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The Obama Administration Policy on Climate Change and the Sustainable Development Goals: Initiatives and Challenges

A Dissertation Submitted to the Department of Letters and English Language in Partial Fulfillment of the Requirements for the Degree of Master in Language and Culture

Board of examiners:

Chairwoman: Ms. M'LILI Amina **(MCB) University of 8 Mai 1945/Guelma**

Supervisor: Mrs. SADAOUI Lamia **(MAA) University of 8 Mai 1945/Guelma**

Examiner: BARES Meriem **(MAA) University of 8 Mai 1945/Guelma**

Submitted by:

Benouikes Aymen

Nouaouria Oussama

Supervised by:

Mrs. SADAOUI Lamia

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Dedication 1

This work is dedicated for my father who is my source of inspiration

For my dear mother, whose memory pushes me every day to do my best

For my brother and sister who are the source of my joy

For my closest friends Anis, Nadir, Madjed, Radi, Yacine, Ihab whom supported me in my times of stress and need

And for my colleague Yacine who was a great partner in this journey

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Abstract

Climate change, driven by human activities, poses significant threats to the environment and economy, leading to rising temperatures, extreme weather events, and biodiversity loss. Governments worldwide, led by the USA, have committed to combating this challenge. Since his first term, President Barack Obama has championed climate change mitigation through various policies. In 2015, the United Nations established the Sustainable Development Goals (SDGs), aiming to balance current needs with future sustainability. Goal 13 specifically addresses climate action, and Obama played a crucial role in advancing this goal despite opposition from political and industry groups. This research examines climate change as a global threat, evaluates the Obama administration's policies and collaboration with the UN, and assesses the outcomes and challenges of these initiatives.

ملخص

يشكل تغير المناخ، الناتج عن الأنشطة البشرية، تهديدات كبيرة للبيئة والاقتصاد، مما يؤدي إلى ارتفاع درجات الحرارة، والظواهر الجوية المتطرفة، وفقدان التنوع البيولوجي. لقد التزمت الحكومات في جميع أنحاء العالم، بقيادة الولايات المتحدة الأمريكية، بمكافحة هذا التحدي. منذ ولايته الأولى، تبنى الرئيس باراك أوباما سياسات مختلفة لمكافحة تغير المناخ. في عام 2015، أنشأت الأمم المتحدة أهداف التنمية المستدامة (SDGs) التي تهدف إلى موازنة احتياجات الحاضر مع استدامة المستقبل. يركز الهدف 13 تحديداً على العمل المناخي، ولعب أوباما دوراً حاسماً في تعزيز هذا الهدف رغم المعارضة من المجموعات السياسية والصناعية. يفحص هذا البحث تغير المناخ كتهديد عالمي، ويقيّم سياسات إدارة أوباما وتعاونها مع الأمم المتحدة، ويقيّم نتائج وتحديات هذه المبادرات.

List of Abbreviations

ACES	American Clean Energy and Security
CH4	Methane
CO2	Carbon Dioxide
CPP	Clean Power Plan
CAP	Climate Action Plan
DSDG	Division for Sustainable Development Goals
EIA	Energy Information Agency
EIF	Enhanced Integrated Framework
EPA	Environmental Protection Agency
EU	European Union
FCCC	Framework Convention on Climate Change
GCC	Global Climate Coalition
GCF	Green Climate Fund
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GMSL	Global Mean Sea Level
GOP	Republican Party
HFCs	Hydro fluorocarbons
ILO	International Labor Organization
IPCC	Intergovernmental Panel on Climate Change
MDGs	Millennium Development Goals

N2O	Nitrous Oxide
NCDs	Non-Communicable Diseases
NDCs	Nationally Determined Contributions
OWG	Open Working Group
PA	Paris Agreement
RSL	Relative Sea level
SDGs	Sustainable Development Goals
U.S.	United States
UN	United Nations
UNDESA	United Nations Department of Economic and Social Affairs
UNFCCC	United Nations Framework Convention on Climate Change
WHO	World Health Organization
WMO	World Meteorological Organization

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Introduction

Climate change has posed a significant threat since the Industrial Revolution, with fossil fuel burning releasing harmful greenhouse gases like CO2, CH4, and N2O. This leads to temperature instability, sea level rise, and global warming. To combat this, international cooperation has been essential. The UN established the Framework Convention on Climate Change (UNFCCC) in 1994, followed by the Kyoto Protocol in 1997 to reduce emissions. The United States, particularly under President Barack Obama (2009-2017), implemented policies such as the Climate Action Plan and the Clean Power Plan to mitigate climate change. Obama also collaborated internationally and supported renewable energy. In 2015, the UN's Sustainable Development Goals included Goal 13: Climate Action. Despite these efforts, Obama faced resistance from political factions and industries. This dissertation analyzes Obama's climate policies, their effectiveness, and challenges, offering insights for policymakers on the relationship between climate change and sustainable development.

Though the Obama administration was very enthusiastic about the issue of climate change and made numerous climate initiatives, it faced many challenges when implementing these policies.

The Obama administration was very enthusiastic about the issue of climate change and initiated key policy initiatives to limit its dangers. Among the most important questions that the study will try to answer are the following:

-What is climate change? What are its effects on living creatures, environment, and economy?

-What are the Sustainable Developments Goals?

-What are the initiatives taken by the Obama administration to address climate change?

-What challenges did Obama face during his climate action journey? and

-To what extent had the Obama administration succeeded in implementing climate policies?

The methodology employed in this dissertation is a combination of the descriptive and qualitative research methods. They represent the most appropriate approach that enables the researcher to make trace and make policy analysis about climate change policies. The research draws on a range of primary and secondary sources, including government reports, academic publications, and news articles, to provide a comprehensive analysis of the subject matter. While the dissertation focuses primarily on the Obama administration's policies on climate change, it also considers the broader issues related to sustainable development.

The dissertation is divided into three main chapters. Chapter one entitled "Understanding Climate Change and Sustainable Development" provides an overview about climate change, its impacts, sustainable development, and its relationship with climate change. Chapter two entitled "Initiatives of U.S. Climate Policy Under the Obama Administration" examines the initiatives of the U.S. former President Barrack Obama toward climate change during both first and second term. Chapter three "Assessment of President Obama's Climate Change Policies and the Challenges Encountered" discusses the challenges faced by President Obama in implementing his climate policies and assesses their overall effectiveness.

Climate change has been and is still one of the most controversial issues among authors, economists, politicians, and experts around the world. It has been discussed before in many books, articles, journals, YouTube channels, and websites on the internet. Hugh Atkinson, a researcher in the field of climate change, in his book entitled *The Politics of Climate Change under President Obama*, discussed many of the acts that Obama had implemented during his two terms like the Clean Power Plan. The book examines the political challenges faced by Obama in addressing climate change, and delves into the domestic and international efforts made to combat the issue.

"*The Global Climate Change: Budget Authority and Request, FY2010-FY2015"* was a report written by Richard K. Lattanzio, an analyst in environmental policy. It provides a detailed overview of the budget allocations and requests for the Global Climate Change initiative during the period from 2010 to 2015.

Marie- Claire Cordonier Segger, from the University of Cambridge, in her article entitled "Advancing the Paris Agreement on Climate Change for Sustainable Development", provides a comprehensive analysis of the Paris Agreement as an international cooperation between nations against climate change.

Another article entitled "Obama reverses Bush policies on emissions controls" by journalist Suzanne Goldenberg (2009), discusses the significant shifts made by Obama shortly after taking office, mainly the executive orders and investments in renewable energy to reduce the GHG emissions.

Another academic paper entitled "Public Opinion and Foreign Policy in the Obama Administration" by Richard Cornelius Eichenberg, a political scientist specialized in the relationship between public opinion and foreign policy, sheds the light on the public attitude toward the Obama administration. It explores the dimensions of public opinion on foreign policy issues during Obama's presidency, providing insights into how public perceptions shaped and were shaped by the administration's policies.

"U.S Climate Policy: Obama, Trump, and Beyond" is a scholarly article written by Daniel A. Farber, specialist in the environmental law. It delves into the contrasting approaches of the Obama and Trump administration in terms of addressing climate change.

Richard Schmalensee of Massachusetts Institute of Technology (MIT), and Robert Stavins of Harvard University, examines the changes in environmental policy over time in their paper entitled "T*he Policy Evolution under the Clean Air Act".*

Chapter One

Understanding Climate Change and Sustainable Development

This chapter explores the complex interplay between climate change and sustainable development, two critical issues shaping the future of our planet. The chapter begins by defining climate change, distinguishing it from weather, and explaining the role of greenhouse gases in the greenhouse effect. The impacts of climate change on the environment, economy, and biodiversity are then examined, highlighting rising temperatures, sea-level rise, extreme weather events, and their wide-ranging consequences. The discussion then shifts to sustainable development, where various definitions are explored, emphasizing the importance of balancing economic growth, social inclusion, and environmental protection. The Sustainable Development Goals (SDGs) are introduced as a framework for addressing these challenges, adopted by the United Nations as a universal call to action. Finally, the chapter presents the relationship between sustainable development and climate change, emphasizing the need to take some urgent actions to achieve long-term sustainability.

1.1 Overview on Climate Change:

Climate change is a phenomenon that is recognized as a huge danger for the planet. Before delving into it, there is a need to distinguish between some important concepts like weather, climate, and greenhouse gases. Weather, is described as short-term atmospheric changes (Armstrong et al. 7). This includes rain, sunshine, cold, or heat, which are what we encounter on a daily basis. It is subject to frequent fluctuations, and the conditions in one location may vary from those in another. It consists of six main variables: temperature, atmospheric pressure, cloud formation, wind, humidity, and precipitation (Finn et al. 2).

In contrast, climate is described as longer-term variations (Armstrong et al. 7). According to the World Meteorological Organization (WMO), it takes a period of thirty years in order to be considered as climate, and the term refers to the characteristic weather patterns

of a particular area, which can vary from season to season. For instance, a location may experience warm and dry conditions during the summer months, while being cool and wet in the winter. The overall climate of the earth is a comprehensive representation that encompasses the diverse climates found around the world.

According to the United Nations Framework Convention on Climate Change (UNFCCC)[1], Greenhouse gases are defined as "those gaseous constituents of the atmosphere, both natural and anthropogenic[2], that absorb and re-emit infrared radiation" (United Nations Framework…3). Basically, they trap heat in the earth's atmosphere. This trapping of heat is what we call the greenhouse effect. The primary greenhouse gases in earth's atmosphere are water vapor, carbon dioxide, methane, nitrous oxide, and ozone. They all have the ability to absorb and re-emit infrared radiation, leading to an increase in the earth's surface temperature. This process is essential for life on earth, as it keeps the planet warm enough to support life. However, human activities have significantly increased the concentration of these gases, leading to an enhanced greenhouse effect and global warming (Environmental Protection Agency).

Climate change refers to the alteration of temperatures and weather patterns over an extended period of time. These shifts can occur naturally as a result of variations in solar activity or significant volcanic eruptions. However, since the 1800s and the emergence of the Industrial Revolution, human actions have become the main reason for climate change, mainly through the burning of fossil fuels such as coal, oil, and gas that produces greenhouse gas emissions that function as a cover to the earth, capturing the heat from the sun and causing an increase in temperatures ("What Is Climate Change?").

Climate change is primarily driven by greenhouse gases, with carbon dioxide and methane being the main ones. These gases are released into the atmosphere through various activities such as driving cars, using gasoline or heating buildings with coal. Additionally,

deforestation and land clearance contribute to the release of carbon dioxide. Methane emissions, on the other hand, are largely attributed to agriculture, oil, and gas operations. When it comes to the sectors responsible for greenhouse gas emissions, energy, industry, transport, buildings, agriculture, and land use are the key players ("Causes and Effects of Climate Change").

Climate change is defined differently by the Framework Convention on Climate Change (FCCC) and the Intergovernmental Panel on Climate Change (IPCC) - a United Nations body that assesses and provides scientific information on climate change for policymakers to guide and justify their own climate action. The FCCC defines climate change as a "change of climate that is attributed directly or indirectly to human activity, that alters the composition of global atmosphere, and that is in addition to natural climate variability over comparable time periods". This definition emphasizes humans as the main reason for the creation of the problem. The IPCC' definition of climate change refers to "any change in climate over time, whether due to natural variability or as a result of human activity." This definition is somewhat broad and doesn't place humans as the main reason (Pielke 31).

1.2 The Impacts of Climate Change:

Human activities like deforestation and the emission of greenhouse gases can cause climate change which eventually will impact both the earth's environment and its living creatures. This section explores the various dimensions of this impact, starting with its effects on the environment, then the nation's economy, moving to biodiversity, health, agriculture, and animals. The rise in global temperatures which is a result of greenhouse gas buildup in the atmosphere, has been accelerating since the Industrial Revolution. This has led to a significant increase in average global temperatures, exceeding 1°C by the early 21st century.

1.2.1 The environment:

The earth's ecosystem is essential for the prevailing of biodiversity, however, if the environment was impacted by climate change, for instance the imbalanced temperature levels caused primarily by greenhouse gas emissions, the consequences will lead to a global warming which occurs when the planets overall temperature rises on the long term (Gibbens). The increasing temperature of the earth attributed to the buildup of greenhouse gases in the atmosphere, results from various human activities that encompass deforestation, Methane emissions, carbon dioxide released by vehicles and power plants (El Zein and Chehayeb 76).

A rising pattern of global warming commenced in the 1940s following the Industrial Revolution and showed no signs of reducing. Throughout the previous century, there was a temperature rise of approximately 0.7° C. This rate had changed in the first decade of the 21st century, which saw an average global increase of about 1°C. Furthermore, this period ranked as the warmest decade ever recorded across the Earth's surface. The increasing heat caused multiple variations in the processes of the climate system in the form of frequent floods, droughts, heat and cold waves, heavy downpours, and highly variable weather patterns in different parts of the world (Rasul et al. 53).

Moreover, Climate change is causing sea levels to rise globally due to the melting of polar ice caps and glaciers, as well as the thermal expansion of seawater. This rise poses significant threats to coastal communities and ecosystem. Sea level can be measured either in relation to the solid Earth's surface (known as relative sea level RSL) or with reference to a geocentric point, which measures the average sea level if the ocean were to be at rest and not influenced by local variations known as geocentric sea level. It has been monitored using satellite altimetry which is a technique used to measure the height of the ocean's surface using radar from a satellite in space over the last two decades, and, when averaged globally, provides the global mean sea level (GMSL). Although the processes driving GMSL rise and

regional changes in relative sea level differ, they are interconnected. The main factors contributing to the current rise in GMSL include thermal expansion of seawater, loss of land ice, freshwater exchange between oceans and land reservoirs, and changes in groundwater storage. These trends are largely attributed to greenhouse gas emissions caused by human activities, driving to a climate change (Ravichandran et al. 175–189).

