 2021; S.2146, 2012; Cleantech Law Partners, n.d.). However, with Republicans controlling the House and legislators being wary of climate policy's perceived economic consequences, both bills failed to receive full votes in Congress. The failure of the ACES was especially damaging to Obama's hopes on climate policy as it initially passed the House and would have fulfilled many of his campaign promises including a binding 17% reduction in GHG emissions and a cap-and-trade system (Weiss, 2010; Goldenberg, 2009). However, the threat of a filibuster and opposition from moderates over the cap-and-trade system meant that it would not have passed the Senate and was ultimately dropped by the administration as potential legislation (Lerer, 2009). However, through various parts of the administration, the government was able to enact some more climate policies. For example, the Department of Energy created new energy efficiency standards for lightbulbs which helped save energy and limit mercury pollution. The Environmental Protection Agency

(EPA) also enacted new emission standards for cars and trucks and passed a rule requiring industrial plants to use the best available technologies to reduce GHG emissions (Struglinski, 2010).

Despite achieving some modest victories, Barack Obama's initial term in office is often regarded as somewhat unsuccessful in terms of addressing climate change. His significant attempt at climate legislation, the ACES bill, did not pass, relegating him to taking steps through executive action. A notable achievement was funding for clean energy initiatives as part of the American Recovery and Reinvestment Act. However, climate initiatives frequently took a back seat due to economic concerns and other legislative focuses, such as healthcare reform. And despite many people, including environmental groups, scientists, and international diplomats voicing their dissatisfaction with Obama's failure to enact meaningful climate policy, climate change remained a minor issue during his reelection campaign in 2012 until his victory speech. During that speech, Obama acknowledged "a warming planet," and announced his intentions to be much more proactive on climate change in his second term and create a climate agenda with bipartisan support at a press conference a few days after his reelection (Goldenberg, 2012). This promise would be realized with Obama's announcement of his Climate Action Plan in June 2013.

The Climate Action Plan (CAP) was President Obama's overarching plan to tackle climate change and dictated the United States' approach to climate change during the rest of Obama's second term. The plan had three goals to achieve: cut carbon pollution, prepare the United States for the impacts of climate change, and lead international efforts to address climate change. Under each goal, the initial plan contained various initiatives that the government would take to reach these goals. The first goal included initiatives like a new EPA plan to regulate emissions from power plants, improving the permitting process for clean energy projects, stricter fuel-economy standards, an expansion of the Better Buildings Challenge, and reductions of emissions of hydrofluorocarbons and methane. The second goal focused on resiliency and adaptation, creating the State, Local, and Tribal Leaders Task Force on Climate Preparedness and helping prepare communities and infrastructure for the impacts of climate change. This goal also included initiatives to protect key economic sectors and natural resources and increased funding for climate science research. The third goal focused on international efforts and stated that the United States would engage multilaterally on the issue of climate and try to reduce pollutants and deforestation, expand clean energy, and increase climate finance. The United States would also take a higher profile role in international climate negotiations like the COPs (Leggett, 2014). With this plan, Obama and his administration finally began fulfilling his campaign promises.

One key policy of the CAP was the goal of reducing emissions from power plants. To achieve this, the EPA created the Clean Power Plan (CPP), a policy that regulated emissions from new and existing power plants under the Clean Air Act, the United States' key air pollution law (EPA, 2015a). The Clean Power Plan was first announced in 2014 and finalized in August 2015. Under the plan, the EPA created national carbon dioxide emission standards for coal and gas power plants. The CPP also stated state-specific goals for carbon dioxide reductions and allowed individual states to create their own plans with emission standards that could be more effective than the national standard. If a state did not create its plan, then the EPA would regulate the plants in that state. During the periods of 2022 to 2029, states would be required to meet a certain goal of emission reductions with a final goal for 2030. The plan also did not specify specific ways in which states could achieve their goals, allowing them flexibility. They could invest in renewable energy, switch to more efficient technologies, or use emissions trading with

other plants and states. The CPP was also estimated to have many benefits not just limited to climate change. Successful implementation would cut the energy sector's carbon pollution by 32% relative to 2005, but would also reduce climate disaster costs, deliver billions of dollars in health benefits, and help the average American save on their energy bills (Natural Resources Defense Council (NRDC), 2017). The Clean Power Plan was one of Obama's most important policies focusing on climate change and demonstrated the progressive approach that he took during his second term as President.

Building on the CPP, Obama's administration also used the CAP to enact extensive climate policy to decrease the United States' emissions and protect the country from the impacts of climate change. The EPA created and passed the Waters of the United States (WOTUS) rule in 2015 as part of the Clean Water Act. Under the Clean Water Act, the federal government had the power to limit pollution in major bodies of water. The WOTUS rule expanded the government's jurisdiction to smaller bodies of water, covering 60% of all bodies of water in the United States and allowing the government to regulate pollution into these bodies (Davenport, 2015). To further curb emissions, the EPA also announced regulations on the emissions of hydrofluorocarbons under its Significant New Alternatives Policy, which would reduce CO2 emissions by 50 million tons by 2025. The EPA's methane standards also imposed regulations on processes and equipment in the oil and gas sector (EPA, 2015b). One final key regulation the EPA created was creating new emission and fuel-efficiency standards for medium and heavy-duty vehicles through 2025, similar to the standards Obama created in 2011 (Gasper, 2014). There were many more actions that the Obama administration took during his second term to achieve the goals set out in the CAP, but the regulations above were the major climate policies that were created and demonstrate the progressive domestic action that Obama undertook to combat climate change.

Obama was also active on the international stage regarding climate change during his second term, acting as more of a global leader on the topic than in years previous. Under Bush and during Obama's first term, the U.S.' leadership on climate had faltered and there had been little international agreement since COP-15. In 2014 however, the United States and Japan agreed to pledge $4.5 billion together to the Green Climate Fund, and the United States and China made a joint announcement on climate change agreeing to work together to adopt another climate treaty at COP-21 in Paris. Both countries also pledged specific targets on climate. The United States pledged to reduce its emissions by 26%-28% below its 2005 level in 2025, while China intends to reach its peak of CO2 emissions by 2030 and increase its non-fossil fuel consumption by 20% by 2030. The announcement also included cooperation on clean energy and clean technologies (The White House, 2014). This announcement was viewed as extremely significant as the competition between China and the United States was one of the main things that resulted in no binding treaty being adopted at COP-15, and this announcement gave hope that a major treaty would be agreed upon in 2015. Early in 2015, the United States and India also announced a partnership on climate, agreeing to cooperate on a number of climate initiatives including reducing hydrofluorocarbons, increasing clean energy finance, and increasing India's solar capacity (The White House, 2015). While no target was agreed with India, the partnership again represented a buildup of multilateral climate action before COP-21. The major international success under Obama came with COP-21 in Paris. At the COP, 196 parties adopted the Paris Climate Agreement, a legally binding treaty that aims to keep the increase in the global average temperature to well below 2°C above pre-industrial levels and pursue efforts "to limit the temperature increase to 1.5°C above pre-industrial levels." To achieve this goal, beginning in 2020, signatories have submitted Nationally Determined Contributions

(NDCs) that outline their plans for combating climate change. The Paris Climate Agreement also states that developed countries provide climate finance to developing countries, and enacts a framework for the transfer of technology between countries (The United Nations, n.d.-b). The Paris Climate Agreement was considered a major success and the most significant climate change treaty since the Kyoto Protocol. However, the Paris Climate Agreement is arguably more significant because, at the time, the United States was a signatory and committed to tackling climate change.

Looking at President Obama's two terms as a whole, he was a progressive President in terms of climate policy as he was influential in tackling climate change domestically and internationally. With his announcement at the beginning of his second term that he would take a more hands-on approach to climate change, he signaled his intentions as a progressive President regarding climate and pushed climate change to the top of his policy agenda. He personally negotiated with other major countries at COP-15 and COP-21, calling leaders of China, India, and Brazil to convince them to agree to climate action. However, like many Presidents, he ran into conflict with Congress, preventing him from passing meaningful climate legislation. The conflict can be attributed to economic fears after the 2008 recession, but also due to rising polarization which meant that Republicans and Democrats frequently disagreed about policies and compromise was more difficult to obtain. Obama only had a Democratic majority in Congress during the first two years in office and the focus at that time was on economic recovery and healthcare reform. During the rest of his terms, the House of Representatives was controlled by Republicans who opposed his policy goals and limited the legislative action that Obama and the Democratic Party could create. Despite this, Obama found alternative means through the Executive branch to fulfill his campaign promises. His second term in particular, with the creation of the Climate Action Plan, resulted in many executive actions, rules, and regulations being passed to tackle emissions and included Obama's signatory policy, the Clean Power Plan. However, as will be demonstrated in the next period, climate policy enacted through executive powers is not as durable and resistant to governmental change.

