



**THE REPUBLIC OF TURKEY
SOCIAL SCIENCES UNIVERSITY OF ANKARA
INSTITUTE FOR GRADUATE STUDIES IN SOCIAL SCIENCES**

**THE IMPACT OF GEOPOLITICS OF ENERGY ON
INTERNATIONAL CLIMATE CHANGE GOVERNANCE**

Master's Thesis

Arife Delibaş

Master of Arts in International Relations

May 2021



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THESIS APPROVAL

This is to certify that the thesis defense examination for the thesis titled “The Impact of Geopolitics of Energy on International Climate Change Governance” prepared by Arife DELİBAŞ with student number 185414008 studying in the field of International Relations Department Master of Arts in International Relations (English) Program has been conducted in accordance with the related clauses of the Graduate Studies and Examination Code of YÖK (Council of Higher Education) on 03/05/2021 at 11:00, and has been approved by unanimous vote.

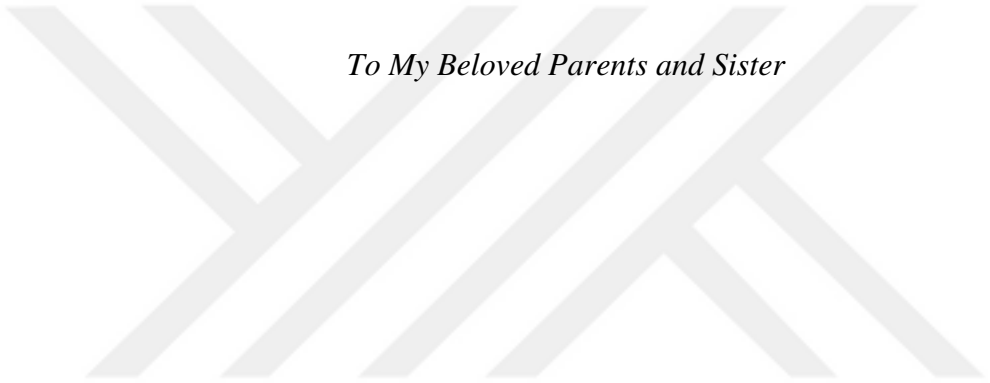
PLAGIARISM

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all materials and results that are not original to this work.

Name, Last Name: Arife Delibaş

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XXXXXXXXXX



To My Beloved Parents and Sister

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ABSTRACT

THE IMPACT OF GEOPOLITICS OF ENERGY ON INTERNATIONAL CLIMATE CHANGE GOVERNANCE

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Climate change is one of the biggest challenges facing the world. As a global problem, this issue requires an international governance process and a permanent solution. The climate change governance process, which is currently under the umbrella of the UN, has gone through various phases that can be considered successful and/or unsuccessful until the final phase. This thesis aims to analyze the impact of geopolitics of energy on international climate change governance. The study is based on three main pillars: climate change governance, the geopolitics of energy, and the impact of the geopolitics of energy on climate change governance. The mainframe of the thesis is drawn around the PA, which is the last step of the climate governance process. INDCs, which are one of the main mechanisms of the PA, and NCs and BRs / BURs reports were examined whether the geopolitics of energy impacted. An assessment was made on the selected research samples for this study and compared the current steps of the samples with their commitments in climate governance. Consequently, it has been argued that most of the samples did not act according to the requirements of the PA. This study showed that energy geopolitics is one of the key tools of the past and future of climate change governance and that the point at which the governance will be transformed will be directly related to the future of the geopolitics of energy.

Keywords: Climate Change, Energy, Geopolitics, Governance, Paris Agreement.

ÖZ

ENERJİ JEOPOLİTİĞİNİN ULUSLARARASI İKLİM DEĞİŞİKLİĞİ YÖNETİŞİMİ ÜZERİNDEKİ ETKİSİ

DELİBAŞ, Arife

Yüksek Lisans, Uluslararası İlişkiler Bölümü

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İklim değişikliği dünyanın karşı karşıya olduğu en büyük zorluklardan biridir. Küresel bir sorun olarak ön plana çıkan bu konu, küresel yönetim süreci ve kalıcı çözüm gerektirmektedir. Günümüzde BM çatısı altında sürdürülen iklim değişikliği yönetimi, gelinen son noktaya kadar başarılı ve/ya başarısız olarak değerlendirilebilecek çeşitli aşamalardan geçmiştir. Bu tezin amacı enerji jeopolitiğinin uluslararası iklim değişikliği yönetimi üzerindeki etkisini tahlil etmektir. Çalışma; iklim değişikliği yönetimi, enerji jeopolitiği ve enerji jeopolitiğinin iklim değişikliği yönetimindeki etkisi olmak üzere üç ana temel üzerine oturtulmuştur. Tezin ana çerçevesi, iklim değişikliği yönetiminin son noktası olan Paris Anlaşması etrafında çizilmiştir. Anlaşmanın ana mekanizmalarından biri olan Niyet Edilen Ulusal Olarak Belirlenmiş Katkı (INDC) beyanları ile NC ve BR / BUR raporları üzerinde, enerji jeopolitiğinin etkisinin olup olmadığı incelenmiştir. Çalışma için seçilen araştırma örneklemi üzerinde iklim yönetimine dair bir değerlendirme yapılmış, örneklemelerin iklim yönetimindeki taahhütleriyle güncel adımları karşılaştırılmıştır. Sonuç olarak örneklemelerin çoğunun PA'nın gereksinimlerine göre hareket etmediği iddia edilmiştir. Bu tez, enerji jeopolitiğinin iklim değişikliği yönetiminin geçmişinin ve geleceğinin temel araçlarından biri olduğunu ve yönetimin evirileceği noktanın enerji jeopolitiğinin geleceği ile doğrudan ilişkili olacağını ortaya koymuştur.

Anahtar Kelimeler: İklim Değişikliği, Enerji, Jeopolitik, Yönetişim, Paris Anlaşması.

LIST OF ABBREVIATIONS

AI	Annex I
AII	Annex II
AILAC	Independent Alliance of Latin America and the Caribbean
ALBA	Bolivarian Alliance for the Peoples of Our America
AOSIS	Alliance of Small Island States
AR5	Fifth Assessment Report
BASIC	Brazil, South Africa, China India
BAU	Business As Usual
BP	British Petroleum
BR	Biennial Report
BRICS	Brazil, Russia, India, China, and South Africa
BUR	Biennial Update Report
CACAM	Central Asia, Caucasus, Albania, and Moldova
CAT	Climate Action Tracker
CBDR	Common but Differentiated Responsibilities and Respective Capabilities
CCA	Climate Change Adaptation
CDM	Clean Development Mechanism
CFC	Chlorofluorocarbon
CfRN	Coalition for Rainforest Nations
CH₄	Methane
CIS	Commonwealth of Independent States
CO₂	Carbon dioxide
COP	Conference of the Parties
CSIS	Center for Strategic and International Studies
EIT	Economies in Transition
EU	European Union
FY	Fiscal Year
G-77	Group of 77
GCF	Green Climate Fund
GHG	Greenhouse Gas

GRULAC	Group of Latin America and Caribbean Countries
HFC	Hydrofluorocarbon
Ibama	Brazilian Institute of Environment and Renewable Natural Resources
IEA	International Energy Agency
INDC	Intended Nationally Determined Contribution
IPCC	Intergovernmental Panel on Climate Change
IR	International Relations
KP	Kyoto Protocol
LDC	Least-Developed Country
LULUCF	Land Use, Land-Use Change and Forestry
MRV	Measurement, Reporting, and Verification
N₂O	Nitrous oxide
NAI	Non-Annex I
NASA	National Aeronautics and Space Administration
NC	National Communication
NDC	Nationally Determined Contribution
NDP	National Development Plan
NGO	Non-governmental Organization
NPT	Treaty on the Non-Proliferation of Nuclear Weapons
MT	Million tonnes
O₃	Ozone
OAPEC	Organization of Arab Petroleum Exporting Countries
OECD	Organisation for Economic Cooperation and Development
OPEC	Organization of Petroleum Exporting Countries
PA	Paris Agreement
PFC	Perfluorocarbon
R&D	Research & Development
REI4P	Renewable Energy Independent Power Producer Procurement Program
SF₆	Sulphur hexafluoride
UK	United Kingdom
UN	United Nations
UNEP	United Nation Environment Programme

UNFCCC	United Nations Framework Convention on Climate Change
US	United States
USSR	Union of Soviet Socialist Republics
WCED	World Commission on Environment and Development
WEOG	Western European and Others Group
WMO	World Meteorological Organization
WWI	World War I
WWII	World War II
ZED	Zero Effect, Zero Defect



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CHAPTER 1

INTRODUCTION

Climate change is a global phenomenon with potentially catastrophic effects on several areas globally, threatening environmental, social, and economic sustainability. According to the *Global Risks Report 2020*, the climate change problem is among the top five risks in terms of likelihood and impact for all living creatures, and even covers all of them, except for weapons of mass destruction (World Economic Forum, 2020, p. 2). War, terrorism, and security are the three most emphasized concepts in International Relations (IR). While certain boundaries and limitations can be drawn on these three issues, climate change is a different area of struggle than all these topics, and it is one of the biggest challenges facing the world. The ultimate reason for this is that there is no concrete enemy in front of us.

Moreover, no one can handle climate change alone, and all actors need to find common ground. The solution to the climate problems cannot be transformed into collective action or free-rider problems because the joint effort is as compulsory as necessary. The main starting point of this thesis is the awareness of such a global problem and the search for answers about what measures have been taken and must be taken in the international arena to solve the problem.

The first issue to start researching is how the international climate change governance process is progressing because, in the face of global problems, global success is required. The governance process, which began in the mid-20th century, continued to occur with various conferences and agreements. In particular, three essential columns: the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol (KP), and the Paris Agreement (PA), have shaped the process so far. While researching the governance process, with the period until PA's adoption, which was considered unsuccessful or unsteady by many researchers in the literature, was

encountered. Indeed, the signing of a new agreement was the most significant indication that the old formal process was not working well. Thus, the following question was sought to be answered: “what are the reasons that affect the success and/or failure of steps by states taken for climate change governance? This question contains many different answers in the various branch of social sciences. However, the focus was on one of the multidisciplinary fields: “energy.”

The concept of energy, associated with “power” in IR, is also one of the biggest causes of climate change problems because the energy sector is highly responsible for global greenhouse gas (GHG) emissions. On the other hand, energy is an indispensable and significant element of human beings’ existence, and it also directly affects the steps of the states. More importantly, “global energy demand is increasing rapidly, because of population and economic growth, especially in emerging market economies” (OECD & IEA, 2011). Starting from this point of view, it was noticed that there would be a strong linkage between the past and future of energy and climate governance. Based on these reasons, which will be developed during the continuation of the thesis, it was aimed to research “what is the role of energy in the climate change governance process?”. Since energy is an extensive field, this thesis is limited to study on the concept of the geopolitics of energy. This framework was chosen because it includes components from geography to resources, from security to power relations, that can directly affect the strategies of states and are the basis of IR.

Consequently, that is how the presented research has arisen thesis research question: “Is the geopolitics of energy one of the main determinants of the success and/or failure of climate change governance?” With regard to this, the main hypotheses are:

(i) The geopolitics of energy is one of the main determinants of success and/or failure of climate change governance.

(ii) The shaping of climate change governance’s future will be directly related to the geopolitics of energy.

1.1. The Purpose of the Study

Despite the common opinion of scientists about climate change, there is still an opposition group denying this matter or a group of people who advocate the needlessness of individual and global struggle. However, it is obvious that we need to get rid of paradoxes. It is crucial to start the struggle without it harming our shared future. Politicians have realized it, and the process of tackling climate change has been initiated under the umbrella of the United Nations (UN). Being aware of the danger and taking action in this direction can be considered as one of the basic steps of the climate governance process.

Climate change governance and geopolitics of energy are outstanding and unique fields in IR. It is imperative to ask questions about the climate change problem and to solve the next generation's problem. Ultimately, what are global measures to tackle these future-threatening problems, and how do states manage this? In this thesis, which is discussed on a global scale due to the nature of IR, the responses of states to global measures and their adequacy against climate change do not seem satisfactory. The thesis is the result of thinking about the causes of unsatisfactory results. This study suggests geopolitics of energy as one of the reasons for the bad results and tries to measure the impact of the geopolitics of energy in this regard.

The objectives of the thesis, which is intended to be descriptive research, can be listed under three primary pillars. The first pillar of the thesis is to examine international climate change governance and its evaluation process. The second is to outline the geopolitics of energy, which is one reason for the appearance of the new world. It is aimed to determine the dynamics of energy transition and identify the changes that will lead to the leader and power axis. The impacts of the geopolitics of energy on the international climate change governance constitute the third main pillar.

This thesis aims to conclude the interactions between the states' attitude towards climate change governance and geopolitics of energy based on the conclusions drawn in the other two pillars and making predictions for the new situation in the future. Moreover, it is expected to contribute to climate change governance, energy, and geopolitics studies

in IR literature. In a nutshell, this study aims to determine the linkage between geopolitics of energy and climate change governance.

1.2. Case Selection and Methodology

The study of climate change from the perspective of IR will be one of the original values of this thesis. With the thesis covering a wide range of social, political, economic, and even cultural topics, this study becomes a scientific study in which many literature reviews are collected in one hand. With the thesis, alternative answers will be brought to the questions about the impacts of the geopolitics of energy in the climate change governance process. And this thesis will take its original place in the literature as it is a thesis that reveals and analyzes the scenarios that may be the cause of the success and/or failure of climate change governance.

The research topic of the thesis is general, interdisciplinary, current, and cannot be ignored. The data obtained as a result of the thesis is open to the benefit of all national and international actors. These actors can be narrowed and listed as follows: states, international organizations, energy companies, energy market and leaders, non-governmental organizations (NGOs), scientists, and individuals who will research in these fields. It aims to be beneficial to the actors with the accumulation of literature and results that it will have, especially in the field of environment, energy, geopolitics, and IR. The field of climate change and energy is very substantial for the world, and this dissertation aims to contribute to international literature and climate peace in the world. It aims to make this contribution by raising awareness of the actors and public and making this study an example for other researchers. Global climate change, which is an issue that affects the whole future, is vital for society. Therefore, it aims to contribute to the future of society. Besides, the environment and culture are intertwined circles, and it is one of the main objectives to contribute to the national culture through this research.

Various problems were encountered during the thesis writing process. Firstly, the subject is relatively current, and there are many predictions about whether the PA will be successful. Besides, the leaders of states and governments are very influential in the governance process. Because leaders' approaches to climate policies can vary, analyses can change with a leadership transition. The United States (US) can be given as a recent

example. As this thesis was written, the presidential election process between Donald Trump and Joe Biden concluded, and the transition brought a different approach to the agreement and the issue. Secondly, the topics; climate change governance and geopolitics of energy have a wide range of subjects. Due to these reasons, it was difficult to determine the scope of the study. Finally, the spread of the COVID-19 is adversely affected my usage of databases and libraries.

This thesis examines the impact of energy geopolitics on global climate change governance through the literature review. Both primary and secondary sources are utilized from library archives and online databases. In terms of primary sources, the official reports of states, international organizations, and official statements are used. Moreover, statistics from various companies and organizations such as British Petroleum (BP), Royal Dutch Shell, International Energy Agency (IEA), etc., are benefited. Academic books, journal articles, thesis, news, reports, and working papers have been used regarding secondary sources. The official websites on climate change, such as the UNFCCC, have been used as a source. Finally, this study is descriptive research, and a case study is selected as the qualitative research design of the thesis. Moreover, it is constructed a content analysis that analyzed the official climate policy reports, National Communications (NCs), and Biennial Reports (BRs) / Biennial Update Reports (BURs), of the research samples through the key components of the geopolitics of energy that consists of inference of this thesis. However, these inferences are also used while examining the Intended Nationally Determined Contributions (INDCs).

1.3. Literature Review

This section has focused on the literature in line with the research question of this thesis. For the sake of this dissertation that brings together different fields of study, a literature review was conducted in the field of climate change governance and energy geopolitics. In addition, for the PA, which is especially emphasized in this thesis, a literature review was also conducted for neoliberalism and neoliberal institutionalism theories in IR disciplines.

Climate policies are currently being addressed in various dimensions by many different scientific disciplines. According to Cass (2017), in the late 1980s, books on

different facets of climate change policies started to emerge, and in recent years the number of publications has increased. Especially as a source of books, “the most active publishers of climate policy books have been the university presses of MIT, Cambridge University, Manchester University, Oxford University, and Routledge” (Cass, 2017, p. 4). The author expressed that previous to 2008, very few have been published in the major IR journals except for the policy journals. After the date, much more information on climate policy became available.

Cass (2017) concluded that the general literature on climate politics centers on two issues: how can we explain the international political response to climate change and how the international community should respond to it? From the general to the specific, climate change policy has found a place in the department of sociology. The concept explained by British sociologist Anthony Giddens as “Giddens’s Paradox” in his book, *Climate Change Politics* (2009) is quite remarkable on the policy. According to Giddens (2009), the politics of climate change must cope with the “Giddens’s Paradox,” which states that:

Since the dangers posed by global warming aren’t tangible, immediate, or visible in the course of day-to-day life, however awesome they appear, many will sit on their hands and do nothing of a concrete nature about them. Yet waiting until they become visible and acute before being stirred to serious action will, by definition, be too late. (p. 2)

Giddens (2009) added that “the paradox affects almost every aspect of current reactions to climate change and it is the reason why, for many citizens, climate change is a back-of-the-mind issue rather than a front-of-the-mind one” (p. 2). People find it hard to give the same level of reality to the future as they do to the present. This applies to both rewards and risks. He has stated that the reason for continuing smoking despite the fact that young people know that smoking is lethal because consequences of the threat at later ages are unimaginable, and the fight against climate change has been linked to the same reason.

In democratic countries, governments come and go. Moreover, real-life contexts may issue a jostle for attention, including immediate questions of the day, which at the time may seem overwhelmingly important. In such circumstances, how is the continuity of climate change policy to be maintained? (Giddens, 2009, p. 7)

He argued that “is not a light-right issue and there should be no more talk of *green being the new red*” (Giddens, 2009, p. 7). He tried to think of a sociological perspective to climate change policy and governance and explain human and common behaviors with these kinds of questions. On the other hand, IR discusses environmental issues in two sections: “problem-solving” and “critical” approaches.

According to Söker and Özlük (2018), problem-solving approaches are those that consider the environment only if there is a problem and seek solutions within the current global system. Theories such as realism, liberalism can be given as an example. On the other hand, critical approaches aim to create a sustainable system to create a better world beyond environmental issues. They, therefore, question the national and international political, economic and social order by arguing that the system should be restructured. The green theory is a primary example of this approach. Each of these traditions of IR theory contributes to our understanding of international environmental cooperation in different paths.

Regarding climate change governance, international organizations have a determinant role. In particular, the governance has been progressing under the leadership of the UN. In this context, the pioneer study of Keohane and Nye (2011) has made significant inferences. They developed the idea: “complex interdependence” in their book *Power and Interdependence: World Politics in Transition* (1st edition published in 1977) and described three main characteristics of the concept: multiple channels, absence of hierarchy among issues, and the minor role of military force. Moreover, the authors argued that participation in international institutions is related to the national strategies of states, and their commitments under these institutions can reflect their priorities (Keohane & Nye, 2011).

According to further study of Keohane and Victor (2010), climate change is a politically complicated issue through three fundamental factors: (i) is a global problem and necessitates global effort; (ii) is an intergenerational problem and solution is already expected for some invisible future problems; (iii) requires changing practices within the habits of billions of people, as well as organizations such as firms. The authors argued that the climate change problems are diverse, and this diversity is associated with political patterns of interests, power, information, and beliefs (Keohane & Victor, 2010). Both

because of the diversity of problems and politics and because of the difficulty of moving away from an equilibrium that has been established, the authors do not expect “an integrated and comprehensive climate change regime to be instituted in the foreseeable future” (Keohane & Victor, 2010, p. 9). They asserted that there is a *regime complex* governing efforts to limit the extent of climate change rather than an integrated, comprehensive regime or whole fragmented, dispersed set of institutions. The regime complex can be evaluated on the basis of six criteria: coherence, accountability, effectiveness, determinacy, sustainability, and epistemic quality (Keohane & Victor, 2010, pp. 19-20). Keohane and Victor (2010) propounded that the UNFCCC would continue to play an umbrella role in such a regime complex; for Kyoto, they highlighted the following inference: “in practice, because Kyoto placed no obligations on developing countries and because the US never ratified the agreement, its practical effect was narrow, thin and ultimately symbolic” (p. 5).

Victor (2004), seeing climate change becoming a perennial issue, has argued in his study that the UNFCCC reflected the interests of the key participants of the Convention. In general, industrial countries tried to control emissions; however, unable to compromise on the share the burden, and they were accepted only acts that did not place any burdens on their economies. Thus, he has emphasized the importance of economic indicators in climate change governance. In other respects, Bulkeley and Newell (2010) have suggested that three factors have an impact on the challenge of climate change governance: (i) multiple scales of political decision-making involved (ii) fragmented and blurred roles of state and nonstate actors, (iii) deeply embedded nature of many of the processes that lead to GHG emissions in everyday processes of production and consumption (p. 2).

While discussing the theoretical approach of this thesis, neoliberalism and neoliberal institutionalism and approaches of the principles that significantly articles of the PA are focused on. Accordingly, various researchers have focused on different principles in the literature. While Okereke (2008) focused on the principle of distribution of justice, Khan (2016) approached economically and touched upon adaptation funding and the market mechanism. Ciplet and Roberts (2017) focused on the principle of transparency and emphasized the importance of this principle to achieve greater

efficiency in terms of sustainability. Cass (2017) and O'Neill (2009) examined the role of institutions in the governance of climate policies in the negotiation process; additionally, O'Neill (2009) primarily studied the role of cooperation in international environmental policies. On the other hand, Keohane and Oppenheimer (2016) concentrated on the behavior of actors and developed arguments with the relations of domestic policies of countries with the climate regime.

There is relatively rich literature on climate change governance. Pattberg and Stripple (2008) argued that climate governance has to be restated. Various domains of influence must be taken into account beyond the public and international spheres. Their notion of a transnational arena of climate governance reflects this new conceptualization. They suggested that “next to the international arena of global climate governance consisting of states and public agencies, there is an increasingly institutionalized arena of transnational global climate governance” (Pattberg & Stripple, 2008, p. 384). Pattberg (2010) assessed the contributions of public-private partnerships to effective and legitimate climate governance in his further article. Considering partnership as a kind of networked climate governance, the author evaluated their potential contribution of this governance in three sets of criteria: mitigation and adaptation; normative goals; and existing institutional architecture of international climate change governance. On the other hand, Gordon (2013) analyzed the opportunities and limitations of global climate governance through transnational city-networks in his article. He discussed the opportunities and constraints of the city-network.

Barrett (2009b) analyzed why the approach is taken so far to mitigate global climate change has failed in his article and mainly focused on the KP. Barret (2009b) expressed “inability to enforce targets and timetables” as a reason for the question. He particularly touched on the failure role of the US leadership in climate governance and the importance of enforcement related to trade.

Dimitrov (2010), in his article on the 2009 Copenhagen Accord in terms of climate governance, argued that this Conference raised two important research questions: (i) how should we measure and assess multilevel climate governance? (ii) can political failures have “positive” policy impacts? He answered that (i) we need aggregate measures to gauge other levels of “public” governance as well as nonstate governance (ii) multilateral

failures may indirectly facilitate climate policy at other levels of governance and may increase stakeholders' self-reliance and strengthen policy efforts at local, subnational, and regional levels (Dimitrov, 2010, p. 23). Bernauer and Schaffer (2010) sought to answer four issues related to international climate governance in their article: political challenges in the climate governance system; reasons why some countries are more cooperative or vice versa; local efforts in climate policy; and normative issues about climate policy.

Hoppe, Wesselink, and Cairns (2013) analyzed the relation between climate change science and climate change governance. They described institutions that related to climate change governance such as the Intergovernmental Panel on Climate Change (IPCC) or the UNFCCC as "boundary organizations," and they suggested that the success of boundary organizations depend on three important points: (i) the degree to which the climate change problem is defined, (ii) the stage of the policy process, and (iii) characteristics of the policy network and the socio-political context.

Pacheco, Vasconcelos, and Santos (2014) primarily focused on the role of the behavior of individuals and risk perception in their articles and reached the following at the end of the article: "global coordination for a common good should be attempted by segmenting tasks in many small to medium-sized groups, in which perception of risk is high, and uncertainty in collective goals is minimized" (p. 573).

Hall and Persson (2018) focused on global climate adaptation governance in their article, and they found that "adaptation governance is low in precision and obligation" (p. 540). In a further study, the perspective of pre-Paris, 'mitigation is global; adaptation is local,' Persson and Dzebo (2019) discussed the necessity of more adaptation emphasis in global and transnational governance from this point of view. In particular, they examined the role of the adaptation in the PA.

Geopolitics of energy as a research area is a considerable amount of literature. While defining the geopolitics of energy, Conant and Gold (1977) mainly focused on locational factors. However, the emphasis on "new" in the concept comes into prominence towards the end of the Cold War period (Arıboğan & Bilgin, 2009; Mitchell, Beck, & Grubb, 1996; Verrastro, Ladislaw, Frank, & Hyland, 2000). Energy geopolitics has been discussed in more detail in the 2000s. For instance, Chevalier and Geoffron

(2013) focused on the issue and the management of resources. They stated that energy and foreign policy and military actions are also essential elements of energy geopolitics. Vidakis and Baltos (2015) concentrated on advancing technology in the energy sector and emphasized the role of access to this technology, data collection, energy security.

Recently, there has been a debate about whether the energy transition will change the geopolitical balance of energy. Daniel Yergin, known for his books focusing on the history of energy such as *The Prize: The Epic Quest for Oil, Money & Power* (1990)¹, *The Quest: Energy, Security, and the Remaking of the Modern World* (2011) has discussed this issue in detail in his latest book, *The New Map: Energy, Climate, and the Clash of Nations* (2020). The book makes a significant contribution to the literature, especially because of its research finding that climate change is one of the catalysts in the energy transition.

The literature in which two or three of the fields of climate change, energy, and geopolitics are used together is quite limited. Mou, Wang, Fang, Qu, and Yang (2017) analyzed that hard and soft power and climate change impact. Their study has been demonstrated by selecting thirty countries as a research sample and using a Factor Analysis Method. These countries are divided into four categories: the European Union (EU) countries, the Umbrella Group, Basic Countries, representatives of other typical countries. The authors determined four common factors (economic gross, development level, human resource, cultural diplomacy) from twenty-three indexes. Moreover, they used these factors to explain the impact of climate change's influence on the geopolitical landscapes of the thirty countries. At the end of the research, the authors concluded that "climate change impacts geopolitics, but global power change still depends heavily on other factors. There are apparent differences between the countries studied, and countries in the same category also have their own hierarchies of influence" (Mou et al., 2017, p. 5). Vogler (2018) focused on relations between international cooperation with energy and climate change governance. He stated that the PA outcome was associated with national economic interests and increased competitiveness of renewable energy. However, this

¹ Date of first publication.

study included a climate governance survey in general terms, and energy-related sections are not detailed.

Ediger's article (2017) bears a resemblance to this thesis as a title. Ediger directed his focus on international climate change initiatives and examined the literature of energy geopolitics in the years between 1965-2014. He discussed the role of the state and the market in climate change implementations. Ediger (2017) advocated that "the competition periods in energy geopolitics, as observed during the oil crises, decrease the chances of success for international initiatives on climate change" (p. 45). Ediger's research, which focused on the reasons for the failure of Kyoto, differs from this thesis in terms of focusing on different focal points, such as the PA and its mechanisms. This study, which will include research on energy geopolitics analysis by examining Paris mechanisms and official reports, will fill the literature gap and take its original place.

1.4. Structure of the Study

This thesis, named "The Impact of Geopolitics of Energy on International Climate Change Governance," is divided into five sections. Chapter 1 is the introduction section and gives a brief overview of the study. In Chapter 2, the international climate change governance process is explained. Firstly, the chapter begins with a brief background of what is the climate change problem. Then, how global climate change becomes a problem and how the process of international climate change governance progress is analyzed. The UN's steps, which is the essential institution to regulate the governance process, are discussed. This part includes the three leading indicators of the governance process: the Convention (UNFCCC) and other two agreements -Kyoto and Paris-. The theoretical analyses are given at the end of the chapter. In this context, neoliberalism and neoliberal institutionalism are applied to understanding the dynamics of the ultimate agreement of climate change governance.

Chapter 3 focuses on the geopolitics of energy. In this chapter, the concepts of geopolitics and geopolitics of energy are explained, respectively, and the related literature is reviewed. In particular, the key components of the geopolitics of energy are investigated. Energy transition, which is a component of the term, is examined in the last subsection of this chapter. This section comprises a brief history of the transition of

energy. In addition, it also reveals the connection between the transition and climate change and examines the changing the balance of geopolitical power of states in the governance process within the context of energy.

Chapter 4 enucleates the impact of the geopolitics of energy on climate change governance. Initially, this chapter briefly focuses on three environmental waves. The relationships between energy geopolitics and the waves in the literature are investigated. The chapter continues with reflections of the geopolitics of energy on climate change governance. In the first instance, sample countries and organizations discussed in this section of the thesis are determined. Afterward, within the context of the INDC mechanism, which makes the PA different from the KP, it was examined whether the selected countries/union, including geopolitics of energy in their INDCs. The last part of the section is devoted to content analysis. In this part, the focus is on the same selected samples. It is analyzed whether countries include geopolitics of energy in their NCs, and BRs / BURs official reports reflecting the climate policies of nations. Finally, the section includes the general assessment of the samples on climate change governance.

Chapter 5, the conclusion chapter, represents a critical discussion of the key findings regarding hypotheses and research questions. It offers a general conclusion from the study as a whole.