From January 1870 to December 2004, spanning 135 years, the global mean sea level (GMSL) rose by a total of 195 mm, averaging approximately 1.44 mm per year. The rise in sea levels during the 20th century was about 160 millimeters. This increase happened gradually over time, with an average yearly increase of about 1.7 millimeters. The confidence limits suggest that this yearly increase could be as low as 1.4 millimeters or as high as 2.0 millimeters (at 95% confidence limits) (Church and White 1).

In fact, 30% of the whole earth's surface is covered by forests. As trees grow, they store carbon from the environment to the wood, and under the soil, without forests, this carbon dioxide would spread in the atmosphere (Melillo). Deforestation can contribute to climate change, trees release moisture which cools the air in the environment and lower the temperature, and in its absence the earth can receive extreme heat waves. Scientists had found that some regions like North America are already suffering from rising temperature (Lejeune et al.).

Both vehicles and power plants are seriously contributing in the rise of the earth's temperature. One fifth of all the U.S emissions are caused by cars and trucks, emitting around 24 pounds of carbon dioxide and other global warming gases for every gallon of gas. Planes, trains, ships, and vehicles under the transportation sector produce nearly 30% of all U.S global warming emissions, which is considered a big percentage ("Car Emissions and Global Warming"). The greenhouse gasses emitted by power plants, are significant contributors to the rise of temperature. CO2 is the most abundant long-lived GHG in the atmosphere, and its

concentration has increased significantly since the industrial revolution. The burning of fossil fuels, such as coal and natural gas, in power plants releases large amounts of CO2 into the atmosphere, which traps heat and contributes to global warming (Kennedy).

This section has discussed how human activities, like deforestation and the use of vehicles and power plants, are causing the Earth's temperature to rise. Global warming has been happening since the 1940s. It is causing sea levels to rise because of melting ice caps and glaciers, as well as the expansion of seawater as it warms up. This rise in sea levels is a big problem for coastal communities and ecosystems. Overall, the main factors causing these changes are human activities causing greenhouse gas emissions, which trap heat in the Earth's atmosphere.

1.2.2 The Economy:

Global economies face serious challenges as a result of climate change, which affects many different industries and aspects of economic activity. Changes in sea levels, weather patterns, and the frequency and severity of extreme weather events are all increasing with rising global temperatures. The effects of these variations on economic systems are extreme.

According to Keith Wade and Marcos Jennings – economists who worked in Schroders- a financial services company, the anticipation is that global warming will elevate both the frequency and intensity of extreme weather events, leading to heightened risks of property and infrastructure damage. Events like Hurricane Sandy, which submerged significant portions of New York in 2012, exemplify the economic toll associated with such extreme weather events. Additionally, sea level rise is anticipated to negatively impact economic productivity as businesses face impairments and individuals suffer property damage to their residences. They also claim that insurance prices are already rising due to the dangers associated with climate change. It has been proven by the insurance industry that a large portion of the risk associated with global warming is likely dependent on it.

Professionals at companies have already felt the impact of harsh weather events. Insurance companies have had to reimburse expenses resulting from property damage that is related to catastrophic weather, ranging from Hurricane Katrina in the U.S. to unseasonal floods in the UK (2).

The year 2011 was the costliest for natural disasters ever resulting in insured losses that have cost the sector more than $126 billion globally. Moreover, forage production like grasses, legumes, and other herbaceous plants that are made to be consumed by grazing animals, is important for feed balance in order to meet the nutrient requirements of livestock, and any change in climate can have a direct impact on the structure of livestock enterprises in the USA. The timing and magnitude of perception lead to a long-term change in forage productivity, especially in dryland crops. Decreases in the amount of forage available to sheep and cattle result in a rise in the demand for hay and feed grains, which in turn drives up the price of producing other livestock products like pork and chicken (Mendelson and Neumann 19).

According to the Institute of Social and Economic Research, climate change has the potential to have a significant impact on tourism. It can directly affect tourists by influencing their participation and experiences through atmospheric conditions. While bad weather—such as rain, wind, fog, and dust storms—disturbs outdoor activities, pleasant weather enhances tourist happiness. For instance, tour guides in southern Alaska saw a noticeable contrast between the sunny, dry summer of 2004 and the rainy summer of 2006. Sales declined. because fewer people choose to travel in wet conditions or go on marine trips once cruise ships have departed (Yu et al. 553). Keith Smith, in his article titled “The Influence of Weather and Climate on Recreation and Tourism declares that the following weather variables may have an impact on travelers’ comfort and safety: air temperature, humidity, radiation strength, wind direction and speed, cloud cover, sunshine length (400).

1.2.3 Biodiversity

The phenomenon of climate change can have a significant effect on many living creatures and biodiversity, where it can be a serious threat to their existence. Due to the warm planet, water supply decreases and sea levels rise and other consequences of climate change can menace people's lifestyle.

1.2.3.1 Coastal Regions

According to S. Jeffress Williams, a scientist and a coastal marine geologist, the sea level was fairly stable for the past few years until about the mid-19th century. During the 20th century, it arose at 1.7 mm/yr. The current average rise rate is 3.1 mm/year, a 50% increase over the past two decades (184). Many regions are experiencing even greater rise rates due to local geophysical factors, for instance, Louisiana and Shakespeare Bay. Warmer ocean temperature and increased precipitation can lead to more intense storms, including hurricanes, it can damage critically infrastructure such as ports, roads, and bridges, disrupting transportation and emergency services. Additionally, changes in precipitation patterns and the unbalanced sea level can lead to increased salinity in estuaries and waterways, affecting aquatic life and human consumption ("Climate Adaptation and Estuaries").

1.2.3.2 Health

Extreme weather events, variations in temperature, and precipitation patterns may eventually cause a wide range of human diseases to spread. Warming temperatures have the potential to elevate the levels of harmful air pollutants, smog, pollen, and smoke from wildfires. These factors can result in a variety of symptoms, including headaches, eye irritation, stuffy noses, wheezing, skin irritation, coughing, and chest pain. The elderly, small children, and people with respiratory conditions (such bronchitis, asthma, or emphysema) are particularly susceptible to the consequences of climate change (Kim et al. 303).

1.2.3.3 Agriculture

According to Cumhur Aydinalp and Malcolm S. Cresser, researchers in environmental science, climate change can affect the agriculture by causing geographical shifts and yield changes in agriculture, a reduction in the quantity of suitable water for irrigation, and loss of land through sea level rise. The yields of different crops and geographic limits may be altered by changes in soil moisture, temperature, precipitation, cloud cover, as well as increases in CO2. The risk of losses due to weeds, insects and diseases is likely to increase. The range of many insects will change or expand and new combinations of diseases and pests may emerge as natural ecosystems respond to shifts in temperature and precipitation profiles (674-675).

1.2.3.4 On Animals

The main cause for concern is that human activity is changing the climate, primarily through the release of greenhouse gases like CO2 and Methane from the burning of fossil fuels. Microbes responsible for disease are most likely to develop and proliferate in environments with higher humidity and temperatures (Padodara and Jacob 85). According to Abraham Bindya Liz, animal genetics and breeding doctor, in her article entitled “Climate Change and Livestock Farming”, an elevation in body temperature indicates accelerated metabolic processes in all bodily systems, which diminishes the body’s ability to combat illness and parasites that live inside the body and others that live externally in addition to disease vectors (Padodara and Jacob 86).

The risk of death and serious disease is predicted to rise in response to an increase in the frequency and intensity of heat waves, and this risk will be made worse by rising temperatures and humidity. For pigs, feed intake drops by 5% and activity levels decline by 7.5% if the temperature rises by 1°C above their ideal growth temperature. Pigs that are

exposed to a high temperature may experience heat stress. In addition to causing suffering, heat stress lowers fertility and production. It may decrease the amount of feed that lactating sows consume, which could decrease their milk production and have a negative impact on the piglets. For instance, Taipei's summers are hot and protracted in China. It is estimated that adult pigs experience heat stress for seven months out of the year (Forman et al).

This part has discussed how Climate change poses significant threats to both ecosystems and human societies. Rising global temperatures lead to decreased water supply, increased sea levels, and more frequent extreme weather events, impacting coastal regions, agriculture, human health, and animal populations. Coastal communities face increased risks of flooding and erosion due to rising sea levels and changes in extreme sea level events. Human health is at risk due to elevated levels of air pollutants, increased frequency of heatwaves, and changes in disease vectors, impacting sensitive populations such as the elderly and those with respiratory conditions. Agriculture is affected by climate change through shifts in geographical suitability for crops, changes in soil moisture and temperature, and increased risk of pests and diseases. Animals also suffer from heat stress, decreased fertility, and lower productivity, impacting food production and lifestyle. Overall, climate change exacerbates existing vulnerabilities and poses complex challenges that require urgent and coordinated action to mitigate its impacts and adapt to a changing world.

1.3 Definition of Sustainable Development:

The term Sustainable development is a notion that has been defined throughout the years by different experts. Scott Campbell, professor of urban planning in the University of Michigan, defines it simply as "the long-term ability of a system to reproduce" (qtd. in Berke and Manta 2). Philip Berke and Maria Manta, city and regional planning professors at North Carolina and Ohio University respectively, define it as "a dynamic process in which communities anticipate and accommodate the needs of current and future generations in ways

that reproduce and balance local social, economic, and ecological systems, and link local actions to global concerns" (3).

According to the World Health Organization (WHO), sustainable development is a broad term that describes policies, projects and investments that provide benefits today without sacrificing environmental, social and personal health in the future. The United Nations states that it is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs (World Health Organization).

The main purpose of this notion is to end poverty and ensure intergenerational equity, which implies fairness to coming generations (Berke and Manta 2). And in order for it to be achieved, there is an urgent need for tackling three main elements which are economic growth, social inclusion and environmental protection. These elements are interconnected and all are crucial for the well-being of individuals and societies ("The Sustainable Development Agenda"). Its principles are working in a way that protects and respects nature, preserve biodiversity, and create livable communities. Local economies should operate sustainably, promoting equity and holding polluters accountable while planning responsibly (Berke and Manta 4).

The Sustainable Development Goals (SDGs) are a set of 17 goals adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity. The SDGs reflect an understanding that sustainable development everywhere must integrate economic, social well-being, and environmental protection. These goals are: (1) No poverty, (2) Zero hunger, (3) Good health and well-being, (4) quality education, (5) Gender equality, (6) Clean water and sanitation, (7) Affordable and clean energy, (8) Decent work and economic growth, (9) Industry, innovation and infrastructure, (10) Reduced inequality, (11) Sustainable cities and

communities, (12) responsible consumption and production, (13) climate action, (14) life below water, (15) life on land, (16) peace, justice and strong institution, (17) partnerships for the goal.

1.4 The Sustainable Development Goals:

Goal 1 of the Sustainable Development Goals is to end poverty in all its forms all around the world. This includes eradicating extreme poverty, reducing the number of people living in poverty, ensuring equal rights to economic resources, and building resilience against climate-related shocks. By 2030, the goal is to eradicate extreme poverty for all people everywhere, which is measured as those living on less than $1.25 a day, and to reduce by at least half the percentage of men, women, and children of all ages living in poverty in all its forms ("Transforming Our World: The 2030 Agenda for Sustainable Development"). This includes implementing nationally suitable social protection systems and policies, ensuring equal access to economic resources and basic services, and building resilience to climate-related extreme events and other shocks. To achieve this goal, mobilizing resources from various sources is necessary, including strengthening development cooperation and establishing a policy framework at the national, regional and international levels based on poverty alleviation and gender-sensitive development strategies ("Sustainable Development Goals").

Goal 2 of the Sustainable Development Goals is to end hunger, achieve food security, improve nutrition, and promote sustainable agriculture. By 2030, the aim is to guarantee access to safe, and healthy food all of the time for all people, especially the poor and the vulnerable. This includes eradicating all forms of hunger and addressing the nutritional needs of various vulnerable groups. The goal also wants to double the agricultural productivity of small-scale food producers, especially women and indigenous peoples, through equal access

to resources, and markets ("Transforming Our World: The 2030 Agenda for Sustainable Development"). Also, it aims to ensure sustainable food production systems and resilient agricultural practices that increase productivity, preserve ecosystems, and strengthen capacity for adaptation to climate change. Maintaining genetic diversity, increasing investment in rural infrastructure and agricultural research, and addressing trade and market limitations are also key elements of this goal ("Sustainable Development Goals").

Goal 3 of the Sustainable Development Goals is to ensure healthy lives and promote well-being for all. Reducing the worldwide maternal mortality ratio, eradicating infant and child mortality that can be prevented, and fighting diseases including AIDS, TB, malaria, and tropical diseases are the goals by 2030. It also aims to reduce premature mortality from non-communicable diseases (NCDs), which are chronic conditions not caused by infectious agents, including cardiovascular diseases, cancer, chronic respiratory diseases, and diabetes. It also seeks to strengthen prevention and treatment of substance abuse, and to reduce the number of road accident deaths and injuries worldwide ("Transforming Our World: The 2030 Agenda for Sustainable Development"). In addition, the goal is to achieve universal health coverage, provide universal access to sexual and reproductive health services, and lower the number of deaths and illnesses caused by pollution and dangerous substances. Key elements of this aim are also strengthening the implementation of tobacco control, promoting vaccine and medication research and development, raising health financing, and improving global health risk management ("Sustainable Development Goals").

Goal 4 of the Sustainable Development Goals focuses on ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all. By 2030, the goal is to ensure that all girls and boys receive a complete free, equitable, and quality primary and secondary education, which leads to relevant and effective learning outcomes. Additionally, it aims to develop the quality of lifestyle in early childhood, care, and pre-

primary education for all children, ensuring that they are prepared for primary education. The goal also emphasizes equal access to affordable education with high-quality technology, including university, for women and men. It seeks to increase the number of youth and adults with relevant skills for employment, decent jobs, and entrepreneurship. Furthermore, the goal aims to eliminate gender disparities in education and ensure equal access to education and vocational training for marginalized communities, including persons with disabilities, indigenous peoples, and children in vulnerable situations. It also targets achieving literacy and numeracy for all youth and a substantial proportion of adults by 2030 ("Transforming Our World: The 2030 Agenda for Sustainable Development").

Moreover, the goal emphasizes the acquisition of knowledge and skills needed to promote sustainable development, through education for sustainable development, human rights education, and the promotion of a culture of peace and non-violence. To achieve this, the goal calls for building and upgrading education facilities that take children's disabilities and gender sensitivity into consideration, in addition to providing safe, non-violent, inclusive, and effective learning environments for all. Additionally, it aims to substantially expand scholarships for developing countries by 2020 and increase the supply of qualified teachers through international cooperation for teacher training, especially in least developed countries and small island developing States by 2030 ("Sustainable Development Goals").