Regressive Shifts as Trump Enters the Stage

Through the Clinton, Bush, and Obama administrations, climate change has never been disputed as a problem that needs to be solved. Each President has had different opinions on the degree to which climate policy should be enacted, but they all recognized climate change as an issue and took steps to combat it. Obama was the most progressive, pushing the climate to the top of his priorities in his second term, while Bush only enacted minor climate policy as he was more concerned with the economy. There were shifts in the extent to which they enacted climate policy due to ideological differences, but all three still believed in the science and backed action on climate change. The 2016 presidential election and subsequent election of Republican Donald Trump, however, represented an extremely regressive shift away from previous Presidents and resulted in a massive step backward for climate policy in the United States.

Climate a Non-Priority During Campaign

The 2016 election featured Donald Trump as a political candidate for the first time. His appeal to Republican voters was as an anti-establishment businessman who would revitalize the economy and had no prior connections to the government. His campaign focused on improving the economy, reducing regulations, reducing immigration, and healthcare. Action on climate change was not important to Trump,

and during the election, he often commented that he questioned human's role in climate change. Climate change was also not a priority for the Republican party, with the words "climate change" and "global warming" not being mentioned once in the document (The Republican Party, 2016). One of the main reasons that Trump did not view the environment as important was that the regulations put in place by the Obama administration to protect the climate were hurting the fossil fuel industry. One of his campaign promises was to revitalize the coal industry, and to do this, he promised to remove Obama's Clean Power Plan (Murray, 2020). This tone of climate disregard and focus on fossil fuels would set the path for Trump's Presidency regarding climate policy when he won the election in November.

A Deregulatory Approach to Improving the Economy

Coming into office in 2017, Trump quickly worked on his campaign promises of deregulation, focusing on removing or replacing many policies that Obama had passed during his time in office. One of Trump's first executive orders stated that for every new regulation put in place, two existing regulations must have been reviewed and potentially eliminated. This set the tone for the rest of Trump's presidency: a strong focus on deregulation and weakening of federal oversight and reach. There was a heavy focus on regulatory action taken by the EPA as these regulations were viewed as the most harmful to the economy, and specifically, America's domestic energy sector which Trump had promised to protect. Many of Trump's deregulatory actions have targeted policies that reduced emissions and put constraints on the fossil fuel industry as an attempt to increase fossil fuel use and boost the industry. During his presidency, there were at least 74 actions taken by the administration that weakened environmental protection (Gross, 2020), many focusing on removing Obama-era policies.

Trump's commitment to deregulation of the energy sector can be demonstrated through one of his early executive orders: Promoting Energy Independence and Economic Growth. Under this order, departments and agencies were instructed to review all existing regulations relating to domestic energy. The order also included a review of the Clean Power Plan, as one of Trump's primary goals was to remove or replace the CPP. The CPP had been finalized in 2015, but in March 2017, Trump ordered the EPA to review the Clean Power Plan with the ultimate goal of rescinding the plan and achieving one of his campaign promises. By this time, Trump had also put in place his own Administrator of the EPA, Scott Pruitt, a climate-skeptic, making it easier to remove climate policies. The EPA's review of the CPP was completed by October 2017, where it recommended that the Agency repeal the plan (EPA, 2017). However, due to the Clean Air Act, the EPA is required to take action to reduce emissions, which meant that the EPA could not just repeal the CPP, but they had to replace it (Jordan, 2019). The resulting replacement policy was the Affordable Clean Energy Rule (ACE), first announced in 2018 and finalized in 2019 and which had major differences compared to the CPP. While the CPP had multiple methods to reduce emissions from power plants such as credit trading and increasing renewable sources, the ACE rule only focuses on heat rate improvement, or efficiency. The rule aims for power plants to draw more energy from the same amount of fuel. While the CPP also included national limits that individual states had to at least match, the ACE rule only requires that states themselves come up with their own achievable limits and a plan within three years to meet that goal. The rule is much more lenient and flexible than the CPP, giving more power to the states in determining their own emission limits. However, the lack of limits also means that it is a far less effective regulatory tool compared to the CPP. The EPA estimated that with full implementation, the rule would result in a decrease of 10 million tons of CO_2, which is only around 0.5% of emissions at the time (Irfan, 2019). Its finalization represented a massive

victory for Trump and his administration, allowing him to deregulate the coal industry, fulfill his campaign promise, and demonstrate his commitment to the deregulation of not just the coal industry, but the environment in general.

Another Obama-era policy that Trump took aim at was the Waters of the United States rule, which he initiated a review of in February 2017. A new replacement rule called the Navigable Waters Protection Rule was proposed in 2018 and finalized in 2020 and drastically reduced the number of wetlands regulated by the federal government regarding water pollution. This represented a drastic reduction in the scope of regulation and another shift away from a progressive policy towards a less-strict and environmentally friendly rule (EPA et al., 2020; Petersen, 2018). Trump also targeted the vehicle emission standards that Obama enacted. Through the National Highway Traffic Safety Administration (NHTSA) and EPA, the Safer Affordable Fuel-Efficient (SAFE) vehicle rule was created to replace Obama's CAFE standards. Under the SAFE rule, fuel economy and carbon dioxide standards were allowed to increase by 1.5% annually for passenger cars and light trucks through 2026, a drastic decrease from the 5 percent increase that Obama had enacted (NHTSA, 2020). This was another victory for Trump, but another shift away from progressive climate policy as the new rules were projected to lead to massive increases in the amount of CO2 in the atmosphere (Rott & Ludden, 2020). Adding on to the revised car emission standards, Trump also revoked a waiver that had allowed California to set its own vehicle emission standards, forcing the state to comply with the new federal standards that Trump had created. This was a massive policy shift as the waiver had been in place since 1970 and allowed California to enact more progressive emission standards compared to the national standards. Revoking the waiver was Trump's attempt to help American automakers since California's vehicle standards, as the biggest car-buying state, often influenced the decisions of automakers and forced them to make more environmentally-friendly vehicles (EPA, 2024; Ebbs, 2019). A final major policy that Trump replaced was a 2016 Bureau of Land Management (BLM) rule that required oil and gas companies to monitor and prevent leaks of methane. In 2018, the BLM repealed a large portion of the original rule, meaning that companies did not have to prevent leaks of methane and allowing methane emissions to increase (Harvard Law School, n.d.). These actions all represented regressive shifts away from the climate policies of previous Presidents, particularly Obama, and demonstrated Trump's commitment to virtually eradicating all climate policies that interfered with the economy.

While many of Trump's actions targeted regulations that decreased emissions, Trump also removed those that protected public lands from fossil fuel use. Trump lifted bans on oil and gas exploration in the Arctic National Wildlife Refuge, the National Petroleum Reserve in Alaska, in coastal waters around the United States, and in former National Monuments in Utah. Permits were given for the Keystone XL pipeline, an oil pipeline running from Canada to the United States, which Obama had previously refused (Gross, 2020). One final key act of deregulation that Trump accomplished was the revision of the National Environmental Policy Act (NEPA) from 1970. The previous version of NEPA required all federal agencies to create environmental assessments for agency action prior to making a decision. Trump's revision, however, narrowed the definition of federal action, limited what environmental impacts agencies need to analyze (including removal of long-term, widespread impacts), and put a two-year limit on analysis (Moorman et al., 2020). These deregulatory actions constitute Trump's climate policy in the sense that since climate policy was not a priority, he did not enact any new climate policy and only tried to undo the climate policy of previous administrations. His climate legacy is

one of undoing, undoing regulations that reduced emissions, protected natural environments, and shifted the United States away from fossil fuels. Under Trump, domestic climate policy became non-existent because it would have negatively impacted the economy, specifically the domestic energy sector.