CHAPTER 2

2. INTERNATIONAL CLIMATE CHANGE GOVERNANCE

Cyclones Idai and Kenneth, drought in East Africa, floods in South Africa, Dry Corridor in Central America, and Australian wildfires are different global disasters in other parts of the world. But they all have a typical result: the destruction that it left-back. The rate of natural disasters that occur due to atmospheric events in our world is approximately 84% (Sevim, 2019, p. 147). While the situation is getting so severe, it is essential to examine which point the world has reached in this crisis management. The roots of combating climate change do not go far back. Scientific issues that came to the agenda with the studies and determinations of scientists required political solutions due to the situation's sensitivity; thus, the governance process started. The chapter deals with the emergence of the climate change issue and the rising climate change governance system.

2.1. The Problem: Climate Change

To make the thesis understandable, general information about climate change will be in the first stage. There are scientific and political discourses in the definition. The IPCC (2012) refers to the definition of climate change as:

A change in the state of the climate can be identified (e.g., using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcing, or persistent anthropogenic changes in the composition of the atmosphere or land use. (p. 557)

On the other hand, the UNFCCC, in its Article 1, defines climate change as “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods” (UN, 1992, p. 4). Thus, the UNFCCC

makes a distinction between climate change attributable to human activities altering the atmospheric composition and climate variability attributable to natural causes (UNFCCC, 2011).

Climate change and global warming are often used interchangeably. However, it is essential to emphasize that there are differences between the two concepts. According to the National Aeronautics and Space Administration (NASA, n.d.):

Global warming refers to the long-term warming of the planet. Global climate change encompasses global warming but refers to the broader range of changes that are happening to our planet. These include rising sea levels; shrinking mountain glaciers, accelerating ice melt in Greenland, Antarctica, and the Arctic; and shifts in flower/plant blooming times. (para. 1-2)

In sum, global warming is one indication of human-caused climate change. According to the Fifth Assessment Report or AR5 of the IPCC (2014):

Each of the last three decades has been successively warmer at the Earth's surface than any preceding decade since 1850. The globally averaged combined land, and ocean surface temperature data as calculated by a linear trend show a warming of 0.85°C over the period 1880 to 2012 when multiple independently produced datasets exist. (p. 2)

“Human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C . Global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate” (IPCC, 2018, p. 4). The IPCC (2014) explained the causes of climate change as:

Anthropogenic GHGs have increased since the pre-industrial era, driven largely by economic and population growth, and are now higher than ever. This has led to atmospheric concentrations of carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) that are unprecedented in at least the last 800,000 years. Their effects, together with those of other anthropogenic drivers, have been detected throughout the climate system and are extremely likely to have been the dominant cause of the observed warming since the mid-20th century. (p. 4)

In the light of this information, this thesis has progressed by acknowledging the existence of climate change reality. In this sense, it cannot be ignored that climate change poses an important challenge to all living creatures and the future. Moreover, “a profound understanding of climate change as a global environmental and societal challenge is the central requirement of climate change governance” (Fröhlich & Knieling, 2013, p. 11).

How states and international organizations manage this process appears as a new problem field that needs to be solved.

2.2. The Evolution of the Global Climate Change and the Rise of International Climate Change Governance System

Scientific studies on the climate change problem have been increasing since the 19th century. The scientific work of French mathematician and physicist Jean Baptiste Joseph Fourier on the “greenhouse effect” in 1824, and the successful study of Irish physicist John Tyndall in 1861 created the most important scientific data about the role of the GHGs in warming Earth’s surface of the beginning of the period. In 1896, the Swedish scientist Svante Arrhenius argued that “increasing CO₂ concentrations in the global atmosphere resulting from the combustion of fossil fuels would eventually have potential to increase average global temperatures, though it would be hundreds if not thousands of years before much could be discerned” (Stevenson & Dryzek, 2014, p. 1). Ultimately, governments began to pay heed to the issue. The progressive process shed light on the 20th century. International governance of the problem has started in the mid-20th century through science and easier access to scientific information by policymakers and the general public.

According to Encyclopædia Britannica, *governance* is defined as “patterns of rule or practices of governing, and it also can be used to describe any pattern of rule that arises either when the state is dependent upon others or when the state plays little or no role” (Bevir, 2016, para. 2). Dodds (2016) defined global governance as “the term used to describe the ways in which national governments, international organizations, corporations, institutions, and civil society order their collective affairs” (p. 98) *lato sensu* governance “is seen to incorporate a diversity of governing process, including those associated with the state (hierarchy), coordination and cooperation among social and political actors, as well as self-governing mechanisms” (Andonova, Betsill, & Bulkeley, 2007, p. 2).

In the context of climate change, Condon and Sinha (2013) stated that “global governance means risk governance and international processes, institutions, and legal regimes, and it requires the coordination of legal regulation in many areas” (p. 12).

Fröhlich and Knieling (2013) argued that climate change policies necessitate coordination among numerous parties and cover many policies and sectoral planning areas. The term governance refers to the dynamic inter-relationships between stakeholders and societal coordination mechanisms, and it refers in many cases to the instruments of an arrangement wherein instruments can be defined as the options available for the realization of societal aims. The authors stated that the state is not the only stakeholder in the creation, determination, and implementation of instruments in governance arrangements; they categorized stakeholders into three main categories: state, civil society, and economy. Therefore “governance is connected with a wide range of regulatory and non-regulatory instruments that are being proposed and initiated by non-state actors” (Fröhlich & Knieling, 2013, p. 13).

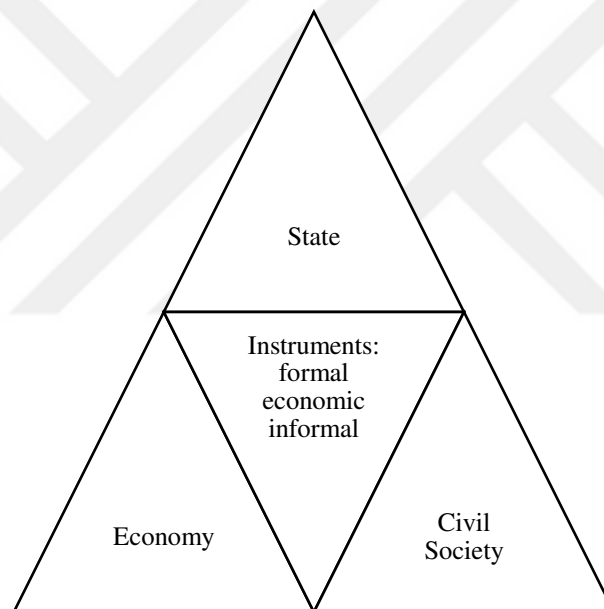


Figure 2.1 Stakeholders and Instruments as Dimensions of Governance

Source: Fröhlich & Knieling, 2013, p. 14

According to Fröhlich and Knieling (2013), climate change governance includes a multitude of structural and regulatory forms across various divergent stakeholders and comprises a diverse set of control mechanisms. It explains the creation of self-organizing systems by combining the coordination of multiple institutions and actors with hierarchical forms of regulation. Climate change governance may thus be characterized as a broad range of forms of coordination concerning climate change adaptation and

mitigation (Fröhlich & Knieling, 2013, p. 21). Nowadays, climate change governance is a non-optional choice, and it will not just be left to enthusiastic countries, to rich industrialized countries, or high per capita emitters (Meadowcroft, 2009).

International organizations and institutions have played a critical role in struggling with climate change and generating proper solutions. Their actions have become increasingly the meat-and-potatoes of the governance. The UN is the leading authority in this regard. By the 1990s, it is possible to see the increasing importance of the UN on climate change politics. The UN's first Conference on the environment was held in Stockholm in 1972, and it was set up in response to rising concern about damage to the environment. It ended with a ringing declaration of the need to protect the natural world, and the UN Environment Programme (UNEP) was set up as a result (Johnson, 2012).

Then, the Vienna Convention for the Protection of the Ozone Layer, a joint effort to realize the awareness of the ozone depletion problem and fix it, was signed in 1985. Vogler (2018) stated that "discovery of depletion of the stratospheric ozone layer caused by emissions of chlorofluorocarbons (CFCs) and other 'man-made' gases. In 1985, the Vienna Convention outlined the problem and called for international action to ban or restrict ozone-depleting chemicals" (p. 3). After the Vienna, international environmental action that the Montreal Protocol on Substances that Deplete the Ozone Layer was signed in 1987. It is "a global agreement to protect the Earth's ozone layer by phasing out the chemicals that deplete it and this phase-out plan includes both the production and consumption of ozone-depleting substances" (UNEP, n.d., para. 1). Montreal has been a very significant step that brings countries together for a common problem solution. After that, in 1988, the IPCC was established by the UNEP and the World Meteorological Organization (WMO).

The IPCC is the UN body for evaluating the science related to climate change. According to the UN General Assembly Resolution 43/53 of December 6, 1988, it was to prepare a comprehensive review and recommendations on the social and economic impact of climate change and potential response strategies and elements for inclusion in a possible future international convention on climate (IPCC, n.d.). It is one of the most significant formations, and it provides policymakers with policy-relevant reports that systematic considerations of the scientific information of climate change's potential

impacts and future risks, and options for adaptation and mitigation. Since 1988 the IPCC has produced five extensive Assessment Reports and several Special Reports on specific topics such as *the Special Report on global warming of 1.5°C* and its Sixth Assessment Report about the global stocktake will be published in 2023.

To sum and the substance of it, there are three main legal instruments (or models) pioneered by the UN: the UN Framework Convention on Climate Change (referred to as the UNFCCC or the Convention), the Kyoto Protocol, and the Paris Agreement. These three are the backbone of the existing international climate change governance system.

2.2.1. The UN Framework Convention on Climate Change

After the First World Climate Conference (1979), the Second World Climate Conference (1990) concluded that “notwithstanding scientific and economic uncertainties, nations should now take steps towards reducing sources and increasing sinks of GHGs through national and regional actions, and negotiation of a global convention on climate change and related legal instruments” (UN General Assembly, 1990, p. 3). In the final section, the Statement called for negotiating a framework convention on climate change and the necessary protocols (UN General Assembly, 1990).

Afterward, the IPCC had completed its First Assessment Report for the Conference in 1991, and at the Earth Summit in Rio de Janeiro in 1992, the UNFCCC has opened the signature. The Conference also produced the Rio Declaration, a set of 27 international environmental protection principles (Condon & Sinha, 2013). According to Article 2 of the Convention, the ultimate objective of the Convention is “stabilization of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic (human-induced) interference with the climate system” (UN, 1992, p. 4).

The governments that have ratified the UNFCCC -known as Parties to the Convention- have met annually as the Conference of the Parties (COP) since 1995 to take stock of their progress, monitor the implementation of their obligations, and continue talks on how best to tackle climate change. Currently, there are 197 Parties (196 States and one regional economic integration organization) to the UNFCCC. (UNFCCC, n.d.-m)

The COP meetings can be considered as one of the essential tools of climate change governance (see Table 2.2).

The Convention divides countries into three essential groups based on the Convention's principle of "Common but Differentiated Responsibilities and Respective Capabilities" (CBDR): Annex I (AI), Annex II (AII), and Non-Annex I (NAI). Parties included in AI to the Convention (AI Parties) include the industrialized countries that were members of the Organisation for Economic Cooperation and Development (OECD) in 1992, plus countries with the economies in transition (the EIT Parties), including the Russian Federation, the Baltic States, and several Central and Eastern European States (UNFCCC, n.d.-e). They were expected by the year 2000 to reduce emissions to 1990 levels (UNFCCC, n.d.-o). AII Parties consist of the OECD members of AI, but not the EIT Parties. They are required to provide financial resources to enable developing countries to undertake emissions reduction activities under the Convention and help them adapt to climate change's adverse effects (UNFCCC, n.d.-e). NAI Parties are mostly developing countries. The Convention recognizes certain groups of developing countries as being especially vulnerable to the adverse impacts of climate change, including countries with low-lying coastal areas and those prone to desertification and drought. Others (such as countries that rely heavily on income from fossil fuel production and commerce) feel more vulnerable to the potential economic impacts of climate change response measures (UNFCCC, n.d.-e).

2.2.2. The Kyoto Protocol

One of the most important outcomes of COP meetings in terms of the governance process is the KP. The KP is an international agreement linked to the UNFCCC and adopted at the third session of the COP (COP 3) on December 11, 1997, in Kyoto, Japan, and entered into force on February 16, 2005 (UNFCCC, n.d.-n). The KP operationalized the UNFCCC by setting binding targets for 37 industrialized countries and the European community to reduce GHG emissions in accordance with agreed individual targets (UNFCCC, n.d.-n). These targets come to mean "an average of 5 percent emission reduction compared to 1990 levels over the five-year periods 2008-2012 (the first commitment period)" (UNFCCC, n.d.-i). According to Bulkeley and Newell (2010), the KP commitments for the states can be summarized as follows:

The US must reduce its emissions by an average of 7 percent, Japan by an average of 6 percent, and the EU by an average of 8 percent. Other industrialized countries are permitted small increases, while others are obliged only to freeze their emissions. Developed countries are obliged to provide: new and additional financial resources to meet the agreed full costs incurred by developing country parties in advancing the implementation of existing commitments. (p. 24)

After the first commitment period, in 2012, the Doha Amendment to the KP was adopted for a second commitment period (2013-2020), but it has not yet entered into force; a total of 144 instruments of acceptance are required for entry into force of the amendment (UNFCCC, n.d.-n).

The KP follows its annex-based structure based on a particular interpretation of the principle of the CBDR, and this situation established a division between countries assigned emissions reduction targets (AI) and those without (NAI). This is a classification on which the UNFCCC system has undergone some changes in the AI Parties list and is included in the Protocol' Annex B list. The Protocol only binds developed countries (and European Community) because it recognizes that they are mainly responsible for the current high levels of GHG emissions in the atmosphere since the Industrial Revolution.

There are two main elements for the KP: (i) binding emission reduction commitments for developed country Parties and (ii) establishing flexible mechanisms. The first element is related to industrialized countries (AI), according to Annex A, which has been undertaken to reduce six GHGs.² “This meant the space to pollute was limited, and what is scarce essentially commanded a price” (UNFCCC, n.d.-m). The second element aims to support developed countries in achieving their reduction targets (UNFCCC, n.d.-m). These flexible market mechanisms or so-called Kyoto mechanisms comprise three mechanisms; International Emission Trading, Joint Implementation (JI), and Clean Development Mechanism (CDM), which enable developed countries to meet part of their emission reduction commitments abroad (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), n.d.). “The purpose of these economic instruments is to make GHG emissions cuts more cost-efficient, with the

² Carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF₆).

assumption that countries are willing to curb their emissions more if doing so is cheaper” (Bernauer & Schaffer, 2010, p. 11).

192 Parties (191 States and one regional economic integration organization) ratified the KP (UNFCCC, n.d.-j). The real rings of the chain as the US and Canada were not included in this process. What were the reasons for these countries, who are aware of climate change on such a serious issue, to withdraw or not ratify from the Protocol? First of all, in 2001, the 43rd President of the US, George W. Bush, announced his opposition to the KP and would not ratify the Protocol, and he expressed his opposition to the KP. According to him,

The KP exempts 80 percent of the world, including major population centers such as China and India, from compliance and would cause serious harm to the US economy. The Senate’s vote, 95-0, shows a clear consensus that the KP is an unfair and ineffective means of addressing global climate change concerns. (The White House, Office of the Press Secretary, 2001b, para. 2)

It is understood from the decision of the US that Russia, Japan, Brazil, and some EU countries, which did not ratify the KP at that time, and the absence of binding targets for developing countries were pushing the US economy. “The US decision also opened the door for states, like Russia, to exert pressure on the remaining Kyoto signatories to extract concessions in exchange for ratification of the treaty” (Held & Roger, 2018, p. 529). And then, the Protocol was ratified by Russia as a landmark for the KP. Thus, the KP entered into force, effective February 16, 2005, by providing the requirement of the Protocol’s item that 55 percent of 1990 CO₂ emissions of the Parties included in AI. However, the controversial agreement faced a new crisis in 2011. Peter Kent, the former minister of the environment of Canada, announced the withdrawal of Canada from the KP. He told the Protocol “is not the path forward for a global solution for climate change” and was in fact “an impediment” (BBC, 2011). In his speech, Kent brought heavy criticism to the KP and then blamed Kyoto’s system and the two major pollutants —The US and China, which threatened the environment. Thus, Canada was the first country that pulls out of the global treaty.

According to Barrett (2009a), “a climate treaty must achieve three things: it must; get countries to participate; get participants to comply and do both of these things even as it requires that parties reduce their emissions substantially. The KP satisfies none of

these conditions” (p. 64). The KP did not work for many reasons, and that the annex-based distinction and coercive goals could not unite countries even in a common problem. Although Kyoto has historically been unsuccessful in some ways, it is not an end but a beginning for the better ones.

2.2.3. The Paris Agreement

Barack Obama, 44th president of the US, declared the Climate Action Plan on February 12, 2013, two years ago from the signing of the PA and supported the new agreement with these words:

So, the question now is whether we will have the courage to act before it is too late. And how we answer will have a profound impact on the world that we leave behind, not just to you but also to your children and your grandchildren. As a President, as a father, and as an American, I am here to say we need to act. (Climate Central, 2013, para. 16-17)

After that, in 2016, he accepted the PA without requesting the Senate’s advice and consent. So what is the PA that brings states back together? Furthermore, what makes the PA different from the KP?

The COP 21 held in Paris on 30 November-12 December 2015 has witnessed a historical consensus on the rates of reduction in carbon emissions that have not been achieved for many years. The PA is a legally binding international treaty, which is a new breath for the global climate change exertion. It was adopted by 196 Parties on December 12, 2015, and entered into force on November 4, 2016 (UNFCCC, n.d.-k). The six-country (Eritrea, Iran (the Islamic Republic of), Iraq, Libya, Turkey, Yemen) have not yet ratified the agreement (UN, 2015). In general, the PA’s central and long-term aim is to:

Strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5°C; and increase the ability of countries to deal with the impacts of climate change, and at making finance flows consistent with low GHG emissions and climate-resilient pathway. (UNFCCC, n.d.-b)

Table 2.1 The Essential Elements of the PA

Long-Term Temperature Goal (Article 2)
Global Peaking (Article 4)
Mitigation (Article 4)
Sinks and Reservoirs (Article 5)
Voluntary Cooperation / Market- and Non-Market-Based Approaches (Article 6)
Adaptation (Article 7)
Loss and Damage (Article 8)
Finance, Technology and Capacity-Building Support (Article 9,10 and 11)
Climate Change Education, Training, Public Awareness, Public Participation, and Public Access to Information (Article 12)
Transparency (Article 13), Implementation and Compliance (Article 15)
Global Stocktake (Article 14)

Note. Decision 1/CP.21 also sets out a number of measures: including strengthening the technical examination process, enhancement of provision of urgent finance technology and support, and measures to strengthen high-level engagement.

Source: UNFCCC, n.d.-b

Completely binding agreements impose many obligations on states, which causes the agreements to become deadlocked from time to time. The most typical example of this has been experienced in the KP. The PA had to apply a different method than the KP to be sustainable and successful. Table 2.1 shows the essential elements of the PA; in addition to that, the “Nationally Determined Contributions” (NDCs) underpin the achievement goals of the PA. These different methods of commitment point to the distinctness between the two agreements. While the PA is based on voluntary and NDCs, the KP follows a top-down approach with compulsory emissions reductions (Aydın & Ari, 2019). What does it mean for the Parties?

To succeed in the goals set for the PA, the Parties present their Intended Nationally Determined Contributions (INDCs). It would not be wrong to say that INDCs are the first stage of achieving long-term goals. According to the World Resource Institute (n.d.):

INDCs pair national policy setting — in which countries determine their contributions in the context of their national priorities, circumstances, and capabilities— with a global framework under the PA that drives collective action toward a zero-carbon, climate-resilient future, and they reflect each country’s ambition for reducing emissions, taking into account its domestic circumstances and capabilities. (para. 2)

Intended was used before the NDCs because INDC is converted NDC following the ratification of the PA. “It is expected that for many countries, their NDCs will be the same as their INDCs, but countries could also increase the transparency and ambition of their climate plans before officially submitting them” (Northrop, 2016, para. 5). For most countries, the INDC automatically became their first NDC; only a few of them, such as Morocco and Nepal, decided to revise or update before submitting (Taibi & Konrad, 2018). NDCs are at the essential process of the PA, and all Parties must submit it every five years and are required to prepare, communicate and maintain successive NDCs, but the content is not binding; it is the voluntary decision of each state (more details on this will be given in Chapter 4).

Bäckstrand, Kuyper, Linnér, and Lövbrand (2017) suggested that the agreement “offers a hybrid mix of bottom-up flexibility and top-down monitoring, reporting, and review and has led to a system that institutionalizes hybrid multilateralism: it strikes a middle position between bottom-up polycentricity and top-down targets-and-timetables by combining intergovernmental and transnational action” (pp. 7-8). However, after Obama, his successor Donald Trump announced his intent to pull the US out of the PA on June 1, 2017. In a December 2018 meeting of the Parties, an official US statement reiterated the intention to withdraw ‘absent the identification of terms that are more favorable to the American people’ (Leggett, 2019, p. 1). The US government stated that the deal puts an “unfair economic burden” on Americans, again like the KP (BBC, 2019). Trump’s move was hailed negatively by environmentalists, many world leaders, and Democrats. This situation brought various discussions, for example, “should a Democrat win the White House, the nation could reenter the agreement after a short absence —as numerous candidates have pledged” (Dennis, 2019, para. 8). Moreover, this thought was as expected with the Biden administration.

According to Zhang, Chao, Zheng, and Huang (2017), three points must be considered in the in-depth analysis of Trump’s motivation to withdraw the US from the agreement: his background (Republican), election promises, and enough space. They interpret the withdrawal from the agreement as follows:

Republicans are conservative in terms of social issues and are close to libertarians regarding economic issues. Republicans support the development of fossil fuel energy above all other aspects of energy policy. Trump emphasizes America first and tries to create a comfortable environment for states that heavily rely on traditional energy as an industry. These moves strengthen the confidence of his supporters and attract potential voters, thus adding to his political image. The Trump administration made an overall assessment of the withdrawal and left enough space for them to renegotiate. (Zhang et al., 2017, p. 214)

The US Government notified its decision to withdraw from the agreement following paragraphs 1 and 2 of Article 28 of the PA on November 4, 2019 (UN, 2019). Thus, according to the agreement, the US formally withdrew from the PA on November 4, 2020. The date comes across a day after Election Day 2020 in the US. While the Trump administration has taken such a step, as shown in previous discussions, Biden, one of the Democrats, has announced that they will return to the agreement. All in all, the US officially rejoined the PA on February 19, 2021 (Kerry, 2021).

Consequently, analysis of powerful state leaders and particularly the role of the US in environmental policy can be helpful in examining environmental governance. While the governance process is evolving in this way, it is obvious that countries consider certain factors in evaluating and putting their governance processes on track. Considering this thesis approach the other economic, political, and sociological factors are not emphasized.

Table 2.2 Key Milestones in the Evolution of International Climate Policy

Date	Milestone
1979	First World Climate Conference
1988	IPCC established
1990	Second World Climate Conference
1990	UN General Assembly negotiations on a framework convention begin
1992	UNFCCC was adopted
1992	UNFCCC is opened for signature
1994	UNFCCC enters into force
1995	COP 1 (Berlin); Berlin Mandate established
1996	COP 2 (Geneva)
1997	COP 3 (Kyoto); Kyoto Protocol was adopted
1998	COP 4 (Buenos Aires); Buenos Aires Plan of Action
1999	COP 5 (Bonn)
2000	COP 6 (The Hague)
2001	COP 6.2 (Bonn)
2001	COP 7 (Marrakech); Marrakech Accords
2002	COP 8 (New Delhi); New Delhi Declaration
2003	COP 9 (Milan)
2004	COP 10 (Buenos Aires)
2005	Kyoto Protocol enters into force
2005	COP 11 (Montreal)
2006	COP 12 (Nairobi)
2007	COP 13 (Bali); Bali Action Plan
2008	COP 14 (Poznan)
2009	COP 15 (Copenhagen); Denmark Accord
2010	COP 16 (Cancun); Cancun Agreement
2011	COP 17 (Durban)
2012	COP 18 (Doha); Doha Amendment
2013	COP 19 (Warsaw); Warsaw Outcomes
2014	COP 20 (Lima)
2015	COP 21 (Paris); Paris Agreement was adopted
2016	COP 22 (Marrakech); Marrakech Partnership for Global Climate Action
2016	Paris Agreement enters into force
2017	COP 23 (Bonn)
2018	IPCC confirms the importance of the 1.5°C goal
2018	COP 24 (Katowice); Katowice Climate Package
2019	COP 25 (Chile in Madrid)

Source: UN, n.d.; UNFCCC, n.d.-I

2.3. The Theoretical Approaches to the PA

International politics is an immense field, and we try to make sense of it, but how?
—With the help of IR theories. Weber (2010) explained the IR theory quite remarkable:

It is a collection of stories about the world of international politics, and in telling stories about international politics, it doesn't just present what is going on in the world out there. It also imposes its vision of what the world out there looks like. (p. 2)

IR theories try to interpret environmental problems from different perspectives based on security, economic, ethical, or cultural approaches. As an approach to the PA's pros and cons and possible solutions of the climate governance; neoliberalism and neoliberal institutionalism, emphasizing the importance of international agreements and cooperation, are analyzed in this chapter.

The main reason for making such a choice is that neoliberalism has been particularly useful in explaining the international political outcomes of global environmental politics. The emerging climate regime is provided a timely case study of regime formation and operation. For this reason, some of the early studies on climate policy have proceeded from it, and also in the 1990s, neoliberal institutionalism had a major impact on environmental policies, and the early theoretical literature on climate politics similarly approached the issue from this perspective (Cass, 2017).

2.3.1. Neoliberalism

Neoliberalism has a generally positive view of human nature. Although it differs from classical liberalism, especially in the market system, Collins (2012) suggested that “it shares liberal assumptions regarding humanity's potential for cumulative progress, and it contends that the power of human reason can be harnessed to produce more desirable collective outcomes through interaction and cooperation” (p. 2). Environmental problems started to come up as a political issue in the period of the neo-neo debate period was effective. According to Okereke (2008), neoliberalism is an environmental project to the extent that many of its core features have direct implications for human relations with nature.

Firstly, Okereke argued that there was no close link between environmental protection and the distribution of justice during the first emergence of environmental consciousness. Still, later distribution had become a major problem, and the dominance of libertarian ideas of justice has undermined distributive justice principles embedded in informative regime texts in regimes such as the UNFCCC. Moreover, “international environmental regimes now the global commons, allocating property rights among states, determining and shaping rules of some aspects of international commerce, distributing

the responsibilities and burdens of responses to global climate change and enabling institutionalization of transboundary environmental rights” (Okereke, 2008, p. 31).

Indeed, one of the most controversial issues of the KP was this distribution aspect. While some countries have too much burden, especially those that pollute more and carry less burden have brought criticisms. This system has been left especially in the PA, which operates by sharing a reduction responsibility, not emission rights regarding distributive justice. Policies such as polluter pay, historical responsibility, and principles and approaches at the center of the distribution justice are not included in sharing mitigation responsibility. The principles that guide the sharing of mitigation responsibility and adaptation costs in the PA are the principles of the CBDR in the light of equality and different national circumstances (Kaya, 2017).

Another related principle with justice is *responsibility*. Responsibility for taking environmental measures is viewed as shared by all actors rather than based on a “polluter pays” principle. In the PA, all signers are required to declare that they take specific responsibility through NDCs. Furthermore, according to Article 3 of the agreement, all parties are responsible for undertaking efforts to achieve the purpose of the agreement.

Adaptation is an essential element of the PA; some neoliberals argue that “without funding for adaptation, many vulnerable developing countries might not remain viable partners in trade and investment. Adaptation funding is viewed as inducing developing countries to go for mitigation and self-interest dictates that industrial countries should provide funding for adaptation” (Khan, 2016, p. 16). In the agreement, Article 7 addresses the adaptation processes and their importance explicitly. In addition, Article 7 (5) includes the following regarding how adaptation should follow:

Adaptation action should follow a country-driven, gender-responsive, participatory, and fully transparent approach, taking into consideration vulnerable groups, communities, and ecosystems, and should be based on and guided by the best available science and, as appropriate, traditional knowledge, knowledge of indigenous peoples and local knowledge systems, with a view to integrating adaptation into relevant socioeconomic and environmental policies and actions, where appropriate. (UN, 2015, p. 9)

Regarding the *market mechanism*, which is another element of the agreement, the PA explicitly includes three mechanisms for cooperation on a voluntary basis. Two of them are related to the market mechanism, while the third involves the “non-market mechanisms” approach. Article 6 of the PA is directly related to these mechanisms. Moreover, these three mechanisms form the agreement on recognizing of interests and priorities between the Parties. Concerning, Article 4 (15) that there may be parties to be harmed by the articles of the agreement, and that these concerns will be taken into consideration are included. Khan (2016) argued that; “the core elements of the UNFCCC and the KP reflect the economic orthodoxy of neoliberalism, i.e., the level of acceptable GHG concentration is determined through cost-benefit analysis. To achieve this level with the least cost, market mechanisms are required” (p. 16).

Neoliberal scholars identify increasing reliance on market mechanisms and private sector actors to address social and political problems. In the case of PA:

The private sector plays a critical role in translating its commitments into tangible action in the real economy, whether it's providing clean energy, enhancing adaptive capacity throughout their supply chain, or enabling broader societal resilience in the communities from which they derive their social license to operate. (The Business of a Better World (BSR), 2016, p. 2)

The non-market approaches mechanism and private sector participation are mainly addressed in Article 6 (8) of the agreement. It can be said that this approach aims to increase cooperation, where no trade is involved. Thus, it is aimed to reinforce the idea of cooperation, which is the main element of neoliberalism, in terms of climate policies.