Goal 5 of the Sustainable Development Goals aims to achieve gender equality and empower all women and girls. This includes ending all forms of discrimination against women and girls worldwide, eliminating violence against them in both the public and private spheres, such as forced labor, sexual exploitation, manipulation, or any type of abuse for personal purposes. The goal also targets ending harmful practices like child, early, and forced marriage as well as sexual abuse. It emphasizes the recognition and valuing of unpaid care and domestic work through public services, infrastructure, and social protection policies,

promoting shared responsibility within households and families. Additionally, the goal seeks to ensure women's full and effective participation and equal opportunities for leadership in decision-making at all levels of political, economic, and public life. It also aims to ensure universal access to sexual and reproductive health and reproductive rights as agreed upon in international agreements. The goal calls for reforms to give women equal rights to economic resources, access to ownership and control over land and other forms of property, financial services, inheritance, and natural resources. It emphasizes the use of enabling technology, particularly information and communications technology, to promote women's empowerment. Furthermore, it underscores the importance of adopting and strengthening sound policies and enforceable legislation to promote gender equality and empower all women and girls at all levels ("Sustainable Development Goals").

Goal 6 of the Sustainable Development Goals focuses on ensuring the availability and sustainable management of water and sanitation for all. By 2030, the goal aims to achieve universal and equitable access to safe and affordable drinking water for everyone. It also seeks to provide access to adequate and equitable sanitation and hygiene for all, with a particular focus on the needs of women, girls, and those in vulnerable situations. Additionally, the goal aims to improve water quality by reducing pollution, minimizing the release of dangerous chemicals, and increasing recycling and safe reuse of water globally. It also targets increasing water-use efficiency across all sectors and ensuring sustainable withdrawals and supply of freshwater to address water shortage thereby reducing the number of people suffering from water scarcity. Furthermore, the goal calls for the implementation of integrated water resources management at all levels, including trans-boundary cooperation where applicable. By 2020, efforts are directed at protecting and restoring water-related ecosystems such as mountains, forests, wetlands, rivers, and lakes. The goal also emphasizes the importance of expanding international cooperation and capacity-building support to

developing countries in water- and sanitation-related activities and programs, including technologies for water harvesting, desalination, water efficiency, wastewater treatment, recycling, and reuse. Additionally, it aims to support and strengthen the participation of local communities in improving water and sanitation management ("Sustainable Development Goals").

Goal 7 of the Sustainable Development Goals aims to ensure a universal access to affordable, reliable, sustainable, and modern energy services for all by 2030. It also seeks to substantially increase the share of renewable energy[3] in the global energy mix and double the global rate of improvement in energy efficiency. Additionally, the goal emphasizes enhancing international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency, and advanced and cleaner fossil-fuel technology. It also promotes investment in energy infrastructure and clean energy technology. Furthermore, the goal calls for expanding framework and upgrading technology for supplying modern and sustainable energy services for all in developing countries, particularly least developed countries, small island developing states, and land-locked developing countries, in accordance with their respective support programs ("Sustainable Development Goals").

Goal 8 of the Sustainable Development Goals focuses on promoting sustainable economic growth, and full, productive employment for all. The goal aims to sustain per capita economic growth, targeting at least 7 percent GDP growth per year in the least developed countries. It also aims to achieve higher levels of economic productivity through diversification, with a focus on labor-intensive sectors. Also, the goal seeks to promote decent job creation, entrepreneurship, and innovation, while encouraging the growth of small enterprises through access to financial services. Moreover, it aims to improve global resource efficiency in consumption and production, to separate economic growth from environmental

degradation. The goal aims to achieve full and productive employment and decent work for all with equal payment. It further aims to reduce the proportion of unemployed, and uneducated youth by 2020. Additionally, the goal calls for immediate and effective measures to eradicate forced labor, human trafficking, and child labor by 2025. Furthermore, it aims to protect labor rights and promote safe working environments for all. The goal also emphasizes promoting sustainable tourism that creates jobs and promotes local culture and products. Additionally, it aims to strengthen domestic financial institutions to encourage and expand access to banking and insurance for all. The goal also calls for increased Aid for Trade, a World Trade Organization initiative, support for developing countries, particularly least developed countries, through the Enhanced Integrated Framework (EIF). The latter is a global partnership that helps least developed countries use trade to drive growth, development, and poverty reduction. Finally, it aims to develop and operationalize a global strategy for youth employment by 2020 and implement the Global Jobs Pact which is an initiative made by the International Labour Organization (ILO) to guide countries in promoting job creation and decent work in the aftermath of the 2009 global financial crisis ("Sustainable Development Goals").

Goal 9 of the Sustainable Development Goals focuses on building resilient infrastructure, promoting inclusive and sustainable industrialization, and fostering innovation. The goal aims to develop quality, reliable, sustainable, and resilient infrastructure to support economic development and human well-being, with a focus on affordable and equitable access for all. The goal aims to promote inclusive and sustainable industrialization by increasing the industry's share of employment and GDP by 2030. This goal is tailored to national circumstances, with a specific focus on doubling the industry's share in least developed countries. Additionally, it targets improving access to financial services, including affordable credit, for small-scale industrial and other enterprises, particularly in developing

countries. By integrating these enterprises into value markets, and fostering economic growth by creating jobs and ensuring prosperity in order to benefit all segments of society. Furthermore, it aims to upgrade infrastructure and industries by 2030 to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action according to their capabilities. The goal also emphasizes enhancing scientific research, upgrading the technological capabilities of industrial sectors in all countries, particularly developing countries, by encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending by 2030. Additionally, it calls for facilitating sustainable and resilient infrastructure development in developing countries through enhanced financial, technological, and technical support to African countries, least developed countries, landlocked developing countries, and small island developing states. Moreover, the goal aims to support domestic technology development, research, and innovation in developing countries, including by ensuring a conducive policy environment for industrial diversification and value addition to commodities. Lastly, it targets significantly increasing access to information and communications technology and striving to provide universal and affordable access to the Internet in least developed countries by 2020 ("Sustainable Development Goals").

Goal 10 of the Sustainable Development Goals aims to reduce inequality within and among countries. It seeks to achieve this by progressively achieving and sustaining income growth of the bottom 40 percent of the population at a rate higher than the national average. The goal also focuses on empowering and promoting the social, economic, and political inclusion of all individuals, regardless of age, sex, disability, race, ethnicity, origin, religion, or economic status. It aims to ensure equal opportunity and reduce inequalities of outcome by

eliminating discriminatory laws, policies, and practices, and promoting appropriate legislation and action in this regard. Additionally, the goal advocates for the adoption of policies, especially fiscal, wage, and social protection policies, to achieve greater equality. It also emphasizes the importance of improving the regulation and monitoring of global financial markets and institutions, as well as enhancing the representation and voice of developing countries in decision-making in global international economic and financial institutions. The goal also calls for facilitating orderly, safe, regular, and responsible migration and mobility of people, implementing the principle of special and differential treatment for developing countries in accordance with World Trade Organization agreements, and encouraging official development assistance and financial flows, including foreign direct investment, to countries in need for it. Lastly, it aims to reduce the transaction costs of migrant remittances to less than 3 percent and eliminate remittance corridors with costs higher than 5 percent by 2030 ("Sustainable Development Goals").

Goal 11 of the Sustainable Development Goals aims to make cities and human settlements inclusive, safe, resilient, and sustainable by 2030. This includes ensuring access to adequate, safe, and affordable housing and basic services for all, upgrading slums, and providing better transport systems. Efforts will focus on enhancing urbanization and developing human settlement planning, protecting cultural and natural heritage, and reducing deaths, economic losses, and environmental impacts of cities. Additionally, the goal aims to provide universal access to safe, green, and public spaces, support economic, social, and environmental links between urban and rural areas, and increase the number of cities implementing policies for inclusion, resource efficiency, and climate change mitigation and adaptation. Least developed countries will receive support for resilient building practices using local materials ("Sustainable Development Goals").

Goal 12 of the Sustainable Development Goals focuses on ensuring sustainable consumption and production patterns by 2030. This includes implementing a better consumption and production frameworks, achieving efficient use of natural resources, and reducing food waste and losses. The goal also aims to manage chemicals and wastes while taking environmental consequences into consideration, reduce waste generation through prevention, recycling, and reuse, and encourage companies to adopt sustainable practices. Additionally, it promotes sustainable public procurement, enhances the awareness and support of developing countries in adopting sustainable practices and monitoring their impacts, particularly in tourism. The goal also calls for rationalizing inefficient fossil-fuel subsidies to reflect their environmental impacts and protect the poor and affected communities ("Sustainable Development Goals").

Goal 13 of the Sustainable Development Goals emphasizes the urgent need to combat climate change and its impacts. This includes strengthening resilience and adaptive capacity to climate-related consequences and natural disasters globally, integrating climate change measures into national policies and strategies, and improving education and awareness on climate change mitigation and adaptation. Additionally, the goal aims to mobilize $100 billion annually by 2020 to address the needs of developing countries for mitigation actions, and to fully operationalize the Green Climate Fund[4] (GCF), a financial mechanism under the UNFCCC that supports developing countries in climate change mitigation and adaptation. It also promotes capacity-building for effective climate change planning and management in least developed countries and small island developing states, with a focus on women, youth, and marginalized communities, recognizing the UNFCCC as the primary forum for global climate change negotiations ("Sustainable Development Goals").

Goal 14 of the Sustainable Development Goals focuses on conserving and sustainably using oceans, seas, and marine resources for sustainable development. By 2025, the goal aims

to prevent and significantly reduce marine pollution, especially from land-based activities, and to manage and protect marine and coastal ecosystems, including restoration efforts. It also seeks to regulate and restore fish stocks by ending illegal, unreported, and overfishing practices.. Additionally, the goal aims to conserve at least 10 percent of coastal and marine areas and increase economic benefits for small island developing states and least developed countries from marine resource use by 2030. Furthermore, it emphasizes increasing scientific knowledge and research capacity, providing access for small-scale fishers to resources and markets, and enhancing the conservation and sustainable use of oceans based on international law, particularly the United Nations Convention on the Law of the Sea (“Sustainable Development Goals").

Goal 15 of the Sustainable Development Goals aims to protect, restore, and promote the reasonable use of terrestrial ecosystems, manage forests sustainably, combat desertification, and prevent biodiversity loss. By 2020, the goal targets the conservation, restoration of terrestrial and inland freshwater ecosystems, especially forests, wetlands, mountains, and dry lands, in line with international agreements. It also aims to promote sustainable management of all types of forests, halt deforestation, to restore degraded forests, and increase reforestation globally. By 2030, the goal seeks to combat desertification, restore degraded land and soil, including land affected by desertification, drought, and floods. Additionally, it aims to conserve mountain ecosystems, reduce natural habitat degradation, halt biodiversity loss, and protect threatened species. The goal also emphasizes ending illegal hunt and trafficking of protected species. It calls for integrating ecosystem and biodiversity values into national and local planning and mobilizing financial resources to conserve biodiversity and ecosystems, particularly in developing countries (“Sustainable Development Goals”).

Goal 16 of the Sustainable Development Goals aims to promote peaceful and inclusive societies for sustainable development, provide access to justice for all, and build effective, accountable, and inclusive institutions at all levels. The goal includes targets to reduce all forms of violence and related death rates, end abuse, exploitation, trafficking, and violence against children, and promote the rule of law and equal access to justice. It also seeks to reduce illicit financial and arms flows, combat organized crime, and substantially reduce corruption and bribery. The goal emphasizes the development of effective, transparent, and accountable institutions, as well as inclusive and participatory decision-making at all levels. Additionally, it aims to provide legal identity for all, ensure public access to information and protect fundamental freedoms, and strengthen national institutions to prevent violence, combat terrorism and crime, and enforce non-discriminatory laws and policies for sustainable development ("Sustainable Development Goals").

Goal 17 of the Sustainable Development Goals focuses on strengthening the global partnership for sustainable development. It includes targets related to finance, technology, capacity-building, trade, policy and institutional coherence, multi-stakeholder partnerships, and data, monitoring, and accountability. These targets aim to enhance domestic resource mobilization, provide additional financial resources for developing countries, and assist in attaining long-term debt sustainability. The goal also emphasizes enhancing cooperation on science, technology, and innovation, promoting the development and transfer of technologies without threatening the environment, and supporting capacity-building in developing countries. Additionally, it seeks to promote a universal, rules-based, and equitable trading system, enhance policy coherence for sustainable development, and encourage multi-stakeholder partnerships. Furthermore, it aims to enhance global macroeconomic stability, respect each country's policy space ("Sustainable Development Goals").

1.5 Evolution of Sustainable Development:

World leaders convened in 2015 to commit to a historic endeavor aimed at securing the rights and well-being of people worldwide and ensuring the sustainability of the planet. This pledge materialized through the adoption of the 2030 Agenda for Sustainable Development, encompassing 17 Sustainable Development Goals (SDGs) aimed at ending poverty, protecting the planet, and addressing inequalities. The SDGs represent a continuation and expansion of the Millennium Development Goals (MDGs), established in 2002 as part of the Millennium Declaration. While the MDGs primarily focused on poverty and hunger, the SDGs take a more comprehensive approach by integrating economic, social, and environmental sustainability ("How are the Sustainable Development Goals different from the MDGs?").

The evolution towards the SDGs traces back to earlier international efforts to promote sustainable development. The 1992 Earth Summit in Rio de Janeiro laid the groundwork with the adoption of Agenda 21, a comprehensive plan of action for building a global partnership for sustainable development ("Rio Declaration on Environment and Development"). Subsequent milestones included the Millennium Summit in 2000, which led to the formulation of the MDGs, and the World Summit on Sustainable Development in 2002, which reaffirmed commitments to poverty eradication and environmental protection ("The Johannesburg Declaration on Sustainable Development and the Plan of Implementation").

The formulation of the SDGs was a collaborative effort involving numerous stakeholders. In 2012, the United Nations Conference on Sustainable Development (Rio+20) initiated the process, culminating in the establishment of the Open Working Group (OWG) which was a UN process that developed a proposal for the sustainable development goals (SDGs) as part of the post-2015 development agenda ("United Nations Conference on Sustainable Development (Rio+20)"). Subsequent negotiations led to the adoption of the

2030 Agenda for Sustainable Development at the UN Sustainable Development Summit in September 2015 (“Transforming our World: The 2030 Agenda for Sustainable Development”).

The SDGs represent a significant departure from the MDGs in terms of scope and ambition. While the MDGs primarily targeted developing countries, the SDGs are universal, applying to all nations. Moreover, the SDGs go beyond poverty alleviation to address root causes and promote development that benefits all individuals (“How are the Sustainable Development Goals different from the MDGs?”).

Implementation of the SDGs requires concerted efforts from all stakeholders. The Division for Sustainable Development Goals (DSDG) which is a part within the United Nations Department of Economic and Social Affairs (UNDESA) plays a crucial role in providing support and capacity-building for SDG-related initiatives (“Division for Sustainable Development Goals (DSDG)”). Additionally, the annual High-level Political Forum on Sustainable Development serves as a platform for monitoring and reviewing progress towards the SDGs (“Transforming our World: the 2030 Agenda for Sustainable Development”).