On an international level, Trump's approach to climate change was a similarly regressive shift away from the approach of President Obama. As stated previously, one of Trump's campaign promises was to withdraw the United States from the Paris Climate Agreement. He confirmed his intention to do so in 2017, began the process in 2019, and officially withdrew the United States from the agreement in November 2020 (Pompeo, 2019). By doing so, Trump dramatically changed the international approach to climate change, as one of the largest emitters was now no longer under the commitment to keep global warming below 2 degrees Celsius. He negated all the work that Obama had done pushing the United States as an international leader on climate change, drastically reducing the United States' credibility on the issue. Further underlining Trump's stance on international climate action, the United State's delegations to the Conference of the Parties during his terms contained no major government officials and only consisted of bureaucratic staff. During Obama's Presidency, he attended some COPs, and his Secretary of State, John Kerry also made annual appearances. Trump never attended a COP and neither did either of his Secretaries of State, Rex Tillerson, and Mike Pompeo. Under Trump, the United States leadership on climate change completely disappeared and his withdrawal from the Paris Agreement reduced the effectiveness of the landmark treaty.

Compared to previous Presidents, Trump's term in office represented a complete u-turn concerning climate change and climate policy. His attempts to deregulate the environment and energy sector undid many climate policies that Obama had passed, while on the international level, his complete disregard for any international climate action undid many years of work that the Obama administration had done in getting the Paris Agreement negotiated and signed. There has arguably never been a more drastic shift regarding climate policy than when Donald Trump took office, raising the question of why such a shift occurred. Three things helped contribute to this shift: his leadership style and policy views, the increasing polarization in American politics, and the policy-making process in the United States.

Trump as an Anti-Climate Leader

One of the main reasons that climate policy shifted so regressively under Trump is that his beliefs, policies, and leadership style on climate change differed so drastically from previous Presidents. Trump has often straddled the boundary between being an outright climate denier to a climate skeptic, changing his views depending on the situation. Before he was even a political candidate in 2012, he posted on Twitter (now X) that global warming was created by "the Chinese" to hurt the economy (Donald Trump, 2012), and in 2014, he again posted that global warming was "bullshit" and "needed to stop," (Donald Trump, 2014). These views were extremely similar to the views that he continued to portray during his campaigns in the Republican primary and presidential election. In 2015 and 2016 during the Republican primaries, he stated that he did not believe humans had played a role in climate change, calling into question man-made climate change (Hewitt, 2015; Dennis, 2016). Continuing into his Presidency, he continued to call into question the science behind climate change. When the Fourth National Climate Assessment was released by the U.S. government, Trump explicitly stated that he "doesn't believe that" climate change will cause extreme damage to the U.S. economy (BBC, 2018), and he stated in another interview that he believed scientists "had a political agenda" when it came to climate

change (CBS, 2018). Due to these beliefs, Trump's approach to climate change has been extremely different compared to his predecessors. His skepticism has meant that progressive climate policies like the policies passed by Obama have been nonexistent with progressive climate policy a non-priority for his administration. His doubt on whether humans played a role in climate change has also meant that he continued support for the fossil fuel industry through his focus on deregulation of the environment and energy sector. A day after he signed the executive order initiating a review of Obama's clean power plan and all regulations relating to energy, Trump said he was "putting an end to the war on coal," (Federman, 2017). All of the new rules and regulations he created to replace Obama's policies were focused on boosting the fossil fuel industry, a key support of his during his campaign.

The Role of Polarization in Climate Shift

Another key explanation for the massive shift in climate policy that occurred during Trump's Presidency is the large increase in political polarization between Republicans and Democrats. Since 2012, polarization has steadily been increasing but jumped massively when Trump took office (Dinkelberg et al., 2021). Due to this increase in polarization, Democrats and Republicans have been at odds with each other on many issues, including climate change and climate policy. Nothing demonstrates this more than the change in polarization and its impacts on the respective policy views of the two ideologies. In 2008, Republican Presidential nominee John McCain was openly supportive of a mandatory limit on GHG emissions in the United States (Bumiller & Broder, 2008). Compare this to 2016, when Donald Trump is openly questioning whether climate change is even real, and the change is stark. On the other side, Barack Obama and 2016 Democratic nominee Hillary Clinton were both supportive of climate policy to tackle climate change. The gap between the two parties has become so large that compromise on a number of issues is impossible, with climate change being such an issue. When it comes to climate change, each party is openly hostile to the views of the other, and this means that when control of the government changes, the government's approach to climate change also changes. Importantly, Donald Trump has exacerbated the ideological gap between the two parties and increased polarization, which has made the shift in climate policy under his leadership even more pronounced. With polarization increasing, the policy differences between the two parties mean that whenever party control of the Presidency and Congress changes, policy changes will also occur, and only become more drastic as polarization continues to increase.

Policy-Making in the United States

While Trump's beliefs and the increase in polarization explain the reasoning behind why the shift in climate policy might have occurred, the policy-making process in the United States helps explain why such a shift did happen. One key aspect of both Clinton and Obama's Presidencies was the Congressional gridlock that occurred, limiting them from passing legislation to support their policies. During their terms, the Democratic Party only controlled both chambers of Congress for two years, and during the rest of their terms, either the House of Representatives or the Senate had a Republican majority. In the United States, legislation is extremely difficult to pass due to the legislative process. Bills must be granted a hearing before having to pass votes in the committees and then both chambers before eventually reaching the President who can sign them into law. At any time, the Senate leader, House leader, or committee chair can refuse to grant a bill a vote, or a filibuster in the Senate can effectively kill a bill unless a 3/5ths majority overrules. Unless a political party controls the House, Senate, and Presidency, then legislation must get support from some members of the other party. Polarization also plays a role in this, as the

increasing polarization has made bipartisan compromise difficult to achieve on most issues. For Obama, since the legislative path for climate policy was blocked by a Republican majority in the House, he was limited to using the powers of the Executive branch to enact climate policy. He did this to great effectiveness, using the EPA, his executive orders, and other government agencies and actions to pass policies like the Clean Power Plan and WOTUS rule. However, without any legislation to support his policies, they were always going to be vulnerable to future administrations (Crews Jr., 2016). Trump was able to accomplish exactly this. Once Trump came into office, most of Obama's climate policies were at risk, and Trump was easily able to initiate reviews of the regulations and policies and instruct his agencies (now headed by his own bureaucrats) to remove or replace them. Compared to Germany and South Korea, where climate policy has primarily been done through legislation like the Low Carbon, Green Growth Act, and Climate Action Law, the United States falls short in its ability to create long-lasting durable climate policy since legislation is difficult to pass. Since climate policy has primarily been accomplished through the Executive branch, it is easy for a new Administration to change those policies, and this helped contribute to the regressive shift in climate policy that occurred during President Trump's term.

Biden Adopts Climate as Priority and Leads Progressive Shift

With Donald Trump's term in office being one of the most controversial Presidencies, the 2020 presidential election was viewed as a must-win by each party. Democrats were determined to remove Trump from office and ensure a return to Democratic policies and beliefs. Republicans on the other hand wanted to continue Trump's Presidency as he promised more deregulation, a stronger economy, and an America-first approach. With Trump's Presidency resulting in a massive shift backward from Obama's climate policies, the 2020 election offered the opportunity to either continue that shift backward, or push climate policy on a progressive path back to Obama's policies and more. The latter occurred with Joe Biden's victory in the election ensuring a climate-policy-supportive President for four years and who pledged to undo many of the actions that Trump took.

Climate a Key Priority to Biden

Beginning with his campaign during the Democratic primary and subsequent presidential election, action on climate change was a key priority of Biden. Early on in his primary campaign, Biden unveiled a $1.7 trillion plan on climate change that embraced many aspects of a "Green New Deal" and would result in net zero emissions by 2050. The plan included ten steps to tackle climate change, including new fuel economy standards, a methane pollution limit, higher appliance and building efficiency standards, and a ban on new oil and gas permits on public lands and waters. Biden called climate an "existential threat" that required a "green revolution" to solve it and also pledged during his campaign to rejoin the Paris Climate Agreement that Trump had left. The major goal of Biden's plan was an enforcement mechanism to ensure that his net zero emissions target would be reached by 2050 by making that goal legally binding, similar to Germany's Climate Action Law and South Korea's Climate Neutrality Act (Joe Biden, 2019; Bradner & Saenz, 2019). This plan and his campaign promises were the complete opposite of the policies of Donald Trump and the Republican party, which still viewed climate change as a non-priority and did not mention climate change once during its party platform for 2020 (which was the same as its 2016 platform) (Republican Party, 2020). With Joe Biden winning the election in 2020, there was hope that all the environmental damage that Trump accomplished would be undone and the United States would once again be on the path towards progressive climate policy.