Many neoliberal scholars have pointed to the importance of the principle of *transparency* as the main component of neoliberal environmental governance. It has been argued to embrace transparency specifically instead of a command, control, and compliance-based forms of governance, and as a “value-neutral” means of ensuring greater efficiency toward sustainability, and the Paris Mechanism for Enhanced Transparency is the culmination of many years of negotiations on the issue (Ciplet & Roberts, 2017). Article 13 of the PA draws attention in terms of transparency. It can be mentioned that a transparency mechanism has been created with the matter. Based on the information provided in Article 13 (3), “(...) be implemented in a facilitative, non-intrusive, non-punitive manner, respectful of national sovereignty, and avoid placing an

undue burden on Parties” (UN, 2015, p. 16). In this context, no compulsory measures are envisaged for the parties that may experience compliance problems, and even a procedure that expresses a peaceful solution of incompatibility is adopted. This can be read as a system based on the goodwill of the Parties.

Although neoliberalism produces outputs that can be accepted as a starting point in terms of climate policies, it has been criticized by thinkers who think that states and international organizations are too focused, and non-state actors are not focused enough. Moreover, Okereke (2008) argued that neoliberalism and its environmental governance could not deliver on the distributive demand for sustainability and long-term goals within the context of the developed and the developing countries (p. 186).

Collins (2012) stated that neoliberalism is also influenced by the belief in liberal institutionalism, and he explained it as follows:

Neoliberal analysis is fundamentally concerned with investigating the formal and informal manifestations of the institutions to determine their overall effectiveness in obtaining cooperative results. Such formal manifestations include various international organizations such as the UN, established by states to pursue common interests. Informal manifestations fall under the concept of *international regimes*. Thus, liberal institutionalism is at the core of neoliberal analysis. (p. 2)

2.3.2. Neoliberal Institutionalism

The response on the part of academic IR to the international environmental politics of the late 1980s and early 1990s was essentially in the liberal institutionalist (Vogler, 1996). Neoliberal institutionalists insist that international institutions play an essential role either by intervening between “basic causal variables” (power and interests), behavior and outcomes (international environmental agreements), and being simultaneously caused with behavior and outcomes by the basic causal variables, or even being a causal variable by themselves (Rowlands, 1996).

Neoliberal institutionalism can be divided into two forms in climate politics literature: the first form is the role of institutions with a particular focus on international organizations in shaping the negotiating environment and altering the incentive structures facing states in international negotiations, and this is a more game-theoretic or rational choice approach to climate politics, and some authors have sought to these analyses to

the politics of climate change to highlight collective action obstacles that must be overcome if countries are to achieve meaningful action to address climate change, and the second one is the effects of international institutions as much more dynamic and emphasizes the role of institutions in promoting learning and facilitating information exchange, assisting with the implementation of international agreements, preventing cheating, and increasing national capacity to fulfill international obligations (Cass, 2017; O'Neill, 2009). Many studies have analyzed the negotiation process and the state's interactions in climate change negotiations concerning the first form.

Neoliberal institutionalism has mainly focused on explaining the emergence of cooperation in international environmental policy and makes powerful contributions to understanding why states cooperate over environmental problems and why we see the sorts of cooperative agreements we do (O'Neill, 2009). International cooperation is not only desirable but necessary to overcome collective action problems and mitigate the negative effects of interdependence. O'Neill (2009) argued that "international institutions, reinforced by environmental activist groups, play a critical role in raising international concern, reducing the transaction costs of cooperation, and monitoring and enforcing resultant agreements" (p. 12). According to all accounts, it can be said that cooperation in international climate change governance does not become easy to achieve, but institutions help facilitate this process.

For neoliberal institutionalism theorists, *anarchy* is a problem for states to cheat on mutual agreements. They have demonstrated how institutions can become important even when the background condition is one of anarchy. Moreover, a free-rider problem may occur between states. Environmental agreements are a striking example in this regard because a single state can receive benefits from it without paying any costs of adjustment from other contributions to the world. It is an element that causes states to leave from the agreements. Donald Trump's action of departure from the PA is an example of this issue. Neoliberal institutionalists look for ways to mitigate these problems. O'Neill (2009) accounted for this approach as follows:

They see international cooperation succeeding when states can work together to realize joint gains and when institutions are set up, that can monitor compliance, increase transparency, reduce the transaction costs of cooperation, and prevent most, if not all, cheating. They assign non-state actors, such as the UN, or NGOs important roles in fostering such transparency and making durable cooperative agreements much more likely. (p. 10)

Domestic policies of countries can be affected by regime complex, and countries' preferences diversify over time, as climate change has paved the way for a new regime after the PA, and climate change policy principles vary with countries' national and international priorities (Okutan, 2018). According to Keohane and Oppenheimer (2016), the PA can only be effective if it generates changes in the behavior of actors with resources that can be allocated and reallocated: that is, in the long term, the behavior of states, non-state actors such as business corporations, and individuals.

Governments have several policies that lead them to participate in climate regimes and answer pressures from actors on climate change policies. There are five main points of Keohane and Oppenheimer's argument: to make changes in energy systems to support domestic policies to reduce emissions; to answer pressure from domestic support groups; to take advantage of other players in terms of reciprocity; to take advantage in diverse areas from other states and civil societies, such as to take support from great powers; to influence domestic support groups or create a global reputation (Keohane & Oppenheimer, 2016). According to Okutan (2018), countries participate in the PA because of the above motivations. To the extent that since the PA demanded various obligations with countries' pledges, there are several advantages relating to reputation and reciprocity, but not being part of the agreement may lead to a decline in reputation (Okutan, 2018).

Another significant contribution of the neoliberal institutionalist perspective to climate studies is the concept of "complex interdependence" developed by Keohane and Nye in 1977. Their idea has three main characteristics, and one of them is "multiple channels" leads one to predict a different and significant role for international organizations in world politics. Moreover, these organizations assist in operationalizing potential coalitions in world politics. According to Keohane and Nye (2011), "by defining the salient issues, and deciding which issues can be grouped together, organizations may help to determine governmental priorities and the nature of interdepartmental committees

and other arrangements within governments” (p. 29). Appertaining to consolidating the power of environmental agencies, the authors cited the Stockholm Environment Conference in 1972 as an example. According to Vogler (1996), they provided the most influential treatment of the conditions of “complex interdependence” where societies were increasingly interconnected at various levels, where the priorities of foreign policy were reordered, and where the use of force, at least between advanced countries, was of decreasing relevance.

Ünver (2017) stated that the essential facilitator on the road to the PA is institutionalizing global energy security issues at a certain level and establishment an appropriate cooperation regime with the fall of oil prices. Different mechanisms related to energy security (supply, demand, transmission, regulation) are, in effect, increases the chances of countries to cooperate and brings this cooperation as an acceleration to the climate regime negotiations (Ünver, 2017). Besides, the PA is a consensus on the most important issue that can be united in the common denominator, so the possibility of failure should be eliminated.

As a result, according to the neoliberal institutionalist approach, environmental problems can be solved through multilateral agreements and cooperation. In this process, states are basic actors, but NGOs can contribute to the process by drawing public attention to environmental problems and putting pressure on states, and international organizations can create a basis for cooperation. It is possible to protect the environment and natural resources by cooperating with multilateral agreements so that international regimes that can make state behaviors sensitive to environmental problems can be created through these agreements. Neoliberalism pushed aside realist parameters such as abilities, interests, and zero-sum games, attempted to present a model outside the prisoner dilemma, claiming that cooperative politics were better positioned within rational decision-making models (Ünver, 2017).

CHAPTER 3

3. THE GEOPOLITICS OF ENERGY

3.1. The Concept of the Geopolitics

What exactly is meant by the term geopolitics? It is quite difficult to answer the question. Several authors have attempted to define it; hence there are several definitions in the literature according to time, place, and person. However, according to Dittmer and Sharp (2014), “all of these versions of geopolitics can fit under this umbrella: geopolitics refers to the theory and practice of politics at the global scale, with a specific emphasis on the geographies that both shape and result from that politics” (p. 3). “The term geopolitics comes from the Greek *gê*, meaning earth or land, *politikē* and refers to the interplay of geography and international politics, particularly the former’s effects on the later” (Grigas, 2017, p. 23). According to the Encyclopædia Britannica, geopolitics is “analysis of the geographic influences on power relationships in international relations” (Deudney, 2013, para. 1). The broader meaning of geopolitics is describes everything related to being able to influence and build power over the land and the people who live in that land: the struggles between all kinds of political forces, struggles to control and dominate all types of land, big or small (Lacoste, 2007). Then, Tezkan and Taşar (2013) stated that “political interpretation of geography” could be the shortest definition of geopolitics, but Østerud (1988) argued that “Geopolitics is not a term for the general linkage of politics to geography. It should rather be understood as a conceptual and terminological tradition in the study of the political and strategic relevance of geography” (p. 191).

The term “geopolitics” has come to be used to refer to establish a connection between geography. According to Spykman (1942), “Geography is the most fundamental factor in states’ foreign policy because it is the most permanent. Ministers come, and ministers go, even dictators die, but mountain ranges stand unperturbed” (p. 41).

Geography and geopolitics have always been fundamental two concepts shaping politics. Each period has been on different strategic plans, and these plans have been shaped through geography. As Mackinder (1919) said, “Each century has had its own geographical perspective” (p. 39).

The word *geopolitik* (geopolitics) was coined in 1899 by a Swedish social scientist Rudolf Kjellén (1864-1922), who defined it as “the doctrine of the state as a geographic organism or a spatial phenomenon: i.e., the state as land, territory, region, or, most precisely, as a Reich (realm, empire)” (Kjellén, 1917; Steinmetz, 2012, p. 1). However, geopolitics began to be used long before its appearance. Since the Archaic age, emperors have benefited from the physical and human resources of the environment for the conquest (Defay, 2005). After the scientific approach, geopolitics appears to be an effective tool in every period. It has been used as a strategic weapon in many warfares and has been intelligently used in the name of personal interests.

Dittmer and Sharp (2014) divided the concept of geopolitics into some periods, from the first usage of the term to more recent conceptualizations. According to the authors, the concept of geopolitics is introduced through four thematic sections: Imperial Geopolitics, Cold War Geopolitics, Post-Cold War Geopolitics, and Reconceptualising Geopolitics. This division is also used in the thesis to facilitate the study.

Table 3.1 Thematic Sections (Discourses) and Key Intellectuals of Geopolitics

Thematic Sections /Discourses	Key Intellectuals	Key Points
Imperial Geopolitics	Alfred Mahan Friedrich Ratzel Halford Mackinder Karl Haushofer Nicholas Spykman Edward Said	Seapower Der Lebensraum Landpower/ Heartland Landpower/Heartland Rimland Orientalism
Cold War Geopolitics	George F. Kennan Dwight D. Eisenhower Henry Kissinger Yves Lacoste Michail Gorbachev	Containment The Domino Theory Diplomacy Illustration of Geographical Warfare New Political Thinking
Post-Cold War Geopolitics	Gearóid Ó Tuathail Samuel Huntington Robert D. Kaplan Francis Fukuyama Edward Luttwak Zbigniew Brzezinski Al Gore Thomas Homer-Dixon	Critical Geopolitics The Clash of Civilizations The Coming Anarchy The End of History Statist Geoeconomics The Grand Chessboard Strategic Environmental Initiative Environmental Scarcity
Reconceptualising Geopolitics	Robert D. Kaplan Lorraine Dowler- Joanne Sharp Rachel Pain John A. Agnew Simon Dalby	The Revenge of Geography Feminist Geopolitics Fear and Emotional Geopolitics Religion and Geopolitics Anthropocene Geopolitics

Source: Dittmer & Sharp, 2014

Based on the articles in the book and other pieces of information, Table 3.1 is formed. Key points are shown in the table, inspired by leading names and their theories starting from this section. Imperial Geopolitics is classical or traditional geopolitics that dominated the late 19th and early 20th centuries. There were some Ecoles (schools) as Britain, Germany, and the US. These were important countries for solving the questions and understanding the classical period of geopolitics. Some theories and models are significant for understanding and interpreting classical geopolitics, such as Ratzel's *Der Lebensraum*, Mackinder's *Heartland*, Spykman's *Rimland*, and general, theoreticians emphasized the power of land, sea, and air supremacy. Then, geopolitics became very popular in Germany; especially, it became a tool in Nazi propaganda after 1933 (Hitler's came to power). The result of the situation was World War II (WWII) and banned the term of geopolitics.

After the end of WWII and the fall of the Berlin Wall, the world witnessed the struggle of two superpowers in 1947-1989. This period is known as the Cold War. There was two opposite side; the Union of Soviet Socialist Republics (USSR) and the US, and according to many researchers, the world remained in-between “East and West, communism and capitalism, good and evil.” In the later period of the Cold War, geopolitics regained its popularity again. There are some reasons why it is popular once again. According to Tuathail (1998), one of them is that “it deals with comprehensive visions of the world political map. Geopolitics addresses the ‘big picture’ and offers a way of relating local and regional dynamics to the global system as a whole” (p. 1). It was used to superpower politics for control and influence over the states and resources of the world. Reuse of geopolitics in this period was mostly in conjunction with Kennan’s containment policy and Kissenger’s policies about diplomacy.

One of the most critical milestones of the Cold War period was *Critical Geopolitics*’ occurrence in the late 1980s and early 1990s. Critical geopolitics “treats geopolitics as a discourse, as a culturally and politically varied way of describing, representing, and writing about geography and international politics” (Tuathail, 1998, p. 3). Moreover, classical geopolitics regards geography as the “reality” that needed to be analyzed in order to guide foreign policy, but it regards language as the building blocks from which reality emerged, and it shifts the attention from “how geography shapes politics” to “how politics shape geography” (Dittmer & Sharp, 2014).

With the fall of the Berlin Wall and after the collapse of the USSR, the struggle was over. Thus, a new unipolar world order, in which the US has been a superpower, and further discussions about the geopolitics are what the world is waiting for. George Bush’s speech on the Gulf Crisis in 1990 emphasized “new world order” for emerging the new era (The American Presidency Project, 1990). In the new world order, different theoreticians also took different approaches to this world: Francis Fukuyama noticed *the End of History* (1992), Samuel Huntington announced the beginning of *the Clash of Civilizations* (1996), and then Zbigniew Brzezinski defined the new but old rules of *the Grand Chessboard* (1997).

There are different perspectives of new geopolitical order; According to Tuathail (1998), some of them adopted a perspective that:

The end of the Cold War has allowed the emergence of a new geopolitical order dominated by geo-economic questions and issues, a world where the globalization of economic activity and global flows of trade, investment, commodities, and images are re-making states, sovereignty, and the geographical structure of the planet, and the others put forward a new geopolitical description that a world dominated no longer by territorial struggles between competing blocs but by emerging transnational problems like terrorism, nuclear proliferation, and clashing civilizations. (p. 2)

In addition, an understanding that put environmental problems and politics in front of states struggles started to develop in this period. For this understanding, new geopolitics means that ecological politics (ecopolitics). When the world witnessed many integration and fragmentation processes, Mearsheimer (1990) said in his article title, *Why We Will Soon Miss the Cold War*, the new world order would seek the Cold War period.

By the 2000s, September 11, 2001 attacks were one of the most important events shaping post-cold war geopolitics, and for some, it was “the only” event. Thus, the US adopted the “war on terror” campaign as its new discourse (The White House, Office of Press Secretary, 2001a) until it was reinterpreted in the Obama era (Zengerle & Spetalnick, 2013). On the global scale, China and newly emerging powers, BRICS (Brazil, Russia, India, China, and South Africa), are rising, and Europe is growing as soft power. There has been lots of discussion about the new threats that affect geopolitics. While global climate change is one of these, another is arising from global diseases such as SARS and now COVID-19. According to Sharp (2014), “this has led to an emerging threat in 21st-century geopolitics of a sense of geopolitical threat as emerging from a combination of nature and anthropocentric danger” (p. 178).

The world order, which is changing and increasing its complexity day by day, has brought along a reinterpretation of geopolitics. As the process of geopolitics, in general, evolves in this manner, the usage area of the term, geopolitics, is increasing, and it comes to the fore as a strategic concept; the word “geo” is added to at the beginning of the many topics such as strategy, economy so on and so forth, the term, geopolitics, is added at the end of the main fields. Energy, which is one of the main topics of this thesis, has been integrated with the concept of geopolitics. The following heading aims to determine the

ties of the concept of “energy,” which constitutes one of the primary sources of motivation for the thesis, with the context of geography and power struggle.

3.2. The Geopolitics of Energy

Energy is the cornerstone of sustainable development, economic growth, modern human life, and, importantly, a challenge in solving climate change problems. Hence, it plays a central role in our societies. For a long time, the role of energy has increased, especially since the discovery of fire; in the meantime, with the discovery of energy resources and technological developments, energy resources have turned into a tool of power and have gained geostrategic importance. Many of the aforementioned geopolitical analyzes focused on using natural resources and the policy implications of geographical features. Access to energy and raw materials is an essential concern in IR due to the fact that it exists in every aspect of life for a variety of purposes. Energy sources are not evenly distributed in nature. This has made countries subject to various classifications. The issue of energy resources, which is a determinant of power for some and a curse for others, has been interpreted in various ways in different periods from the geopolitical point of view.

There is a considerable amount of literature on the definition of the geopolitics of energy. One of the early representatives Conant and Gold (1977), stated that geopolitics emphasized the importance of locational factors on the politics of states. According to them, in the context of the geopolitics of energy, “these locational factors are emphasized, as they must be, in considering access to raw materials generally” (Conant & Gold, 1977, p. 6). Highlights in their analysis are the main considerations that energy geopolitics analyses should recognize that some changes: its dynamic nature, the international system itself, the relationship between factors influencing energy supply and demand. Moreover, the authors argued that the primary energy resources depend on such elements as: transform them into a usable form and transport them to consuming areas; other elements of energy geopolitics that have an impact on international politics; the logistical supply lines, the technology, and the processing facilities without which the raw resource is of little value (Conant & Gold, 1977, p. 6).

With the end of the Cold War period, some different conceptualizing begin about the issue, such as Mitchell, Beck, and Grubb (1996) discussed in their book *The New*

Geopolitics of Energy used the word “new” and explained possible changes of the global energy geopolitical situation after the Cold War. By the 2000s, in particular, think tanks such as the Center for Strategic and International Studies (CSIS) have also started to analyze the geopolitical trends.

Later, corresponding with the geopolitics of energy, Arıboğan and Bilgin (2009) published an article. The authors concentrated on the role of energy in the geopolitics’ period of change from the classical, modern, and critical approaches. Through the idea of *energeopolitics*, they demonstrated the correlation between energy and geopolitics. Additionally, they suggested that “geopolitics of energy will sustain a territorial connotation as long as the need for oil and natural gas maintains its spatial characteristics of conflict and cooperation among concerned state or non-state actors” (Arıboğan & Bilgin, 2009, p. 116). They reached a conclusion that “contemporary geopolitics at global and regional levels has already entered a period in which energy issues subdue geopolitical implications and create *energeopolitics*, so to state conceptually” (Arıboğan & Bilgin, 2009, p. 127).

According to the study of Chevalier and Geoffron (2013), the geopolitics of energy “concerns the balance of power among nations and companies for access to energy resources and, within each nation, the management of energy issues and resources” (pp. 14-15). The authors interpreted the energy geopolitics as for that exporting and importing countries of oil and gas: for exporting countries, it is closely associated with the appropriation of oil and gas money and its allocation through political decisions, and for importing countries, it is related to the security of energy supply as a major political concern. They suggested that “energy policy, foreign policy, and sometimes military actions are components of the geopolitics of energy” (Chevalier & Geoffron, 2013, p. 15).

Vidakis and Baltos (2015) created a new analytical method, *geoenergeia*, to address the effects of energy resources in political and economic systems as well as their impact on IR. According to them, the study of energy interrelationships at the international, global or regional level render possible to:

(i) Assess the impact of new technologies in the energy industry, mainly observing how these new technologies define levels of energy resource scarcity or how they change the geostrategic importance of global regions; (ii) collects quantitative and qualitative data regarding energy resource scarcity, highlighting the causative connection between energy resources scarcity and certain political decisions; and (iii) monitor the energy security aspects of relevant political decisions to create a classification of the world states according to the wealth of energy resources they control. (Vidakis & Baltos, 2015, p. 3)

Moreover, regarding the question of what is the requirement of geopolitical analysis of energy, Lehmann (2017) suggested that:

It requires assessing the inherent rivalry among states and firms over the wealth and power that flow from controlling the motive energy for economic activity and military power projection, and an energy geopolitics lens looks first, therefore, at the positional rivalry over natural resource geographies that provide the fuel for motive energy. (p. 15)

According to Campos and Fernandes (2017), the geopolitics of energy as a concept is expressed as follows:

It is the study of the interactions between all the actors involved in the global energy scenario, as well as the influence of energy and all the variables of the complex energy system (such as geographic location, supply lines, technology and processing facilities, and factors that impact supply and demand, such as the analysis of reserves, processing, discoveries, increased consumption, and research and energy technology) in the decision-making process at political, economic, military and social levels. (pp. 28-29)

Based on the information mentioned, it is seen that the common use of some points in the geopolitics of energy comes into prominence. From this point of view, Figure 3.1 is formed based on the above information and general information in the literature and shows the key components of the geopolitics of energy. According to the Figure, the geopolitics of energy is divided into six key facts: natural resources, energy price, strategic location, energy management, energy security, and energy transition. While listing the main headings, no ranking condition has been observed, and rather than a sharp distinction between the titles, there is intertwining, contextuality, and interaction. These six core elements cover quite a wide range of study areas. However, this study content focuses on the geopolitics of energy. Therefore, there is a categorization of these titles only in terms of their geopolitical context.

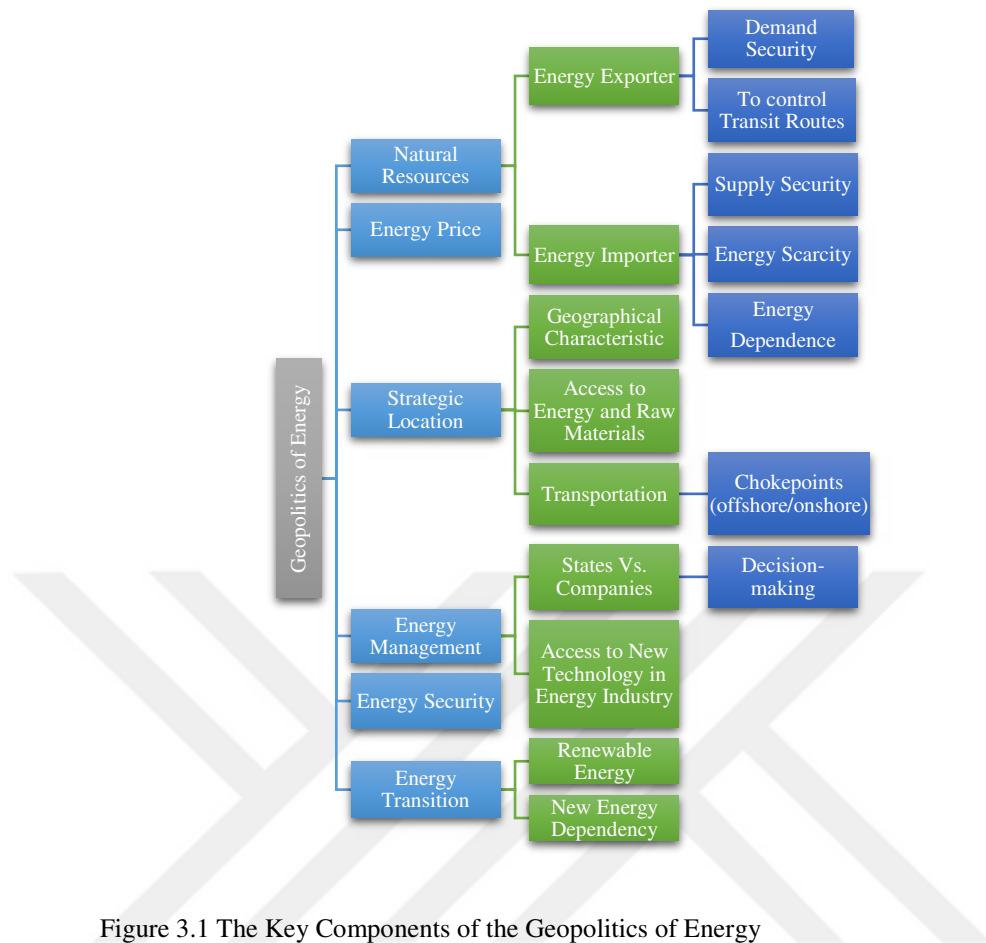


Figure 3.1 The Key Components of the Geopolitics of Energy

Source: Prepared by the author

Figure 3.1 demonstrates the six main titles and their various interrelated subtitles. Firstly, having energy resources, which is one of the main determinants of balances of energy geopolitics, is discussed under the title of “natural resources.” The title is divided into two groups; energy exporter and energy importer. These two subtitles have important components in themselves. While these components are classified as demand security and control transit routes for energy exporter. They can be listed as follows; supply security, energy scarcity, and energy dependency for energy importers. The other title has been determined as “energy prices.” The reason for the title is the role of countries having energy resources as shaping energy markets. Especially OPEC and then OPEC+ arrangement play an essential role in determining energy prices and shaping energy markets. In particular, how much and in what way do the increase or decrease in energy prices affect a country? The research question associated with the title is significant in

terms of its dependence on energy resources and in terms of reflecting the geo-economic position of the relevant country. For this reason, it is included as the main title.

The third topic is the subject of geopolitics related to geography: “strategic location.” This title is divided into three sub-titles: geographical characteristics, access to energy and raw materials, and transportation. Transportation is an extensive topic, but chokepoints (offshore and onshore) are a common and valuable concept for energy geopolitics. Another subtitle is “energy management.” As in many sectors, the management process is very significant in the energy sector. This subject, which covers many issues from the proper management of resources to the management of the technology required for the processing of resources, from the whole process of the arrival of the lines used in the transportation of the resources to the country to the distribution of these resources, is limited to the with access to new technology in the energy industry and states vs. companies subtitles. Especially with the subtitles of states vs. companies, the point is whether the geopolitical importance of a country’s energy resources is managed by states or by companies. It is possible to talk about two different models here: the US and the Russian model. While there is a reciprocal relationship between states and companies in both, it is seen that companies are more dominant in the decision-making process in the US model (e.g., ExxonMobil), while the state is more effective in the Russian model (e.g., Gazprom). The last two items are “energy security” and “energy transition.” These two issues, which find themselves broad scope in the literature, are closely related to energy geopolitics. More details on this will be given in the following titles.

3.3. The Transition of Energy

Smil (2017) makes an entry in his book *Energy and Civilization: A History*, “energy is the only universal currency: one of its many forms must be transformed to get anything done” (p. 38), and then he added humans depend on this transformation for their survival, and much more energy flows for their civilized existence. Indeed, energy sources have been used for certain services in every period of history and have increased their importance in every age. Energy transitions have also been experienced with the development of technology and discoveries.

Defining energy transition as “the shift from the world of today, which depends on oil, natural gas, and coal for more than 80 percent of its energy—just as it did thirty years ago—to a world that increasingly operates on renewables” (Yergin, 2020, p. 14) asserted that beyond this definition of the term meant different points for different nations and that it so much the more for the developing world. Not every country, as Yergin points out in his book *The New Map: Energy, Climate, and the Clash of Nations* (2020), have the same advantages simultaneously and equally. In particular, the author emphasized the difference in access to new technological developments and new resources used in the energy market. According to Yergin (2020), “energy transitions are not new. They have been going on for a long time and unfold over time” (p. 367). The causes of energy transitions have also shifted over time. Recently, the reasons for this transition have found a place in politics, policy, and activism that have gone beyond technology, economy, and environmental considerations (Yergin, 2020).

When the history of energy and its transition is analyzed, the fundamental changes that affect almost all countries are important, and there is a change in the primary energy resources between processes. “The first energy transition began in Britain in the thirteenth century with the shift from wood to coal” (Yergin, 2020, p. 368). Indeed, coal becomes a distinctive commercial fuel in January 1709 due to the method of Abraham Darby, an English metalworker and Quaker entrepreneur (Yergin, 2020). Before the eighteenth-century, coal had been produced but have limited importance. With the industrial revolution, demand and coal production have increased thanks to technological developments and its price and availability advantages. With the start of the first oil production activities in 1859 in Pennsylvania, the first stages of the transition from coal to oil began. In the ongoing processes, the oil industry has developed rapidly and has been used all over life. Especially in the World War I (WWI) and WWII periods (1914-1945), oil demand and competition increased, and the parties turned to important oil fields with the eagerness to hold the critical oil regions. For the sake of example, Britain’s geopolitical plans for Iran-Iraq regional oil because of did not have an oil reserve but passed its navy from coal to oil during WWI, and Hitler’s desire to access Baku oils in WWII reflects the periodic geopolitical importance of oil.

The geopolitics of energy in the Cold War period is more complicated. The post-war era increased the dependence on the Middle East oil, and global oil prices have increased rapidly. For example, in 1948, crude prices were more than double the 1945 level (Yergin, 1991). However, with the impact of periodic geopolitical events, oil prices have constantly been changing and continue to be.

The fact that Egypt closed the Suez Canal and cut off sea traffic in 1956 this crisis caused a significant change in oil transportation. The troubles experienced in safe transportation caused serious problems with energy security. The fact that maritime transport creates insecurity in energy supply has brought the transportation of oil through pipes to the agenda. Simultaneously, the difficulties in the Middle East oil strengthened the geopolitical energy strategies of the Soviets, and it entered the competition to sell oil to Europe. In 1960, Arab oil giants (Iraq, Kuwait, and Saudi Arabia) with Iran and Venezuela united in the balance of changing geopolitical strategies and established the OPEC to coordinate and unify the petroleum policies and ensure the stabilization of oil markets. After this date, OPEC will form the world's leading oil-producing bloc and affect the world market. Today, while OPEC is still valid, at the same time, a new arrangement called OPEC+ has started, and Russia is involved in the process and affects the energy markets.

In 1967, the "Six-Day War" (Arab-Israeli War) started, and the US met European countries' energy demands at that time. However, the problem of energy security has been questioned once again, especially for the West. It is clear that the energy security problem up to this point is the chains intertwined with energy geopolitics. So how is energy security defined? There are important debates about the definition of "energy security" because there is no *de facto* definition. For example, the longest acts, The Food and Energy Security Act of 2007 and the Energy Independence and Security Act of 2007, neither offered any definitions of the term energy security (Sovacool, 2011). However, according to Sovacool's research in 2011, the term has found forty-five different literature definitions until the research date.