1.6 The Relationship between Sustainable Development and Climate Change:

Climate change and sustainable development have a unique relationship with both affecting the other in multiple ways. While sustainable development aims at promoting economic growth, social equity and environmental protection for the sake of long-term survival and prosperity, climate change threatens these goals because it increases environmental degradation, and the frequency of extreme weather events, and is a danger to the livelihoods of vulnerable communities. Addressing climate change is crucial for achieving sustainable development goals, and integrating climate considerations into development policies can enhance sustainability and resilience.

Climate policies play a role in influencing sustainable development objectives. First, they help in reducing climate change damages by mitigating greenhouse gas emissions and enhancing resilience to climate change impacts. This, in turn, ensures that sustainable development aspirations are less hindered by negative climatic effects. Second, climate policies provide ancillary benefits, such as reducing local air pollution, conserving biodiversity, and creating employment opportunities. However, implementing mitigation and adaptation measures can impose direct costs, which vary depending on the measures' strictness and implementation. Also, climate policies can have spill-over effects, impacting economies globally. For example, a decrease in oil demand due to climate policies can negatively affect oil-exporting countries but positively affect oil-importing nations (Swart 22).

Moreover, wider development policies can also influence climate change and responses to it. Pursuing alternative development pathways, such as transitioning to a service economy or adopting sustainable practices, can lead to lower emissions and increased resilience to climate change. Specific sectoral policies, like Brazil's biofuel program, can significantly contribute to climate change mitigation, even without explicit climate-related objectives. Furthermore, institutional changes and investments in social capital can improve the capability to mitigate and adapt to climate change (Swart 22).

Climate change, on the other hand, impacts the Sustainable Development Goals (SDGs) significantly. It creates challenges in achieving goals related to prosperity, poverty eradication, health, food, energy, water availability, and more. For instance, climate change impacts can worsen health outcomes, increase food and water insecurity, and threaten peace and inclusivity in societies. Climate change also undermines efforts to achieve justice and equality, as it disproportionately affects the poorest and most vulnerable populations, exacerbating inequality and hampering poverty reduction efforts (Fuso Nerini et al.).

This chapter found that climate change is a long-term alteration in weather patterns and temperatures, caused mainly by human activities like burning fossil fuels and deforestation, and results in rising global temperatures. These changes lead to decreased water supplies, higher sea levels, and more frequent extreme weather events. The impacts are significant: coastal communities face increased risks of flooding and erosion; human health is affected by higher levels of air pollution, more frequent heatwaves, and changes in disease patterns; agriculture suffers from changes in crop suitability, soil moisture, and increased pests and diseases; and animal populations experience heat stress and reduced productivity, impacting food production.

The chapter also discussed Sustainable development, which is an approach that integrates economic growth, social inclusion, and environmental protection to ensure long-term prosperity and equity. The United Nations' 17 Sustainable Development Goals (SDGs) aim to end poverty, protect the planet, and ensure prosperity for all by 2030. These goals build on the earlier Millennium Development Goals (MDGs) but have a broader focus on integrating economic, social, and environmental sustainability.

The relationship between climate change and sustainable development is complex. Climate change poses significant challenges to achieving the SDGs by exacerbating environmental degradation, extreme weather events, and threats to vulnerable communities. Addressing climate change is essential for sustainable development, requiring policies that reduce greenhouse gas emissions, enhance resilience, and promote sustainability. Effective action on climate change is necessary to achieve the SDGs and ensure a prosperous and equitable future for all.

Chapter Two

Initiatives of U.S. Climate Policy under the Obama Administration

The previous chapter dealt with Climate change and its impacts, and also with sustainable development and its goals, in addition to the relationship between the two in order to provide the background necessary to understand the policies used to eradicate climate change. This chapter deals with the U.S policy making concerning climate change, in addition to an overview about the U.S. federal climate policy, and lastly the policies and initiatives that President Barack Obama has implemented in order to address climate change and preserve the environment

2.1 U.S. Climate Change Policy Making: Presidential Authority and Legislative Process

The United States' approach to climate change policy making is different from other nations, influenced by a complex interaction between executive actions and legislative processes. The U.S. system provides significant authority in the President, while legislative action requires navigating a bicameral Congress which is composed of a lower chamber known as the House of Representatives, and an upper one known as the Senate. Within the Executive Branch, composed of the President and the Cabinet, the President can have considerable influence over climate policy. Through executive orders, the President can direct federal agencies to adopt specific measures, for instance, reducing carbon emissions to protect the environment (Ohliger 9). Also, the President can use rulemaking to impose obligations on businesses and other regulated entities to curb emissions, particularly under the Clean Air Act[5] which is the first environmental law to provide the federal government a serious regulatory role, passed in 1970 with a strong support from both parties (Schmalensee and Stavins 2). Despite being from the same party, members of the House of Representatives do not always align with the President's agenda. Each Representative speaks for a specific district, and their votes often reflect local interests, such as supporting industries like coal.

The concept of party discipline is less pronounced in the U.S., allowing elected officials to vote based on their constituencies' needs and electoral considerations (Ohliger 9).

Enacting climate legislation requires navigating the legislative process in Congress. Bills are typically drafted and considered separately in the House of Representatives and the Senate. Various committees that have authority over environmental, energy, and related issues play key roles in making legislation. For instance, the Senate's Environment and Public Works Committee handles environmental matters, while separate committees oversee energy, finance, and agriculture, all relevant to climate policy. Differences in the House and Senate processes add complexity. While the House focuses on passing legislation and maintaining majority support, the Senate's rules, including the filibuster, which requires 60 votes to be passed in congress, can complicate passage. A joint committee, known as a Conference Committee, resolves differences between House and Senate bills to create a final, agreed-upon version. The legislative process is time-sensitive, with bills valid only for the duration of a specific Congress. If agreements are not reached within the two-year period, the process restarts in the next session. Once both houses pass a bill, it goes to the President for signature or veto. Executive implementation follows, often involving further rulemaking by federal agencies to detail the legislation's specifics (Ohliger 9-10). One of the Obama's initiatives that faced this gridlock[6] is the American Clean Energy and Security Act of 2009 which passed in the house but failed in the senate.

U.S climate change policy making involves a complex blend of executive actions and legislative processes, necessitating coordination across multiple branches of government. The president, through executive orders can implement significant measures, yet these often require support from congress. The legislative process, influenced by individual lawmakers, political affiliations, and interest groups like industries can create challenges which have the potential to lead to crucial bipartisan consensus. Additionally, the judiciary impacts policy by

interpreting laws and addressing legal challenges which shapes the nation's process in applying policies that address climate change both directly and indirectly. This complex process of creating, interpreting, and executing laws show the difficulty of passing effective legislation under the U. S's checks and balances system of government (Ohliger).

Over the past two decades, however, according to Christopher Bailey, a professor of American politics, the U.S. has faced policy gridlock in addressing environmental challenges, including climate change, due to increasing ideological divides in Congress and opposition from business interests and conservative politicians. Such as the partisan differences in congress between the republicans who believed that climate change was not real or caused by natural processes, and democrats whom prioritized addressing climate change as an issue, this has led to a fragmented approach to issues such as climate change and energy use, hindering the development of coherent environmental policies (Atkinson). Additionally, some fossil fuel and related industries like natural gas industry, have worked with the republicans for decades to advance an anti-regulation agenda and doubt climate science (Smith et.al 30).

2.2 Overview of U.S. Federal Climate Policy

The United States' approach to climate change policy has been a multifaceted journey, reflecting a mix of bipartisan cooperation, political conflict, and shifting priorities. The U.S. had a pivotal role in initiating the negotiations for the 1992 United Nations Framework Convention on Climate Change (UNFCCC). The U.S. was also crucial in negotiating with other parties on an international level, where they agreed to cut emissions with the goal of "preventing dangerous anthropogenic interference with earth's climate system", recognizing in the process the shared goal of reducing emissions in a specific way for each nation according to their capacities (Pataki et.al 25).

The history of the United States's climate policy started around the 1950's, where pollution was the main issue because climate change was not recognized yet. Harry Truman

in 1950 was the first president who tackled the problem by inviting workers of areas affected by air pollution to gather ideas about the reduction of air pollution through the US Technical Conference. Similarly, President Eisenhower paid attention to the issue by increasing the funding for research about the consequences of air pollution. The Air Pollution Control Act[7] was passed in 1955. President Kennedy too expressed his concern about pollution in many speeches, however, he did not do much because he got assassinated. President Johnson passed the Clean Air Act of 1963 as a response to Kennedy's concerns. It set emission standards for industries, but it did not include standards for automobiles and trucks. He also established 'regional air sheds' to monitor the degree of pollution around the nation. Nixon later came and created the Environmental Protection Agency[8] (EPA) (Kenton). This era from 1964 to 1980, was labeled as the 'golden age' of environmental policy because it established major acts such as the Clean Air Act (1970), and the Federal Water Pollution Control Act[9] (1972) (Sussman and Daynes 78-79).

After Nixon, Gerald Ford took office and he was concerned primarily with the economy, thus, there was a setback in reducing air pollution, he limited the power of the Clean Air Act in fear of the negative impact on the economy, and he threatened to veto any legislation that interfered with the growth of the economy. President Carter was the first to recognize global warming and climate change as concepts. He asked several agencies including the EPA and the National Science Foundation to make a one-year study which resulted in the 'The Global 2000 Report[10] which warned about the effect of human activities that release CO2 in the atmosphere impact the climate negatively. Unlike Carter, Ronald Reagan did not focus on scientific research about climate change, he prioritized the economic development instead, with his most significant climate policy being the signature of the Montreal Protocol[11] that focused on the depleting the Ozone Layer. Goerge H.W. Bush gave environmental protection higher interest than his predecessor, he emphasized the power of

the Clean Air Act, he also signed the Earth Summit in Rio de Janeiro[12] that made the U.S the first industrialized country to ratify a treaty on climate change (Sussman and Daynes 80-83).

The Clinton administration engaged in policies to tackle climate change through a package of incentives and modest targets aimed at reducing GHG emissions by proposing a 5 billion dollars program of tax cuts for new technologies. The administration also played a major role in shaping the 1997 UN Kyoto Protocol[13] (Lattanzio et al. 5). The protocol was a legally binding emission target for industrialized countries (Böhringer 451). The George W. Bush administration was reluctant to help on the international level; this was illustrated by Bush's refusal to agree to mandatory emission reduction targets under the UNFCCC and officially withdrawing from the Kyoto Protocol stating that the Protocol was an unfair and ineffective way of addressing global climate change concerns (Hovi et al. 2). On the other hand, he initiated the Methane-to-Markets Partnership[14] (M2M) that aimed to reduce methane emissions and to advance the recovery and use of methane as a valuable clean energy source (Pugh 6).

The Obama Administration continued the trajectory of the Clinton administration by leading the development of a more collaborative approach with countries like China and France, resulting in the Paris Agreement[15] (PA) which was adopted on December 12th, 2015, and entered into force on November 4, 2016. It aimed to address climate change by limiting global warming to well below 2 degrees Celsius by reducing GHG emissions and perusing efforts to limit it to 1.5 degrees Celsius above pre industrial level. This agreement followed the Kyoto Protocol as the principle regulatory instrument addressing climate change by setting mandatory action from members according to their abilities (Denchak).

The U. S's approach to climate change policy has evolved over the decades, starting from initial concerns about pollution in the 1950's to playing a leading role in international agreements like the Paris Agreement. Early efforts focused on air and water pollution, with

significant legislation and establishment of the EPA. While some administrations, like Carter's, recognized global warming, others prioritized economic growth over environmental regulations. The Clinton and Obama administrations made significant strides in international climate agreements, but the U.S has faced persistent policy gridlock due to ideological divides and opposition from business interests particularly from fossil fuel industry.

2.3.The Obama Administration Initiatives on Climate Change:

President Obama initiated many policies in the fight against climate change, which demonstrated his commitment to reducing greenhouse gas emissions and promoting clean energy. His climate initiatives included setting carbon standards for power plants, emissions standards for vehicles, regulating emissions from the oil and natural gas sectors, and implementing energy efficiency standards for appliances.

2.3.1. Executive Actions

During his presidency, Barack Obama employed multiple measures to address climate change because he understood the urgency of this matter and the fact that Congress is in gridlock because scientific evidence could not work as supportive arguments to convince party members about the existence of climate change (Sussman and Daynes 54). This made it difficult to achieve the number of votes necessary for climate policies to be passed.

The Obama administration's approach toward the environment included his focus on technological pathways. Obama invested in new technologies that can improve the existing market structures and technological preferences by promoting innovation, reducing barriers to entry, and enhancing the overall competitiveness of American industries. Additionally, Obama preferred a centralized White House control over the issue of climate change, meaning that the White House provides the regulations and supervise its implementation. This approach allowed Obama to bypass departments and agencies and to coordinate between them effectively ("Climate Change"). At the international level, particularly in pursuing

policy goals in cooperation with the UNFCCC, Obama was enthusiastic and more helpful due to his major role in negotiating international agreements such as the Paris agreement (Pugh 2). President Obama changed things up completely by blazing down a new path of action.

Micheal Kraft, professor of political science and public affairs at the University of Wisconsin, states that Obama demonstrated his commitment to addressing environmental issues and climate change through the people he appointed into important administrative offices, such as Lisa Jackson, the Environmental Protection Agency (EPA) administrator, and Steven Chu as Energy Secretary and also through his budget proposals such as the investment of 54 billion dollars in funds to encourage domestic renewable energy production (Jennifer L).

Obama made use of executive orders that has no permanence beyond an individual's tenure in office but once signed by a president has full force of law. For instance, the executive order 13514, signed in October 5, 2009, which encouraged environmental practices in federal operations, reduced greenhouse gas emissions, increased the use of renewable energy, conserved water and improved energy efficiency. It established goals for agencies to improve their energy, economic, and environmental performance with a focus on sustainable leadership to cut expenses and emissions while encouraging efficiency and innovation ("Executive Order 13514").

Another one is Executive Order 13653 that was issued on November 1, 2013. It was entitled "Preparing the United States for the Impacts of Climate Change". It aimed to address the effects of climate change and to prepare federal agencies and make them more resilient by encouraging the scientific research and establishing recent progress to discover new strategies in order to improve the preparation of the nation. It also aimed to modernize federal programs to support climate resilient investment, by delegating several departments to ensure the preparedness for climate related risks and working on this process in cooperation. In addition

to providing usable information that enhance tools to identify and assess climate impacts and describe programs and policies to manage them (“Executive Order 13653”).

Another executive order is 13677, entitled “Climate Resilient International Development”, issued in September 23, 2014. It aimed to integrate climate-resilience considerations into all U.S international development work to the extent permitted by law. It established a new working group which was tasked with developing guidelines for integrating climate change risks and resilience into funding decisions, assessing climate risk, and identifying approaches for adjusting programs to address these risks (“Executive Order 13677”).

Executive Order 13693, entitled “Planning for Federal Sustainability in the Next Decade” sought to keep the federal government at the forefront of environmental programs, GHG emissions reductions by 40%, and sustainability across all federal agencies. It required agencies to report annually comprehensive inventory and progress towards GHG emission reduction goals, and using low emission transportation options such as electric or hybrid vehicles (“Executive Order 13693”).