A Complete Reversal of Trump's Approach

Immediately after entering office, Joe Biden set the tone for climate policy during his Presidency when he signed the Paris Climate Agreement and made the United States a party to the vital climate treaty. By reentering the United States into the agreement, Biden essentially reignited the United States' efforts to fight climate change, committing them to the treaty's goal of limiting global warming to at least two degrees Celsius. It also represented the beginning of a shift away from Trump's climate approach that would continue through Biden's first two years in office. Under the Paris Agreement, the United States was also required to submit its Nationally Determined Contribution which it did in April 2021. In a report to the UNFCCC, Biden set the U.S. NDC at a greenhouse gas reduction of 50% to 52% by 2030 compared to 2005 levels. This was a significant step in the United States' approach to climate change as it announced a target to the world and made sure that the United States would be held accountable. Continuing the re-engagement on international climate action, Biden also hosted the Leaders Summit on Climate, which was a meeting of 40 world leaders to discuss climate change. At this meeting, Biden announced the U.S.' NDC and also helped negotiate several other commitments from major countries including China, the European Union, and Japan. In 2022, the United States, alongside the European Union, created the Global Methane Pledge, a voluntary commitment by 155 countries to reduce global methane emissions by 30% from 2020 levels by 2030 (Global Methane Pledge, 2022). The creation of this initiative again represented the administration's intention to act as a global climate leader, creating international climate action and pushing other countries to do the same and be more proactive on climate change.

Domestically, Biden continued the shift away from Trump's focus on deregulation and boosting the fossil fuel industry. One of his first executive actions was an order on "Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis," (Exec. Order No. 13990, 2021). Under this order, Biden outlined his objectives for the United States, including listening to science, improving public health, and protecting the environment. He ordered all executive departments and agencies to review and address any action taken during Trump's presidency that conflicted with his objectives. This included reviews on methane emission standards, vehicle fuel efficiency standards, and appliance and building standards. The order also included a reinstatement of moratoriums on oil and gas exploration and projects in the Arctic. He revoked the permit for the Keystone XL pipeline which Trump had granted, which eventually led to the project being canceled (CNBC, 2021). The executive order also targeted several other executive orders that Trump had passed, either suspending them or revoking them entirely. Biden also pushed climate onto the agendas of federal agencies, requiring them to create various task forces and positions centered around climate action. An interagency National Climate Task Force was set up to facilitate action on climate change between agencies and departments, making it easier to create and enact climate policy (Thomas & Schwarber, 2021).

On the regulatory side, Biden, through the EPA, focused on passing new regulations to replace Trump's weaker policies. One primary focus was on new vehicle carbon emission and fuel-efficiency standards to replace the SAFE standards that Trump had passed. In 2021, the EPA announced new standards for passenger and light vehicles. Under these new standards, automakers had to reach a target of 161 CO2 grams per mile by 2026. By comparison, the SAFE standards allowed for a little less than 210 CO2 grams per mile by 2026. The EPA's new rule is expected to reduce carbon emissions by 3.1 billion

tons by 2050. The NHTSA also introduced new fuel economy standards for vehicles, which included an 8 percent increase in fuel efficiency by 2026, resulting in an increase of 10 miles per gallon compared to 2021 (Center for Climate and Energy Solutions, n.d.). In 2022, the EPA targeted heavy-duty vehicles, creating more stringent standards on nitrogen oxide pollution which will reduce these emissions by 50% by 2045. The EPA also announced a new proposed rule on methane emissions that would impose limits on methane emissions for new and existing oil and natural gas operations. The proposed rule is estimated to reduce emissions by 58 million tons from 2024 to 2038 (EPA, 2023). One regulation that Biden has yet to replace by 2022 is a regulation on emissions from power plants, or a new version of Obama's CPP and Trump's ACE rule. The creation of this regulation has been complicated by a Supreme Court ruling in July that stated that the EPA could not implement industry-wide restrictions on power plant generation, but could only do so on a plant-by-plant basis (West Virginia et al. v. Environmental Protection Agency et al., 2022). This has severely limited the EPA's ability to control emissions from power plants and has forced Biden and the EPA to rethink their approach. However, this was just one setback and the majority of Biden's attempts at implementing new regulations have been successful. The new regulations represent significant shifts away from Trump's prior regulations. They are much stricter on the amount of emissions allowed and are projected to reduce emissions by a large amount. They represent Biden's commitment to much more progressive climate policy and demonstrate the extreme shift that occurred when he took office.

Definitive Legislative Action on Climate Change

One of Biden's major successes when it comes to climate policy was two pieces of legislation that he was able to pass that included funding for climate initiatives. With a Democratic majority in both the House of Representatives and Senate, being able to pass climate legislation was a real possibility, and unlike Clinton and Obama who failed to pass legislation when they had the same opportunity, Biden was successful. The first major piece of legislation was the Infrastructure Investment and Jobs Act (Bipartisan Infrastructure Law), a massive $1 trillion investment in infrastructure across the country. While not a major piece of legislation dedicated to climate change, it did include funding for some climate initiatives. The bill included $65 billion in clean energy and grid investments, $55 billion for clean water, $50 billion for climate resilience and weatherization, and $7.5 billion for electric vehicle charging stations (The White House, 2024). The bill represented a major victory for Biden's administration as not only did it include some funding for climate initiatives, but it passed with bipartisan support which was surprising given the high polarization. Biden was not done there, however, as he was also able to pass another bill that was a major piece of climate legislation. In 2022, Biden and Congress passed the Inflation Reduction Act (IRA). The IRA is a $369 billion investment in climate initiatives using mainly subsidies and tax credits to boost investment in clean energy and climate-friendly projects and actions. The law includes tax credits for electric vehicles, domestic production of solar, wind, and batteries, and for manufacturing factories of EVs and clean technology. The law also created the Greenhouse Gas Reduction Fund, which is a $27 billion bank that will provide funding for clean energy in overburdened communities. To address the impacts of climate change, there is $60 billion for low-income communities and communities of color affected by climate change, and there is $20 billion for programs designed to reduce emissions in the agriculture sector. One final key component of the law is a tax of $900 per metric ton of methane emissions that surpass federal limits (H.R.5376, 2021). With the investments from the IRA, the United States' GHG emissions are projected to fall by 33% to 40% by 2030 compared to 2005 levels, and put the United States on the path to achieving its nationally determined contribution under the Paris Climate

Agreement (Ramseur, 2023). Both pieces of legislation were big victories for Biden's administration as legislation regarding climate had been extremely difficult to pass in the past.

The importance of the IRA and Bipartisan Infrastructure Law cannot be understated. By passing these bills, Biden's administration ensured that funding for climate initiatives would be secured for at least the next decade and put the United States on an extremely progressive path regarding climate policy. Since this investment was primarily achieved through revisions to the United States Tax Code, mainly in the form of credits and taxes, reversal of these measures would require a new piece of legislation to be passed that further revised the code. This could happen under a future administration, but since the legislative process in the United States is complex, it would require a unified Congress and President under one party. Even if that did occur, new legislation would still face major obstacles like the Senate filibuster, which could block legislation. Republican attempts to repeal the Affordable Care Act demonstrate how difficult it would be to repeal the climate investments under the IRA. In this case, despite having control of Congress and the Presidency, the party suffered major in-fighting over attempts to repeal the law, and multiple attempts failed. The only success the party had was removing the individual mandate, which imposed a tax penalty on those who did not have sufficient healthcare (Knight, 2020). As this example demonstrates, repealing the measures included in the IRA would be a very difficult task. This means that the climate credits and measures included will likely continue even after the end of Biden's first term, ensuring that the United States will continue to take action to lower its emissions.

It is important to mention that there was another piece of legislation that Biden championed, but which he was not able to pass as it failed to get enough support in the Senate. The Build Back Better bill was a proposed $1.75 trillion investment in climate and social policy, $555 billion of which was dedicated to climate change. This included $320 billion in tax credits and subsidies, incentives for manufacturing of wind and solar energy, and the creation of a Civilian Climate Corps dedicated to restoring forests and wetlands. While the bill passed the House, it failed in the Senate as Democrat Joe Manchin refused to support the bill. However, many climate aspects of the bill were included in the IRA, although there was less funding overall for climate initiatives (The White House, n.d.-b).