Many of these definitions are very close to each other, and these generally include the five 'S's (Supply, Sufficiency, Surety, Survivability, and Sustainability), the four 'A's (Availability, Accessibility, Affordability, and Acceptability), or the four 'R's (Review, Reduce, Replace, and Restrict) of energy security, this

multitude of definitions serve some strategic value; it enables people to advance very different notions of energy security so that they can then justify actions and policies on energy security grounds. (Sovacool, 2011, pp. 2-3)

Energy security can be discussed in two parts as long-term and short-term periods: “long-term mainly deals with timely investments to supply energy in line with economic developments and environmental needs. On the other hand, short-term focus on the ability of the energy system to react promptly to sudden changes in the supply-demand balance” (IEA, n.d.-a). Moreover, different from an explanation of period-based, the meaning of energy security varies by the position of the countries. In this context, The World Bank considers energy security in three main country profiles: energy producers, the major industrialized economies, and poor countries.

For *energy producers*, it is the ability to secure, long-term, and attractive markets for their natural resources that often underpin their economies. For the *major industrialized economies*, it is the continuing supply of energy that drives their economies and supports a high and growing quality of life. For *poor countries*, it is a vital ingredient in their paths out of poverty. (The World Bank Group, 2005)

According to Yergin (1991), maintain energy security countries must act upon some main tenets: diversification of supply, resilience, recognizing the reality of integration, high-quality information, and collaboration among both producers and consumers and different from those, he added two significant dimensions: the recognition of the globalization of the energy security system and the protection of the entire energy supply chain and infrastructure (pp. 75-78).

Although there were short-term energy security problems, especially until the 1970s, especially because energy producers are turning their resources into a political tool, the 1973 oil crisis was one of the turning points in understanding the importance of this insecurity requiring long-term energy policies. During the 1973 Arab-Israeli War (Yom Kippur War), the Organization of Arab Petroleum Exporting Countries (OAPEC) was composed of Saudi Arabia, Kuwait, Libya, Iraq, Bahrain, Qatar, Algeria, the United Arab Emirates, Egypt, and Syria in 1973, decided to cut back oil production in order to force the Europeans and Japan to put pressure on the US to change its policy on the Arab-Israeli dispute (Verrastro & Caruso, 2013), and imposed an embargo on oil shipments to the US, the Netherlands for their military assistance to Israel, and later extended the embargo to Portugal, South Africa, and Rhodesia (Painter, 2017). This embargo was a

severe threat to energy security and led to several economic problems such as the 1973-1975 recession and aggravated inflation by the rising oil price.

After the first oil crisis, the current energy security system responded to the Arab oil embargo (Yergin, 2006). IEA was established in 1974 by members of the industrialized countries except for France because Foreign Minister Michel Jobert saw the IEA as a “machine de guerre,” an instrument of war (Yergin, 1991). It was established “as the main international forum for energy co-operation on a variety of issues such as security of supply, long-term policy, information transparency, energy efficiency, sustainability, research and development, technology collaboration, and international energy relations” (IEA, n.d.-b, para. 4). Another necessary consequence of the crisis is an increase in the orientation and research of oil-dependent countries towards alternative energy sources as renewable energy. Besides, coal has been identified as the most reasonable alternative, and oil was substituted with coal in such oil crisis periods (Ediger, 2017).

Another giant shockwave occurred with the 1979 Iranian Revolution; it decreased in the oil output and occurred in the second oil crisis. Besides, after the Soviets invaded Afghanistan in 1979, the threat to regional and energy security increased. In January 1980, US President Jimmy Carter presented the US’ reaction to the ongoing situation in his speech prepared by his advisor Brzezinski. Today this speech is known as the Carter Doctrine. He would once again reveal the geopolitical importance of the region by saying:

Let our position be absolutely clear: An attempt by any outside force to gain control of the Persian Gulf region will be regarded as an assault on the vital interests of the United States of America, and such an assault will be repelled by any means necessary, including military force. (Office of the Historian, Foreign Service Institute; United States Department of State, 1980)

In the remainder of his speech, Carter also focused on the energy issue, describing the goals of reducing dependence on foreign oil and creating new energy policies.

By September 1980, the instability of the region continued to increase with intensification, and the Iran-Iraq War that would last eight years started. The war led to panic about the purchase and prices. However, as a result of the work of the IEA, various measures have been taken before the crisis has grown further. Moreover, non-OPEC

producers played an essential role in this process. According to Yergin (1991), “non-OPEC producers were making significant cuts in their official prices, and their gain was OPEC’s loss, and the demand for OPEC oil fell” (p. 714).

By the 90s, the Gulf War, which started with the invasion of Iraq in Kuwait, proved instability in the Middle East, and the issue showed that the first post-Cold War crisis was a geopolitical energy crisis. Many lessons have been learned and applied from the other crises for the Gulf War. It resulted in a ceasefire in 1991. However, “if successful in holding on to Kuwait, Saddam Hussein would directly control 20 percent of OPEC production and 25 percent of world oil reserves and would be in a position to intimidate neighboring countries, including other major oil exporters” (Yergin, 1991).

By the 2000s, it is possible to list five events that have come to the forefront in influencing the energy balances: the US invasion of Iraq (2003), the global financial crisis (2008), the Arab Spring (2010), the Ukraine crisis (2009 and 2014), and finally the COVID-19 pandemic (2020). Iraq invasion, the Arab Spring, and the Ukraine crisis are momentous cases for affecting energy geopolitics in particular, and they have created problems in terms of energy security, especially involving energy producers. The reflections of the Iraqi invasion, which emerged mainly from Saddam Hussein’s view of a threat to energy stability, continue in the country, even in the region. Throughout the Arab Spring, it brought more instability in the region, and the area returned to a “complete battlefield” to guarantee energy security and protect the national interests.

The Ukraine crisis is an important case between Russia and Ukraine that has been repeated from time to time, and it’s one root based on energy crises. The geopolitical significance here is that the unrest directly affects Europe. The fact that Ukraine is a transit country for transporting Russian gas to Europe, the European market is vital for Russia, and the two countries have some problems left from the Soviets that have turned the region into a fragile geopolitical area. In fact, it would not be wrong to say that one of the most important reasons for Europe’s search for resource diversification is this regional crisis, which is continuously experienced. On the other hand, the 2008 financial crisis and the COVID-19 are two global issues that have caused quite serious problems, especially in terms of energy demand and prices. In particular, the effects of COVID-19 on energy markets have caused various historical moments, many energy companies and

energy-producing countries have experienced a significant contraction, and the damage to the economy and the energy sector in the writing phase of this thesis can now only be measured by estimates.

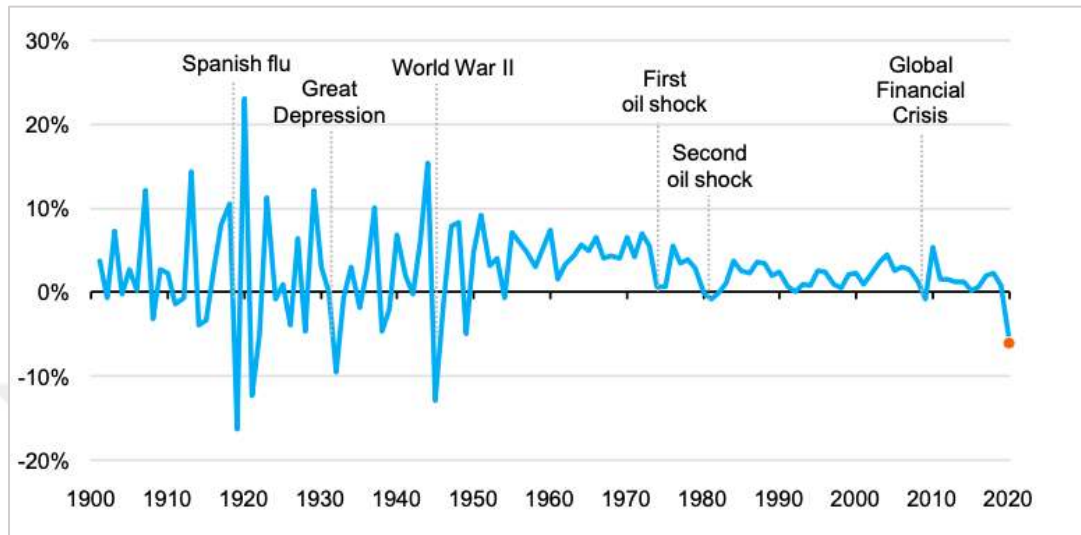


Figure 3.2 Rate of Change in Global Primary Energy Demand, 1900-2020

Source: IEA, 2020

As a summary described above, Figure 3.2 illustrates the rate of change in global primary energy demand from 1900 to 2020. In addition, Figure 3.3 shows the fluctuating situation of crude oil prices from 1861 to 2019 in the face of critical geopolitical events. When the graphs are analyzed, energy demands generally show a downward trend, especially due to global events, while energy prices increased. Demands have decreased as a result of events such as a pandemic, and oil prices have increased significantly in the geopolitical crises in the Middle East.

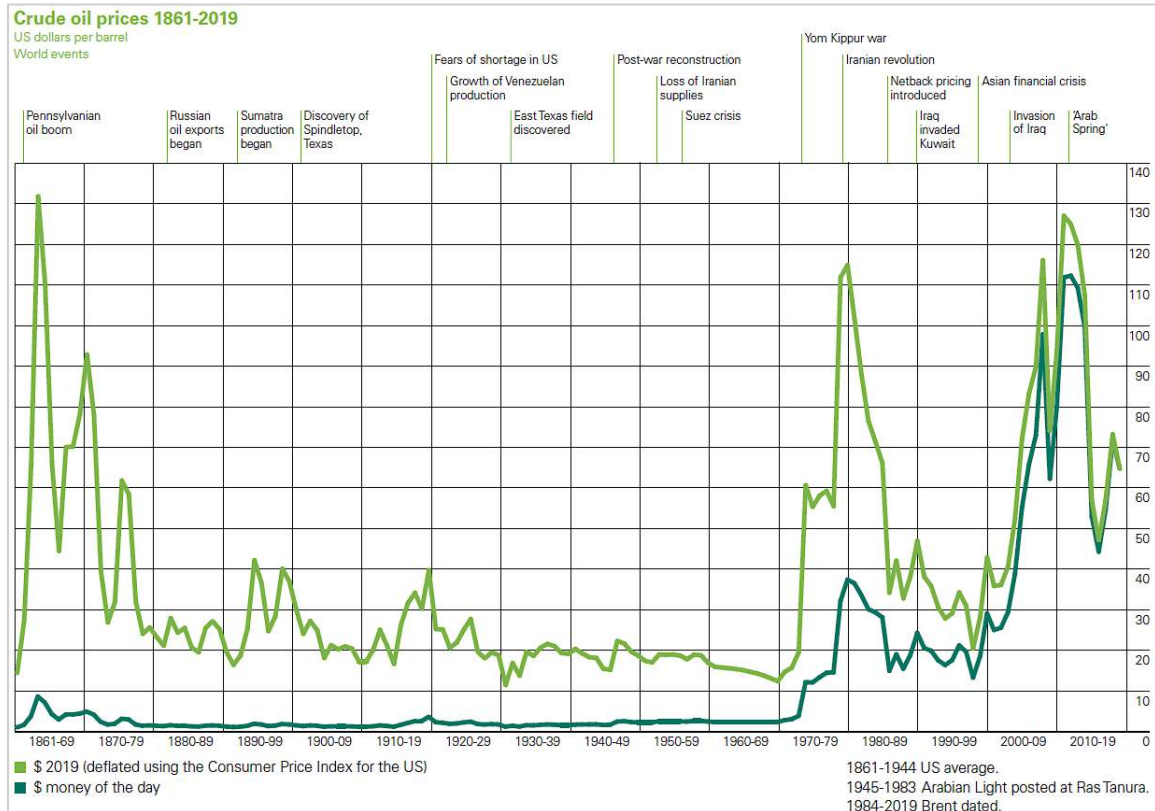


Figure 3.3 Crude Oil Prices 1861-2019

Source: BP, 2020, p. 26

Figure 3.4 compares the data on percentages of the distribution of proved oil reserves in 1999, 2009, and 2019. The Middle East is directly related to energy geopolitics and is linked to holding the largest share. While geopolitics of energy focused especially on oil and the Middle East until the 2000s, the wars and revolts that did not end in the Middle East after the 2000s made the region even more unstable. In the 2000s, “the energy world lives in some hybrid of the state-centric energy system of the 1970s and of the liberalizing world of the 1990s” (Bressand, 2012, p. 13) and began to shift in the energy market. For example, new energy sources were discovered, in parallel with new powers emerged, and also technological developments have increased rapidly in the sector. Moreover, factors such as population growth, consumption habits, and globalization have also affected energy transitions. In addition to these, the trend towards clean energy is a noteworthy factor due to the increase in environmental awareness. According to Yergin (2020), the challenge caused by climate change is a great motivator for the transition of energy, and this challenge and political pressures will move the world toward low-carbon

energy sources. Therefore “*climate* will be a profound determinant of the new map of energy” (p. 15).

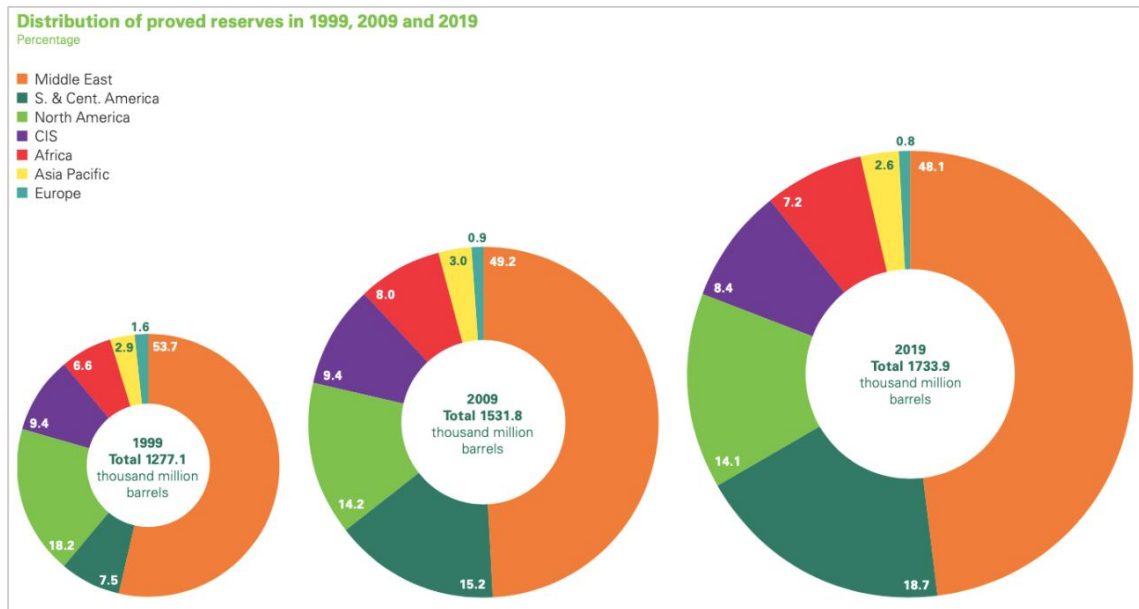


Figure 3.4 Distribution of Proved Oil Reserves in 1999, 2009, and 2019

Source: BP, 2020, p. 15

Even though oil has been a favorite of the energy sector for a long time and oversupply in the diversity of use, it is not the only factor affecting energy geopolitics. Natural gas also stands out as an essential energy sector. If to compare, although the use of oil is quite wide natural gas is more limited. However, because gas is more clean-burning fuel than coal and oil, its use in electricity and transportation has increased recently. Although natural gas is lagging behind oil reign, its story goes back to old times.

“Natural gas seeps were first discovered in Iran between 6000 and 2000 B.C. and in China 2,500 years ago” (Grigas, 2017, p. 28). But in Europe and the US, its discovery is based on newer ones. In England, it was found in 1659, and in the US, it was first discovered in 1815 in West Virginia. After that, the first natural US gas company, Fredonia Gas Light Company, was established in 1858 (Grigas, 2017). The story of the Soviet gas is more current, during WWII. The US was historically the biggest producer of natural gas in the world until 1982, when the USSR overtook it.

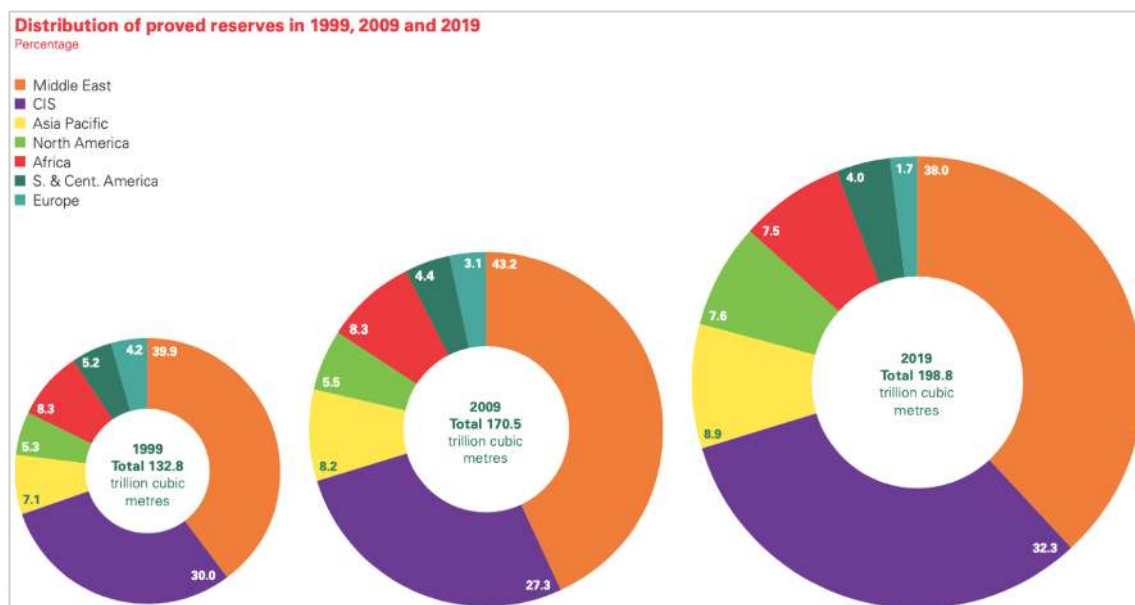


Figure 3.5 Distribution of Proved Natural Gas Reserves in 1999, 2009, and 2019

Source: BP, 2020, p. 33

When proven reserves in natural gas are analyzed, the largest reserves are located in the Middle East. Unlike oil reserves, however, natural gas is more concentrated in the Commonwealth of Independent States (CIS) (Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Russian Federation, Tajikistan, Turkmenistan, Uzbekistan) than in America. Therefore, the slightest unrest in these regions will affect countries that depend on these resources more in terms of natural resources and threaten energy security. Europe's foreign dependency on geopolitical energy balances, which has the least resources, especially in oil and natural gas, has required to take measures to maintain energy security. The generation of natural gas started in Europe in the 1920s, but the Suez crisis of 1956 prompted the domestic quest for safe reserves. However, as shown in Figure 3.4 and Figure 3.5, the resource problem has become increasingly problematic in Europe after the 1990s, and easy and cheap access to safe energy has become more critical. From this point of view, the question of whether Europe is aiming towards renewable energy and getting rid of fossil fuels is due to a lack of resources (more details on this will be given in Chapter 4).

By the 2000s, LNG emerges as a significant development in the global gas market. Its rise was a landmark because it allowed gas to be exported in tankers rather than via pipelines. Today, Qatar emerged as the region's most significant gas player because of

the largest exporter in the world; according to the data (see Figure 3.6), it exporting 77.8 million tonnes (MT) (International Gas Union, 2020). Then, it was closely followed by Australia, which exported a total of 75.4 MT (International Gas Union, 2020).

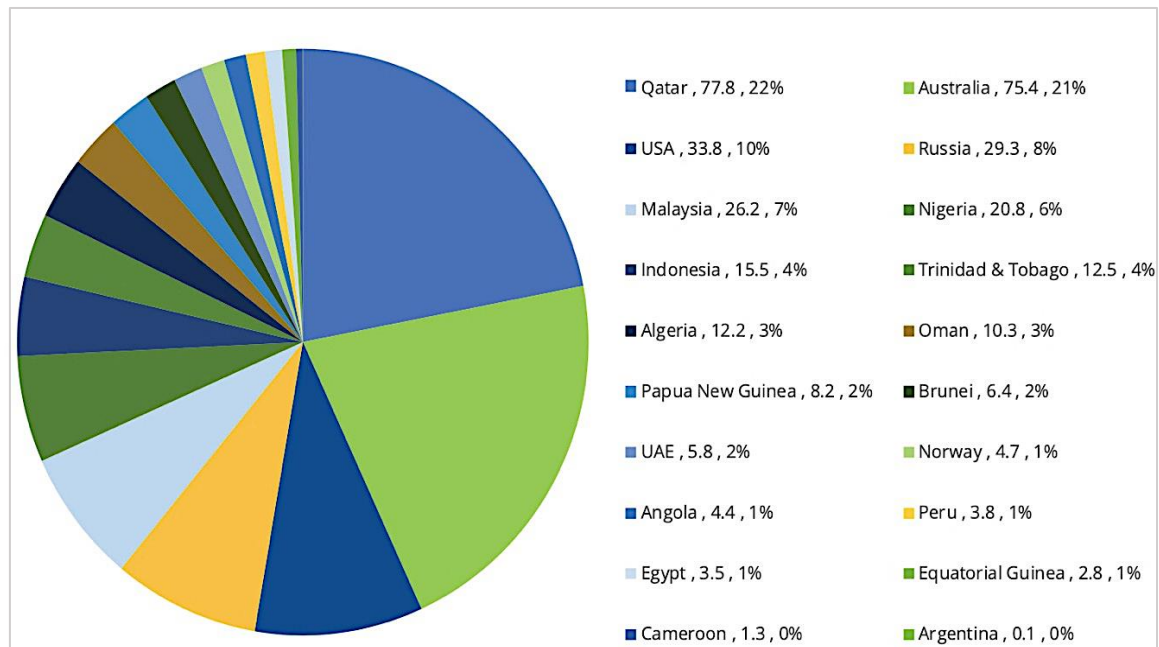


Figure 3.6 2019 LNG Exports and Market Share by Market (in MT)

Source: International Gas Union, 2020

Global LNG trade has demonstrated an increasing chart. Finally, “in 2019, reaching 354.7 MT, an increase of 40.9 MT since the end of 2018, which constitutes approximately 13%” (International Gas Union, 2020). One of the most important reasons for this flourish is that gas is cleaner energy compared to its rivals oil and coal in the fight against climate change. In sum, LNG trade would have a particularly significant effect on the growth of a global gas market and to what degree gas can be considered a truly liquid commodity (Grigas, 2017). Moreover, “gas is fuel for today and tomorrow, and it can act as a partner for renewable sources to offer reliable, flexible, and cost-effective access to more and cleaner energy at scale” (Royal Dutch Shell, 2020, p. 12). On the other hand, the report also argued that “gas faces a challenge from those arguing to remove all fossil fuels from the global energy mix. However, the supply of reliable energy cannot all be met by renewables—at least not yet” (Royal Dutch Shell, 2020, p. 12).

Especially in the early 2000s, the fast development of unconventional gas and oil called the “American shale revolution” is at the center of market changes. The revolution started in 2003-2005 as part of extensive exploration efforts. However, it is not new for the US; shale gas was found in New York in 1821, and especially with the thought that the geopolitical energy crisis experienced in the 1970s may endanger the energy security of the US, it accelerated the development of shale resources and drilling techniques. “Shale gas production went from zero in 2000 to a quarter of US gas production in 2012 and increased to half of total US natural gas production in 2015—a game-changer for the US natural gas market” (Grigas, 2017). “2.83 billion barrels (or about 7.76 million barrels per day) of crude oil were produced directly from tight oil resources in the US. This was equal to about 63% of total the US crude oil production in 2019” (U.S. Energy Information Administration, 2020).

Coal is a more abundant source compared to other fossil sources. Proven sources are mostly seen in Asia Pacific countries (especially China, Australia, and India) and the US (see Figure 3.7). The findings of this study support the idea that coal use increases as the price increases of oil in the face of geopolitical events. This led to the same result for the crises in the 2000s. Growth in coal consumption slows sharply compared to the past, but there is a sharp difference in region and country characteristics. In the 1960s-80s, coal gradually lost importance in all of Europe but less so in Eastern Europe and the USSR because coal was a cheaper option, and they had less concern about the environment than the West (Grigas, 2017).

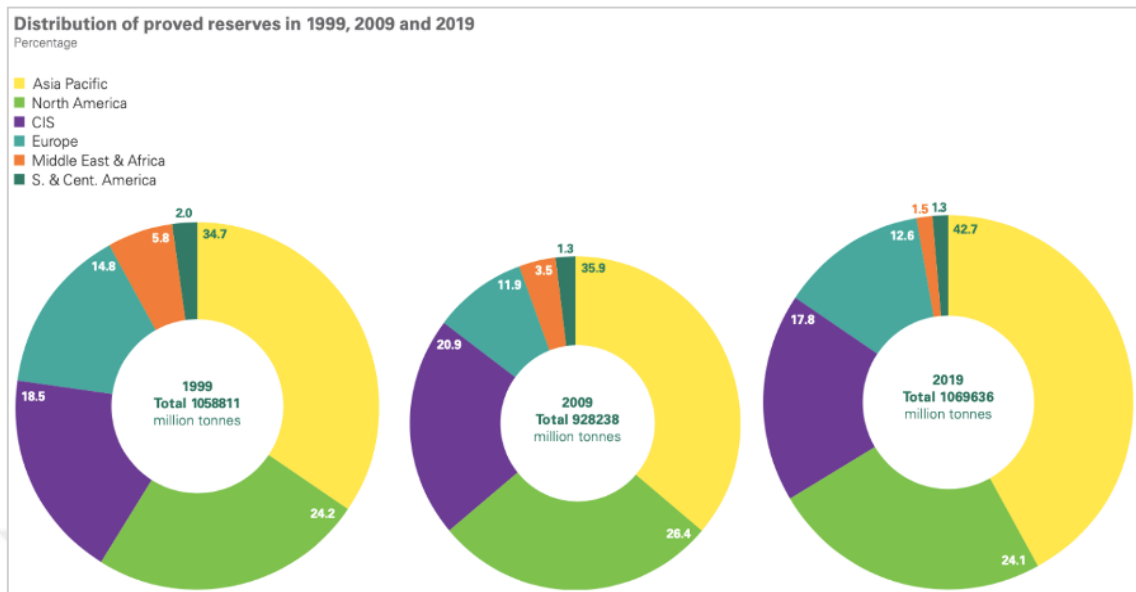


Figure 3.7 Distribution of Proved Coal Reserves in 1999, 2009, and 2019

Source: BP, 2020, p. 45

Nowadays, with the OECD countries switching to cleaner and lower-carbon fuels, the increase in global coal consumption has dropped. In contrast, coal demand within India and other emerging Asian economies increases, and China still dominates the sector (BP, 2019, p. 103). It is the biggest reason for this increase, especially as more demand for power increases due to industrial development. On the other hand, the most important reason why the US, whose coal consumption has increased until 2007, has decreased after this date is shale oil and gas.

As the story of oil, gas, and coal progressed in this way, a new great transition - renewable energy- was followed, called transformation, shifted towards cleaner energy that is more suitable for climate change targets that aim to reduce GHG emissions, as in other processes. One of the main elements shaping 21st-century geopolitics is the energy transition. The transition of energy ultimately implies a systemic change and should not underestimate the impact of it. There are three key factors in this context: (i) the transformation readjusts value chains. The economic value is no longer generated from fossil fuels, and this means that the ability to generate profits will use of low-carbon technologies, (ii) it will yield new energy spaces, defined by infrastructure, production chains, and industrial clusters, (iii) today's emphasis remains on individual sectors (i.e.,

electricity, buildings, transportation, industry), each with a dominant mix of fossil fuels (Goldthau, Keim, & Westphal, 2018).

The geographic distribution of oil, natural gas, and coal reserves has helped determine the international geopolitical outlook. Among the many factors determining a state's place in the international system, geopolitics of energy plays a crucial role. Owning and controlling energy resources gives that country a lot of economic and political power inside and outside the country. In the course of time, the transformation in energy resources began to change the perception of power, and with this, a transformation in the roles of states in the international system began to be observed. This transition process will have different results in the countries and even regions with different geopolitical features. Figure 3.8 demonstrates that the impact of the energy transition in selected countries and groupings.