Another important way that Obama influenced policy was through memoranda which allowed Obama to guide federal agencies’ approach on particular policies like climate action. A key example of Obama’s memorandum on climate change is the one entitled ‘Climate Change and National Security’, passed in September 21, 2016. It aimed to address the relationship between climate change and national security. According to the memorandum, climate change poses major dangers to national security by worsening already present risks, such as food and water shortages, extreme weather events and geopolitical instability. Key points of the memorandum included the establishment of a federal climate and national security working group to determine U.S. national security priorities related to climate change (“Presidential Memorandum - Climate …2”).

The goal of this working group was to develop strategies to integrate climate science and intelligence information into the national security plan. The memorandum ordered the working groups and federal agencies to establish action plan for climate change and national security in a determined timeframe of 90 days. This initiative aimed to identify vulnerabilities, assess possible consequences, and integrate climate considerations into agency decision-making processes, each agency was considered to direct specific climate related threat, for example economic impact, food and water security. It highlighted the importance of sharing climate science and intelligence information with federal agencies to improve understanding of climate-related risks and inform national security policies and strategies ("Presidential Memorandum – Climate… 6").

Overall, Obama's use of executive orders and memorandums in the fight against climate change in his tenure shows that he was actively trying to do something about environmental policy. In fact, Obama's use of executive actions to combat climate change during his presidency demonstrated how crucial presidential leadership can be in confronting urgent environmental concerns. All the same, these actions were not entirely smooth or uncontroversial. Thus, they demonstrated a dedication to pushing forward policies that emphasize sustainability and environmental defense.

2.3.2. The American Clean Energy and Security Bill (ACES) (2009):

It is a bill that was proposed by the House of Representatives on June 26, 2009 and aimed to address environmental sustainability and energy efficiency from various angles. Known as the Waxman-Markey bill, this document has five parts with each part focusing on different aspects of clean energy and environmental conservation (Waxman).

The first title "Clean Energy" includes applying new measurements for new coal – fuels power plants, and the research and development for electric vehicles. The second title "Energy efficiency", aims at improving the energy in various sectors by developing a

strategic energy management and supporting the transition to a clean energy economy. The third title "Reducing Global Warming Pollution" contains provisions aiming at transitioning to a clean energy economy and addressing climate change challenges. The fourth title "Transitioning to a Clean Energy Economy" aims at protecting consumers from higher energy prices by providing allowances to electricity and natural gas local companies, supporting programs that cut emissions, and helping coal generators, and oil refineries to transition from carbon-based fuels. Finally, the fifth title "Agriculture and Forestry Related Offsets" administered by the Secretary of Agriculture, focused on incentivizing sustainable practices in agriculture and forestry that contribute to climate change mitigation like organic farming, agro forestry, and reforestation (Waxman).

The ACES Act covers seven greenhouse gases (GHGs), including carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O). It recommends the establishment of all petroleum fuels' manufacturers and importers, natural gas distributors, producers of F-gases, which are potent greenhouse gases with high global warming potentials, as well as entities that emit over 25,000 tons of GHGs annually (H. R. 2454 - 111th Congress). To this end, the bill aimed to reduce greenhouse gas emissions by 3% below 2005 levels by 2012, by 17% in 2020, by 42% in 2030 and by a total of not less than 83% before the year 2050 ("American Clean Energy and Security Act of Congress: Full Text Bill Summary").

The bill also suggests that emission allowances be distributed among different stakeholders to mitigate the impact on their businesses. These allowances would be used for such purposes as providing support to consumers through targeted electricity subsidies; assisting businesses to adapt new technologies in clean energy; supporting technology development and deployment; and constructing buildings more resistant to impacts from climate change. The bill also involves a section on investing in clean technologies, renewable energy and energy saving schemes. The bill addressed also carbon market oversight, which

gives regulatory responsibilities to the Federal Energy Regulatory Commission (FERC) and the Commodity Futures Trading Commission (CFTC) responsible for regulating derivatives related to the carbon market created by the bill (Waxman).

The bill passed in the House of Representatives by a vote of 219-212 due to Democratic numerical superiority at that time. It enjoyed strong support from President Obama. But then things went wrong for it in Senate. Despite backing from the House of Representatives, the bill failed in the Senate (Atkinson 45-46). A main reason for the bill's failure was the opposition by the American Petroleum Institute (API), citing that it would cause job losses and increase the gasoline prices (Ryan).

The American Clean Energy and Security (ACES) of 2009 was a major attempt at tackling climate change while promoting clean energy and increasing energy independence. Though passing the bill through legislation failed, its objectives remain relevant in today's fight against global warming and efforts aimed at achieving sustainable development through renewable sources of energy.

2.3.3. New Energy for America Plan (2009):

President Obama's first term as president was characterized by a series of major policy pronouncements which were aimed at addressing climate change and transforming the nation's energy sector, such as the "New Energy for America" plan delivered on January 26, 2009 as part of efforts to move the U.S. economy away from fossil fuels towards a more sustainable future (Atkinson 47).

The New Energy for America focused on some of the main issues facing America like dependence on foreign oil and how critical it was to curb greenhouse gas emissions. Among its goals was the call for 30% reduction in American greenhouse gas emissions by 2025 and 80% reduction by 2050. Additionally, it sought to commit $150 bn to support green industries expected to generate five million jobs over ten years. It promoted heavily the development of

renewable energy sources, which are all those limitless energy sources present in nature and are naturally replenished like sun, wind, and water. It targeted attaining 25% electricity provision through renewables by 2025 and making the United States a global leader in tackling climatic change. One of the things in the plan was promising to have one million plug-in hybrid electric vehicles[16], which are vehicles that work using an electric motor and combustion engine (Atkinson 47).

For Obama, it was important to introduce market-based mechanisms that would make cleaner power generation economically efficient and profitable such as cap-and-trade which is a key strategy that aims to reduce GHG emissions by creating a market for trading allowances, and by providing economic incentives for cleaner technologies. Parts of the plan were criticized for its flawed Loan Guarantee Program[17], a program that provides loans and credit guarantees to aid in the development of new technology (Murphy).

2.3.4 The Copenhagen Summit (2009):

The Copenhagen Summit, also known as the 2009 United Nations Climate Change Conference, was held from December 7 to 18, 2009, in Copenhagen, Denmark. The main objective was to establish a framework for climate change mitigation beyond 2012; to agree on global emissions targets and a timeline for reducing greenhouse gas emissions to mitigate the effects of climate change; to foster international cooperation and coordination among the 192 participating nations to address the global issue of climate change; and to establish a legally binding agreement that would ensure compliance and enforcement of emissions reduction targets (“Copenhagen Climate Conference”).

The Summit resulted in the creation of the Copenhagen Accord which was a non-binding agreement that recognized the need to limit global warming to below 2°C and included a reference to exploring pathways to remain below a 1.5°C global temperature increase. The Accord was negotiated between 27 Heads of State and Government,

representing over 80% of global CO2 emissions. The Accord included voluntary reduction commitments from various countries, but these pledges did not add up to what was required by science to stay within the 2°C objective. Some developing countries, like Brazil and Mexico, made more ambitious commitments. The Accord provided for significant financing for climate action, including fast-start funding (US $ 30 billion) for 2010-2012 and long-term finance (US $ 100 billion per year in 2020), as well as the establishment of institutional structures for managing this financing ("A Brief Analysis of the Copenhagen…" 5)

President Barack Obama played a significant role in the summit. He delivered a speech on December 18, 2009 where he emphasized the importance of international cooperation and American leadership in addressing climate change. He worked closely with other world leaders, including Premier Wen of China, Prime Minister Singh of India, and President Lula of Brazil to achieve a meaningful agreement. Obama highlighted the progress made in the U.S on climate change, including investments in renewable energy, increased fuel efficiency standards, and the passage of the American Clean Energy and Security Act in the House of Representatives. He reaffirmed the United States' commitment to comprehensive legislation and international climate negotiations and emphasized the need for transparency, mitigation, and finance to address climate change ("President Obama at Copenhagen…"). He also announced a new U.S. emissions reduction target of 17% below 2005 levels by 2020, which was seen as a significant step forward in the negotiations ("President to Attend Copenhagen…").

2.3.5. The Global Climate Change Initiative (GCCI) (2010):

The Global Climate Change Initiative, signed on September 22, 2010 by president Obama, aimed to integrate climate change consideration into U.S foreign assistance by the use of bilateral, and multilateral mechanisms to encourage resilient societies, enhance sustainable growth, decrease the reliance on carbon, reduce emissions caused by

deforestation, land degradation, and energy production. This initiative was divided into three categories: adaptation assistance, clean energy assistance, and sustainable landscapes assistance (Lattanzio 1).

Adaptation programs aimed to help low-income countries mainly in Africa, Latin America, and Asia to reduce their weaknesses to the impact of climate change in several sections, including infrastructure, agriculture, water services, and health. It aimed also to increase the countries' ability to apply the best science for making decisions and fostering good governance to execute these decisions. It also aimed to build climate resilience through establishing strategies to mitigate risks from climate change (Lattanzio 1).

Clean energy programs aimed to reduce GHG emissions from energy production by increasing the use of clean energy technologies, policies, and practices through providing financial contributions and assistance for several organizations projects, including the UN agencies. It also aimed to push heavy investments in developing countries with fast increase in emissions, which provided funding for power and building projects that support worldwide environmental benefits. Furthermore, it used renewable energy strategies to help those countries to increase the access to energy and incentivize the growth of the economy (Lattanzio 2).

Sustainable landscapes programs aimed to reduce GHG emissions from deforestation and forest degradation, it also aimed to support policies for forest governance, supervising systems, managing resources, and decreasing deforestation and fostering sustainable forests in order to target the cause of deforestation and GHG increase in developing countries through enhancing regulation and execution, and securing social and economic benefits of good forest management. Moreover, it provided financial aid for programs that were aligned with worldwide environmental benefits including biodiversity and sustainable use of land (Lattanzio 2).

The GCCI was funded by the Department of State, Department of the Treasury, and U.S. Agency for International Development (USAID). These funds were regulated and provided from the administration's executive budget (Lattanzio 2). The congress was in charge of several activities in relation to the initiative including: (1) giving the authorization for regulations, federal agency programs, and financial contribution, (2) executing those regulations, (3) guiding the agencies in the process, and (4) making sure that the programs benefit the U.S (Lattanzio 3).

The budget that was granted to the GCCI was 945 million dollars in 2010, and 819 million in 2011. This large spending was justified by several arguments on the basis of the commercial interest where international climate assistance might benefit the U.S with business and trading increase and expanding markets. Additionally, it was seen as a preparation for natural disasters. And lastly, it was considered as a method to increase the U.S international leadership (Lattanzio 8).

2.3.6. Blue Print for a Secure Energy Future (2011):

President Obama was inaugurated in 2009 at a time when people acknowledged the call to handle global warming. The White House released Blueprint for a Secure Energy Future in 2011 which stressed the importance of clean energy in not only reviving the American economy but also ensuring its future plans implementation ("America's Energy Security").

By 2035, the blueprint targeted achieving 80% of electricity generated from clean sources, thus requiring fuel-efficient vehicles that save energy. It highlighted how federal government can take the lead on these objectives through being an example. The administration aimed to increase safe and responsible domestic oil and gas development while encouraging new frontiers exploration and the use of natural gas ("Executive Summary: Blueprint for a Secure Energy Future"). This was in response to the Deepwater

Horizon incident[18] which called for safety and environmental standards to be met. The administration therefore sought to strike a balance between energy needs and the environment by reforming safety and environmental standards and encouraging responsible resource utilization.

To lower costs for consumers and conserve energy, President Obama undertook steps that would promote vehicle fuel efficiency. These included ground-breaking investments in advanced vehicle technologies, public transit, high-speed rail as well as fuel economy standards intended for cars, trucks among others ("Executive Summary: Blueprint for a Secure Energy Future"). Such measures were expected to lead to reduced transportation expenses, less dependence on oil, more transportation options as well as rejuvenation of America's manufacturing sector.

Moreover, the executive branch concentrated on improving energy efficiency in dwellings, companies and factories by establishing new energy efficiency standards, and offering incentives like tax credits and rebates to minimize electricity bills, enhance competition and conserve the environment ("Executive Summary: Blueprint …"). Projects such as weatherization involved making energy-efficient improvements to homes, enhancing comfort, and reducing energy costs for low income households ("Weatherization: Energy Conservation…"). Better Buildings Initiative was a program launched by the U.S. department of energy to improve energy efficiency in homes, commercial buildings, and industrial plants ("Better Buildings Initiative"). These projects were geared towards scaling up investments in energy efficiency with an aim of creating jobs and reducing energy consumption.

Apart from that, Obama's way of dealing with global warming was characterized by innovation. The government aimed at exploiting the clean-energy potential of America through investing in renewable sources like wind, solar as well as hydroelectric power; it also sought to invest in nuclear power and efficient natural gas ("Executive Summary: Blueprint

for a Secure Energy Future"). These investments had a goal of reducing air pollution and greenhouse gas emissions by creating jobs thus making the U.S. a global leader in clean energy technologies.

2.3.7. Climate Action Plan:

In 2013, President Obama initiated the Climate Action Plan, detailing the steps America will take to cut carbon pollution, prepare the United States for the impacts of climate change, and lead international efforts to address climate change. The commitment of the President's Climate Action Plan was the goal of reducing U.S. greenhouse gas emissions by 17% below 2005 levels by 2020. In a speech announcing new steps to cut carbon pollution in 2013, President Obama framed the maximum exposure of carbon pollution and the introduction of non-stop carbon emissions into the atmosphere as an intergenerational moral issue. The President insisted that the sacrifice should be for the sake of future generations, and urged the necessity of doing the right thing because "this is for the sake of our kids and the health and safety of all Americans…, for the sake of the planet" (The Obama White House "President Obama Announces…").

Obama emphasized the moral obligation to leave future generations a planet that is not polluted. To achieve this goal, the President's plan delineated steps for cutting carbon pollution in America. First, proposals to reduce emissions from power plants, which are responsible for 32% of all US GHG emissions, are at the core of his plan. Obama has also committed to making heavy-duty vehicles more fuel-efficient and to curbing the use of hydro fluorocarbons (HFCs), a potent greenhouse gas (Atkinson 49). Obama took steps to prepare the US for impacts of climate change.

The president's plan underlined the global leadership role of the US. Obama promised to work on bilateral international agreements to combat climate change such as the U.S. China Announcement on Climate Change in 2014 where both countries outlined their post-

2020 actions regarding climate change with the U.S. aiming to reduce their CO2 emissions by 26%-28% below its 2005 level in 2025, while China intending to peak its CO2 reductions by 2030 ("U.S.-China Joint Announcement on Climate Change").