Despite that minor setback, the first two years of Joe Biden's Presidency demonstrated another shift in the United States' approach to climate change, albeit in a different direction from the shift that Trump initiated in 2016. Biden has been able to reimplement many of the regulations and rules that Trump was able to remove, restoring many of Obama's policies and in some cases, improving on them. His two legislative successes, the Bipartisan Infrastructure Law and Inflation Reduction Act are major successes and the biggest piece of climate legislation in U.S. history. Combined with his executive action, Biden has put the United States on an extremely progressive path toward tackling climate change. He has also re-engaged the United States in international climate negotiations, rejoining the Paris Agreement and being a figurehead for leadership on climate change. Similarly to why Trump was able to shift climate policy in such a major way in 2016, leadership, polarization, and the policy-making process also explain why Biden was able to create a progressive shift in climate policy.

Biden as a Climate Leader and Advocate

It is very important to differentiate the leadership styles and beliefs between Joe Biden and Donald Trump, as that helps explain the massive differences between the two with regard to their respective approaches to climate change. Whereas Trump was a climate skeptic and often cast doubt on science and human involvement in climate change, Biden has always been a public supporter of climate action and supported the scientists researching climate change. As Obama's Vice President, he was active in the administration's own efforts to enact climate policy, and during his primary and presidential campaigns in 2020, he clashed frequently with Trump over their differing views on climate. In September 2020, Biden called Trump "unconscionable" for failing to acknowledge the science behind climate change (Sullivan, 2020), and in the following month, he called climate change the "number one issue facing humanity," (Newburger, 2020). During his primary, Biden also pushed himself as the ideal candidate for a "Green New Deal" and portrayed himself as a fierce advocate for climate change. His numerous campaign promises supported this image as a leader on climate change who, if victorious in the election, would push climate change to the top of his priorities and enact extensive and significant climate policy (Davenport & Glueck, 2019). Internationally, he also portrayed himself as a climate leader, hosting the Leaders Summit on Climate in 2021 as a way to rally other countries to push for more ambitious climate action (U.S. Department of State, n.d.). Biden attended the COP-26 in Glasgow and COP-27 in Egypt, another shift away from his predecessor who did not attend any international conferences or events on climate change. After four years of Trump's non-involvement, Biden's appearances and actions pushed the United States again to the forefront of leadership on climate change. Compared to Trump, Joe Biden can be described as a "Climate President", as he has shown extremely strong intention and support for climate action and backed up these promises with strong executive, legislative, and international action that has put the United States on a progressive policy path.

Democrats Prioritize Climate with Rising Polarization

A major impact of Trump's presidency has been the drastic increase in political polarization that has been seen since the election in 2016. This has continued to increase during Biden's term, and Democrats and Republicans are still extremely opposed on policy issues. Climate change has always been a big part of the Democratic Party's platform, and in their 2020 platform, an entire section was devoted to tackling climate change and included numerous policy goals and initiatives that the party would take if it had control of Congress. In the primary, climate change was a frequent talking point between candidates, and Biden's proposed $1.7 trillion plan demonstrated the yearning within the party for a strong, definitive plan on climate change (Davenport & Glueck, 2019). His plan was extremely progressive, mirroring many aspects of the Green New Deal, and again demonstrated the very progressive stance that the Democratic Party had on climate change. With Republicans essentially relegating climate change to the bottom of their policy agenda, the Democratic Party knew that they would have to be responsible for any climate action that the United States would take. With Democrats having a majority in Congress and control of the Presidency, action on climate change during Biden's term was a must, and the party succeeded. The two pieces of legislation were major victories for the party as they provided funding for climate initiatives that will be difficult to remove even if Republicans win back the Oval Office and/or Congress, and allowed Biden and the party to fulfill their campaign promises of major climate action. Due to the increasing polarization, the Democratic Party was the only party that put climate change on its agenda, and this made it more likely that climate policy would be enacted when it gained full control of the government leading to the progressive shift that took place in 2021 and 2022 under Biden.

Legislative and Executive Action Taken

Just like how Trump was able to undo many of Obama's climate policies because they were done through the Executive branch, Biden was similarly able to undo Trump's actions. One of Biden's first actions was an immediate review of all agency actions that took place during Trump's term to undo many of those actions. Since Trump had primarily focused on removing Obama's regulations and replacing them with weaker ones, Biden was able to adopt a similar approach of removing Trump's regulations and replacing them with stronger, more environmentally-friendly ones. This included new vehicle emission standards and regulations on methane emissions. Trump's usage of executive powers to deregulate made it easier for Biden to implement his own regulations to protect the environment and combat climate change. However, one key difference in Biden's Presidency was his successful attempts to pass climate legislation. The Bipartisan Infrastructure Law and Inflation Reduction Act back up his executive actions, allowing the United States to fight climate change through two means. The legislation is also more durable to governmental change, meaning that even if the Republican Party gained control of Congress or the Presidency, it would be more difficult for them to undo the funding for climate initiatives in the bills. By passing this legislation, Biden also corrected the failures of his Democratic predecessors, Clinton and Obama, who faced similar situations in their first two years but failed to pass climate legislation. Obama struggled to overcome the policy-making process in the United States and had to use his executive powers to enact climate policy, which made it easier for Trump to undo his progress. Biden, on the other hand, has ensured that funding for his climate policies will continue even if he loses the election in 2024 or if Republicans gain control of Congress. Biden's success is similar to the approaches taken by South Korea and Germany, who have used extensive legislation to enact their climate policies and ensure continuity across governments.

Chapter 5

Effectiveness of Climate Policy

While the three previous chapters have explored shifts or continuity in climate policy, it is also necessary to offer some views on whether these shifts and climate policies that have been passed have had an actual impact on emissions in Germany, South Korea, and the United States. While researching the true impact and effectiveness of the climate policies passed in each country could be its own research paper, this section will briefly explore general trends in emissions in the three cases in order to determine whether these climate policies have been effective. This involves looking at CO2 emissions per capita, provided by OurWorldinData, and projected emission totals through 2030, provided by the Climate Action Tracker (See Figure 1, page 77).

Beginning with Germany, it can be seen that per capita emissions have been slowly decreasing for at least the past 40 years. Since the mid 2000s, emissions have slightly lowered at a higher rate than in the past, perhaps indicating that climate policies passed by Merkel have been successful. South Korea shows more evidence that the Low Carbon, Green Growth framework implemented by President Lee has been an effective tool to lower emissions. Prior to its creation in 2008, emissions per capita had been steadily rising. As the graph shows however, emissions per capita have slowly leveled off, remaining relatively constant during the rest of Lee's term and President Park's term. There is a slight decrease around 2020, which might be attributed to the Green New Deal passed by President Moon. Finally, for the United States, we see that emissions per capita were steady under Clinton and Bush, before decreasing by a significant amount during President Obama's term. The decrease continued under President Trump, which might seem contradictory given his focus on environmental deregulation and blatant disregard for climate policies. However, an argument could be made that this is a result of the policies Obama passed, just with long-term effects. The slight rise in 2016-2017 also illustrates the point that many of Trump's actions actually had negative impacts on the environment, and led to an overall rise in emissions. While it's extremely difficult to link the rise and fall of emissions directly to climate policies as there are external factors that impacted emissions as well like the 2020 COVID-19 pandemic, the trends do appear to show that progressive climate policies had at least some impact on helping lower emissions (Ritchie et al., 2020).

Climate Action Tracker, an independent scientific project, has also made projections for emissions for the three cases through 2030 based on the currently implemented policies. Germany is projected to meet total GHG emissions of 455-483 megatons of CO2 per year by 2030 compared to current emissions of 744 megatons in 2022 (Climate Action Tracker (CAT), 2023b). South Korea is expected to emit 650-658 megatons by 2030, while it emitted 683 megatons in 2022 (CAT, 2023a). The United States, on the other hand, due to its much larger population, is projected to emit 4.9 to 5.4 gigatons of CO2 per year by 2030, decreasing from .3 gigatons in 2022 (CAT, 2023c). These projections do demonstrate the climate policies are anticipated to have an impact on emissions, although it does vary by country. Germany and the United States' emissions are projected to decrease quite significantly, while South Korea's emissions will only decrease slightly.