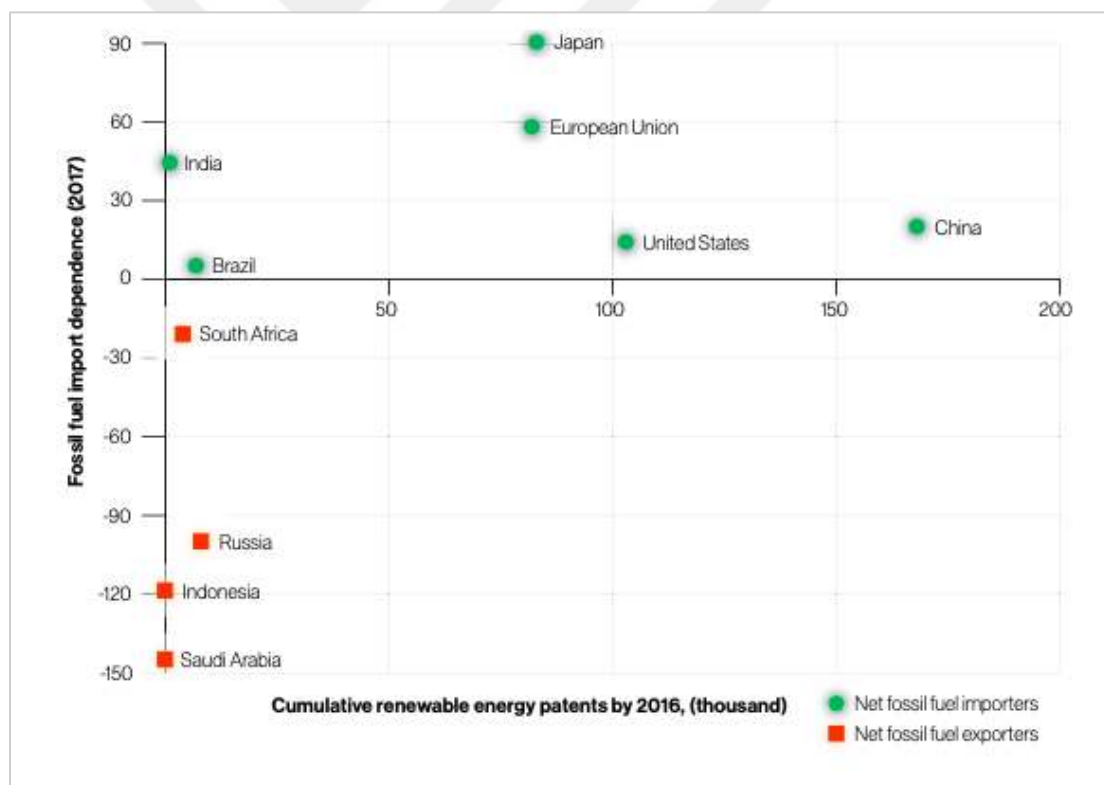


Figure 3.8 Impact of the Energy Transition on Selected Countries and Groupings

Source: IRENA, 2019

Figure 3.8 comprises of the Y and X-axis, and “the Y-axis indicates the share of oil, gas, and coal imports in total primary energy consumption in 2017 and the X-axis

shows the cumulative number of patents for renewable energy technologies that had been registered by the end of 2016” (IRENA, 2019, pp. 27-28). According to the result of the study, “countries and groupings in the upper right quadrant of the Figure stand to gain the most from the energy transition: they are highly dependent on imported fossil fuels but have positioned themselves at the forefront of the clean energy race” (IRENA, 2019, p. 28).

Transition to renewable energy is especially important in terms of energy dependence and energy security. This transition will allow the system to turn from the homogeneity based on fossil sources to more heterogeneous. This represents a power that can change the balance of energy geopolitics. Moreover, renewable energy expansion can alter energy dependencies among the current producers, consumers, and transit countries.

Geothermal, hydropower, bioenergy, ocean, solar, and wind are the principal renewable energy sources, and especially solar and wind energy are growing very fast. Renewables, the fastest-growing energy sources, in combination with energy efficiency, now form the leading edge of a far-reaching global energy transition (IRENA, 2019). Six fundamental issues have allowed the renewable trend to increase: declining cost, pollution and climate change, renewable energy targets, technological innovation, corporate and investor action, and public opinion. “Most renewables take the form of flows, while fossil fuels are stocks, and they can be deployed at almost any scale and lend themselves better to decentralized forms of energy production and consumption, so renewable energy sources have nearly zero marginal costs” (IRENA, 2019, p. 23). As a result of these dynamics, the energy transition accelerates, resulting in some geopolitical consequences. Firstly, while the geopolitical importance of the regions where fossil fuels are collected increases, renewables give the same chance to the other regions due to their diverseness. However, the energy system restructuring will not threaten the major oil and gas producers, such as the Gulf States and Russia, as quickly and existentially as is generally assumed because of developing economies like China and India consumptions (Goldthau et al., 2018).

Figure 3.9 shows the data on global energy demand growth by fuel type. From the figure, we can note that primary energy demand is expected to grow at 1% between 2019 and 2040 (Royal Dutch Shell, 2020). In particular, we observe from Figure 3.9 that the

demand for gas and renewable energy, which pollutes nature less than oil and coal, is projected to be greater.

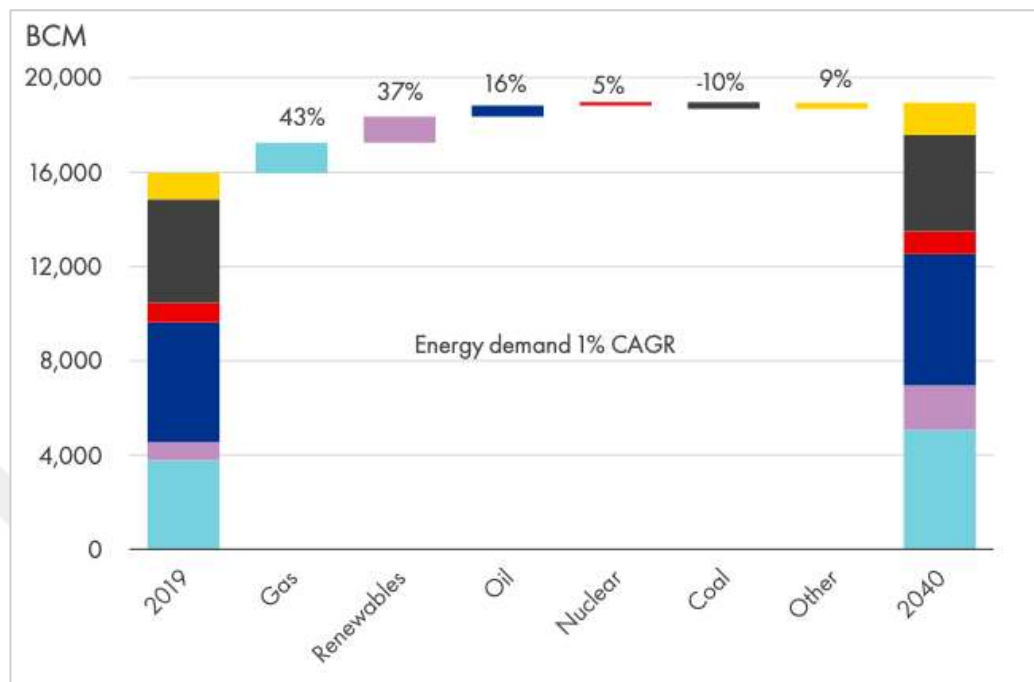


Figure 3.9 Global Energy Demand Growth by Fuel Type

Note. CAGR - Compound Annual Growth Rate

Source: Royal Dutch Shell, 2020, p. 6

Finally, people's energy needs have never been exhausted; on the contrary, it has increased steadily. Although periodic crises play a significant role in energy demands and prices, there have been incredible transformations in energy with the transformation of the world. Many dynamics play a role here. However, for this thesis, the most crucial part of the work is the change in the fight against the climate change problem to reduce GHG emissions and use more eco-friendly energy sources. However, this transition process is not as easy as it is seen that the energy sector is a substantial global sector. It will not be possible to change this situation in the short term.

CHAPTER 4

4. THE IMPACT OF THE GEOPOLITICS OF ENERGY ON THE CLIMATE CHANGE GOVERNANCE

The domination of fossil fuels in the energy mix, which has been going on for many years, brings along various problems. The part of these problems suitable for the purpose of the thesis is environmental problems. Although some segments of societies ignore environmental problems, they are not the same for all of them. In the face of the growing climate change problems over time, countries first took national steps to combat the issue, and then these steps began to internationalize. This section will briefly explain how environmental concerns and reforms progress and analyze the impact of the geopolitics of energy on the process, and then analyze international governance of countries within the scope of the UN Convention at the final stage based on INDC mechanism and official national reports.

4.1. Three Environmental Waves

Three significant waves come into prominence considering the environment and politics. Although Krupp (2018) argued that we are in the fourth wave now, the period between which these waves vary according to different sources (for a more in-depth discussion of these issues, see Hoffman & Ehrenfeld, 2015). According to Mol (2001), “western industrial societies are usually divided into two or three different waves, depending on the historical outlook of the authors” (p. 48). The author divided the waves into three, and these waves began in the 1900s, 1970s, and 1980s, respectively. These waves can be interpreted from several approaches, such as globalization or security.

The first environmental wave was seen in the industrialized countries of the period. It was expressed by well-educated segments of society in general, and the emphasis of this wave was not to question the emerging industrial society but on the

demands of the endangered species and ecological areas for protection with this rapid industrialization (Mol, 2001). Matthew (2013) called the first wave “the strong US leadership.” The mid-1960s was the first period when the environmental wave found its place in the US’s political arena. Especially as stated in the previous section, the desire to shift to cleaner energy has become the main subject of the first wave due to the severe air pollution problems caused by coal. Yergin (1991) summarized the steps that constituted the first wave of the environment in the US with the following paragraph:

In 1965, New York’s mayor pledged to banish coal from the city. An air pollution crisis hit New York City on Thanksgiving Day, 1966; smog gripped the city, and coal-burning was restricted. Within two years, Consolidated Edison, the utility serving New York City, switched to oil. In 1967, a clean air bill passed the US Senate by a vote of eighty-eight to three. In 1970, Federal legislation was enacted that established what became known as environmental impact statements: The possible consequences for the environment of major new projects had to be projected and taken into account before a go-ahead would be given. That same year, one hundred thousand people paraded down Fifth Avenue in New York City to mark Earth Day. (p. 568)

After these changes, the second wave began in the 1970s. Matthew (2013) described the second wave had a strong start but a weak finish in the Early Post-Cold War era. “The central notion of environmentalism in the 1970s was that a fundamental reorganization of the social order was a *conditio sine qua non* for an ecologically sound society” (Mol, 2001, pp. 49-50). By the 1970s, a report translated into thirty languages, which was very resonant, attracted the attention of the whole world: *The Limits To Growth: A Report For The Club Of Rome’s Project On The Predicament Of Mankind* (1972). The report draws attention to unlimited growth and resource constraints, and the links between the five subsystems of the global economic system; population, food security, production, environmental pollution, and consumption of non-renewable natural resources were investigated and concluded that:

If the present growth trends in world population, industrialization, pollution, food production, and resource depletion continue unchanged, the limits to growth on this planet will be reached sometime within the next one hundred years. The most probable result will be a rather sudden and uncontrollable decline in both population and industrial capacity. (D. H. Meadows, Meadows, Randers, & Behrens III, 1972, p. 23)

The report is the first global model developed to bring the world economy and the environment together and is considered the building block of the green economy. After this study, the teamwork updated the report called *Beyond the Limits* in 1992 (during the Rio Earth Summit) and then *Limits of Growth: After 30 Years* published in 2004. According to the last one, unfortunately, the results were more pessimistic and explained how accurate the warning of thirty years ago was. The slowing down of the second wave is the 1973 oil crisis. This energy geopolitics caused the environmental movements to lose their importance, and the importance of energy security increased (see Chapter 3). The second wave was much more focused on nuclear weapons, different from the first one. Treaty on the Non-Proliferation of Nuclear Weapons (NPT), which was signed in 1968 and entered into force in 1970, attracted attention to prevent the spread of nuclear weapons and provided cooperation in the peaceful uses of nuclear energy in general terms—according to Yergin (1991), slowing or stopping the progress in nuclear power “succeeded in most of the major industrial countries, decisively altering what had been assumed to be the major path of response to the oil crisis” (pp. 777-778) in the second wave process.

Environmental demands for change and responses to them have manifested themselves in the most industrialized countries. Although many measures were adopted to combat environmental problems, not all of them were implemented in this period. The institutions causing environmental degradation were not affected by these implementations, and the second wave was seen as unsuccessful.

Finally, the third wave began in the late 1980s. The World Commission on Environment and Development (WCED) published a report entitled “Our Common Future,” known as Brundtland Report, in 1987. In 1992, the UN Conference in Rio de Janeiro was an essential step that formed the beginning of the third wave. Particularly after this date, the UN has a substantial effect, and it still retains its importance at the point where it came with the PA. Besides, the Chernobyl disaster in 1986, an environmental event that should not be forgotten, was experienced at this time, and the incident had a negative impact on environmental improvement. Moreover, it was a turning point, especially in the environmentalist policies of Eastern Europe and the USSR. However, the Chernobyl disaster has not been the only environmental devastation

experienced to date. The Three Mile Island accident in 1979, the Exxon Valdez oil spill in 1989, and the Fukushima Daiichi nuclear accident in 2011 are just a few of the other examples of environmental destruction. While most of them are accidental disasters, many disasters bear the consequences of geopolitical ambitions. Many destructions and geopolitical ambitions that emerged as a result of the wars witnessed by the world have, unfortunately, mostly prevented environmental governance and protection. Table 4.1 reflects the key features of the three waves in general terms.

Table 4.1 Some Characteristics of the Three Waves of Environmental Concern and Reform

	First Wave	Second Wave	Third Wave
Beginning	Ca. 1900	Ca. 1970	The late 1980s
Central Notion	Nature conservation	Limits to growth	Global change
Focal Point	Protection of reserves and species	Minimizing additions and withdrawals	Sustainable development
Geographical Range	Industrializing nation-states	Industrialized nation-states	Globalizing world
Results	Protected areas and species	National environmental agencies, laws, NGOs	Ecological reform of modern institutions around production and consumption
Major Social Theories on Environment	—	Deindustrialization, neo-Marxism	Ecological modernization

Source: Mol, 2001, p. 49

In particular, during the third wave, increased scientific research for the environment (such as the IPCC reports), warnings from scientists and policymakers have closely followed even visible results in the world's negative direction. Especially, international initiatives starting from the 1990s attempted to achieve a global benefit on the problems, but the process ended in failures. As the problem of climate change continues to increase its adverse impact day by day since the third wave, the impact of the geopolitics of energy in shaping the positions of countries in this struggle remains at its strongest. The impact of energy geopolitics on current climate governance will be analyzed in the following titles.

4.2. Reflections of the Geopolitics of Energy on Climate Change Governance

It is remarkable that the activities of countries are different in the process carried out on climate change. Although there are many reasons for this, one of the main reasons is the geopolitics of energy. Due to each country's geopolitics, different energy needs and quantity of natural resources affect the attitudes of countries towards environmental governance.

The PA, considered a landmark for climate change governance, is embodied by various promises from all corners of the world to limit GHG emissions. While more is needed to prevent climate change harms, every step taken by countries is crucial. One of the most concrete indicators in the study of these steps is the INDCs in which states have made promises. Although the targets stated by countries in their INDCs are different from each other, the impact between energy geopolitics, INDCs, and the reflections of energy on these targets are analyzed in this chapter. Some states generally present their plans for the 2025 or 2030 period, while others have determined their longer-term goals by 2050 and formed mitigation strategies in this direction. It is significant to examine the INDCs, one of the PA requirements (referred to in Chapter 2), to examine the impact on countries and environmental governance.

In order to answer the research question of the thesis, a sampling selection research was conducted. There are different types of classification methods in the studies of energy and climate change policies literature. According to Roberts (2004), the world map of energy politics is dominated by five major players, each with its agenda and, more to the point, its role in the building of the following energy economy: (i) developing world, (ii) Europe (member states of the EU), (iii) energy producers (including countries and companies), (iv) the diverse community of activist groups, NGOs and international agencies, and (v) the US (Arıboğan & Bilgin, 2009; Roberts, 2004). On the other hand, according to the UNFCCC (2006), "Parties can be divided into three main groups: (i) groups of Parties under the Convention, (ii) regional groups, and (iii) political negotiating groups" (p, 44).

Related to the first classification, the Convention has two main groups: AI and NAI Parties. "AI Parties have higher per capita emissions and greater financial and

structural potential to counter climate change than most developing countries” (UNFCCC, 2006, p. 46). Then, regional groups that based on “the UN tradition are consist of five categories: Africa; Asia; Central and Eastern Europe; the Group of Latin America and Caribbean Countries (GRULAC); and the Western European and Others Group (WEOG; the “Others” include Australia, Canada, New Zealand, Turkey, and the US)” (UNFCCC, 2006, p. 48). The UNFCCC (2002) indicated that this group “are not usually used to present the substantive interests of Parties and several other groupings are more important to the climate negotiations” (p. 30). Associated with this statement, the UNFCCC has been pointed out to political negotiating groups.

Several countries contributing to climate change governance belong to political negotiating groups based on their common interests. It was created for various benefits such as convenience and advantage in joint decision-making and exchange and developed information on common issues. These groups are listed as follows: the Group of 77 (G-77) and China; the African Group; the Alliance of Small Island States (AOSIS); the EU; the Umbrella Group; the EIG; the Central Group; and other groups as the OPEC, and the CACAM (Central Asia, Caucasus, Albania, and Moldova); the Cartagena Dialogue; the Independent Alliance of Latin America and the Caribbean (AILAC); the BASIC Group (Brazil, South Africa, China India); the Like-Minded Group; the Coalition for Rainforest Nations (CfRN); and the Bolivarian Alliance for the Peoples of Our America (ALBA) (UNFCCC, n.d.-f). It would be wrong to say that every country in the same group shares the same opinion. For example, “countries in the Umbrella Group share information on a common concern but do not take common positions” (UNFCCC, 2006, p. 50). Moreover, according to the UNFCCC (2006), for construct these classifications, there is no formal procedure; the Parties shall resolve to form on the purpose of information sharing on common issues.

Table 4.2 shows the research samples from different regions of the world selected to limit this thesis. Eleven countries and one union are used as research samples. In the process of country sample selection, it was considered to make selections from different geographical regions, which are prominent in climate change governance and have geopolitical importance or vice versa, with having different economic and social indicators. The use of categories has proceeded through the classifications, which are

specified in line with the decisions of the Parties in climate change negotiations (political negotiating groups).

Table 4. 2 The List of the Research Samples

Category	Representatives
The Umbrella Group	Canada, Japan, Russia, the US
The European Union	The 28 Members of the EU (Including the UK)
The Group of 77 and China	Brazil, China, India, South Africa
Representatives of other typical categories	Iran (OPEC), Saudi Arabia (OPEC), Turkey

Source: UNFCCC, 2006

4.3. What Do INDCs Say About the Geopolitics of Energy?

The first step of INDCs is the nineteenth session of the COP (COP 19) held in Warsaw, Poland, in November 2013. The COP decided in:

To invite all Parties to initiate or intensify domestic preparations for their INDCs, without prejudice to the legal nature of the contributions, in the context of adopting a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties towards to achieve the objective of the Convention as set out in its Article 2 and to communicate them well in advance of the twenty-first session of the COP (by the first quarter of 2015 by those Parties ready to do so) in a manner that facilitates the clarity, transparency and understanding of the intended contributions, without prejudice to the legal nature of the contributions. (UNFCCC, 2014b, p. 4)

This invitation was reiterated at COP 20, held in Lima, Peru, in December 2014 (UNFCCC, 2015h, p. 3). During these meetings, countries agreed on which information may include in INDCs. According to Paragraph 14 of the Lima Call for Climate Action (Decision1/CP.20), information may include: the reference point including a base year, time frames and/or periods for implementation, scope and coverage, planning processes, assumptions, and methodological approaches towards calculating emissions and how the contribution is fair and ambitious, how it contributes towards achieving the objective of the Convention (UNFCCC, 2015h).

Referent COP decisions were an invitation for the Parties well in advance of COP 21 (Paris Climate Summit) to set post-2020 emission reduction targets. Following these summits, the pledges that states voluntarily submit their national climate targets are INDCs, one of the key vehicles for the success of the PA. The Parties' pledges "seek to

limit global warming to well below 2 °C, preferably to 1.5 °C, over pre-industrial levels” (IRENA, n.d., para. 1). After the ratification process of the PA, INDCs will become binding for the Parties.

The international steps towards meeting the Parties’ commitments rather than the poor-rich distinction act as a barometer of where the world stands on tackling the problem, and through these commitments, governments are less likely to renounce in the future (Yeo, 2015). Consequently, why INDCs matter? They; help the Parties exhibit leadership about the issue, make it easier to adapt commitments to national goals, skills and duties, help create “a new climate economy” where emissions reductions, sustainable economic growth, and elimination of poverty go hand in hand. Such individual steps will form the foundation of joint action and, if they are sufficiently successful, set the path for a climate-resilient future (Levin & Rich, 2015).

According to the Decision1/CP.20, paragraph 16 (b), “the COP requested the secretariat to prepare, by November 1, 2015, a synthesis report on the aggregate effect of the INDCs communicated by Parties by October 1, 2015” (UNFCCC, 2015h, p. 3). Moreover, the COP requested to update this report by its Decision1/CP.21, paragraph 19 (UNFCCC, 2016a). Through these reports, facilitating the clarity, transparency, and understanding of the (I)NDCs is expected (UNFCCC, n.d.-d). This report related to the adaptation component and discussed trends on the basis of the knowledge in the INDCs. According to the report, many of the INDCs:

Cover most or all of the IPCC sectors, including energy, industrial processes, and product use, agriculture, land use, land-use change and forestry (LULUCF) and waste. A few Parties specifically highlighted transport and buildings, while others also mentioned shipping and aviation, oil industry flaring, solvents, and electric power. (UNFCCC, 2015m, p. 6)

Furthermore, the report suggested that water (89)*³, agriculture (82)*, and health (67)* were the first three priority areas in the Parties adaptation components. Energy (38)* was another important priority area (UNFCCC, 2015m, p. 60). On the other hand, related to priority areas for implementation highlighted in the INDCs, renewable energy and energy efficiency came into prominence (UNFCCC, 2015m, p. 34).

³ *Number of Parties

In the following subheading, considering the importance of the energy sector and the purpose of the INDCs, research on the role of the geopolitics of energy in the INDCs of selected countries/union is included. In INDCs examinations of the sample countries shown in Table 4.2, the main components in Figure 3.1, “the Key Components of the Geopolitics of Energy” in Chapter 3, were used. The following arguments examine the impact of the geopolitics of energy on the commitments that have been made for the PA, regardless of whether countries perform or not. The research under this title has been analyzed using the INDC reports of the countries. INDCs are accessed using the INDC submission portal on the UNFCCC website (UNFCCC, n.d.-a).

4.3.1. The Geopolitics of Energy Analysis of Samples’ INDC Submissions to the UNFCCC

4.3.1.1. Canada

The country generally focused on clean energy systems in the report. According to its submission, with almost 80% of its electricity supply already emitting no GHGs, so the country has one of the cleanest electricity systems among G7 and G20 countries (UNFCCC, 2015a, p. 1). Canada concentrated on “the transportation (responsible for approximately 25% of Canada’s emissions) and electricity sector for reducing emissions because they are the largest emitting sectors of the Canadian economy” (UNFCCC, 2015a, p. 2). Therefore, the country also has various regulatory steps and investments in these sectors. Moreover, it indicated that it would continue to take joint steps with its continental trading partners, especially the US, and pursue further action in the related industries, including energy and transport.

The important point is investments of Canada in clean energy technologies, and its commitment to follow progresses consistently in the energy transition to a low carbon economy. The country “has invested more than \$10 million in green infrastructure, energy efficiency, clean energy technologies, cleaner fuels, and smarter grids since 2006” (UNFCCC, 2015a, p. 2). These investments are particularly listed as: “(i) the development and demonstration of clean technology products such as electric vehicle charging stations and wind hybrid power plants, (ii) the generation of electricity from renewable energy

sources such as wind, low-impact hydro, biomass, photovoltaic and geothermal energy” (UNFCCC, 2015a, p. 2).

Defining itself as a leader in clean energy technologies, Canada underlined its investments that provide further innovation (the world’s first large-scale power sector carbon capture and storage project in Saskatchewan) (UNFCCC, 2015a, p. 2). The country is expected that many of the coal-fired plants will be replaced by natural gas plants, especially in the electricity sector. As a result, INDC of Canada is based on achieving reduction targets by switching to clean energy technologies, especially in sectors where emissions are highest and focused on coal-to-gas conversions. This demonstrated the importance of technology, energy management, and energy transition for the country.

4.3.1.2. Japan

The country, which has a nuclear accident at the Tokyo Electric Power Company’s Fukushima Daiichi Nuclear Power Station and natural disasters as the Great East Japan Earthquake, has brought forward new steps in its INDC on energy strategies. As a starting point of rebuilding and reviewing its energy strategy, the state decided on the new Strategic Energy Plan in 2014.

Although Japan’s industrial sectors, both steel and cement, have attained high energy efficiency (according to the report, the world’s highest level), the country plans to promote and enhance the industries towards a low carbon society. The significant steps include expanding the use of renewable resources (especially wind power), increasing energy efficiency, utilizing nuclear power generations whose safety is confirmed, and pursuing high thermal power generation efficiency will Japan’s main energy policies in the future. However, fossil fuels will remain a primary resource for the countries’ power generation. The 2030 energy mix assumed in Japan’s INDC is based on “the 20–22% of supplied by nuclear energy, 22–24% by renewable energy, and the remaining 56% by fossil fuel sources (coal, LNG, and oil)” (UNFCCC, 2015l, p. 8). Consequently, the country has focused on establishing a new energy strategy, and its focal point is developments in eco-friendly transportation systems, energy efficiency, energy conservation in the industry sectors.

4.3.1.3. Russia

Russia has not presented a comprehensive INDC report. In the INDC of Russia, only increasing energy efficiency, reducing the energy intensity of the economy, and increasing the share of renewables in the Russian energy balance were emphasized with regard to energy geopolitics (UNFCCC, 2015i, p. 3).

4.3.1.4. The United States

The INDC report of the US does not contain much detailed information on energy geopolitics. The main emphases were energy conservation and the Clean Air Act. As relevant to energy conservation, the report included explanations about the building sector. The country mentioned regulations to cut carbon pollution from new and existing power plants under the Clean Energy Act. Moreover, developing standards to address methane emissions from landfills and the oil and gas sectors were emphasized. It shows developing standards to address methane emissions from landfills and the oil and gas sector. This indicates that these sectors will not be abandoned and will continue with developing standards.

4.3.1.5. The European Union

The EU and its 28 Member States (including the UK) adopted a common INDC submission. This report, which contains a very general INDC reduction target because it is a common statement, does not contain presumption on energy geopolitics. However, the energy sector is included as one of the sectors within the coverage of reduction targets.

4.3.1.6. Brazil

Brazil emphasized that it would “strive to transition to renewable energy systems and the decarbonization of the global economy by the end of the century” (UNFCCC, 2015e, p. 1). The country focused on two issues: “(i) sustainable use of bioenergy and (ii) tripling to nearly quadrupling the share of zero- and low-carbon energy supply globally by the year 2050 targets in line with mitigation action” (UNFCCC, 2015e, pp. 2-3).

One of the reasons Brazil primarily emphasizes energy is that “it has one of the largest biofuel programs to date, including the cogeneration of electricity using biomass”

(UNFCCC, 2015e, p. 3). According to the report, “Brazil qualified as a low carbon economy because its energy mix during those dates consists of 40% of renewables (75% of renewables in its electricity supply), which amounts to three times the world average in renewables and more than four times the OECD average” (UNFCCC, 2015e, p. 3).

The country asserted that it plans to take more steps compatible with the temperature target. For example, it will increase the share of sustainable biofuels in the Brazilian energy mix to approximately 18% by 2030. Moreover, In the energy sector, achieving 45% of renewables in the energy mix by 2030, including expanding:

The use of renewable energy sources other than hydropower in the total energy mix to between 28% and 33% by 2030; the use of non-fossil fuel energy sources domestically, the share of renewables (other than hydropower) in the power supply to at least 23% by 2030, by raising the share of wind, biomass and solar; achieving 10% efficiency gains in the electricity sector by 2030. (UNFCCC, 2015e, p. 3)

As a result, Brazil stated that it would focus on renewable energy (especially wind, biomass, and solar) rather than fossil fuel use in its INDC, and it will follow standards that promote new standards of clean technology and enhance energy efficiency measures in the electricity and industry sector.

4.3.1.7. China

China is one of the countries that broadly treat geopolitics of energy in its INDCs. The issue proceeded on topics such as how to transition to the low-carbon system, increasing the energy mix in ensuring energy security, and how the state will support financing in the new system. “The share of non-fossil fuels in primary energy consumption is 11.2% by 2014” (UNFCCC, 2015b, p. 3), and according to the INDC submission, the country will “try to increase the percentage to around 20% by 2030” (UNFCCC, 2015b, p. 5). “China will accelerate the transformation of energy production and consumption and continue to restructure its economy, optimize the energy mix, and improve energy efficiency” (UNFCCC, 2015b, p. 4). INDC of China has collected details on energy geopolitics under the title “Building Low-Carbon Energy System” (UNFCCC, 2015b, p. 7). Accordingly, it will try to restrict total coal consumption and enhance the clean use of coal.

The country has also stated that “it has targets to strengthen research and development activities in low-carbon technologies” (UNFCCC, 2015b, p. 13). It expressed financial support for the transition to these technologies through “implementing preferential taxation policies, improving green government procurement policy systems, advancing the reform in the pricing and taxation regime for energy-and-resource-based products, improving the green credit mechanisms, encouraging and guide financial institutions, and operating energy-efficiency crediting business” (UNFCCC, 2015b, p. 14). As a result, China will pay attention to energy security for the future, start returning to renewable energy, and continue to make use of coal as useful as possible. These targets are an essential indicator that China tries to expand its energy mix for strengthening its energy security.

4.3.1.8. India

India has provided a very detailed INDC report compared to the other sample countries. According to the submission, the country has “a definite plan of action for clean energy, energy efficiency in various sectors of industries, steps to achieve lower emission intensity in the automobile and transportation sector, non-fossil-based electricity generation, and a building sector based on energy conservation” (UNFCCC, 2015c, p. 8). India touched on the energy entitled “Clean and Efficient Energy System” as mitigation strategies (UNFCCC, 2015c, p. 8). This title focused specifically on two subtitles: promotion of clean energy and enhancing energy efficiency.

India claimed that “it is operating one of the world’s biggest projects for renewable capacity expansion” (UNFCCC, 2015c, p. 9). The country had set its targets in renewable energy sectors such as wind energy (predominant contributor to the renewable energy growth in India), solar power, biomass energy (more than 70% of the country’s population depends on it), hydropower, and nuclear power. On the other hand, coal is still seen as an indispensable and dominant resource for the country, but it is emphasized that “initiatives to improve the efficiency of coal-based power plants and to reduce its carbon footprint will be realized” (UNFCCC, 2015c, pp. 9-10). Additionally, it has declared that it will progress towards achieving these goals with targets such as “Green Energy Corridor” projects, “Electricity for All” programs, and “Zero Effect, Zero Defect” (ZED) policy.