President Obama went as far to announce that he would use the administrative power within his presidency to begin the process. In June 2013, he instructed the Environmental Protection Agency (EPA) to propose standards for the amount of carbon dioxide that could be emitted from power plants. The EPA would propose rules to limit these emissions coming from both new and existing plants, a move that could only be done via the executive branch. That move represented the commitment by the president to use his power to make progress on climate, when Congress would not act (Leggett 1). The plan devotes a section to innovation and invention. According to President Obama, the US is home to the world's most advanced technology, and as a result, has the greatest potential to develop the newest energy inventions and techniques. He introduced a strategy for advancing innovation and invention of new clean energy technologies, such as upgrading transportation with electric cars in order to reduce the reliance on fossil fuels, and reducing other emissions (Atkinson 49).

Crucially, nearly all the programs Obama announced or proposed in the plan could be put into place without the need for additional action from Congress (Freedman). Instead, the majority involved the development of new standards and regulations by agencies within the Executive Branch, such as the Environmental Protection Agency (EPA), which would be tasked with developing new rules on carbon pollution from power plants and finding ways to make it easier to produce clean energy on public lands, and the Interior Department, which could also devise rules on renewable energy on public lands.

2.3.8. The Clean Power Plan (CPP):

The most significant change made to U.S. energy policy came in the form of the Clean Power Plan (CPP), put forth by the Environmental Protection Agency (EPA) in June

2014 and launched in August 2015 by President Barack Obama. The White House hailed it as a sign of America's continued leadership in confronting global climate change ("Fact Sheet: President Obama to Announce Historic Carbon Pollution"). At its most fundamental level, the CPP called for the reduction of carbon emissions from power plants. It set ambitious targets for reducing carbon emissions by 32% below 2005 levels by 2030 (EPA). This was accomplished through a public-private partnership between the EPA and the states, where the EPA set targets for each state based on their unique circumstances ("Fact Sheet: Overview of the Clean Power Plan").

At the same time, the CPP did recognize that fossil fuels would still serve as the largest source of energy for the United States in the future. The CPP also sought to promote fabrication and adoption of renewable energy sources, aiming to increase renewable energy share by over 30% by 2030 ("Fact Sheet: President Obama to Announce Historic Carbon Pollution"). This move towards renewable energy was met with resistance, especially from the hydraulic fracking industry, which opposed the legislation because of the potential threats to their business model and profitability (Samji). The CPP updated fuel economy and greenhouse gas emission standards for vehicles, reduced emissions from oil and natural gas systems, and made energy efficiency standards for new appliances (Ohliger 13). These were important measures to defend the world from climate change and to reduce the country's carbon footprint.

Both the Environmental Protection Agency's (EPA) and the Clean Power Plan (CPP) have faced a number of legal challenges in order to delay and block its execution. Almost as soon as the rules for the CPP were published, a number of states sought to block the Clean Power Plan in the courts including West Virginia, Texas, Alabama, and New Jersey (Atkinson). As the Clean Power Plan would be litigated in numerous courtroom battles for years to come, it became evident that despite the uncertainty surrounding its full

implementation, the plan had already achieved a significant milestone. A survey done in 2016 by the Program for Public Consultation at the university of Maryland school of Public Policy found that the CPP was supported by around 70 percent of registered voters in the US, including a majority in many states opposing it in court (Cassady and Kearns). The plan reflected a widespread recognition of climate change and a readiness to take action (Atkinson 53-54). Despite strong public support, the Cpp faced legal challenges and resistance from the fossil fuel industry. While its full impact was uncertain due to these challenges, it marked a critical step towards addressing climate change and promoting sustainability in U.S energy policy.

2.3.9. The Keystone XL pipeline

A permit for the Keystone XL pipeline project to cross the international boundary between the United States and Canada was submitted by the Canadian corporation TransCanada to the U.S. Department of State in September 2008 (Parfomak et al.1). As originally planned, the pipeline would transport crude oil produced in Alberta, Canada's oil sands area, to refineries along the U.S. Gulf Coast. A presidential permit is required for the construction, connection, operation, and maintenance of a pipeline that links the United States with a foreign nation (Parfomak et al. 6).

The authorization to the project was contingent upon a determination that the project would serve the "national interest". The State Department was required to consider various criteria in determining the national interest for pipeline permit applications. These include the project's environmental impact, its contribution to climate change, and its influence on energy supply diversity. Additionally, the State Department assessed the security of crude oil transportation to the United States, considering the construction of border facilities, the stability of U.S.-supplier relationships, and the ability to meet security objectives, in addition

to the economic benefits to the U.S., alongside the goals of reducing fossil fuel reliance and promoting alternative and renewable energy sources (Parformak et al.7).

Both positive and negative arguments exist about the pipeline. Increasing the diversity of the U.S. petroleum supply and the pipeline's potential economic advantages, particularly employment creation, are the main points of contention for supporters of the Keystone XL project, which includes Canadian agencies as well as participants in the U.S. and Canadian petroleum industries. Community groups and environmental organizations were typically the ones opposing pipelines. Their worries were related to matters that fall under the broader category of the pipeline's effects on greenhouse gas emissions and the environment. The State Department announced on January 18, 2012, that it would reject the Keystone XL project because the December-passed law did not give enough time to gather the data they believe was required to determine whether the project served the national interest or not.

It was estimated that if the pipeline was approved it would have a serious impact on GHG, which will affect the environment directly. Due to the gradual drop in oil prices worldwide, there would be a 0.6-barrel rise in global oil consumption for every barrel of increased output. Therefore, the net yearly impact of Keystone XL may be almost nothing to 110 million tons of CO2 equivalent annually (Erickson and Lazarus 1).

The Keystone XL pipeline aimed to carry Canadian oil to the U.S. Gulf Coast but was rejected in 2012 due to worries over CO2 emissions and environmental impact, this refusal shows the challenges of balancing economic and environmental factors in energy projects. The oil industry strongly opposed the refusal for the project and argued that the pipeline would create jobs and enhance the U.S energy security by increasing reliance on Canada. John A. Boehner, the House Speaker stated that "Republicans in Congress will continue to push this because it is good for our country, and it is good for our economy" (qtd. in Eliperin and Mufoson).

2.3.10. The Paris agreement

Under the auspices of the UNFCCC, the Paris Agreement was adopted in December 2015 and is considered as a turning point in negotiations to limit the potential damages of climate change (Cabrera et al. 391). The goal of the Paris Agreement was to reinforce the international response to the climate change challenge. Holding the global average temperature increase to well below 2°C above pre-industrial levels and working toward a 1.5°C increase, were important steps towards sustainable development and the eradication of poverty. Other steps include enhancing adaptation to the damaging impacts of climate change, promoting climate resilience and low-GHG emission development, and aligning financial flows with a path towards low-GHG emissions (Viola).

The ultimate goal of the UNFCCC, as stated in the Paris Agreement, was to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system, within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened, and to enable economic development to proceed (Segger 224).

The Paris Agreement essentially laid out a core triangle of obligations. First, nations are required to take nationally determined, quantifiable, and progressive steps toward mitigation and adaptation of climate change. These steps are then encouraged by changes in financial flows and associated technology transfer, capacity-building, education, and other cooperative measures. Enforcement was accomplished through some criteria including transparency by making actions, decisions, and stocking information that can be easily accessible to the public to ensure scrutiny and accountability. In addition to that, public participation was meant to allow stakeholders, such as national governments, that have signed the Paris Agreement to contribute in the decision-making process (Segger 207).

The Paris Agreement, established under the UNFCCC marked a pivotal moment in global efforts to combat climate change. Its primary goal was to limit global temperature rise to well below 2 degrees Celsius above pre-industrial levels, with the intention of decreasing another 1.5 degrees Celsius. The agreement emphasized the importance of mitigation, adaptation, financial support, particularly for developing countries. Key mechanisms such as transparency, technology transfer, and sustainable development initiatives were outlined to facilitate global cooperation in addressing climate change. Through these cooperative frameworks and mechanisms, the Paris Agreement set forth a comprehensive approach to combat climate change and promote sustainable development worldwide.

President Barak Obama had taken the issue of climate change as one of the top priorities and concerns of the United States, where multiple initiatives addressed climate change and GHG emissions, both directly by increasing the use of renewable energy and reducing reliance on fossil fuels, or indirectly by refusing projects that were going to threaten both present and future generations like the Keystone XL Pipeline.

Chapter Three

Assessment of President Obama's Climate Change Policies and the Challenges Encountered

This chapter delves into the challenges faced by President Obama in his climate policy, offering an examination of some of the obstacles he encountered during his tenure. From navigating legislative gridlock and industry opposition to grappling with legal hurdles and international diplomacy, Obama's efforts to enact meaningful climate policy were met with formidable resistance. The chapter evaluates the effectiveness of his policies in mitigating greenhouse gas emissions and achieving the broader goal of limiting global temperature rise. Through an analysis of both domestic and international factors, it provides valuable insights into the complexities of climate policymaking and the legacy of President Obama's environmental agenda.

3.1 Challenges that Faced Obama in his Climate Policy:

Many challenges faced President Obama when implementing his climate policy, including political opposition from Republicans in Congress, resistance from industries reliant on fossil fuels, various legal hurdles, and the complexities of navigating international climate agreements. The political landscape was fraught with partisanship, making it difficult to pass comprehensive climate legislation. Industries such as coal, oil, and natural gas lobbied heavily against regulatory measures, arguing that they would lead to job losses and economic downturns. Legal challenges from states and industry groups further complicated efforts to enforce new regulations. Additionally, achieving consensus on global climate initiatives required balancing the diverse interests of numerous countries, each with its own economic and environmental priorities. This multifaceted opposition created significant obstacles for the Obama administration, which sought to address climate change in an often-hostile environment.

3.1.1 Political Opposition:

During his presidency, Barack Obama faced numerous challenges in enacting comprehensive climate change policy, with his efforts often stymied by political and institutional constraints. While some have praised his administration's initiatives, others have criticized them as insufficient to address the urgency of the climate crisis. Opposition to environmental and climate change legislation extended to attempts to roll back existing regulations. This refusal could be explained through the concern about the economic side including job losses, and is expressed in blocking funding to prevent the Environmental Protection Agency (EPA) from enforcing stricter regulations, like in 2011 when the House of Representatives passed a spending bill that proposed cuts to the EPA's budget (Clarcke).

Similarly, the Energy Tax Prevention Act of 2011 sought to prevent the EPA from regulating greenhouse gases under the Clean Air Act, despite a Supreme Court ruling affirming the EPA's authority to do so. On April 7, 2011, the bill passed the House by a vote of 255 to 172 but it died with the ending of the two-year Congressional session, in January 2013 (H.R.910). This legislative gridlock led to a shift towards executive actions as a means of addressing climate change, with Obama implementing new standards including the introduction of stricter codes for clean air, action on greenhouse gas emissions, environmental protection for endangered species, and higher fuel efficiency standards.

In later years of his presidency, Obama continued to face opposition from Republicans on climate policy. Despite the successful negotiation of the Paris Agreement, Republicans, led by Senate Majority Leader Mitch McConnell and Senator James Inhofe, expressed skepticism and opposition and argued that Obama "made promises that he can't keep". They asserted that the agreement could be reversed by a future Republican president, and called climate change a "hoax" and that the administration used the agreement as an excuse to impose emission targets on every sector of the U.S economy. McConnell warned

that the agreement could be reversed if the GOP won the White House, while Inhofe criticized the agreement as a pretext for imposing emission targets on the U.S. economy (Freking).

Despite these challenges, the Obama administration pressed ahead with regulations to cut emissions from cars and light trucks, aiming for drastic reductions by 2025. Greenhouse gas emissions in the United States have already decreased by 8% between 2005 and 2009, although the economic downturn contributed to this decline. The Obama administration's efforts to secure funding for its climate initiatives faced resistance from Congress, with House Republicans seeking deep reductions in climate-related spending (Eilperin). This partisan divide underscores the political obstacles to enacting meaningful climate policy at the federal level.

Opposition mainly from Republicans, driven by economic and political considerations, hindered Obama's efforts to enact comprehensive climate policy throughout his presidency. Despite his administration's initiatives, including executive actions and policy proposals, the political landscape proved challenging for meaningful action on climate change at the federal level. This shows how complex it is to balance the environmental policies with economic growth, in the light of political division.

3.1.2 Industry Opposition:

Opposition to President Obama's climate policy involved various stakeholders who raised concerns about the economic and regulatory implications of his environmental agenda. One of the primary sources of opposition came from industries reliant on fossil fuels, such as coal and oil. These industries viewed Obama's proposed regulations as a threat to their profitability and argued that stringent environmental standards would lead to job losses due to the increased costs of complying with the new regulations. Also, the transition to cleaner energy might not absorb the workers from their industries because of the different skill level

required to operate cleaner energy sources. They also claimed that it would increase prices for consumers due to the higher production costs because the compliance to the regulations involves installing new technologies, updating old ones, and adopting new measures to reduce emissions, which means that they would automatically raise prices in order to avoid bankruptcy. Key examples of such industries are Duke Energy, American Electric Power, and Southern Company (Irja Vormedal and Meckling).

In addition to industry opposition, some policymakers and economists raised concerns about the economic impact of Obama's climate policy. They argued that strict environmental regulations could hamper economic growth and competitiveness because stricter regulations in one country can make its businesses less competitive globally, as they may not be able to operate at the same level of efficiency as those in countries with less stringent regulations, particularly in industries that rely heavily on fossil fuels. For instance, the fossil fuel industry was affected by the CPP which led to a decline in coal production and an increase in natural gas and renewable energy usage. The coal industry, which was heavily reliant on fossil fuels, faced significant challenges in adapting to these changes, which could have negatively impacted its competitiveness globally (Stock).

Critics also questioned the efficacy of certain environmental regulations, suggesting that they might not effectively address climate change due to a variety of reasons. First, they believe that certain regulations, such as those targeting specific industries or emissions sources, might not lead to significant overall reductions in greenhouse gas emissions. They also contend that these regulations could be economically burdensome, potentially leading to increased costs for businesses and consumers. These costs could arise from the need to comply with new standards, invest in cleaner technologies, or face higher operational expenses. Critics were concerned that these economic impacts might outweigh the

environmental benefits, leading to debates about the balance between environmental protection and economic growth.

Furthermore, opposition to Obama's climate policy was also evident in legal challenges to environmental regulations which were expressed through the strong opposition of the CPP by the Attorney General of West Virginia Patrick Morrisey who vowed to challenge it, stating that it would lead to job losses, higher electricity rates, and stress on the power grid. Also, the Private Coal Company Murray Energy filed lawsuits alongside 12 states including Texas, South Dakota, and Kentucky arguing that the EPA had exceeded its statutory authority and that the agency overstepped its boundaries because the CAA, which is the primary legislation the EPA relies on, was not explicitly designed to tackle climate change (Atkinson 46).