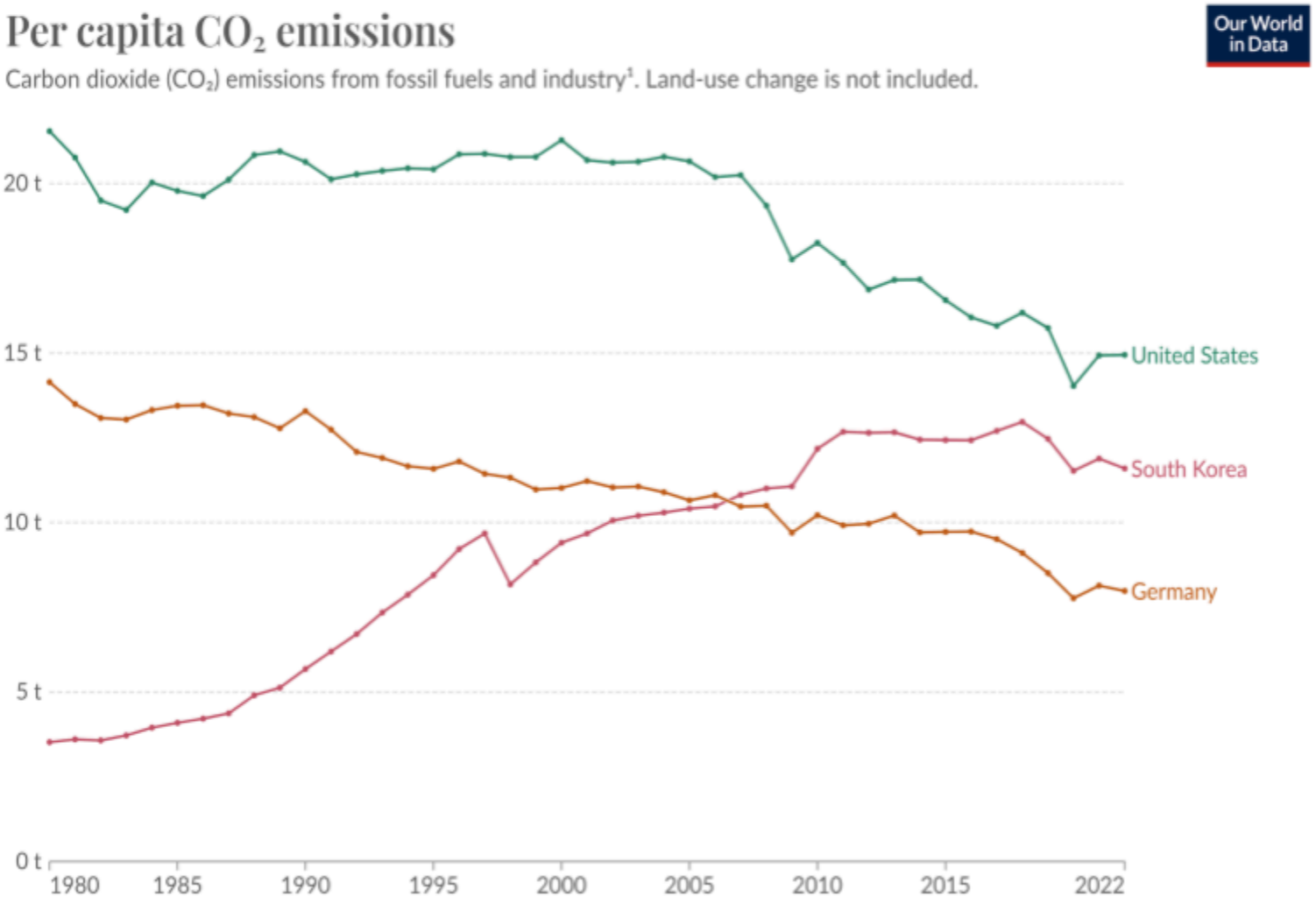
These are just projections, however, and the actual impact of these countries' policies might be much higher or lower than anticipated. Some policies will likely have a stronger impact on emissions than expected, while others might not succeed and be considered failures. For example, the Renewable Energy Act in Germany was extremely successful at increasing usage of renewable energy, while Clinton's

Climate Action Plan failed to materialize credible reductions in emissions (Jacobsson & Lauber, 2004). Predicted impacts of policies are also likely to change as global events occur, which will affect the effectiveness of climate policies. Some of these more recent and upcoming events are discussed at the end of the paper, but as an example, consider Germany's relationship with nuclear power under Merkel. Before the Fukushima nuclear disaster in Japan, Merkel and her government had committed to extending usage of nuclear power plants by 12 more years than planned. The disaster, subsequent fallout, and public outcry however, forced a drastic government u-turn, changing Merkel's climate policy away from nuclear energy. As the global political environment shifts, so will governments' policies and implementation of policies, which will alter the emission projections.

One important thing to note when comparing the emissions of South Korea with Germany and the United States is that South Korea is a different stage of economic development compared to the other cases. Growth of the economy has been strongly linked to higher emissions of greenhouse gasses since the 1800s with the Industrial Revolution. As a country develops, their emissions will increase as well. This is due to increased focus on fossil fuels and the manufacturing of raw materials to create goods in order to stimulate growth. In the case of South Korea, it was still considered a majority agricultural economy with little industrialization as late as the 1960s. Over the past 60 years, the country has focused heavily on industrialization, such as developing a world-leading steel industry, and is now one of the world's leading economies. As can be seen in the graph, however, this has contributed to increasing emissions throughout Korea's development. Emissions have consistently risen from the 60s onwards, before slightly leveling off around 2008 with the introduction of Low Carbon, Green Growth. Since then, emissions have been stable, and have even shown signs of decreasing. This follows the general relationship trend between economic growth and emissions as can also be seen in the emissions trends in the United States and Germany. Both are developed countries which have already industrialized, and their emissions have slowly been decreasing since at least the 1980s, as they do not have to rely as heavily on fossil fuels (Nugent & Barone, 2021). Therefore, it is important to take into account the stage of economic development a country is at when looking at their emissions, as developing countries will likely have rising emissions and developed countries will have stable or declining emissions.

These metrics offer some insight into the effectiveness of the climate policies discussed above. While again, it is difficult to directly link decreases in emissions to climate policy, the data appears to show that climate policies do have some impact. The more progressive climate policies, like the Low Carbon, Green Growth framework and Inflation Reduction Act, are more likely to help decrease a country's emissions.

Figure 1



1. Fossil emissions: Fossil emissions measure the quantity of carbon dioxide (CO_2) emitted from the burning of fossil fuels, and directly from industrial processes such as cement and steel production. Fossil CO_2 includes emissions from coal, oil, gas, flaring, cement, steel, and other industrial processes. Fossil emissions do not include land use change, deforestation, soils, or vegetation.

Conclusion

In order to limit global warming to the 2 degrees Celsius goal of the Paris Agreement, countries must be doing more to lower greenhouse gas emissions through the creation and implementation of climate policies. This requires understanding how these climate policies evolve over time and how they are shaped by domestic and international politics. Leadership, political polarization, and the policy-making process all play a significant role in shaping climate policy in Germany, South Korea, and the United States, although they have had different impacts in each country. In some cases, these characteristics have led to continuity over time in climate policy, with successive governments implementing similar or more progressive policies. In others, climate policy has dramatically switched directions under both progressive and regressive governments.

For Germany, climate policy first began under Helmut Kohl and was continued by Gerald Schröder . Both Chancellors focused on renewable energy policies as Germany joined the UNFCCC and hosted the first Conference of the Parties, while also committing to its first emission reduction target ever. 16 years of consistent leadership under climate activist Angela Merkel followed, combined with a non-polarized coalition government, led to significant climate policies being enacted and implemented, as well as an extremely strong international leadership on climate change. Merkel continued the energy transition to renewable sources, created new international initiatives focused on climate finance, and was key to negotiations on the Paris Climate Agreement. In her final term, her government committed to carbon neutrality, which was a significant step for a developed western country. Credit should be given to Merkel for her strong leadership in pushing for more progressive policies, while the compromises between the CDU/CSU and SPD played a major role in limiting shifts in German climate policy under Merkel. In 2022, there was a slight shift as the more progressive SPD and Green party took power, but in a positive direction. The new government continued many of the policies that Merkel began, while also implementing stronger policies like a planned coal phaseout. In Germany, domestic characteristics like strong climate-conscious leadership and little polarization, have limited shifts in climate policy.