The country has taken a two-pronged approach to address the energy demand of its citizens while maintaining minimal growth in carbon emissions, taking universal energy access and energy stability as one of the country's fundamental development goals. On the generation side, the government promotes greater use of renewables in the energy mix, mainly through solar and wind power, and shifting towards supercritical technologies for coal-based power plants. On the demand side, efforts are being made to efficiently use energy through various innovative policy measures under the overall ambit of the Energy Conservation Act (UNFCCC, 2015c, p. 8).

As relevant to fiscal initiatives promoting green actions, the country "had cut subsidies and increased taxes on fossil fuels (petrol and diesel), turning a carbon subsidy regime into one of carbon taxation" (UNFCCC, 2015c, p. 27). India has signaled that with the technological developments, "the carbon intensity in the Indian economy will decrease in the future, and the share of renewable energy in the electricity-mix will increase" (UNFCCC, 2015c, p. 28). It stated as a target in its INDC: "to achieve about 40 percent cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030 with the help of the transfer of technology and low-cost international finance, including from Green Climate Fund (GCF)" (UNFCCC, 2015c, p. 29). The priority areas where the country plans to launch new initiatives are cleaner energy technologies and renewable energy generation. The country argued that "one of the most important areas of this research should be clean coal and fossil fuel, energy management, and storage systems for renewable energy, emphasizing the importance of joint research & development (R&D) on clean technologies and their transfers" (UNFCCC, 2015c, p. 32).

4.3.1.9. South Africa

South Africa has geographical vulnerabilities in many respects, such as water and food security and access to energy. Emphasizing that energy is a challenge preventing economic development, the country drew attention to its dependence on coal. According to the statement, "its coal-fired power plants are old and inefficient, and a significant proportion of its liquid fuels being generated from coal" (UNFCCC, 2015k, p. 2). The country has stated that it would have difficulties in the short-term (up to 2025) in the energy transition and pointed to poverty and inequality as its priority areas. For this

reason, it emphasized that its INDC should be evaluated in respect of national circumstances.

The country implements some programs to perform INDCs. Its 2030 National Development Plan (NDP) vision integrated with climate-compatible energy plans. In this direction, South Africa is investing in transforming its low-carbon energy sector, especially the coal-based sector. The focal point of the country is to transition its inefficient coal-fired power plants to clean and high-efficiency technology. The country also mentioned renewable energy investments regarding mitigation efforts. It noted that there are investments under the Renewable Energy Independent Power Producer Procurement Program (REI4P) (UNFCCC, 2015k, p. 9). All shows the importance of coal in the long run for the country. On the other hand, it emphasized that efficient use of renewable resources such as solar, wind bioenergy in addition to electric vehicles, energy-efficient lighting, and investments made in renewable will have a positive effect on the country's economy.

4.3.1.10. Iran

Iran is one of the countries that has signed but not ratified the PA (UN, 2015). INDC report of Iran is particularly framed by the sanctions that the country has been imposed for a long time, which the country has described as “unjust.” The country's rich fossil fuel reserves and dependence of the national economy on revenues from production and export of oil and its byproducts, inter alia, the economic and social problems arising from the sanctions led to it vulnerable to high-carbon-intensive products. Even the country's reduction commitment rates were prepared within the framework of sanctions and presented as conditional vs. unconditional. Also, both are conditional on international sanctions.

Nevertheless, Iran planned to be successful in reducing emissions with “the development of combined cycle power plants, renewable energies, and nuclear power, as well as reduction of gas flare emissions, increasing energy efficiency in various consuming sectors, substituting high-carbon fuels with natural gas, strategic planning for utilizing low-carbon fuels” (UNFCCC, 2015f, p. 4). The country also touched upon a

mitigation program, “the Fifth 5 Year National Development Plan” (2010 to 2015). It aimed to “a 30% reduction in energy intensity” (UNFCCC, 2015f, p. 5).

4.3.1.11. Saudi Arabia

Saudi Arabia, emphasizing their vulnerability to climate change and its consequences like Iran, mentioned two main scenarios in its INDC: (i) assumes economic diversification with a robust contribution of oil export revenues, and (ii) accelerated domestic industrialization based on sustainable utilization of all indigenous resources including oil, gas, and minerals. The main difference between the two baseline scenarios is “the allocation of oil produced for either domestic consumption or export. While exported oil will not contribute to the GHG emissions of Saudi Arabia, domestic consumption will increase its GHG emissions” (UNFCCC, 2015n, p. 2).

The focal point is the country’s effort to reflect energy security on its INDC by reducing its energy dependency. The country will focus on the economic contribution of other gases, minerals, and their derivatives rather than only to oil revenues. Economic diversification is a key element of the sustainability of the country’s economy. Saudi Arabia has ambitious plans to diversify its economy away from heavy reliance on income generated from a single resource. Further, especially its steps for the geopolitics of energy are to ensure energy efficiency, increase energy mix and energy security, especially renewables, encourage investments in exploring and producing natural gas, and provide technological improvement.

4.3.1.12. Turkey

Turkey is the only G20 country that has signed but not ratified the PA (UN, 2015). Due to its geographical location, Turkey has become an important country in terms of energy geopolitics. On the other hand, it is constrained in terms of natural resources in the face of rapidly increasing energy demand. The country emphasized the insufficiency of fossil fuel reserves by saying “limited energy resources,” highlighting the significant role of energy imports in its account deficit (UNFCCC, 2015g, p. 2).

Energy security is one of the most important issues for the country, especially considering the increasing demand and import dependency. The country’s purpose to

increase renewable capacity, and this target is clearly stated in its INDC (UNFCCC, 2015g, p. 3). It mainly aims to supply its capacity for the production of electricity from solar and wind power. Moreover, the country made such commitments as tapping the full hydroelectric potential, commissioning a nuclear power plant until 2030, developing channels that promote the use of renewable energy sources (loans, tax reduction, etc.) in its report.

In the light of this information, it was found that there is a correlation between energy geopolitics and INDC reports. Remarkably, this correlation is related to the interaction capacity of energy geopolitics over climate governance. The most striking result to emerge from the data is that the countries are more willing to continue in the areas they specialize in. For example, Canada and Japan try to improve their technical capacity, or Brazil tries to increase the share of biofuels in its energy mix. Moreover, countries such as Saudi Arabia and Iran, whose economies are based on fossil fuel revenues, express these details in their reports, and they pursue a strategy to set targets in this direction. The more fragile countries along an economic dimension, South Africa and Iran, do not hesitate to present them as an “excuse” in climate governance, highlighting their vulnerability to the transition to renewable energy. Countries with growing economies and populations, such as China and Turkey, tend to turn to renewable energy to guarantee their energy security rather than climate concerns. Major powers such as the US and Russia, which may not have contributed as much as expected to climate governance, have avoided submitting the detailed reports. These results might offer compelling evidence for the realism in IR because states continue to pursue their national interests in the targets determined for solving the common problem. It would appear that this national interest is directly related to the geopolitics of energy.

Crucially, these pieces of evidence are slightly lower than the value expected, and there is certainly room for improvement. Because INDCs are short reports that contain the GHGs emission reduction targets of countries. In these samples, the length of reports ranged from 3 to 38 pages. Due to energy is a key fact for reaching countries’ reduction targets, most INDC reports contain the keywords on the subject. This limits the thesis findings. Further data collection is required to determine exactly how energy geopolitics

affects climate governance. In order to make an overall analysis, more detailed reports of countries will be examined in the next section.

4.4. National Communications (NCs) and Biennial Reports (BRs) / Biennial Update Reports (BURs)

In the process of climate change governance, “Article 12 of the Convention obliges the Parties of the UNFCCC, in accordance with Article 4, paragraph 4, to communicate to the COP information” (UNFCCC, 2014a, p. 9) through the Secretariat. This helps the Convention provide accurate, transparent, and detailed information about emissions, activities, and assistance while providing an important framework for understanding current levels of emissions and the commitment of ongoing initiatives, as well as for national and international development (UNFCCC, 2014a).

The national reporting processes of the Parties have become more comprehensive and internationalized over time. All Parties use some methods to communicate their goals and strategies about related issues such as mitigation and adaptation to the Convention. Some of these are compulsory, and some are voluntary methods. Accordingly, NCs and BRs / BURs are the two key elements that enter into the international part of the measurement, reporting, and verification (MRV) framework that is required for the Parties that have ratified the Convention.

According to Christiana Figueres (UNFCCC, 2014a), by way of the Bali Action Plan adopted at COP 13 in 2007, the reporting provisions inherent in the Convention were further strengthened. In the framework of improving international and national action to combat climate change, the Bali Action Plan adopted the principle of MRV for all developed and developing country Parties. “For the AI Parties to meet their commitments for reporting under the Convention, they are required to prepare NCs every four years (Decision 9/CP.16) and BRs every two years (Decision 2/CP.17)” (UNFCCC, n.d.-g, para. 1). This timing situation is similar for the NAI Parties (see Table 4.3), and reporting is implemented with NCs and BURs.

NCs are prepared by both the AI and NAI Parties, although the frequency (see Table 4.4), level of detail, and qualifications differ according to the group to which they

belong (Parra & Witkowski, n.d.). On the other hand, corresponding with BRs / BURs, BRs are similar to BURs, but BRs have more demanding requirements. In the most general sense, the UNFCCC (n.d.-c) has summarized the contents of these two reports as:

NCs provide information on GHG inventories, measures to mitigate and to facilitate adequate adaptation to climate change, financial resources and transfer of technology, and education, training, and public awareness, and any other information relevant to the achievement of the objective of the Convention. BURs provide an update of the information presented in NCs, in particular on national GHG inventories, mitigation actions, constraints, and gaps, including support needed and received. (para. 2-4)

Table 4.3 Submission of National Reports for NAI Parties

Submission	Mandate	Frequency
National Communication	Article 4 of the Convention Article 12 of the Convention Decision 17/CP.8 Decision 1/CP.16	Every four years
Biennial Update Report	Decision 1/CP.16 Decision 2/CP.17	Every two years Least-developed country (LDC) Parties and small island developing States may submit BURs at their discretion

Source: UNFCCC, 2020f

It can be concluded with the help of these pieces of information that both reports constitute the primary sources of extensive and up-to-date information on countries' national circumstances in the context of climate change. These two reports, which show some kind of binding status, form part of climate change governance like INDCs. Their preparation and submission processes are the focal point for the UNFCCC. Energy is one of the main topics of these reports, which contain information on many issues such as social, economic, environmental policies and actions, education, information-sharing, agriculture, and other sectoral initiatives. The main reason why these reports are examined in the thesis is the inseparable connection of the energy sector with these two issues, especially in these reports, which contain comprehensive data from countries on two important issues mitigation and adaptation in the context of climate change.

4.4.1. The Geopolitics of Energy Analysis of Samples' NCs and BRs / BURs Reports

The analyses of NCs and BRs / BURs reports were prepared using a similar procedure as for INDCs. In order to investigate analyze the impact, the content analysis was done. Table 4.5 presents the data on the analysis. Table 4.4 summarizes the data used in content analysis and contains information about the status of sample countries by the UNFCCC and the submission dates of reports.

Table 4.4 Status of Selected Samples According to the UNFCCC

Country/ Union	Situation	NC Report	BR/ BUR Report
Canada	AI	NC7- 29 Dec 2017	BR4- 13 Feb 2020*
Japan	AI	NC7- 27 Feb 2019	BR4- 27 Dec 2019
Russia	AI	NC7- 29 Dec 2017	BR4- 30 Apr 2020*
The US	AI	NC6- 01 Jan 2014	BR2- 31 Dec 2015
The EU	AI	NC7- 19 Dec 2017	BR4- 09 Jun 2020*
Brazil	NAI	NC4- 31 Dec 2020	BUR4- 31 Dec 2020
China	NAI	NC3- 25 Jun 2019	BUR2- 25 Jun 2019
India	NAI	NC2- 04 May 2012	BUR2- 07 Jan 2019*
South Africa	NAI	NC3- 31 Aug 2018	BUR3- 05 Jun 2019
Iran	NAI	NC3- 11 Aug 2018	._**
Saudi Arabia	NAI	NC3- 22 Dec 2016	BUR1- 03 Apr 2018
Turkey	AI	NC7- 26 Aug 2019	BR4- 27 Dec 2019

Note. *Date of original submission: Canada: 31 Dec 2019; the EU: 20 Dec 2019; Russia: 31 Dec 2019; India: 31 Dec 2018. **Iran does not have a BUR report on the portal.

Source: UNFCCC, n.d.-h

Table 4.5 shows twelve sample Parties from top to bottom and six key components of the geopolitics of energy from left to right. Positive and negative signs (“+/-” symbols) are used to indicate whether the piece of information on these key components is available in these countries' NCs and BRs / BURs reports. The pieces of information referring to the symbols are given in detail in Appendix (see Appendix A).

Table 4.5 Content Analysis of the NCs and BRs/BURs by Samples

	Natural Resources	Energy Price	Strategic Location	Energy Management	Energy Security	Energy Transition
Canada	+	-	+	+	+	+
Japan	+/-	+/-	-	+	+	+
Russia* ⁴	+	NA*	NA	NA	NA	+/-
The US	+	+	+	+	+	+
The EU	-	+/-	-	+	+	+
Brazil	+	-	+	+	+	+
China	-	-	-	+	-	+
India	+/-	-	+	+	+	+
South Africa	+/-	-	-	+	+	+/-
Iran	+	-	+	-	+	+/-
Saudi Arabia	+	+	+	+	+	+/-
Turkey	+/-	-	+	+	+	+

Note. *NA: Not Available; “+”: Contain Information; “-”: No Contain Information; “+/-”: Contain Information but the Components Affect the Country Negatively.

Source: Prepared by the author

General inferences by considering the information in the analysis are as follows:

(i) Natural resources are distributed unevenly across the world (as cited in Chapter 3), and these uneven distributions have reflected countries’ reports. Countries have addressed the correlation between their resources and dependency. It is actually a reason that affects positively or negatively the energy transition. The uneven distribution of natural resources affects the energy transition and creates a dependency problem. While resource-rich and developed economies are more compatible with the energy transition, countries with resource-rich (fuel-exporting) and developing economies, and countries with having scarce resources and developing economies have weaker steps on energy transition.

(ii) The effects of unequal resource distribution could not generalize with the effecting role of countries having energy resources in regulating market prices as Canada and Brazil.

⁴ *The analysis could not be made for four items, because of the original reports of Russia are in Russian. Unofficial translate has been used for other items.

(iii) Strategic location, like natural resources, is a feature dependent on geography. However, not every country having natural resources is a strategic location and vice versa.

(iv) In most of the samples, there is an effort on the management of energy. They mostly mentioned that they promote energy efficiency, improve climate-friendly technology capacity.

(v) Energy security is a key component for almost all samples considering climate change governance. Countries highlighted strengthen energy security through diversification of energy mix.

(vi) Results indicate that all samples put energy transition on the agenda. It is an essential step for climate governance. However, whether or not to have the resources consuming still creates an obstacle.

(vii) All results show that the selected components of the geopolitics of energy are widely included in the climate policies of countries to determine climate change governance efforts.

(viii) It can be concluded with the help of these arguments that each country has its own national circumstances, and the geopolitics of energy is one of the main instruments of the past and future of climate change governance.

4.5. Assessment of the Research Samples on Climate Change Governance

The Climate Action Tracker (CAT) “is an independent scientific analysis that tracks government climate action and measures it against the globally agreed the PA aim of ‘holding warming well below 2°C, and pursuing efforts to limit warming to 1.5°C’” (CAT, n.d.). The CAT evaluates whether countries are on track to fulfill their mitigation commitments. To put more shed light on the thesis argument, their research was utilized. The CAT qualified the commitments of the research samples as follow: Russian Federation, Saudia Arabia, Turkey, the US—Critically Insufficient; China, Japan, South Africa—Highly Insufficient; Brazil, Canada, the EU—Insufficient; India—2 °C Compatible and Iran is not evaluated, yet (CAT, 2020c). However, targets of Iran are

likely to be Critically Insufficient compared to the other samples. As a result, samples other than India still follow a path far from achieving their Paris aims. This section has given an account of the general and more current points of view on the research samples on current governance policies.

In the first instance, Canada is both a fossil fuel resource-rich economy and one of the countries moving towards becoming a leader in clean energy and its technology. The country, whose energy needs are consistently increasing due to its large landmass and growing population, stated that its natural gas generation is expected to increase to replace coal and nuclear generation (UNFCCC, 2017b, p. 143). The country also “continues to expand its LNG production” (CAT, 2020d, para. 10). However, the protests against natural gas pipeline construction that began locally could cause nationwide protests in February 2020 (Austen, 2020). According to its seventh NC report, “Canada’s energy exports such as crude oil, refined petroleum products, natural gas, and coal mostly go to the US” (UNFCCC, 2017b, p. 20). Geopolitics has a large share in this trade partnership. The country has emphasized the energy transition to achieve “an economy-wide target to reduce GHG emissions by 30% below 2005 levels by 2030” (UNFCCC, 2015a, p. 1) it has intended in its INDC. According to CAT (2020d), “during the last election (October 2019), the government made a number of promises to scale up climate action but has done little to deliver on this in the intervening months” (para. 1). In sum, “the Canadian government is at a crossroads: it could either continue with the slow implementation of an inadequate climate plan or adopt a recovery package that accelerates the transition to a zero-emissions future” (CAT, 2020d, para. 1).

Japan, which breaks new ground for new energy strategies after the nuclear accidents, “established the fourth Strategic Energy Plan for 2030 which stated the policies of reducing nuclear power dependency, reducing fossil resources dependency, and expanding renewable energy in April 2014” (Agency for Natural Resources and Energy (METI), 2018, p. 3). “The country depends on imported raw material and energy” (U.S. Energy Information Administration (EIA), 2020b; WorldAtlas, 2019, para. 2), and especially oil and coal import have still crucial for the country’s energy generation. However, it emphasized the importance of renewable energy in the reports and suggested various regional cooperations and policies for promoting low-carbon growth. Moreover,

the government announced its plan that would develop concrete plans to phase out inefficient coal-fired power stations by 2030 on July 3, 2020 (The Japan Times, 2020). Due to its energy dependence, the country is likely to turn to renewable resources, vary its energy mix, and ensure energy security. The 2030 INDC target of Japan is “at the level of a reduction of 26% by fiscal year (FY) 2030 compared to FY 2013” (UNFCCC, 2015l, p. 3). At this point, developing itself on technological innovation with the awareness of all geopolitical energy negativeness, the country takes steps to aim to maintain energy efficiency and contribute to climate governance with recent notice “to phase out inefficient coal-fired power plants, boost offshore wind power deployment, plans to discuss medium- to long-term ‘green recovery’ measures during its process of revising the country’s Basic Energy Plan, started on September 1, 2020” (CAT, 2020i, para. 3).

Russia is one of the world’s largest polluters and accepted the PA in 2019 (UN, 2015). Its unconditional emission target is “to reduce GHG emissions by 25-30% from 1990 levels by 2030” (UNFCCC, 2015i, p. 3). Russia’s emission targets and plans are not enough to fight against climate change. In general, the country has made little progress in climate action implementation. Its most prominent role is that it has an economy based on the export of fossil fuels and mineral resources. Because the country “is one of the leading fossil fuels producers with a share of 14% of combined global oil and gas output and the world’s largest energy exporter” (BP, 2019, p. 1). According to the CAT, Russia adopted a new strategy called “Energy Strategy 2035” in June 2020. It “aims primarily to grow its fossil fuel sectors, with a specific focus on expanding natural gas production and exports” (CAT, 2020j, para. 6). Moreover, “the Russian Ministry of Energy has explicitly identified the promotion of renewable energy to be a direct threat to Russia’s fuel and energy complex” (CAT, 2020j, para. 14).

Russia also opposes some implementations on international governance effort as carbon border tax (Morgan, 2020). However, this idea is expected to get stronger in such countries, including the US with the Biden administration, the EU, and Canada. Russia is “the main supplier of petroleum oils and natural gas to the EU” (Eurostat, 2020, p. 1). “Energy imports to the EU from Russia as a share of total imports to the EU from Russia increased by 3.2 percentage points from 61.4 % in 2016 to 64.6 % in 2020” (Eurostat, 2020, p. 8). The pivot is how Russia will collaborate with its vital trade partner, the EU,

as that transitions of the others to a carbon-free economy? Climate change poses a two-fold threat to the country's economy: the impact of adverse damage resulting from increased natural disasters on the economy and the vulnerability of Russia's overdependence on hydrocarbon production (Newlin & Conley, 2021).

On the contrary, those in the country think that climate change will reflect credit upon Russia. Pointing to nuclear, hydroelectric, and natural gas production as one of the most environmentally friendly energy mixes in the world, Putin stated the following regarding energy transition and zero-carbon energy: "When these ideas of reducing energy production to zero or relying only on solar or wind power are promoted, I think humanity could once again end up in caves, simply because it won't consume anything" (The Moscow Times, 2019). However, despite all these statements, especially the ambitious target of the EU will cause pressure on the country and extra costs. With the recent pandemic, falling energy demand and prices, other socioeconomic problems, and the increasing adverse impact of climate change over time, Russia will need to reconsider its weak steps on climate change governance.

As a superpower, the role of the US in climate change governance is very significant. However, the role of the US in the climate change governance process varies with the policies followed by its leaders. While the Bush and Trump administrations were adopted a more pessimistic manner about the struggle with climate change, the Obama and Biden administration have a more optimistic attitude. In its INDC, the US aimed to achieve "an economy-wide target of reducing its greenhouse gas emissions by 26%-28% below its 2005 level in 2025 and to make best efforts to reduce its emissions by 28%" (UNFCCC, 2015o, p. 3). The CAT evaluated the 2025 target of the US as 'Insufficient', but because of the decision to withdraw from the PA, they rated it as 'Critically insufficient' (CAT, 2020b). But a new assessment is needed because of the US official return to the agreement under Biden's leadership. "Rejoining the PA requires that the Biden administration announce a new NDC that includes a 2030 emissions target" (Bordoff, 2021, para. 4).

"The Trump administration has not initiated a green recovery even in the pandemic. Instead, it has used the process as justification to further relax environmental regulations" (CAT, 2020b, para. 4). Moreover, while Republicans make suggestions to

strengthen the oil industry for the recovery process, Democratic President Biden stands out with his serious plan focused on clean energy investment and new job creation (CAT, 2020b). The Biden Plan, a Clean Energy Revolution, aims to achieve reaches economy-wide net-zero emissions no later than 2050 (The Biden Plan, n.d.). In addition to multiple ambitious climate plans, Biden has shown determination in his claim by choosing important figures in his cabinet for managing climate change governance. In one position, John Kerry is a special presidential envoy for climate. He was the negotiator of the PA and was the Secretary of State in the Obama administration (Barbaro, Johnson, Krupke, & Ploeg, 2021). In another position, Gina McCarthy, who ran the Environmental Protection Agency under the Obama administration and now leads a major advocacy group chosen as Kerry's partner, the domestic climate czar, and the White House national climate advisor (Eilperin & Dennis, 2020; Friedman, 2020). All policies show that the Biden administration is planned to prioritize climate policy. The country's NC and BR reports are also old-dated; it will be more appropriate to evaluate the role of energy geopolitics on climate change governance after the new submissions.

The EU is taking a leading part in climate negotiations and the global fight against climate change. The EU and its member states have signed a common INDC statement and are committed to a "binding target of an at least 40% domestic reduction in GHGs by 2030 compared to 1990" (UNFCCC, 2015d, p. 1). According to the CAT, the EU has taken a significant step toward taking back its status as a climate pioneer. Though its climate policies are not yet compliant with the PA, it stands out among other countries in terms of making climate change the driving force behind economic recovery (CAT, 2020g).

For the EU to become a climate leader in the climate action area, it needs to set a more ambitious target. The European Commission recommended in the proposal of the 2030 Climate Target Plan that the EU increase its "economy-wide GHGs reduction target by 2030 compared to 1990 of at least 55% including emissions and removals" (European Commission, 2020a, p. 2). The Commissions suggested that as a result of increasing ambitions on target and the transition to low-carbon energy systems:

The EU's energy system will be much more secure and resilient. Fossil fuels are exposed to volatile fuel prices and supply disruption. More than half of EU energy needs are covered by imports. Renewable energy generated in the EU reduces this exposure, thereby increasing the security of supply. Net energy imports are projected to decrease by more than a quarter in the period 2015-2030. Increasing the climate ambition from the current 2030 target to 55% and achieving climate neutrality by 2050 would save on the EU's import bill EUR 100 billion over the period 2021-2030 and up to 3 trillion by 2050. (European Commission, 2020a, p. 6)

All the EU members are not the same point or capacity to the energy transition. However, there is a general transition from coal to renewable. "In 2019, the share of renewables in power generation increased by 1.8 percentage points and reached 34.6%, and the share of coal will continue to fall in 2020" (CAT, 2020g, para. 12).

The EU sets various plans, packages, and targets on behalf of climate action and fulfills its responsibilities. To give an example of this is the "Clean Energy for all Europeans" package. The EU completed its energy policy framework to facilitate energy transition and to deliver on the EU's Paris commitments in 2019 (European Commission, 2020b). Moreover, "in the framework of the European Green Deal, the EU is planning to revamp almost all of its climate legislation and complement it with additional measures" (CAT, 2020g, para. 2). As a result, the EU can both lead this process, consolidate its soft power, and guarantee energy security by reducing energy dependency, and it could be the winner of climate change governance.

Brazil is another country taking a leading part in climate change governance thanks to the policies to promote renewables and reducing deforestation. It was the first country to sign the Convention in 1994 (UNFCCC, 2020d, p. 67). It played a relevant role in the governance process with its efforts, such as hosting summits and provide several research programs. The country planned to "reduce GHG emissions by 43% below 2005 levels in 2030" (UNFCCC, 2015e, p. 2). Brazil's long-term goals are to "strive for a transition towards energy systems based on renewable sources and decarbonization of the global economy by the end of the century" (UNFCCC, 2015e, p. 4). However, these targets and government policies do not overlap completely. According to Viscidi and Graham (2019), "Brazil was a global leader on climate change. Now it's a threat" (Viscidi & Graham, 2019). President Jair Bolsonaro, which took office in 2019, has been cited as the main reason for this argument. At this point, several statements by

Bolsonaro caused reactions. “He has grumbled that environmental policy is ‘suffocating’ the economy and has threatened to withdraw Brazil from the PA” (Viscidi & Graham, 2019, para. 4).

Reduced deforestation is the essential contribution of Brazil fighting climate change problem, but “compared with 2019, the first five months of 2020 registered a substantial drop in government spending on forest inspection activities carried out by the Brazilian Institute of Environment and Renewable Natural Resources (Ibama)” (Angelo, 2020). According to the CAT (2020f), this politics “takes Brazil in the opposite direction of its PA commitments, which include a target of zero illegal deforestation in the Brazilian Amazonia by 2030” (para. 4). Although renewable energy still has an important share in the energy sector for the country where the environmental regulations have been weakened due to the pandemic, and the CAT (2020f) argued that “policy developments during Brazil’s COVID-19 recovery may ultimately limit the options for long-term deep decarbonization of the economy by locking Brazil into a carbon-intensive energy infrastructure” (para. 6).

China’s every step is significant for climate change governance because it is the world’s largest GHG emitter (Climate Watch Historical GHG Emissions, 2021). The country is often criticized for this reason, especially by the EU. Moreover, coal remains the primary concern as to governance effort. This approach is incompatible with the aim of the PA. China has specified its actions by 2030 in its INDC as follows:

To achieve the peaking CO₂ emissions around 2030 and making best efforts to peak early; to lower CO₂ emissions per unit of GDP by 60% to 65% from the 2005 levels; increase the share of non-fossil fuels in primary energy consumption to around 20%. (UNFCCC, 2015b p. 5).

The geopolitics of energy is vital for China, especially considering its population and economy. Remarkably, further analyses showed that the country is “the world’s largest financier and builder of both fossil fuel and renewables infrastructure worldwide” (CAT, 2020e, para. 7).

While the fight against the increasing population and energy dependence is a matter for China to take steps, China had to take a step in this process as a result of the problem of air pollution becoming a major problem and the pressures on the international

arena for combating climate change. Recently, in September 2020, President Xi Jinping signaled to strengthen its INDC commitment and emphasized that “China would achieve a peak in emissions before 2030 and carbon neutrality before 2060” (CAT, 2020e; Harvey, 2020; Volcovici, 2020) with the result of pressures. If it happens, this could be a considerable step for the governance process.

India, one of the key developing countries with its population and surface area, is also in a significant position on climate change governance due to its emission profile. The country promotes efficient use and conservation of energy by various acts. Additionally, different policies have focused on policies such as universalizing access to electricity and promoting renewable sources of energy. Besides, the country plans renewable energy investment projects such as the Green Energy Corridor Project. Related to renewables, “for the first time in 2018, solar investments exceeded investments in coal (CAT, 2020h, para. 12). India underlines that in order to secure a reliable, adequate, and affordable supply of electricity, but coal will continue to dominate power generation in the future. “While no new coal-fired power station has been built in the first half of 2020, it keeps planning for more coal capacity” (CAT, 2020h, para. 7).

Its second NC report showed that it aims to increase the efficiency of coal-based power plants as in South Africa and reduce its carbon footprint. According to its INDC, the country has planned “to reduce the emissions intensity of its GDP by 33 to 35 percent by 2030 from 2005 level” (UNFCCC, 2015k, p. 29). The CAT (2020l) suggested that “there is potential for the nation to become a world leader with enhanced 1.5 compatible targets and a just and swift transition away from coal and accelerate the transition to renewable energy” (para. 1).