The increased emphasis on renewable energy by the EPA and the Obama administration has caused considerable concern, disquiet, and anger in the hydraulic fracturing industry which argued that these rules were unnecessary, since fracking was already heavily regulated at the state level. Also in 2016, U.S. District Judge Scott Skavdahl struck down an Obama regulation on hydraulic fracturing rule on federal lands that would have imposed additional safety and disclosure requirements on fracking operations on public and tribal lands. The industry saw this as an overreach of federal authority, arguing that the rule was costly, unnecessary, and unattainable (Cama).

Marty Durbin, President of America's Natural Gas Alliance, argues that the reported shift in favor of renewable energy "is perpetuating a false choice between renewables and natural gas" and that "an accelerating move to natural gas is critical to keeping the lights on" (qtd. in Atkinson 52). Durbin stressed that natural gas and renewable energy should be viewed as complementary rather than competing energy sources. He believed that a balanced approach that incorporates both natural gas and renewable energy is necessary to ensure a

reliable and sustainable energy future. This debate highlights the complexity of balancing the imperatives of addressing climate change with ensuring energy security.

Opposition to Obama's climate policy also extended to those who denied the human-induced nature of climate change. Thomas Friedman, a political commentator and columnist for the *New York Times*, in his book *Hot, Flat, and Crowded*, identified three types of deniers: those paid by fossil fuel companies to deny the problem, scientists who disagree with the consensus that climate change is manmade, and conservatives who reject the existence of climate change due to their opposition to the proposed solutions (114-115). Industries like fossil fuels, automobiles, and chemicals, as well as political figures like Senator James Inhofe and media personalities like Rush Limbaugh and Glenn Beck, contributed to this denial (Sussman and Daynes 137).

The Global Climate Coalition[19] (GCC) represented the concerns of contrarians, comprising major corporations that sought to undermine actions against global warming. Operating out of the National Association of Manufacturers, the GCC spent millions to promote skepticism about climate change, and had arguments against the scientific evidence about the existence of climate change and claimed that the idea of GHG was not fully understood and that there was a lack of scientific consensus on the issue. They also engaged in media by providing background information to journalists to influence public perception to hinder climate action (Sussman and Daynes 137). While initially successful, by the late 1990s, several major corporations began to withdraw from the GCC as evidence of human-induced climate change grew (Sussman and Daynes 138).

The fossil fuel industry, particularly coal, has been a major player in opposing climate change action, given its significant reserves and economic interests. The industry has funded campaigns to undermine climate science and regulations, supported think tanks and advocacy groups to oppose environmental policies, and lobbied aggressively against

regulations. This strategic opposition fostered public skepticism and political resistance, significantly hindering the implementation of Obama's climate agenda (Oreskes and Supran).

Conservative think tanks, such as the CATO Institute and the Heritage Foundation, have also played a role in opposing climate action, promoting materials to create skepticism and challenge the scientific consensus. An example of this include the contradiction of 'The Polar Bear Population Decline' by providing a paper funded by the same sources claiming that polar bears were not under threat from global warming (Jacques et al. 355). They have argued against government action on climate change, claiming it would harm the economy and expand bureaucracy (Lieberman and Loris).

Despite these challenges, some progress has been made in the private sector to address climate change. Many companies have adopted low-carbon business models and invested in renewable energy (Levy). The insurance industry has also become increasingly concerned about climate change, particularly the impact of catastrophic weather events, leading to changes in coverage policies (Sussman and Daynes 141).

Opposition to President Obama's climate policy came from various stakeholders, including fossil fuel industries, policymakers, economists, and climate change deniers. Industries like coal and oil saw the regulations as threats to their profitability, job security, and consumer prices, while policymakers and economists worried about economic growth and competitiveness. Legal challenges and claims of federal overreach further hindered implementation. Additionally, climate change denial, supported by political figures and industry-backed organizations, aimed to undermine public support. Despite these obstacles, progress has been made in the private sector with companies adopting low-carbon models and investing in renewable energy, illustrating the complex balance needed between economic, political, and environmental priorities.

3.1.3 Legal Hurdles:

The legal hurdles faced by President Obama's climate policy were formidable, reflecting the broader challenges in implementing comprehensive climate change strategies. One of the most significant legal battles revolved around the Clean Power Plan (2015), a central component of Obama's climate agenda. This plan aimed to significantly reduce carbon emissions from existing power plants, a crucial step in meeting U.S. commitments under the Paris Agreement (Friedman)**.** However, a coalition of mostly Republican-led states and industry opponents challenged the plan, arguing it exceeded federal authority and would harm the economy (Hurley and Volcovici)**.** The U.S. Supreme Court's decision to block the plan's implementation pending further review underscored the ideological divide on climate policy, with opponents claiming victory and supporters concerned about the implications for combating climate change (Biesecker and Hananel).

Another major challenge during the Obamas administration was the delay in implementing crucial regulatory measures, particularly those aimed at reducing greenhouse gas emissions (Friedman)**.** The EPA faced obstacles in proposing greenhouse gas limits on oil refineries, with delays citing the need for more time to develop pollution standards (Gardner). Similarly, regulations to reduce emissions from power plants, the largest source of greenhouse gas emissions, were delayed multiple times, facing political pressure and opposition from industry. These challenges highlight the complexities of climate policy implementation, requiring careful navigation of legal, political, and economic landscapes.

Another initiative that faced hurdles was the ACES Act, with the cap-and-trade system facing several challenges, including equity issues about the distribution of the quantity of emissions allowances between companies, doubts about the effectiveness of a carbon market in reducing emissions, and criticism for allowing too many offsets like not providing enough resources to train workers from low-income and minority communities for

jobs in the clean energy economy. While many environmental organizations supported the bill, dissent from groups like Greenpeace[20] and Friends of the Earth[21] highlighted concerns about its perceived weakness and concessions to special interests. These organizations believed that the bill did not go far enough in addressing climate change and that it allowed for 85% or more of pollution, which they saw as a significant delay in real action on climate change. Additionally, the bill encountered hurdles in the Senate, where strong Republican opposition and the threat of a filibuster[22] prevented it from advancing to a vote. Concerns about the potential negative impact on the competitiveness of U.S on the international level, created significant obstacles for the bill's progress and implementation (Bassi and Yudken).

The New Energy for America plan, like other initiatives encountered a series of legal challenges during its implementation. These challenges ranged from concerns over state sovereignty, with critics arguing that the plan violated the states' rights to regulate their own affairs. The Environmental Protection Agency's authority to regulate existing power plants under the Clean Air Act led to some opponents viewing the plan as an unconstitutional overreach, particularly in its requirement for states to either file implementation plans or accept a federal plan. Legal challenges also included requests to temporarily stop the implementation of the policy, citing potential irreversible harm from immediate enforcement. Despite these obstacles, the Obama administration addressed concerns through adjustments to the plan, such as shifting regulatory burdens directly onto power plants and extending compliance deadlines for states (Freeman).

The Paris Agreement was also criticized. One of the main criticisms was around its perceived costs, effectiveness, and impact on American competitiveness as carrying out the energy regulations agreed to in Paris would harm American manufacturing, and destroy $2.5 trillion in GDP by 2035. Critics contended that the agreement would potentially lead to job

losses. Additionally, concerns were raised about taxpayer money which was 1 billion Dollars being directed towards the Green Climate Fund without Congressional approval. The agreement was also criticized for potentially hindering American energy competitiveness and for not going far enough in terms of emissions reductions. Political pushback from Congressional Republicans added to the opposition, with questions raised about the need for Congressional approval to agree to the deal (Loris).

The delays and setbacks in implementing key climate regulations highlight the inherent challenges in translating policy goals into concrete action. Despite ambitious targets, the Obama administration frequently encountered political resistance from Congress, industry groups, and state governments, which slowed down or blocked regulatory processes. Regulatory complexities, such as lengthy approval processes, legal battles, and the need for extensive stakeholder consultations, further impeded swift implementation. These obstacles illustrate the difficulty of achieving substantial progress in climate policy, as the interplay between political opposition and intricate regulatory frameworks often results in significant delays and compromises.

3.1.4 International Challenges:

President Obama faced significant international challenges during his tenure in the pursuit of fighting climate change. One of them is implementing effective climate policy on the global stage and to achieve international cooperation. One of the foremost challenges was navigating international diplomacy and negotiations, particularly in the lead-up to the Copenhagen Climate Summit in December 2009, which was an international conference that took place in 2009 in Denmark; it succeeded the Kyoto Protocol. It aimed at addressing climate change under the UNFCCC. It called for developed countries to reduce their emissions by 25 to 40% below 1990 levels by 2020 and for global emissions to be halved by 2050. It also sought to mobilize 10 billion Dollars per year in new and additional resources

for developing countries to support their efforts in reducing emissions and adapting to climate change. However, without a robust climate policy in the United States, convincing other nations, especially major emitters like China and India, to commit to emissions reductions proved daunting. Chris Mooney, a journalist in the *Washington Post*, highlights the expectation that the U.S. should lead by example, making it crucial for Obama to enact substantive climate legislation domestically to bolster international negotiations. Obama faced a dual challenge of balancing domestic policy priorities while simultaneously fostering international cooperation on climate change.

President Obama faced several international challenges in his climate policy, particularly in persuading major emitters like China and India to take ambitious actions to reduce emissions. Additionally, Obama sought to engage other countries with significant greenhouse gas emissions, such as Brazil and Indonesia, through the Clean Energy and Energy Efficiency Initiative[23] in 2011 which promoted clean energy technologies and energy efficiency measures (Moore). Also, he initiated the Major Economies Forum on Energy and Climate[24], which included these countries, along with others, those most vulnerable to the effects of climate change, like Bangladesh and Central African nations, to facilitate dialogue and cooperation on climate change mitigation. The forum aimed to cut GHG emissions and promote clean energy initiatives ("Major Economies Forum on Energy and Climate").

Furthermore, enhancing cooperation with other nations on clean energy technologies posed a significant challenge. Initiatives like the U.S.-China Clean Energy Research Center (CERC), was funded equally by the United States and China. It was established in 2009 to facilitate joint research and development on clean energy technologies by scientists and engineers from both countries. The center aimed to promote cooperation on cleaner uses of coal, including large-scale carbon capture and storage (CCS) demonstration projects, as well as energy efficiency in buildings, clean vehicles, and advanced coal technologies (Yang).

Overall, persuading major emitters to take ambitious actions, and promoting cooperation on clean energy technologies were key international challenges faced by President Obama in his climate policy.

3.1.5. Public opinion about Obama's Climate Policies:

The American public point of view on the Obama administration climate policies or toward the existence of the climate change was significant. Statistics showed that in 2008, 72% of the American population considered the evidences of global warming were real, only 17 % were skeptical about such evidences, and 11% were not sure about them (Borick et al). Additionally, public opinion on the Obama administration's climate change policies was generally supportive. Two-thirds of Americans wanted President Obama to take action on climate change, with 65% supporting his actions to prevent its consequences (Goldenberg).

The Paris Agreement as an international negotiation between the U.S and other nations had a great support from the public. President Obama began his term with high public approval ratings, with 60% to 70% of the public approving his handling of foreign policy and international affairs (Eichenberg 11). Additionally, the Clean Power Plan that was launched by the president as an initiative to eradicate climate change had received a huge support from hundreds of businesses including eBay and Nestlé. The plan was described as the strongest action ever on climate change by a US president (Vaughan).

For the Keystone XL pipeline, the Pew Research Center survey in September 2013 found that 65% of Americans supported building the Keystone XL pipeline, while 30% opposed it. Most arguments of those who supported it were about the creation of many jobs and the increase in the economy. This shows that the public remained divided on issues like job availability and the government's role in regulating financial institutions and environmental standards ("Continued Support for Keystone XL Pipeline.").

3.2 Assessment of President Obama's Environmental and Climate Policies

In his first year in office, the Obama administration made significant strides in addressing environmental challenges and promoting clean energy initiatives. Almost immediately after taking office, Obama demonstrated a commitment to addressing climate change by establishing the White House Office of Energy and Climate Change Policy in 2008, which was created to coordinate administration policy on energy and global warming and implementing green programs as part of a stimulus package (Henry et al.). These early efforts signaled a strong start to his climate agenda.

Initiatives such as the American Recovery and Reinvestment Act of 2009 (ARRA) aimed to create jobs to jumpstart the economy. It included measures to modernize infrastructure, enhance energy independence, and protect those in need ("Economic Recovery Act of 2009"). The administration invested $50 billion in cleaner U.S. energy, energy efficiency, and domestic sources of renewable energy, which included funding for the Weatherization Assistance Program. The latter was an initiative funded by the U.S Department of Energy (DOE) that aimed to reduce energy costs and increase energy efficiency of the homes of low-income households to improve their health and safety ("Resources for Working Families.").

Similarly, Energy Efficiency and Conservation Block Grants (EECBG), was a federally funded program designed to aid states and local governments in incorporating measures to reduce energy reliance, reduce fossil fuel emissions, and improve energy efficiency ("Energy Efficiency and Conservation Block Grant Program"). Additionally, President Obama issued Executive Order 13514 prioritizing sustainability, requiring federal agencies to set goals for reducing greenhouse gas emissions and increasing energy efficiency (Struglinski and Warren).

Despite issuing regulations to reduce greenhouse gas emissions, Obama's policies were vulnerable to being undone by the Republican-controlled Congress and later President Trump, who signed an executive order upon taking office that ended the CPP and replaced it with the Affordable Clean Energy Rule that allowed states to set their own standards for reducing GHG emissions (Rott). He also withdrew from the Paris agreement (Roberts).

Domestically, Obama's policies, such as doubling vehicle fuel efficiency standards and implementing reforms in the power sector, were pivotal in driving emissions reductions. His Clean Power Plan, even though opposed by the Supreme Court, bypassed Congressional gridlock and required states to develop strategies for lowering emissions, leading to significant reductions in coal use and emissions output of about 5,170 million metric tons, 1.7% below their 2015 levels, after dropping 2.7% between 2014 and 2015 ("U.S Energy-Related CO2 Emissions…").

Supporters of Obama's climate policy point to several achievements, such as the establishment of the Appliance and Equipment Standards Program, which set standards for reducing electricity use in various appliances. Additionally, the Obama administration developed a measure to quantify the social cost of carbon, through an interagency process involving 12 U.S. government agencies. This process employed several climate-economy models to estimate the social cost of carbon. The central estimate from the process was 43 dollar per ton of carbon dioxide emissions, which represents the damage that would be avoided by reducing emissions by one ton (Backman). This was an important factor in justifying future climate regulations (Bookbinder).

President Obama's second term marked a significant shift in his approach to environmental and climate policies, characterized by a more focused and determined effort to address the pressing issue of climate change. Freed from some political constraints, mainly his need to secure his reelection, Obama was abile to take bold action on key issues. Also, the

pressure of a divided government and opposition from the Republican controlled House of Representatives, which limited his ability to pass major legislation was erased because in his second term, the democrats controlled the Senate, giving him more leverage to push through his agenda (Chansoria).