In South Korea, however, climate policy has experienced some shifts as Presidents have changed, making its climate policy less consistent over time and arguably less progressive than Germany. President Kim was responsible for South Korea's first climate policies with his Climate Action Plans, which were limited in size and scale. President Roh did marginally better, with a Climate Action Plan that had a tangible funding amount. However, the first major shift in Korean climate policy occurred under President Lee in 2008, with the Low Carbon, Green Growth framework and law. This was a shift in Korea towards more qualitative economic growth, with increased focus on environmental stewardship. The vision was supported by a five-year plan with significant investment, multiple policies related to energy, and a commitment to demonstrate more initiative on climate to the international community through the Green Climate Fund and Global Green Growth Institute. Lee was key to this shift, as he had a strong history of environmental leadership as mayor of Seoul and frequently spoke on climate change at international events. Polarization between the two parties was also not as strong, which made it easier to pass climate policies as both parties agreed that action on emissions was necessary. While both parties agree to take climate action, they often differ on the approach to take, with the conservative party in Korea favoring a more economically-friendly approach. This can be seen in the climate approach under Lee's successor, Park Geun-hye, who lowered the importance of the LCGG in favor of a new economic vision. However, she did continue Lee's five-year plan, implement the emissions trading scheme, and signed and ratified

the Paris Climate Agreement. This can be viewed as continuity between Lee and Park on most climate policies. There was another progressive under the next President, Moon Jae-in, who enacted a "Green New Deal" investment and signed a carbon neutrality law that committed South Korea to achieving carbon neutrality by 2050. Leadership under Lee and Moon, combined with minimal political polarization and the creation of durable climate policies, contributed to two periods of significant progressive shifts in climate policy. While it seems unlikely that another shift will occur during the remainder of President Yoon's term, he has still remained committed to the carbon neutrality goal.

Finally, the United States' approach to climate policy over the last three decades represents the case with the most changes in climate policy. Beginning with Bill Clinton, George W. Bush, and Barack Obama, climate policy in the United States has shifted as control of the White House has changed between the Republicans and Democrats. During Clinton's term, he attempted to pass climate policy, but was blocked by economic recessions and Congressional gridlock. However, he was able to successfully negotiate the Kyoto Protocol, the first international climate treaty. However, the United States' approach to climate change shifted regressively under Republican Bush, who rejected the Kyoto Protocol and focused heavily on the fossil fuel industry. Climate policy shifted again during Obama's terms in office where climate change was a higher priority. This resulted in strong regulation on emissions and significant international climate cooperation including the Paris Climate Agreement. The changes in climate policy during these Presidents demonstrate the strong effects of leadership and political polarization in America. Since political polarization is extremely strong, Democrats and Republicans completely disagree on climate change and have very different views on the crisis. These shifts in policy have only accelerated over the past two administrations, which were Donald Trump and Joe Biden. Trump's administration focused heavily on removing environmental regulations and withdrawing on climate agreements to benefit the fossil fuel industry. This included weak rules for power plant emissions, and exiting from the Paris Agreement. Trump's leadership, as a strong climate-skeptic, contributed heavily to the extreme backsliding on climate policies, while political polarization has only gotten worse, ensuring that the Republican party has completely ignored climate change. When Biden won in 2020, policy shifted again, but towards more progressive action. This included new environmental regulations, two very important pieces of legislation that included funding for climate initiatives, and a re-engagement with the international community on climate change, including rejoining the Paris Agreement. Biden has portrayed himself as a strong climate leader by passing key climate legislation, and as a Democrat, has put climate change high on his agenda, resulting in the progressive shift seen through his policies. In the United States, unlike Germany and South Korea, leadership, polarization, and the policy-making process under different Presidents have all contributed to major shifts in climate policy.

These three variables and cases demonstrate the importance of studying domestic politics when analyzing climate policy. This study has contributed an analysis of three characteristics in domestic politics (although there are certainly more that play a role), and expanded on research looking at the domestic aspects of climate change and policies. The three variables all play a significant role in explaining climate policy and how it shifts as governments change, although the importance of each variable differs. Political polarization is likely the most important factor that determines whether climate policy shifts or not. If a country is not polarized, then both leadership and the policy-making process will likely have little impact on whether policy shifts as both ideological parties will support at least some action on climate policy. Only in the case of extreme leadership, like the leadership of Donald Trump,

would climate policy shift in an unpolarized political system. In a polarized system though, climate policy will change whenever the party in government changes, as they will have completely different agendas when it comes to climate action. This makes political polarization the most important variable. Leadership is likely the next most important factor on climate policy as strong leadership can definitely influence the direction a country takes with regard to its climate policy. The most prominent example is Angela Merkel and Donald Trump, who are complete opposites when it comes to their views on climate change, but heavily influenced climate policy in their respective countries. The variable with the least impact is the policy-making process, as many countries use legislation for a majority of their climate policies and there is little change across countries. The policy-making process is important for the United States since climate legislation has been notoriously difficult to pass until Joe Biden was able to. Despite their differing impacts, all three variables are still important to exploring climate policy shifts.

However, there is still much more that the academic community can research with regard to climate change. This study briefly touched upon the effectiveness of some of the climate policies passed by Germany, South Korea, and the United States, but an even more comprehensive study on these climate policies could help determine whether the shifts and/or consistency observed in the cases actually had a tangible impact on emissions. Time is running out to find an effective, efficient, and global approach to climate change, and future studies will play a crucial role in determining whether the targets of the Paris Agreement are met. The final section of this research touches upon some pressing issues in both the domestic and global communities and what impacts or challenges they will pose for climate policy.

Implications for the Future

The results of the three case studies demonstrate the impact that domestic political characteristics have on a country's climate policy. Depending on leadership, polarization, and the policy-making process, climate policy can either undergo progressive or regressive shifts, or remain relatively consistent as one of the three variables change. The natures of these shifts can have large impacts on the direction a country is taking with regard to climate change, with negative shifts likely to have extreme effects on global mitigation efforts, especially when they occur in a large emitting country like the United States. Therefore, it is important to identify some ongoing and future events which may result in more shifts over the next couple of years.

The United States' 2024 Presidential Election

Arguably the biggest upcoming event that could have extremely large implications for future climate policy within the United States as well as the international community's overall fight against climate change is the 2024 election. The 2024 is set to be a repeat of the 2020 election, with the state primaries occurring at the time of writing. However, the two candidates for the Democratic and Republican parties are practically confirmed, with incumbent Democratic President Joe Biden against former Republican President Donald Trump. Climate change has remained a relatively low-attention issue in the primary campaigns so far, with more attention on the economy, abortion, and foreign policy. It was mentioned at the first Republican primary debate in August 2023, with candidates being asked if humans contributed to climate change. The various responses demonstrated the Republican Party's view on the topic, with only Nikki Haley stating the climate change was "real", with the other candidates focusing on the negative effects of climate policy on the economy and U.S. competitiveness (Geoghegan, 2023). That being said, climate change could still be a deciding factor for voters, as it was in the 2016 and 2020 elections. A study showed that climate change has become an increasingly more important issue to voters, increasing from 2016 to 2020 in its importance. The study also demonstrated that climate change opinions could have had as much as a three percent impact on the 2020 popular vote towards Biden, and a similar trend might occur in 2024 (Burgess, 2024). With Trump and Biden being at completely opposite ends with regard to climate policy, and voters seeming to prefer candidates promising to do more to tackle climate change, this could have an impact on the outcome of the election.

With both candidates also having previous experience as President, it also allows for predictions in the direction of U.S. climate policy depending on who wins in the election. During Donald Trump's term in office, climate policy completely changed direction, becoming almost non-existent during his administration. He took efforts to dismantle previous administrations' climate policy, especially environmental regulations passed by Barack Obama, and took the United States out of international climate action such as the Paris Climate Agreement. If Trump wins in 2024, then it is likely that he will adopt a similar approach with climate policy not being a priority at all. If Trump wins, but Congress remains split or in complete control of the Democratic Party, then Trump will be limited to rolling back regulations and pulling the United States from international climate action. This will still be a major shift compared to Biden and have very negative effects on climate policy in the United States. If the Republican Party also wins a Congressional majority, then the potential arises for an extreme nullification of many of the climate provisions in the Inflation Reduction Act and Bipartisan Infrastructure law passed by Biden. This could be done by just delaying or completely avoiding implementation of the measures in these laws, or passing new legislation that voids or revises the tax codes that provide much of the funding

for climate policies. While the control of the Congress would play an important role, it is safe to assume that climate policy during a possible Trump second term would be another complete reversal compared to Biden and represent a significant stepback in progress for climate action.