Among developed and emerging economies, South Africa has implemented one of the most comprehensive and consultative climate governance schemes (Averchenkova, Gannonand, & Curran, 2019). However, the country’s reports emphasized that it faced many difficulties in implementing the PA and INDC necessities. These difficulties arise from a variety of areas as follows:

Overstretched human and technical capacity, structural issues, such as historical tensions between the main players, lack of clarity in the assignment of responsibilities, lack of ownership over implementation agendas, multiple ministries dealing with issues concurrently without sufficient coordination, and cumbersome and ineffective communication practices. (Averchenkova, Gannonand, & Curran, 2019, p. 3)

The country heavily dependent on coal, and according to its INDC statement, it is investing in a transition to the low-carbon energy sector (UNFCCC, 2015k, p. 2). It defined its emission goal as “South Africa’s emissions by 2025 and 2030 will be in a range between 398 and 614 Mt CO₂-eq” (UNFCCC, 2015k, p. 6). According to the CAT (2020l), “initial proposals by the South African government for post-COVID-19 economic recovery indicate its intention to focus on carbon-intensive investments instead of prioritizing a green recovery” (para. 1).

Iran is one of the leading countries for the geopolitics of energy with its resources-rich position with enormous oil and gas reserves. The country stated that “the increasing trend of GHGs emissions is inevitable on the grounds that this wealth is a part of national development” (UNFCCC, 2015f, p. 2). Dependence of the national economy on oil and its products’ revenues is the main reason why the country’s mitigation of GHGs emission actions plays second fiddle.

The country had not constantly refrained from its emphasis on economic sanctions in its INDC, and it has shaped its situation on climate governance effort according to the sanctions. It committed to reducing its “GHGs emissions in 2030 by 4% compared to the Business As Usual (BAU) scenario as unconditional mitigation action, and its conditional mitigation action included up to 8% against the BAU scenario (i.e., 12% in total)” (UNFCCC, 2015f, p. 4). Due to the significant share of the energy sector in emissions, more than 90%, mitigation of emissions potential mostly exist in this sector, but the country has been various technological requirements. “The total annual investments needed to achieve unconditional and conditional GHGs mitigation are about 17.5 and 52.5 billion US dollars respectively” (UNFCCC, 2015f, p. 6). The %30 reduction of energy intensity target of Iran did not succeed, unlike energy intensity was increased.

President Hassan Rouhani accepted climate change as “one of the most significant challenges of the 21st century” (Islamic Republic News Agency (IRNA), 2014).

However, the unconditional and conditional targets of Iran are conditional on the absence of any forms of restrictions and sanctions. Iran has long been in a difficult process due to the impact of sanctions economically, so it has not been able to make great strides in benefiting climate governance. According to Madani (2020),

The sanctions cannot be blamed as the cause of Iran's environmental problems; their impact as a degradation catalyst is undeniable. Their effect on the international banking system, the economy, and trade have effectively limited Iran's access to technology, know-how, service, and aid, with major environmental implications. (p. 28)

However, considering Iran's general attitude towards sanctions, it is possible to say that the development of Iran's environmental actions will be directly shaping with the lifting of the sanctions. Consequently, despite all efforts, fossil fuels will take an important place. Climate problems are currently not considered as important as sanctions for the country with problems selling oil.

Saudi Arabia is one of the leaders of OPEC and has unique fossil fuel resources as Iran. The country ranked in the top 15 most polluted countries (Climate Watch Historical GHG Emissions, 2021) is an important country for climate governance, given its economy based on fossil fuels and its influence in the Middle East. Therefore, its efforts on climate change governance and emission reduction from the energy sector have a determining role.

The country is one of the countries most affected by the global oil demand and the decrease in prices, especially with the pandemic. In this respect, the Saudi "Vision 2030" strategy is a critical framework for energy geopolitics. It is one of the main objectives of the program, especially to reduce dependence on oil and increase non-oil trade. It is seen that this framework continues in its INDCs. The country aimed to "achieve mitigation co-benefit ambitions of up to 130 million tons of CO₂eq avoided by 2030 annually through contributions to economic diversification and adaptation" (UNFCCC, 2015n, p. 1).

According to the CAT (2020k), "as the host of the G20 Summit in November 2020, Saudi Arabia has an important role in shaping the global economic recovery measures, but it has reportedly made efforts to censor the discussion around fossil fuel subsidy removal" (para. 1). Stating that it would work within the scope of "Vision 2030"

to phase-out of fossil fuel subsidies, which is an important step in combating climate change, the country cannot fully apply in practice. “In December 2017, the Saudi government announced it would slow down this fossil fuel subsidy phase-out to enhance the economy” (CAT, 2020k, para. 4).

Last but not least, Turkey is one of the countries that “is highly vulnerable to climate change” (UNDP, n.d.). The country submitted that up to 21% reduction in GHG emissions from the BAU level by 2030 in its INDC (UNFCCC, 2015g, p. 2). However, it has been criticized for not yet ratifying the PA. This situation stems from the demand of the country to change the status under the climate framework. The country offered a suggestion to the Secretariat as “Turkey desires to amend AI to the UNFCCC by deleting the name of ‘Turkey’ and it can much better contribute to combating climate change by being a NAI country” (UNFCCC, 2018b, p. 4). According to Birpınar (2019), Turkey had three red lines when it came to the climate negotiation in Paris:

The first and foremost was removal of the country classification discussed above and were made great effort to be relieved of the developed state status that provided an unjust and extra burden on us regarding the struggle against climate change. Secondly, Turkey said, ‘do not demand anything from us as a country other than the voluntary reduction contribution we provided in September.’ And thirdly, Turkey stated, ‘our emission reduction potential is very high, provide us with financial support so that we can perform much better work in the struggle against climate change’. (para. 14-15)

To this end, “France and Germany had proposed a financial package to Turkey with the support of the UN and the World Bank in 2019 in return for the latter’s ratification of the agreement. Obviously, the package was deemed insufficient by Turkey” (Demirtaş, 2020, para. 10). Thereanent, according to an interview with President Erdoğan:

Neither Merkel nor Hollande kept this promise. When they didn’t keep it, I said in every meeting held about this issue after that, ‘Look, you didn’t keep your word. I will not sign this because you did not keep your word. But if you keep your promise and provide the necessary support to Turkey, then I will sign it.’ Now at the G20 meeting in Saudi Arabia, they again failed to do so. They are always trying to impose on us. (...) Because they want to trap us in the status of developed countries. This is the case. (Presidency of the Republic of Türkiye Directorate of Communications, 2020, para. 18)

The primary goal of the country, which is mainly dependent on energy imports, is to become a center in energy trade in its region by taking advantage of its market size and geostrategic position (Türkiye Cumhuriyeti Dışışleri Bakanlığı (MFA), n.d.). Turkey neighbors many fossil fuel-rich countries as Russia, Iran, etc., so it is one of the most significant factors affecting its preferences. In addition, current resource reserve developments in the Eastern Mediterranean and the Black Sea have accelerated the continuation of the country's drilling activities.

According to it's the seventh NC report, "Turkey's Energy Policy gives top priority to decreasing import dependency by improving the security of supply and utilizing renewable energy sources to the maximum extent in an environmentally sound manner" (UNFCCC, 2019d, p. 87). Despite the low cost of renewable energy systems, the country continues to rely on fossil fuels, and the government supports domestic coal production and gas. "Globally, only China is planning to increase its coal-capacity by a higher amount than Turkey" (CAT, 2020a, para. 10). According to the CAT (2020a), "Turkey is at a crossroads with regards to its energy future: current government plans foresee decreasing its dependency on gas imports through increased renewable energy capacity, but also with the use of domestic lignite coal" (para. 1). That is to say, with the increasing global awareness of climate change governance and the PA and the new policies of the Biden administration in the US, it is likely that Turkey will be subjected to more pressure on this issue in the future.

CHAPTER 5

CONCLUSION

This thesis sheds new light on whether the dependence of the status of climate change governance is related to the geopolitics of energy. The aim of the final chapter is to draw a conclusion from findings revealed by this study's detailed examination of the hypotheses and research question raised in the introduction section and an overview of the general conclusions as a whole. In this thesis, the geopolitics of energy, one of the main determinants of the success and/or failure of climate change governance, was attempted to analyze. The main arguments are that geopolitics of energy is the main determinant of the success and/or failure of climate change governance, and the shaping of climate change governance will be directly related to geopolitics of energy. The findings confirmed the hypotheses put forward at the outset. However, before delving into these conclusions, a summary of what the findings indicated will be given.

This thesis is divided into three main pillars: (i) international climate change governance, (ii) the geopolitics of energy, and (iii) impacts of the geopolitics of energy on international climate change governance. With this in mind, this study began by examining the emergence of global climate change and the rise of the international governance system. International climate change governance, which started in the mid-20th century, has been continuing under the leadership of the UN. The process is carried out particularly through the COP meetings. In this direction, the three main legal instruments or models of the UN were examined: the UNFCCC, the KP, and the PA. The differences between the three models were put forward. It was found out that the pre-Paris period did not go to plan, so much the more because of the burden-sharing and completely bindingness problems, and this awareness was the biggest driving factor of the PA and its core: INDC mechanism. Therefore, the PA and its essential elements were analyzed. This section proceeded especially through IR theories by reason of they offer

an insight into international politics. Neoliberalism and neoliberal institutionalism were opted for research due to their approach. There was a significant positive correlation between the theories and the case. These results showed that environmental problems could be solved through multilateral agreements and cooperation. States are basic actors, but NGOs can have the catalyst effect on the process. It was seen that they sought to the protection of the environment possible, but these theories push aside realist parameters on survival of states such as abilities, power, interest, etc. On the other side, cases such as the withdrawal of the US from the PA or unambitious and noncompatible emission reduction targets of states toward the PA put a question mark in the minds about the parameters that these theories push aside.

Secondly, it was moved on to the geopolitics of energy which is the invisible curtain behind climate change governance. There is increasing popularization of geopolitics in IR. As a strategic tool, geopolitics and energy are seen as a tool for interpreting strategies of states. A growing body of literature has examined defining geopolitics of energy. The six main components were prepared in compliance with the literature (as cited in Figure 3.1). These points were used in Chapter 4 as one of the criteria to examine the impact of energy geopolitics on climate governance in the INDC and content analysis towards the NCs and BRs / BURs. The energy transition, which is one of these components and is detailed in the thesis, has provided an advantage, especially for understanding the correlation between energy geopolitics and governance. The transition of fossil fuels to renewable forms of energy is considered as the most significant development to address climate problems because of the fact that fossil fuels are the biggest driver of the crisis. The results point to the likelihood that countries are adopting a renewable energy target, but several key barriers still hamper renewable energy expansion. The particular focus here was on the question of whether climate change was the main reason for the switch to renewable energy. It was found that it is a reason, but there are still other main reasons as aim to less energy dependency, more competitiveness.

Thirdly, it was revealed that the impacts of the geopolitics of energy on climate governance. The focus was primarily on the PA, which is the final and current stage of climate governance. First of all, the three waves of environmental concerns have been investigated to verify whether energy geopolitics impacts processes. The research

revealed that there is a connection between energy geopolitics and the three waves. The first wave was a concern about the coal and air pollution problem. It gave the catalyst to the transition from coal to oil. So here, the environmental issue has a hand in energy. On the other hand, in the second wave period, energy security came to the fore. Correspondingly, the wave lost some of its momenta. These findings support the hypotheses of this thesis. Assuming that the last wave continued under the umbrella of the UN, the analysis was continued at the last point reached. That is to say, research was conducted on the INDC mechanism of the PA. The utility of the mechanism was demonstrated in Chapters 2 and 4.

As INDCs are the most intrinsic element of the current governance process, the information addressed in these statements on the geopolitics of energy is a significant clue to the research question. Due to energy being a crucial factor for reaching countries' reduction targets, most INDC reports contain components of the subject. The results of this analysis support the idea that there is reciprocity between energy geopolitics and INDC reports. Remarkably, this reciprocal relationship pertains to the interaction capacity of energy geopolitics over climate governance. The most striking result to emerge from the data is that the countries are more willing to continue in the areas they specialize in. While the countries with developed technology are committed to progress in this respect, the countries whose economies are based on fossil fuels revenues express these details in their reports, and they pursue a strategy to set targets in this direction. Moreover, the more fragile countries along economic dimension do not hesitate to present them as an "excuse" in climate governance, highlighting their vulnerability to the transition to renewable energy. Countries with growing economies and populations tend to turn to renewable energy to guarantee their energy security rather than climate concerns. Major powers (as the US and Russia) may not have contributed as much as expected to climate governance, have avoided submitting detailed reports. These results showed that countries continue to pursue their national interests and matter of survival in the targets determined for solving the common problem. It would appear that these interests are directly related to energy geopolitics. Critically, despite the fact that these findings were expected to do, the research findings were not enough to test the impact. To shed light on these processes, a new analysis on the national reports has been proposed (referred to in Table 4.5).

The NCs and BRs / BURs reports are primary sources as governments submit them, and they are updated in certain periods. By having of content analysis, it was able to more data concerning the research question, and the result has further strengthened the hypotheses of the thesis. The results of the content analysis indicated from the specific to the general that: the uneven distribution of natural resources affects the energy transition and creates a dependency problem. While resource-rich and developed economies are more compatible with the energy transition, countries with resource-rich (fuel-exporting) and developing economies and countries with having scarce resources and developing economies have weaker steps on energy transition. The effects of unequal resource distribution could not generalize with the effecting role of countries having energy resources in regulating market prices. At this point, the role of major international energy companies is also essential. However, this thesis is confined by states. Therefore, future studies on the topic are recommended in order to elucidate the impact of energy companies on climate change governance. Then, the content analysis results would seem to suggest that strategic location, like natural resources, is a feature dependent on geography. However, not every country having natural resources is a strategic location and vice versa. In most of the samples, there is an effort on the management of energy. They mainly mentioned that they promote energy efficiency by strengthening their technical capacity. Energy security is a key component for almost all samples considering climate change governance. Countries highlighted strengthen energy security through diversification of energy mix. Results indicate that all samples put energy transition on the agenda. It is a critical step for climate governance. However, whether or not to have the resources consuming still creates an obstacle. All results show that the selected components of the geopolitics of energy are widely included in the climate policies of countries to determine climate change governance efforts. It can be concluded with the help of these arguments that each country has its own national circumstances and the geopolitics of energy is one of the main instruments of the past and future of climate governance.

The last point was a general assessment of the samples on climate governance. This heading provided an insight into countries' commitments and current climate policies. In general, the findings of this study suggest that most of the samples did not act according to the requirements of the PA. The condition has deepened even more with

COVID-19. However, the current positive steps from the US and China are considered to give a green light. Especially the more ambitious actions of Brazil and India in governance can further strengthen the process. If the EU progresses together with these countries, it can become a soft unifying power. Iran, South Africa, and Turkey, which are more fragile economically, can be part of the governance process if they are supported economically. Although the incentives of resource-rich countries such as Russia and Saudi Arabia for the climate process do not benefit countries economically in the short term, they are highly critical in the long term, given the devastating consequences of climate change.

Taken together, these results would seem to suggest that energy geopolitics plays a key role in changing the course of countries' climate governance. This thesis has designated its focus on the question "whether one of the obstacles of success and/or failure of climate governance could be geopolitics of energy?" rather than a holistic question like "what are the obstacles to path to success and/or failure of climate governance?". Energy geopolitics is both a tool and a purpose for states. Because the energy sector is the root cause triggering GHGs emissions, on the other hand, energy demand has never been exhausted; on the contrary, it has increased steadily. Although energy geopolitics plays an essential role in the demand and price side, there has been a great transition. At the outset, it was argued that one of the crucial steps for climate change governance to succeed is the transition to clean energy. Although countries are making this effort, energy geopolitics will continue to play its role. This time geopolitics of renewable energy will also be discussed. The rising concerns about energy dependence and the fact that fossil fuels are exhaustible resources can accelerate the transition process with the requirement of climate change governance. However, the compatibility of the current system with fossil fuels is a reason that the transition process will not take place in a short time; already, transition processes are not short-term and easy changes as stated in the literature. The withdrawal of some countries as Canada and the US from climate agreements, the lack of ambitious mitigation targets, and the fact that most developing countries' priorities are not the climate problems show that the climate governance process is not easy and will not be. The energy factor behind this difficulty may also provide an opportunity for the solution of the problem. However, this requires a solid technological infrastructure and a serious budget. The renewable world may be the world

of new opportunities, but climate governance is not limited to energy. Global politics remains an obstacle behind the governance. But if the world is ambitious enough, it might be possible to turn obstacles into opportunities. In a nutshell, the future of climate governance will be driven by the appearance of a new world shaped by energy geopolitics. Tackling climate change is not yet the ultimate goal. However, public awareness may provide a unique solution. It is hoped that this research will serve as a base for future studies on climate governance and geopolitics of energy.



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APPENDICES

A. CONTENT ANALYSIS

CANADA	
Natural Resources	“As a resource-rich economy, Canada is also a net exporter of agriculture, energy (electricity and oil and gas) and many resource-based commodities such as pulp and paper, mined metals and aluminum” (UNFCCC, 2017b, p. 17). “Canada has an abundant and diversified portfolio of energy resources. In terms of hydrocarbon resources, Canada is a major global producer and exporter” (UNFCCC, 2017b, p. 20). “Canada’s position in the world is 2nd in hydroelectricity production, 2nd in uranium production and exports, 3rd in oil reserves 4th in production and 3rd in exports, 5th in natural gas production and 4th in exports, 7th in wind energy capacity” (UNFCCC, 2017b, p. 20). “Canada is a net energy exporter and is the world’s fourth-largest exporter of crude oil and fourth-largest exporter of natural gas” (UNFCCC, 2017b, p. 72).
Strategic Location	“Canada’s unique geographic, demographic, and economic circumstances influence its GHG emissions profile. For example, while Canada has a relatively small population, it also has one of the largest landmasses in the world, most of it located in the northern half of the northern hemisphere” (UNFCCC, 2017b, p. 6). “Transportation is critical to the Canadian and global economy. As a trading nation, Canada relies on a transportation sector that is globally competitive. In 2016, the broader transportation industry contributed 4.5% to Canada’s GDP” (UNFCCC, 2017b, p. 22). “Canadian ports and harbors serve as vital links and gateways that facilitate domestic and international economic activities. Canada is home to more than 560 port facilities” (UNFCCC, 2017b, p. 23).
Energy Management	“Canada is part of a fully-integrated North American market where natural gas moves from supply basins to demand centers via an extensive pipeline network” (UNFCCC, 2017b, p. 21).

	“The Emerging Renewable Power program will provide up to \$200 million to expand the portfolio of commercially viable renewable energy sources and technologies available to provinces and territories as they work to reduce GHG emissions from their electricity sectors” (UNFCCC, 2020b, p. 16).
Energy Security	“While the primary focus of the \$400 million Arctic Energy Fund under the Investing in Canada Infrastructure Program is to improve energy security, funding can also be used to support the transition, in whole or in part, from fossil fuel-based systems to renewables” (UNFCCC, 2020b, p. 16).
Energy Transition	“Canada is a leader in clean electricity, with 80% of its power generation coming from non-GHG emitting sources, ranking 2nd among G7 countries. In terms of renewable energy, Canada leads among the G7 with 65% of electricity generated from hydro, wind, solar and other renewable sources” (UNFCCC, 2017b, p. 20). “Coal generation is expected to fall by 60% between 2015 and 2030 as coal units continue to retire or reduce production in Alberta, Saskatchewan, and Nova Scotia. Natural gas generation is expected to increase to replace coal and nuclear generation, as well as to support increasing use of intermittent sources of generation such as wind” (UNFCCC, 2017b, p. 143).
JAPAN	
Natural Resources	“Before the 1960s, domestic coal was Japan’s primary energy supply mainly. Soon after, the domestic coal lost price competitiveness; therefore, Japan started to rely heavily on cheaper petroleum from the Middle East. However, when the second oil crisis hit in the 1970s, petroleum-dependent policy and measures were replaced with the promoted introduction of nuclear power, natural gas and coals, accelerating development of new energies” (UNFCCC, 2019c, p. 32).
Energy Price	“Crude oil import prices shifted stable in the 1990s; prices skyrocketed in the 2000s due to the strong growth of oil demand in the developing countries and increasing geopolitical risks in the Middle East. Japan’s LNG import prices are linked to crude oil; therefore, its trend resembles that of crude oil prices. Level of coal import prices remains lower than crude oil and LNG, steadily growing after the 2000s” (UNFCCC, 2019c, p. 35).
Energy Management	“In the Industrial Sector, promotion and enhancement of voluntary action plans of the industry through the steady implementation of Industry’s Action Plans towards a Low-carbon Society and Evaluation and Verification of progress, promotion of introduction of highly energy-efficient

	equipment and devices, implementation of thorough energy management and promotion of energy efficiency actions through alliance between industry groups have been promoted” (UNFCCC, 2019c, p. 5). “In order to contribute to significant global emission reduction through innovation, based upon National Energy and Environment Strategy for Technical Innovation towards 2050 adopted in April 2016, Japan will promote the development of innovative technology with great reduction potential and impact in a long-term perspective” (UNFCCC, 2019c, p. 10). “Japan will also accelerate innovation through ‘Innovation for Cool Earth Forum,’ the global platform to promote discussions and cooperation on innovation in energy and environmental technology among worldwide academic, industrial and public sectors” (UNFCCC, 2019c, p. 11). “Japan promotes thorough energy management and the introduction of energy-efficient equipment and devices based on the Act on the Rational Use of Energy. Through measures, Japan intensively promotes energy efficiency using various initiatives under the Act on the Rational Use of Energy” (UNFCCC, 2019c, p. 114). “Japan will contribute to solving the climate change problem all over the world through the development of technologies in the environment and energy fields (Innovation), and by taking a leadership role in the international diffusion of the technologies (Application) based on proactive diplomatic initiatives for countering global warming, which is called the Actions for Cool Earth Japan as announced in November 2013” (UNFCCC, 2019b, p. 184).
Energy Security	“Japan works to realize an energy mix through thorough energy conservation, full use of renewable energy while suppressing the burdens on the people, improvement of the efficiency of thermal power generation, use of nuclear power generations whose safety is approved, and diversification of fuels in different categories by shifting to natural gas in the industry sector based on the policies in the Strategy for Energy Reform” (UNFCCC, 2019c, p. 5). “Renewable energy is promising, diversified, and important because low-carbon domestic energy sources in Japan contribute to energy security. Therefore, the renewable energy will be expanded their introduction to the maximum extent in accordance with their characteristics while reducing the burden on the people by properly responding to issues such as stable supply, cost, and environmental aspects” (UNFCCC, 2019c, p. 125).

Energy Transition	“Japan strengthens public campaigns to facilitate all types and classes of people to work on mitigating global warming together, change their awareness, and encourage them to make wise choices by selecting low-carbon products, services, and initiatives so that the lifestyles of Japanese people will be appropriate as members of a low-carbon society” (UNFCCC, 2019c, p. 5). “Efforts toward the establishment of low-carbon society should be accelerated throughout the world. Japan proposed “East Asia Low Carbon Growth Partnership” with the aim of promoting low-carbon growth through regional cooperation among the participating countries of the East Asia Summit and presented “A proposal from East Asia Low Carbon Growth Partnership Dialogue - Transformation to Low Carbon Growth –“which contains some good practices towards the low carbon economic growth at a COP21 official side event. In order to facilitate the achievement of an agreement at COP21, Japan announced its new policies of contribution called “Actions for Cool Earth 2.0,” which consists of two pillars: (i) providing support to developing countries worth of 1.3 trillion yen in 2020 and (ii) promoting innovation. Japan continues to proactively contribute to the international community in these fields” (UNFCCC, 2019c, pp. 164-165).
RUSSIA	
Natural Resources	“All types of fossil fuels are produced in Russia; the main part of the production is oil, natural gas, gas condensate and coal” (UNFCCC, 2017c, p. 34). “Russia has 34% of the world’s proven reserves of natural gas, about 12% of oil, about 20% and 32% of coal and brown coal, respectively” (UNFCCC, 2017c, p. 37). “Energy makes the largest contribution to the total GHG emissions in the Russian Federation. The main emissions in this sector are associated with the burning of natural fuels produced in Russia (oil, natural and petroleum (associated) gas, coal and, to a much lesser extent, peat and oil shale), as well as their processed products” (UNFCCC, 2017c, p. 52).
Energy Transition	“Production of primary energy resources in 2016 compared to 2012 increased due to an increase in oil production –by 5.5%, coal-by 11.5%. Gas production decreased by 2.0%. Electricity generation from nuclear and hydroelectric power plants increased by 11.9%” (UNFCCC, 2017c, p. 37). “The concept of long-term socio-economic development of the Russian Federation for the period of 2020 was approved by Order of the Government of the Russian Federation. In relation to the energy sector, the Concept provides for: overcoming energy barriers to growth, including by improving energy efficiency and expanding the use of alternative energy sources, while maintaining the trend towards higher

	energy prices; increasing the use of renewable energy sources; promotion of production modernization aimed at reducing energy and material consumption; development and implementation of new efficient technologies for the production of electric and thermal energy; creation of economic incentives for the modernization of production, the use of environmentally friendly and (or) energy-saving technologies through the introduction of tax policy measures” (UNFCCC, 2017c, p. 93). “As part of the implementation of the Concept, it is planned to stimulate modernization production, reduction and recycling of waste, development, and implementation of new efficient technologies for the production of electric and thermal energy, associated with environmentally safe waste disposal, and containment of anthropogenic GHG emissions” (UNFCCC, 2017c, p. 93).
THE UNITED STATES	
Natural Resources	“The US is the world’s second-largest producer and consumer of energy. The nation has large reserves of energy sources currently available for production, including fossil fuels, uranium ore, renewable biomass, and hydropower. Other renewable energy sources, such as solar and wind power, currently represent approximately 2 percent of the total energy resources used in the US” (UNFCCC, 2014c, p. 50). “The production of ‘shale gas’ has grown rapidly in recent years. The extraction and use of shale gas are projected to continue to grow during the next several years” (UNFCCC, 2014c, p. 51). “Current estimated recoverable coal reserves would supply the US demand for energy, assuming constant 2011 rates of consumption, for approximately 258 years. As of December 31, 2008, of the estimated world recoverable coal reserves of 948 billion short tons, the US holds the world’s largest share (27 percent), followed by Russia (18 percent), China (13 percent), and Australia (9 percent)” (UNFCCC, 2014c, p. 62). “Proved US reserves of dry natural gas are rapidly increasing. This growth has led to greater domestic natural gas supply and relatively low prices in the US, thus reducing US reliance on foreign natural gas” (UNFCCC, 2014c, p. 63). “Horizontal drilling and hydraulic fracturing in shale and other very low-permeability formations continue to drive record increases in proved oil” (UNFCCC, 2014c, p. 63).
Energy Price	“The discovery and exploitation of vast reserves of US natural gas have reduced the domestic price per British thermal unit of natural gas and sparked demand for natural gas as both a base-load fuel for electricity generation and a heating fuel for US households” (UNFCCC, 2014c, pp. 57-58).

Strategic Location	“The US is one of the largest countries in the world, with a total area of 9,192,000 km² (3,548,112 square miles) stretching over seven-time zones” (UNFCCC, 2014c, p. 60).
Energy Management	“For clean energy, dedicated US climate assistance focuses on countries and sectors offering significant emission reduction potential over the long term, as well as countries that offer the potential to demonstrate leadership in sustained, large-scale deployment of clean energy. The US also supports regional energy programs that improve the enabling environments for regional energy grids to distribute clean energy, as well as global programs that focus chiefly on information sharing and building coalitions for action on clean energy technologies and practices” (UNFCCC, 2014c, p. 21). “A large number of US states and localities are implementing clean energy incentives and clean energy targets as well” (UNFCCC, 2014c, p. 52). “Over the years, the US has developed an extensive multimodal system that includes road, air, rail, and water transport capable of moving large volumes of people and goods long distances” (UNFCCC, 2014c, p. 68). “The Obama administration and Congress are working to spur a revolution in clean energy technologies. The research and innovation activities in this arena, which span multiple federal agencies, are organized around such goals as reducing emissions from energy supply, end-use, and infrastructure; capturing and sequestering CO₂ and reducing emissions of other GHGs; measuring and monitoring emissions; and bolstering the contributions of basic science to innovation” (UNFCCC, 2014c, p. 197). “The US has initiated or joined a number of technology collaborations in hydrogen, carbon sequestration, nuclear energy, and fusion that address many energy-related concerns, including climate change” (UNFCCC, 2014c, p. 197). “In 2014, renewable energy was half of newly installed generating capacity. This progress is credited to strong federal policies supporting research, development, and deployment of renewable energy. In December 2015, Congress passed a five-year extension of these important provisions, providing long-term certainty that will drive the construction of new projects up to and beyond 2020. This represents one of the biggest investments to deploy renewable energy in our nation’s history and sends a clear signal to the market that will spur investment in wind, solar, and other renewables” (UNFCCC, 2015j, p. 18).