Obama placed energy and the environment at the top of his agenda. In his second inaugural address on January 21, 2013, he pledged that his administration would "respond to the threat of climate change, knowing that the failure to do so would betray our children and future generations" (qtd. in Hill 71). One of the key accomplishments of Obama's second term was the announcement of his Climate Action Plan in the summer of 2013. The plan, developed in secrecy in the White House because the administration wanted to ensure that the plan was comprehensive and robust before announcing it publicly, set out his overall vision for climate change – mitigating greenhouse gas emissions, preparing for impacts, and leading internationally on climate change policy (Hill 71).

Through a combination of executive orders and intensive diplomacy, Obama was able to achieve historic results in the fight to address global warming, especially in cutting GHG emissions that were 6,576 million metric tons in 2009 ("U.S. Energy Information Administration…"). The emissions decreased to 5,170 million metric tons in 2016 ("U.S. Energy-Related CO2 Emissions…"). Obama's climate policies during his second term ranged from creating a wildfire building standard for federal buildings to issuing the Clean Power Plan to requiring the national security apparatus to plan for the national security risks posed by climate change through the recognition of the Department of Defense that recognized climate change as an accelerant of instability or conflict on national security in its 2010 Quadrennial Defense Review (La Shier and Stanish).

He also put one of the most effective insiders in Washington, John Podesta, who is a democratic strategist and advisor who served in various roles in the Obama administration, in

charge of his climate efforts, ensuring the necessary leadership to accomplish his climate agenda. The centerpiece of Obama's second-term climate policy was the Paris Agreement, reached in 2015. The agreement, which aimed to limit global warming to well below 2 degrees Celsius, demonstrated Obama's commitment to addressing climate change on a global scale (Hill 72). The agreement was a significant achievement in international climate diplomacy and underscored Obama's leadership on the issue.

President Obama's environmental and climate policies evolved significantly over his presidency. In his first year, he demonstrated a strong commitment to addressing climate change and promoting clean energy, but faced substantial obstacles that limited the scope of his achievements. The complexity of climate politics, coupled with opposition and changing priorities, resulted in mixed outcomes during his first term. However, his second term saw a notable shift towards a more focused and determined effort to tackle climate change. Initiatives such as the Climate Action Plan and the Paris Agreement highlighted his administration's commitment to environmental protection and set a new standard for global climate policy. Despite challenges and limitations, President Obama's legacy includes significant strides towards a more sustainable future, emphasizing the importance of continued efforts to address climate change for the well-being of future generations.

Internationally, Obama was able to break the deadlock with China and secure the U.S.-China deal, where Obama and the Chinese president Xi Jinping held a summit in 2014 in Beijing and pledged actions to address climate change which was instrumental in the success of the Paris Agreement (Victor). The deal, which included significant commitments from China to invest in clean energy, demonstrated the effectiveness of Obama's diplomatic efforts and leadership.

With 197 nations having signed the Paris agreement, which was approved by the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) in

2015, it is possibly the first truly global climate change pact. On November 4, 2016, it came into force following the membership of at least 55 parties representing at least 55% of the world's greenhouse gas emissions (GHG). The goal of the agreement is to set the globe on course for GHG stabilization at a level that would prevent catastrophic climate change. Countries submitted national plans stating their GHG-related targets they intended to meet as part of their Nationally Determined Contributions (NDCs) (Liu et al. 2). These are commitments made by countries under the PA to reduce GHG emissions and adapt to the impacts of climate change based on each country circumstances and priorities- to the UNFCCC before and during the Paris agreement.

Countries are required to assess their implementation of the agreement every five years through a procedure called the global stocktake. Governments were alerted by the first of these assessments, which was published in September 2023, that the world is not on track to reach the long-term objectives of the Paris Agreement. According to the Climate Action Tracker compiled by Germany-based nonprofits Climate Analytics and the New Climate Institute, "The Paris Agreement is not enough". Even at the time of negotiation, it was acknowledged as being insufficient. According to Council of Foreign Relations (CFR), it was only intended to be a first step, and as time went on, countries were expected to return with even more resolve to reduce their emissions.

President Biden doubled the goal made by former President Barack Obama in addition to his declaration in 2021 that the U.S. will try to reduce emissions by 50% to 52% from 2005 levels by 2030. And China stated that it wants to reach peak emissions before 2030. With The EU also promising to cut emissions by at least 55% from 1990 levels by 2030, and even if nations stick to their commitments for 2030 and beyond, the global average temperature will still rise by 2.0°C (3.6°F) by 2100. The Climate Action Tracker estimates that if more than a

hundred nations that have set or are considering net-zero targets stick to them, warming might be limited to 1.8 °C (3.2°F) (Maizland).

The chapter provided a comprehensive assessment of President Obama's climate change policies, highlighting the multifaceted challenges encountered. Politically, the Obama administration faced substantial opposition from Republicans in Congress, who often viewed his climate initiatives as economically detrimental and overly regulatory. This political resistance was paralleled by significant pushback from industry stakeholders, particularly those within the fossil fuel sector, who perceived the administration's policies as threats to their profitability and operational viability.

Legally, Obama's climate change initiatives encountered hurdles that tested their robustness and longevity. Several executive actions and regulations, including the Clean Power Plan, faced judicial scrutiny and were subjected to numerous legal challenges, often resulting in delays or rollbacks. These legal battles underscored the precarious nature of implementing comprehensive climate policies through executive authority alone, highlighting the necessity for more durable legislative solutions. Internationally, while the Obama administration made strides in re-engaging the United States in global climate efforts, exemplified by the Paris Agreement, it also faced challenges in securing international cooperation and commitments. The Copenhagen Summit, for instance, exposed the complexities and difficulties of achieving global consensus on climate action, reflecting the broader struggle of aligning national interests with international environmental objectives.

President Obama's climate change policies were ambitious and set a foundational framework for future climate action. However, the challenges encountered—political, legal, and international—highlight the intricate and often contentious landscape of climate policy-making. These challenges also emphasize the need for continued and concerted efforts to

overcome opposition and legal constraints, ensuring sustainable and effective climate action on both national and global scales.

Notes

[1] The UNFCCC is an international environmental treaty aimed at preventing dangerous human interference with the climate system. It was signed in 1992 and has near-universal membership, with 198 countries having ratified the convention. The UNFCCC provides a framework for global efforts to mitigate climate change and adapt to its impacts, focusing on stabilizing greenhouse gas concentrations in the atmosphere at a level that prevents dangerous interference with the climate system (LSE).

[2] Anthropogenic refers to the influence of human beings on nature, including the effects of human activities on the environment, climate, and ecosystems. This term encompasses various aspects of human impact, such as pollution, deforestation, and greenhouse gas emissions, which have significantly altered the natural world ("Anthropogenic - Energy Education.").

[3] Renewable energy is energy derived from natural processes that are replenished at a faster rate than they are consumed. It is typically harnessed from continuously occurring natural phenomena such as solar power, wind power, hydroelectricity, geothermal energy, and biomass (Office of Energy Efficiency & Renewable Energy. "Renewable Energy.").

[4] The GCF is a fund for climate finance established within the framework of the UNFCCC. Its primary objective is to assist developing countries with climate change adaptation and mitigation activities. It is based in Incheon, South Korea and is governed by a Board of 24 members and supported by a Secretariat ("Green Climate Fund - Climate Funds Update.").

[5] The Clean Air Act is a US federal law that regulates air emissions from stationary and mobile sources to protect public health and welfare. It is administered by the EPA and has undergone several significant amendments since its initial enactment in 1963. The law aims to reduce and control air pollution nationwide, setting standards for concentrations of certain

pollutants in outdoor air and regulating emissions of hazardous air pollutants from specific sources (Hu).

[6] In the context of politics, gridlock refers to a situation where no political or congressional action can be taken due to a lack of consensus or other impediments. This often occurs when one party in Congress blocks action by the other party, resulting in a stalemate ("Gridlock.").

[7] The Air Pollution Control Act (1955) was the first federal law to address air pollution. It provided research funding but no direct regulatory authority. For more info visit The Clean Air Act of 1963 (boem.gov)

[8] The EPA is an independent agency of the U.S. government responsible for controlling and abating environmental pollution. It maintains separate programs for air and radiation, water, solid waste, and pesticides and toxic substances, and enforces national pollution-control standards through various laws and regulations (The Editors of Encyclopedia Britannica).

[9] a comprehensive federal law in the United States that aims to restore and maintain the chemical, physical, and biological integrity of the nation's waters. It was first enacted in 1948 and has undergone significant amendments, particularly in 1972 and 1977, which led to the law being commonly referred to as the Clean Water Act (BOEM).

[10]The Global 2000 Report was a landmark study commissioned by President Jimmy Carter and released in 1980 that warned of grave consequences for humanity if changes were not made in environmental policy around the globe ("The Global 2000 Report | Encyclopedia.com.").

[11] The Montreal Protocol is an international treaty designed to protect the ozone layer by phasing out the production and use of numerous substances that are responsible for ozone depletion ("Montreal Protocol | International Treaty | Britannica.").

[12] was a major international conference held in Rio de Janeiro, Brazil, from June 3 to 14, 1992. The summit aimed to address urgent problems of environmental protection and

socioeconomic development at the global level. For more info visit United Nations - Earth Summit+5

[13] The Kyoto Protocol is an international treaty adopted in 1997 that aimed to reduce the emission of gases that contribute to global warming. It was named after the Japanese city where it was adopted and entered into force in 2005. The treaty required industrialized nations to reduce their greenhouse gas emissions, with the goal of preventing dangerous anthropogenic interference with the climate system. It was widely hailed as the most significant environmental treaty ever negotiated, although some critics questioned its effectiveness ("Kyoto Protocol | History, Provisions, & Facts.").

[14] The Methane-to-Markets Partnership is an international initiative to reduce global methane emissions by recovering and using methane as a clean energy source from agriculture, coal mines, landfills, and oil and gas systems ("Methane to Markets | Department of Economic and Social Affairs.").

[15] The Paris Agreement is an international treaty on climate change that was adopted in 2015. It aims to mitigate, adapt to, and finance climate change by reducing greenhouse gas emissions and limiting global temperature increases. The agreement was negotiated by 196 parties at the 2015 United Nations Climate Change Conference in Paris, France, and has been ratified by 195 members as of February 2023 (Fontinelle).

[16] are a type of hybrid electric vehicle that combines a rechargeable battery pack with an internal combustion engine. They are designed to be more environmentally friendly and cost-effective than traditional hybrid vehicles (U.S. Department of Energy).

[17] A loan guarantee program is a government-sponsored initiative that provides a guarantee to lenders against default on loans. This type of program aims to reduce the risk for lenders and encourage them to provide loans to borrowers who may not otherwise qualify. The guarantee

can be used for various purposes, including medical expenses, education expenses, and small business financing ("Ultimate FAQ:loan Guarantee Program, What…").

[18] The Deepwater Horizon incident was a catastrophic oil spill that occurred on April 20, 2010, in the Gulf of Mexico. It involved a blowout on the Deepwater Horizon oil rig, which was operated by British Petroleum (BP). The incident resulted in the deaths of 11 people, injuries to 17 others, and the release of approximately 4.9 million barrels of crude oil into the Gulf of Mexico over a period of 87 days (Monnier).

[19] The GCC was an industry group based in the United States that opposed policies to reduce greenhouse gas emissions from the late 1980s to the early 2000s (Fisher). for more info visit Global Climate Coalition - DeSmog

[20] an independent global campaigning network founded in Canada in 1971 by a group of environmental activists. The organization focuses on worldwide issues such as climate change, deforestation, overfishing, commercial whaling, genetic engineering, anti-war and anti-nuclear issues. It uses direct action, advocacy, and research to achieve its goals (Greenpeace).

[21] an international environmental organization that aims to promote the sustainable use of the Earth's resources and protect the environment through grassroots activism and advocacy. For more info visit Friends of the Earth • Homepage (foe.org)

[22] A filibuster is a political procedure in which one or more members of a legislative body prolong debate on proposed legislation to delay or entirely prevent a decision. It is characterized as a form of obstruction in a legislature or other decision-making body ("Filibuster | Definition, Examples, & Facts")

[23] a comprehensive program aimed at reducing energy consumption and promoting the use of clean energy sources. The initiative is led by the U.S. Department of Energy and involves

various offices and programs that work together to achieve its goals (Office of Energy Efficiency & Renewable Energy).

[24] is a series of meetings initiated by U.S. President Barack Obama in April 2009. The forum aims to facilitate a candid dialogue among key developed and developing countries to generate political leadership and advance concrete initiatives for reducing greenhouse gas emissions and increasing the supply of clean energy ("Major Economies Forum on Energy and Climate."). For more info visit **Major Economies Forum on Energy and Climate - Global Energy Monitor (gem.wiki)**

Conclusion

The Obama administration's climate policies were pivotal in advancing the United States' contribution to the United Nations Sustainable Development Goals (SDGs), particularly those related to environmental sustainability and climate action. Through a combination of regulatory reforms, significant investments in renewable energy, and robust international engagement, the administration sought to mitigate climate change while promoting economic growth and sustainable development

Climate change is described as longer-term variations of whether and temperature in a specific area it can be caused by natural causes or human activities, it can threat humans' lives, and especially those who suffer from respiratory diseases like Asthma due to the high levels of temperature. It can threat animals with extinction because it affects their production and sources of food. Agriculture can be affected due to the rise of temperature levels which can affect the growth of plants; the economy of the countries can be damaged as well by disasters caused by climate change.

The SDG's are a set of goals that should be achieved in the year 2030, it was established by the United Nations, where climate action is the goal number 13 in the agenda , The main initiatives made by Obama were both international like the Paris Agreement, the Global climate change Initiative and the Copenhagen summit, and national like the executive actions , the Clean Power Plan, the Climate Action Plan, the New Energy for American Plan, and the rejection of the Keystone XL pipeline.

The journey of President Barak Obama in addressing climate change was not ever an easy task to be done. Multiple challenges stood in his way and slowed his progress. The main challenges were the political opposition from the Republican party who saw such initiatives as a threat to the economy and a huge number of losses in jobs; industries that use coal to

generate power criticized Obama for encouraging the renewable energy because such step could affect their incomes.

Even on the international level, Obama faced obstacles in negotiating with other nations, in addition to legal hurdles. As a general assessment it can be noticed that Obama had made notable steps toward a better climate; however, the challenges that he had faced were not easy and cost him a lot of progress. After the end of his second term, his successor to the White House, President Donald Trump withdrew many of the initiatives made by Obama like his withdrawal from the Paris Agreement that was considered as one of the main international negotiations about climate change.

Despite these challenges and setbacks, the Obama administration's climate policies established a critical framework for future actions and highlighted the integral role of national leadership in driving global sustainability efforts. The alignment of these policies with the SDGs demonstrated a comprehensive approach to addressing climate change while fostering sustainable development. As the international community continues to confront the urgent threat of climate change, the lessons and foundations laid during Obama's tenure offer valuable insights into the path forward. Achieving the SDGs requires sustained and coordinated efforts, building on past successes and addressing persistent challenges to ensure a resilient and sustainable future for all.

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