On the other hand, a victory for President Biden would represent a continuation of the climate policies that his administration has championed. He has pushed the United States' climate policy in a positive way, passing legislation and issuing executive action that tackles the problem. He has also reengaged the United States internationally on climate change, rejoining the Paris Agreement and participating in climate summits and negotiations. If Congress returns to a Democratic majority like it was during 2021 and 2022, the likelihood for new legislation that includes climate policy also increases heavily under Biden. If Congress is split, or in Republican control, then Biden will be limited to executive action, which will not be as effective as legislation, but as Obama demonstrated, can be used to enact some meaningful and effective policies. Biden will still be able to push the United States as a global leader on climate change too. So a Biden victory in 2024 will represent a continuation of the positive climate policies that have been seen over the past four years.

Whatever outcome occurs, the 2024 election will be a pivotal moment for climate policy in the United States. A Trump victory would potentially reverse much of the progress made during Biden's term, while a second Biden term would continue the strong approach on climate that his administration has been taking. The international community and environmental and climate activists around the world will be watching closely, as the election will have a huge impact on whether temperatures rise above 2 degrees Celsius.

Future Elections in South Korea and Germany

Like the United States, upcoming elections in South Korea and Germany also have the potential to change climate policies within the country, although likely not to the same extent as in the United States. South Korea held a recent parliamentary election on April 10, 2024, as what was seen as a mid-term judge of Yoon's Presidency, while Germany has a federal election scheduled for October 2025.

In South Korea, the parliamentary elections were seen as a referendum on the first two terms of Yoon's administration, and unfortunately for Yoon, the public do not appear very supportive of his Presidency. In the election, the Democratic Party won 175 seats, while the second largest opposition party, the Rebuilding Korea Party won 12 seats. Combined with a few other smaller parties, the opposition to Yoon's People Power Party controls 192 seats out of 300, giving them a large majority in the National Assembly, but just short of a super majority (Yim & Kim, 2024). The result will likely lead to frequent stalemate between the National Assembly and Yoon's government, as they will block each other's policy initiatives. If Yoon wants to push his own policies, he will have to work and compromise with the DP, while the DP will be trying to push its own policies. With three years left for Yoon's Presidency, it will be interesting to see how successful he and his government is before the next presidential election in 2027 (Lee, 2024a).

For climate change specifically, the election was important as it was the first time that climate change was included in both major parties' top ten policy goals. Both parties included climate policies in their campaign pledges, such as the DP's promise to reduce GHG emissions by 52% from 2018 levels by

2035 and the PPP's pledge to 28 out of 59 coal-fired power plants by 2036 (Lee, 2024b). With the opposition in control of the National Assembly, extensive compromise will have to take place in order to pass some of these policies. But importantly, it demonstrates how climate change continues to be a major issue for South Koreans and that climate policy will remain on the agendas of both parties.

In Germany, with the upcoming election taking place in October 2025, it is slightly harder to predict what the outcome will be. Early polls show strong support for the CDU/CSU with roughly 30% with AfD, SPD, and Green all hovering between 13% to 18%. Based on these polls, it is likely that the CDU/CSU will be the main party in government, although its coalition partners are less clear (Politico, 2024). While the AfD is polling strongly, parties like the CDU/CSU and SPD have ruled out working with it in previous elections, which could potentially open the door for a new Grand Coalition government between the CDU/CSU and SPD. However, while the winner of the election is unclear, the election is unlikely to have a major impact on climate policy in Germany, since the issue is so non-partisan and both major parties are strong supporters of progressive climate action. Whoever does win in the election will likely continue many of the same policies that previous government's have adopted, including increasing the share of renewable energy, phasing out fossil fuel usage, and the promotion of energy efficiency and security. So unlike the United States, climate policy will be unlikely to shift after the 2025 election.

The Russian Invasion of Ukraine

Another ongoing event which has had impacts on climate policy and will continue to impact it is the Russian invasion of Ukraine which began in 2022. The invasion primarily has consequences for energy security, particularly for countries that heavily relied on Russian oil like Germany. In 2021, Russia accounted for 12% of global energy production and was the primary energy provider for the European Union. The invasion had two impacts on energy supply and security: higher prices, and an embargo on Russian oil for many Western states. Due to the war, gas and oil prices increased as Russia tried to fund its war, and this was passed down onto consumers, resulting in overall higher energy prices. Western countries, including the EU and United States, also passed an embargo on Russian oil, preventing it from being sold in these countries. This affected the energy supply for these countries, and has led to intense political discussions over energy security and interdependence. This has resulted in both positive and negative impacts for climate change. On the one hand, it has opened the door for an increased focus on renewable energy as traditional energy sources become more unappealing and pricier. This has resulted in policies aiming to increase the supply of renewable energy, as can be seen through the United States' Inflation Reduction Act and Germany's increased target for 80% renewable energy by 2030. However, the focus on energy security has also led to some countries falling back to dirtier energy sources. The war forced Germany to postpone the closing of its nuclear power plants (Brown et al., 2023), and the United Kingdom announced the granting of hundreds of new oil and gas licenses to promote energy security (UK Government, 2023). These two instances demonstrate some of the negative effects of the war, as the focus has shifted away from energy policies focused on climate change towards energy policies focused on security. The Russia-Ukraine war demonstrates the impact that global politics can have on climate change action, and shows how global events can have both positive and negative impacts on climate policy. While the Russia-Ukraine war is an extreme example of a conflict that has had global repercussions, it demonstrates how global conflicts, disasters, and events can impact climate change action.

European Court of Human Rights Ruling

A very recent development, but one which might have drastic impacts on the future of climate policy, was the ruling that the European Court of Human Rights (ECHR) made on April 8, 2024. In the ruling, the Court stated Switzerland had violated the human rights of its citizens by failing to do enough to tackle climate change. The case was about the lack of success by the Swiss government to reach its own emissions targets, which negatively affected the plaintiffs who argued that they were suffering from increased heat waves. The main implication of the case is that it sets a precedent for all other countries that are party to the European Convention on Human Rights, in which they have a legal duty to do more to tackle climate change. If the countries do not take action, then its citizens can go to court in further litigation, which may result in financial penalties (Dickie et al., 2024). Ultimately, the ruling is likely to push Switzerland and other countries to adopt stronger climate policies.

The case is similar to the Germany Climate Law discussed earlier in the paper, and demonstrates the role that the judicial system can have on climate policies. In the German case, the court pushed the government to adopt a more ambitious plan and change its climate legislation. This is another example of judicial systems pushing countries to take stronger climate action. While this ruling only impacts European countries, it will still have a significant impact on global emissions. A similar ruling to the case in Germany may occur in South Korea, where the Supreme Court is relatively independent. With justices being appointed by both the President, National Assembly, and Supreme Court Justice and typically only serving 6-year terms, the court has remained independent of partisan conflict (Government of the ROK, n.d.-a). However, there have been no climate cases heard yet, with a few waiting for their opportunity, so it remains to be seen whether the court can elicit a similar outcome to the case in Germany (Kaminski, 2022). However, a similar ruling is unlikely to occur in the major emitting countries like the United States and China, as their judicial courts are unlikely to support a similar ruling and they do not recognize the authority of the International Court of Justice, the only other international judicial body which might impose a similar ruling. In the United States, especially, the Supreme Court has become highly polarized over the past decade, with its justices consistently making decisions based on their own conservative or liberal beliefs, not just on a constitutional and legal basis. The current Supreme Court leans heavily conservative, with a 6-3 majority for conservative justices who serve for life. Due to this leaning, a ruling that would force the government to adopt stronger climate policies is extremely unlikely (Totenberg, 2022). In fact, over recent years, the Supreme Court has even ruled in cases that have restricted the ability of the EPA to take climate action. In 2022, the Court ruled that the EPA did not have the authority to regulate GHG emissions from power plants unless Congress gave them that authority, which is extremely unlikely. More recently in 2024, the Court has been deliberating the EPA's "good neighbor rule" which requires upwind states to reduce emissions that might impact downwind states, specifically related to ozone pollution (Howe, 2024). There has not been a final decision yet, but it demonstrates how unlike in Germany, the judicial system in the United States has and may in the future halt climate policies and limit government action on climate change. So while these judicial rulings are unlikely to affect the largest emitting countries, they might impact emissions in smaller countries and that would still represent a positive step in the global fight against climate change.

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