	“While the US is taking action to encourage the adoption of cleaner forms of energy today, we are also making major investments in R&D to support the clean energy and climate change mitigation technologies of tomorrow. To accelerate the transition to a clean energy economy, the Obama Administration and Congress continue to enhance cutting-edge R&D of clean energy sources” (UNFCCC, 2015j, p. 21). “In FYs 2013 and 2014, the US committed \$4.2 billion to finance clean energy activities in developing countries. The US is supporting countries to place the building blocks to scale up renewable energy, for example, by providing technical assistance to energy system planners, regulators, and grid operators to improve the capability of regional energy grids to distribute clean energy. The US also supports global programs that focus chiefly on information sharing and building coalitions for action on clean energy technologies and practices” (UNFCCC, 2015j, p. 44).
Energy Security	“The US energy supply system is diverse and robust in its ability to provide a secure supply of energy with only occasional interruptions. However, current and projected impacts of climate change will shift seasonal patterns of energy use toward a reduction in heating and an increase in cooling requirements. Along with a variety of economic factors and an increase in extreme events in vulnerable areas, shifts in energy use and climate extremes pose risks to energy security” (UNFCCC, 2014c, p. 154). “At the UN climate negotiations in Paris, President Obama and other world leaders launched Mission Innovation, a landmark commitment to dramatically accelerate public and private global clean energy innovation. To reinvigorate global efforts promoting clean energy innovation, all participants of both efforts share a common goal to develop breakthrough technologies and substantial cost reductions, which will enable the global community to meet our shared climate goals, increase access to clean and affordable energy, support economic development, and strengthen energy security” (UNFCCC, 2015j, p. 22).
Energy Transition	“Principally due to a shift from coal to natural gas, as well as rapidly growing deployment of renewable sources of energy, CO2 emissions from electricity generation decreased by 10 percent below 2005 levels in 2011” (UNFCCC, 2014c, p. 10). “During the President’s first term, the US more than doubled generation of electricity from wind and solar sources. To continue US leadership in clean energy, President Obama has set a goal to double renewable electricity generation from wind and solar once again by 2020” (UNFCCC, 2014c, pp. 14-15). “Investments in renewable energy have led to rapid growth of wind, solar, and geothermal power in the energy mix” (UNFCCC, 2014c, p. 51). “Renewable energy sources, including solar, wind, hydropower, and geothermal, have rapidly expanded. While the three major fossil fuels—petroleum, natural gas, and coal— have dominated the US fuel mix, recent increases in the domestic production of petroleum liquids and natural

	gas have prompted shifts between the uses of fossil fuels (largely from coal-fired to natural gas-fired power generation)” (UNFCCC, 2014c, pp. 61-62). “Due to the advent of innovative drilling techniques, such as horizontal drilling and hydraulic fracturing, the US has experienced a boom in shale gas and oil exploration and extraction, and natural gas has recently become an increasingly prominent US fuel source” (UNFCCC, 2014c, p. 63). “These policies have played a primary role in the rapid expansion of electricity generated from renewable resources, such as solar energy and wind” (UNFCCC, 2014c, p. 64). “Renewable energy represents a rapidly growing source of US energy production” (UNFCCC, 2014c, p. 64). “While fossil fuels remain predominant, 2005–2012 trends show swift—and ongoing—evolution of the fuel mix toward cleaner sources, with natural gas and renewables increasingly displacing coal and petroleum” (UNFCCC, 2014c, p. 65). “Under President Obama, the US has made notable investments in renewable energy. Since 2008, wind power has tripled, and solar generation has increased by more than thirtyfold” (UNFCCC, 2015j, p. 18).
THE EUROPEAN UNION	
Energy Price	“Increasing gas and electricity prices should have a positive impact on the EU’s GHG emissions as both industry and households make efforts to conserve energy and improve their level of energy efficiency. This may particularly be the case for households as their disposable income has not risen as much as fuel prices. On the other hand, substitution effects may play a negative role, whereby consumers opt for cheaper fuels such as coal, which is more carbon-intensive” (UNFCCC, 2017a, p. 25).
Energy Management	“The EU is a lead player in the area of low-carbon technologies, yet while emissions are falling in Europe, they are rising in the rest of the world” (UNFCCC, 2020a, p. 134). “To support the delivery of these targets, the Commission adopted the Clean Energy for All Europeans Package in 2016, which aims to keep the EU competitive as the clean-energy transition changes global energy markets” (UNFCCC, 2017a, p. xi). “The Commission has made progress towards ensuring that the 2030 target is met, through the proposition of an amended Renewable Energy Directive” (UNFCCC, 2017a, p. 59).

Energy Security	“These are also headline targets of the Europe 2020 strategy for smart, sustainable and inclusive growth. In order to meet these key objectives: A Directive setting binding national targets for increasing the share of renewable energy sources in the energy mix” (UNFCCC, 2017a, p. 66).
Energy Transition	“The EU has made progress towards achieving its targets of renewable generation equalling 20 % of energy, with a 16 % share of renewable energy in 2014 and an estimated 16.4 % in 2015. Moreover, the vast majority of EU countries are well on track to achieving their 2020 binding targets for renewable energy” (UNFCCC, 2017a, p. xi). “Continued efforts are needed to ensure that the 2020 targets are met and to lay the foundations for achieving the 2030 targets of a share of at least 27 % of EU energy consumption for renewable energy and 30 % energy efficiency” (UNFCCC, 2017a, p. xi). “In this way, the EU can lead the clean energy transition, not only adapt to it. The eight legislative proposals in the package aim to put energy efficiency first, achieve global leadership in renewable energies, and provide a fair deal for consumers. They include amendments to the directives on energy efficiency, the energy performance of buildings, and renewable energy” (UNFCCC, 2017a, p. xii). “Renewables have seen the most marked increase with consumption increasing by over 190 % from 1990 levels. Nevertheless, fossil fuels continue to dominate total energy consumption, making up 73 % of total primary energy consumption in total” (UNFCCC, 2017a, p. 18). “The trend observed since 1990 of a shift in the primary fuel mix from coal to gas has slowed down in recent years, but it has been replaced by an increasing shift towards renewables. The share of renewables in gross inland energy consumption increased from 4% in 1990 to 17% in 2016, largely driven by a very strong increase in the use of biomass for energy purposes. Production of energy from solar photovoltaics and wind has also increased very substantially over the period” (UNFCCC, 2020a, p. 33). “All EU countries have adopted national renewable energy action plans showing what actions they intend to take to meet their renewables targets” (UNFCCC, 2020a, p. 69).
BRAZIL	
Natural Resources	“The country is the second-largest ethanol and biodiesel producer worldwide, with large-scale production as vehicular fuel and the generation of bioelectricity for SIN, from surplus sugarcane bagasse in distilleries” (UNFCCC, 2020d, p. 223).
Strategic Location	“It is the world’s fifth-largest country, exceeded in size only by Russia, Canada, China, and the US” (UNFCCC, 2020d, p. 35). “Brazil has one of the world’s longest coastal zones, a privileged portion of the territory in terms of natural, economic and human resources” (UNFCCC, 2020d, p. 36).

Energy Management	“The National Energy Policy establishes the guidelines for managing and exploiting energy resources” (UNFCCC, 2020d, p. 224). “Two basic documents guide the sector’s decisions: Ten-Year Energy Plan, which indicates projections of energy expansion in the medium term and serves as the basis for energy auctions and contracting for expansion to the free market; and the National Energy Plan, which focuses on the long term by exposing trends for the expansion of the energy system, projection of energy demand, among other objectives” (UNFCCC, 2020d, p. 224).
Energy Security	“As to energy security, climate change will have an impact on all energy chains in Brazil. The most vulnerable energy sources are water for hydroelectricity generation (mainly in the Amazon and Caatinga biomes), and bioenergetic crops (soy and sugarcane) for the production of biofuels (in the Atlantic forest and Cerrado biomes) or for generation of bioelectricity from sugarcane bagasse. On the other hand, the generation of energy from wind and solar energy sources (for centralized and decentralized generation) could be maintained and/or increased (although, in the case of wind energy, the scenarios indicate a reduction in the potential in areas of the Northeast where much of the installed capacity is currently found)” (UNFCCC, 2020d, p. 207).
Energy Transition	“The percentage of renewable sources in the Brazilian Energy Mix in 2019 was 46.1%, a significantly higher share than the average in OECD countries (10.8%) and the world (14.2%)” (UNFCCC, 2020d, p. 36). “Its electric mix is clean, and the energy mix is transitioning to be predominantly based on renewable energies” (UNFCCC, 2020d, p. 64). “Regarding energy circumstances, Brazil has the cleanest energy mix and electricity mix among the largest global consumers. A breakdown of the energy mix for 2018 and 2019 shows a significant increase in the share of renewable sources, from 45.5% in 2018 to 46.1% in 2019. This accounts for a 2.8% increase in the supply from renewable sources compared to the previous year, compared to a 0.3% increase in non-renewable sources during the same period” (UNFCCC, 2020d, p. 65). “Brazil’s share of renewables in its energy mix is currently 4.3 times larger than the average in OECD countries and 3.3 times larger than the average for the rest of the world” (UNFCCC, 2020d, p. 65). “The country’s electricity mix remains primarily based on renewable sources, with the prospect of increasing its share over the next few years given the growing competitiveness of wind and solar sources” (UNFCCC, 2020d, p. 65).

	“With low GHG emissions levels, the diversified Brazilian industrial sector also follows sustainable principles, with an increasing share of renewable energies in its energy mix. In 2019, more than half (58%) of the energy consumed in the industrial sector came from renewable sources” (UNFCCC, 2020c, p. 8).
CHINA	
Energy Management	“China has further improved its laws and regulations on energy conservation and issued Industrial Energy Saving Management Scheme since 2011, to promote the implementation of the basic national policies on resource saving and environmental protection in industrial sectors, strengthen management of energy for industrial use, adopt technologically feasible, economically reasonable and environmentally and socially sustainable measures, reduce energy consumption on all links of industrial sectors, reduce pollutant emission, and utilize energy efficiently and reasonably” (UNFCCC, 2019g, p. 108). “By donating renewable energy and climate change monitoring and early warning devices, this provided support for policy preparation and planning in addressing climate change. Additionally, it promoted climate-friendly technologies” (UNFCCC, 2019g, p. 211). “The Chinese government has donated energy conservation, low carbon products as well as hosted climate change workshops and other activities to actively push forward South-South Cooperation on climate change” (UNFCCC, 2019g, p. 212).
Energy Transition	“China has always developed non-fossil energy while pursuing clean and efficient use of fossil energy. It also takes the development of clean and low-carbon energy as the main direction of adjusting energy structure. The 12th Five-Year Plan for Energy Development compiled by the Chinese government in 2013 further proposed the main goals and tasks of optimizing energy structure during the 12th FYP period: to lift the share of non-fossil energy consumption to 11.4%; increase the ratio of installed power generation capacity of non-fossil energy to 30%; increase the share of natural gas in energy consumption to 7.5%; and reduce the share of coal consumption to around 65%” (UNFCCC, 2019g, p. 122). “During the 12th FYP period, China increased the support to the development of new renewable energy, such as wind, solar, geothermal and bioenergy” (UNFCCC, 2019g, p. 123). “China has established the strategic guideline of ‘working on oil and gas simultaneously’ to encourage the exploitation and utilization of natural gas” (UNFCCC, 2019g, p. 124).

	“The Chinese government also developed the Shale Gas Development Plan (2011-2015), which proposed the goal that till 2015, the yield of shale gas will be 6.5 billion m3 and arranged special funds to support the exploitation of shale gas. China also formulated related industrial policies to promote the scientific and efficient development and use of coal-bed gas and shale gas” (UNFCCC, 2019g, p. 125). “Since 2011, the scale of development and utilization of new energy and renewable energy has grown significantly in China. By the end of 2015, China’s power generation capacity of non-fossil energy occupied 27.2% of the national gross generating capacity. The share of non-fossil energy consumption went up from 7.4% of 2005 to 12.1% of 2015, with a growth of 4.7 pps.” (UNFCCC, 2019g, p. 127). “China will optimize energy consumption structure, expand natural gas consumption and increase the share of natural gas and non-fossil energies in the energy consumption. China aims to have natural gas account for 10% of total energy consumption by 2020, increase non-fossil energies to more than 15% of total energy consumption; reduce coal consumption to lower than 58%, and increase coal consumption for electricity to more than 55% of total coal consumption. China will push forward the sustainable development of non-fossil energies, give priority to hydropower development, safely and stably push forward nuclear power development; comprehensively coordinate development of wind power, solar energy and other renewable energies; consider local conditions to develop bioenergy, geothermal energy, ocean energy, and other new energies” (UNFCCC, 2019g, p. 128).
INDIA	
Natural Resources	“The consumption of commercial fuel (coal, oil, natural gas) for production of power and other uses has been steadily rising over the years, with domestically abundant coal continuing to be the dominant source. Coal meets 63% of India’s total commercial energy requirement, followed by petroleum products (30%) and natural gas. Nearly 70% of the power requirement in India presently is met by thermal power plants. The total coal reserves in India are 211 billion tonnes, and by current estimates, the reserves are enough to meet India’s power needs for at least another 100 years. However, due to expanding coal demand, coal imports have been rising rapidly since the last decade. In order to meet the growing demand for oil, India imports about 70% of the total crude oil requirements. The total renewable energy consumption in India, including biomass energy, amounts to about 30% of the total energy consumption, the rest being fossil fuel consumption” (UNFCCC, 2012, pp. 21-22). “India is not expected to be self-sufficient in hydrocarbons. India has only 0.4% of the world’s proven reserves of crude oil, while the domestic crude oil consumption is estimated at 2.8% of the world’s consumption” (UNFCCC, 2012, p. 23).

	“India largely depends on external sources for meeting its requirement of petroleum products” (UNFCCC, 2012, p. 26). India has only 0.6% and 0.4% of the world’s gas and oil reserves, respectively, while it has 9% of the world’s proven coal reserves. As compared to India’s population, energy resources are meagre. To meet its energy needs, India is highly dependent on the import of crude oil” (UNFCCC, 2019a, p. 45).
Strategic Location	“India is the seventh-largest country in the world with a geographical area of 328.73 million hectares, which is 2.4% of the global land area. India has diverse climatic conditions due to its topography and presence of Himalaya that separates the country from the rest of the Asian mainland. India has a coastline of about 7,500 km” (UNFCCC, 2019a, p. 6). “India has 12 major ports, and nearly 200 non-major (minor/intermediate) ports along the coast-line and sea-islands” (UNFCCC, 2019a, p. 121).
Energy Management	“India has installed state-of-the-art energy-efficient technologies to curtail the energy bills. Increased competition due to the liberalization of the economy, the increase in energy prices, and the promotion of energy efficiency schemes with the introduction of the Energy Conservation Act in 2001 have contributed to reductions in the energy intensities of the service and industry sectors” (UNFCCC, 2012, p. 21). “Because of India’s Clean Coal Technology Initiative, supercritical technology for power generation has been adopted in the country” (UNFCCC, 2019a, p. 11). “Green Energy Corridor project for evacuation of renewable energy from generation points to the load centres by creating intra-state and inter-state transmission infrastructure is under implementation in renewable resource-rich states” (UNFCCC, 2019a, p. 105). “India has set up an ambitious plan to scale up electricity generation from renewable energy sources. This includes the National Solar Mission under the NAPCC and various other initiatives like standalone power generation from renewable sources (wind, biomass, and industrial/urban waste), rural energy program (biogas, improved cookstoves), and decentralized solar energy applications (thermal water heaters, solar photovoltaic applications for lighting and water pumping)” (UNFCCC, 2019a, p. 161). “India’s renewable energy program is one of the largest and among the most vibrant. Support for renewable energy and manufacture of renewable technology components has been growing in the country. India has been undertaking research and development activities through budgetary support, which is limited. Though this has resulted in achievements in many areas, efforts for technology development are not

	commensurate with the deployment scales. There are major technology-related gaps that would require to be addressed to unleash the potential of renewable energy in the country” (UNFCCC, 2019a, p. 176). “India cannot go for large-scale deployment of renewable energy technologies unless a facilitative technology transfer regime is put in place, and incremental costs as well as associated costs on these technologies are met from multilateral climate change funds” (UNFCCC, 2019a, p. 176). “India has already started progressively upgrading its existing (only old and inefficient) coal-based power plants from sub-critical to super-critical technology” (UNFCCC, 2019a, p. 177). “Government of India is focusing on low carbon infrastructure and public transport systems to reduce its environmental impacts” (UNFCCC, 2019a, p. 179).
Energy Security	“In the recent years, the government has rightly recognized the energy security concerns of the country, and more importance is being placed on energy independence. The Government of India has taken various initiatives towards diversification of energy sources, energy-efficient technologies, energy conservation measures, regulatory frameworks, etc. to meet the national goals as well as simultaneously addressing climate change concerns. India is probably the only country in the world with a full-fledged ministry dedicated to the production of energy from renewable energy sources. Additionally, India is emerging as a growing market for solar, wind, and hydroelectric power. The Government of India has an ambitious mission of ‘Power for all by 2012’” (UNFCCC, 2012, p. 21). “As a large part of the energy is still derived from fossil fuel, energy security is a matter of concern for India, although in the future it is expected that alternate sources of energy like biofuels would also be available. However, as mentioned earlier, coal being abundant, cheap, and locally available, it will be the mainstay of energy in the country for many years to come” (UNFCCC, 2012, p. 22). “India largely depends on external sources for meeting its requirement of petroleum products. The significant supply-demand gap poses considerable energy security concerns for India. Biofuel blending policy by the Government of India is exploring alternate sources of energy as one of its main objectives” (UNFCCC, 2012, p. 26). “Ensuring energy security, improving access and affordability of modern energy resources for all Indians, diversifying energy resources, resource use efficiency enhancement, reducing aggregate technical and commercial losses in power transmission, and enhancing renewable energy are the pillars of Indian energy policy planning” (UNFCCC, 2019a, p. 11).

	“Renewable Purchase Obligation is the policy instrument for increasing the share of renewables in the electricity mix. In the larger perspective, renewables are a strategic national resource, and their progressively increasing share puts the nation on the path of energy security, energy access, and also reducing the carbon footprint” (UNFCCC, 2019a, p. 162).
Energy Transition	“Reduced energy intensity, at the relatively low level of India’s per capita GDP, has been made possible by a range of factors, including India’s historically sustainable patterns of consumption, enhanced competitiveness, proactive policies to promote energy efficiency, and more recently, the use of the Clean Development Mechanism to accelerate the adoption of clean energy technologies” (UNFCCC, 2012, p. 21). “As stated earlier, coal remains the dominant fuel in our energy mix with a share of 38%, up from 26% in 1953/54. Another fuel that has gained prominence is petroleum. From a share of just 2% in 1953/54 (as all petroleum was imported into India at that time), it has risen to about 26% in 2010/11. The share of natural gas has also increased from virtually nil to 6% in 2001/02” (UNFCCC, 2012, p. 23). “Solar installed capacity in India has increased by about 9 times from 2.63 Gigawatt (GW) to 23.28 GW between March 2014 and August 2018” (UNFCCC, 2019a, p. 5). “The share of non-fossil sources in installed capacity of electricity generation increased from 30.5% in March 2015 to 35.5% in June 2018” (UNFCCC, 2019a, p. 5). “The share of non-fossil fuel-based electricity generation installed capacity has reached 35.5% as in June 2018. Solar energy capacity increased by about 9 times from 2.63 GW in March 2014 to 23.02 GW in June 2018” (UNFCCC, 2019a, p. 11). “The Government of India has set an ambitious target of 175 GW renewable energy capacity by 2022” (UNFCCC, 2019a, p. 11). “Fossil fuels in the form of coal, oil and gas still play a major role in the energy scenario of the country. Energy transition through increasing energy efficiency and deployment of renewables, while ensuring access to affordable energy is inevitable for sustainable development and climate change mitigation” (UNFCCC, 2019a, p. 44). “Coal is the main fuel used for power generation in India. The power sector alone consumes more than 65% of total coal consumption in India” (UNFCCC, 2019a, p. 177). “Nuclear energy is also expected to play a key role. The Government of India has targeted to establish 63 GWe nuclear capacity by the year 2032” (UNFCCC, 2019a, p. 178).

	“Indian Railways is predominantly driven by fossil fuel, which needs to be shifted to use of alternate and renewable sources of energy to reduce the GHG emissions” (UNFCCC, 2019a, p. 179). “Globally, India holds the 5th position in installed capacity of renewable energy as well as of solar power. India is a vast country blessed with an abundance of sunshine, which is increasingly being harnessed by different stakeholders to meet their respective energy needs” (UNFCCC, 2019a, p. 192).
SOUTH AFRICA	
Natural Resources	“Energy utilisation in South Africa is characterized by high dependence on cheap and abundantly available coal. South Africa imports a large amount of crude oil. A limited quantity of natural gas is also available. The country also mines uranium, which is exported. Enriched uranium is imported for South Africa’s nuclear power plant, Koeberg. South Africa also makes use of renewable energy in the form of electricity generated by hydropower most of which is imported. Electricity is also generated from other renewable energy sources such as biomass and solar” (UNFCCC, 2018c, p. 54). “Local refining of crude oil imports contributes 64% to the liquid fuels demand in South Africa. A large portion of liquid fuels are produced in South Africa through the coal-to-liquids and gas-to-liquids processes” (UNFCCC, 2018c, p. 56). “South Africa’s primary energy sources are mainly coal (65.7%) and crude oil (21.6%). Renewable energy sources and waste (7.6%), natural gas (2.8%), nuclear (1.9%), and hydro (0.2%) make up the remainder of the supply” (UNFCCC, 2018c, p. 199).
Energy Management	“The National Energy Efficiency Strategy also considers the use of subsidising energy efficiency projects through the Eskom Demand Side Management Fund. Eskom’s programme covers a range of funding and awareness initiatives, which promote energy efficiency and load management. The programme has expanded the implementation of energy efficiency technologies by providing rebates through the following: Energy Efficiency Demand Side Management; Energy Management Programme; Solar Water Heating Programme; Energy Conservation Scheme; and Demand Response Programme” (UNFCCC, 2018c, p. 202). “There are various initiatives which have high levels of impact, innovation and importance, such as the National Cleaner Production Centre South Africa’s Industrial Energy Efficiency Improvement Project in South Africa that has been designed to promote and implement energy management systems” (UNFCCC, 2018c, p. 323).

	“Important mitigation policies in the Energy sector include the Integrated Resource Plan 2018, the post 2015 National Energy Efficiency Strategy and the Integrated Demand-side Management Programme” (UNFCCC, 2019e, p. xi).
Energy Security	“There is a need for safe, clean, affordable, and reliable energy supply in South Africa. The country aims to meet its medium-term energy supply requirements while encouraging innovation in clean coal technologies, nuclear energy, renewable energy, and the hydrogen economy” (UNFCCC, 2018c, p. 37). “The government intends to diversify energy supply and hence is promoting the use of renewable energy technology as well as other new energy technologies” (UNFCCC, 2018c, p. 54). “A new draft IRP for 2018 has been published, which provides an update on South Africa’s efforts to diversify its energy mix and reduce the reliance on coal. These alternatives options reduce GHG emissions and other pollutants, of which help to improve security of supply and in most cases, lower the cost of providing energy when externality costs are accounted for” (UNFCCC, 2019e, p. 15).
Energy Transition	“The government’s initiatives include the Department of Energy’s Renewable Independent Power Producer Procurement Programme, which has been widely recognized as an innovative and successful measure for developing the local renewable energy market” (UNFCCC, 2018c, p. 19). “Coal provides over 70% of South Africa’s primary energy” (UNFCCC, 2018c, p. 54). “Coal is an important part of South Africa’s energy mix, and it will continue to drive economic and social progress of much of the developing world for the foreseeable future. The challenge now is to make the production and use of coal more sustainable” (UNFCCC, 2018c, p. 55). “Due to South Africa’s location, geography and size, multiple renewable energy resources are available South Africa’s long coastline provides favourable conditions for wind power and the semi-arid climate and flat terrain receives high irradiation making it ideal for solar power. Biomass opportunities are available along the east coast which is tropical and characterized by large wood and sugar plantations. Small-scale hydropower is also a possibility” (UNFCCC, 2018c, p. 56). “Renewable energy producers in South Africa are slowly growing and are being developed under the REI4P. The programme covers renewable energy technologies including solar, wind, biomass, hydro and landfill gas” (UNFCCC, 2018c, p. 57). “The updated draft plan continued to reiterate that coal will continue to play a role in providing energy in the future, but to be limited to electricity generation. Alternative and more economically viable options such as gas and crude oil exist, for the production of liquid fuels, but

	have severe cost implications. Coal then continues to provide base-load power in the foreseeable future, although coal will be put out of place substantially over time by improvements in solar, wind, nuclear and gas energy sources.” (UNFCCC, 2019e, p. 15). “South Africa continues to make a significant transition towards becoming a climate-resilient and low carbon economy. This is evident in the increased mitigation and adaptation efforts and commitment towards implementing the recommendations of the Paris agreement and other recent related policies” (UNFCCC, 2019e, p. 16).
IRAN	
Natural Resources	“The country’s income from petroleum and natural gas exports typically provides the largest share of government revenues” (UNFCCC, 2018a, p. 25). “Iran is rich in potentialities of renewable energies. Sun, wind, geothermal, and tidal energies are either underproduction or R&D” (UNFCCC, 2018a, p. 51). “Nuclear power is another source of alternative energy. Government buys renewable energy at guaranteed prices in Iran in order to encourage its market. Iran has progressed significantly in its know-how and has planned to develop its applications in different peaceful fields” (UNFCCC, 2018a, p. 51). “Iran’s oil and gas industry is the most active industry cluster of the country. Iran has the fourth-largest reserves of oil and second-largest reserves of gas in the world” (UNFCCC, 2018a, p. 54).
Strategic Location	“Iran, with an area of more than 1.6 million square km, is the sixteenth largest country in the world. Iran is placed in the Middle East and surrounded by Armenia, Azerbaijan, Turkmenistan and the Caspian Sea on the north, Afghanistan and Pakistan on the east, Oman Sea and the Persian Gulf on the south and Iraq and Turkey on the west” (UNFCCC, 2018a, p. 42). “The country’s major port of entry is Bandar-Abbas on the Strait of Hormuz. Imported goods are distributed by trucks and freight trains. Other major ports include Bandar Anzali and Bandar Turkmen on the Caspian Sea, and Khorramshahr and Bandar Imam Khomeini on the Persian Gulf” (UNFCCC, 2018a, p. 55).

	“The country’s geographical location makes Iran a place with highly diverse set of ecological conditions. This variety of climate has created an assortment of 7,576 plants, 517 birds, 208 reptiles, 170 fishes, 164 mammals and 22 amphibious species” (UNFCCC, 2018a, p. 73).
Energy Security	“In 2010, about 99.1% of primary energy supply was met from country’s cheap endowed oil and gas resources. Thus as a necessity, diversification of energy supply mix by other sources should be incorporated in development programs for energy security and moving towards a more environmental friendly system” (UNFCCC, 2018a, p. 86).
Energy Transition	“Despite policies and measures, national status of energy efficiency is still very low and needs more attention and efforts. In recent years, natural gas has dominated as the main source of energy carrier in national fuel mix. Substitution of liquid fuels with natural gas is one of the main policies to move towards low carbon economy in national economy-wide” (UNFCCC, 2018a, p. 50).
SAUDI ARABIA	
Natural Resources	“The Kingdom of Saudi Arabia is one the largest oil-exporting country and is a member of OPEC” (UNFCCC, 2016b, p. 6).
Energy Price	“The Saudi Arabian economy will undoubtedly be impacted by climate change response measures and policies since these actions will be implemented as policy measures to reduce primarily CO2 emissions. This will reduce oil demand and affect negatively global oil prices. The implication of this for Saudi Arabia would be a reduction in crude oil exports and a decline in its oil export revenues which comprise a large portion of its GDP. However, Saudi Arabia will be working hard adapt to these response measures and policies by diversifying its economy sufficiently away from crude oil exports” (UNFCCC, 2016b, p. vii). “Climate change response measures and policies will impact world oil demand by making hydrocarbon energy more expensive in AI countries, thus leading to a reduction in oil imports and a downward pressure on the international oil price. This will have negative economic impacts as well as adverse effects on Saudi Arabian welfare since lower incomes can lead to deteriorating socio-economic standards” (UNFCCC, 2016b, p. 120). “The diversification of the Saudi economy is not only in the best interest of Saudi Arabia, but may also be in the best interests of the global economy. If the Saudi economy continues to be dependent heavily on oil revenues and the concomitant increase in fiscal commitments due to its current population boom, then the only method the Kingdom has in its disposal to meet its domestic financial commitments is to increase

	its oil revenue through oil supply management. This will lead to higher global oil prices and may potentially have adverse effects on the global economy” (UNFCCC, 2016b, p. 130).
Strategic Location	“The Vision is based on three themes: a vibrant society, a thriving economy and an ambitious nation. This will enable KSA to build on its leading role as the heart of Arab and Islamic worlds. Finally, it will use its strategic location to build its role as an integral driver of international trade and to connect the three continents: Africa, Asia and Europe” (UNFCCC, 2018d, p. 3).
Energy Management	“The Kingdom has developed an Energy Technology Program consisting of seven priority technical areas namely; renewable energy generation, conventional energy generation, electricity distribution and transmission, energy conservation and management, energy storage, fuel cell and hydrogen, and combustion” (UNFCCC, 2018d, p. 52). “Saudi Arabia is striving to advance the knowledge, insight and understanding of energy challenges and opportunities. It is focusing on a number of research areas related to energy economics, policy, technology and the environment” (UNFCCC, 2018d, p. 52). “Saudi Aramco established a fuel research center in Paris, France which conducts research on developing more efficient combustion engines using modified petroleum formulations” (UNFCCC, 2018d, p. 52). “A Center of Research Excellence in Renewable Energy was established at KFUPM in 2007. The Center aims to further enhance the scientific/technological development in all the major areas of renewable energy” (UNFCCC, 2018d, p. 54). “The Kingdom has been following an increasing trend of engaging in international collaboration in scientific research and technological development by direct cooperation between Saudi universities and research organizations and reputed foreign counterparts” (UNFCCC, 2018d, p. 62).
Energy Security	“The ambitious future energy mix is strategically important to the Kingdom to attain long-term prosperity, energy security and leading position in the global energy market. Building on some commercial and economical potential of renewable energy technologies, solar photovoltaic energy, concentrated solar energy and wind energy are envisaged as the most potential renewable energy sources in the Kingdom compared to the other technologies” (UNFCCC, 2016b, p. 6). “The Kingdom undertook and implemented integrated programs to develop solar energy-based technologies to provide support for the industrial base of the country” (UNFCCC, 2016b, p. 46).

	“The Kingdom has been encouraging investments for natural gas exploration and production and adopting measures to increase the share of natural gas in the national energy mix” (UNFCCC, 2016b, p. 64). “The ambitious future energy mix is strategically important to the Kingdom to attain long-term prosperity, energy security and leading position in the global energy market” (UNFCCC, 2016b, p. 100). “Saudi Arabia will be working hard to adapt these response measures and policies by diversifying its economy sufficiently away from crude oil exports” (UNFCCC, 2016b, p. 136). “The future energy mix is strategically important to the Kingdom to attain long-term prosperity, energy security and leading position in the global energy market. Building on some commercial and economical potential of renewable energy technologies, solar photovoltaic energy, concentrated solar energy and wind energy are envisaged as the most potential renewable energy sources in the Kingdom compared to the other technologies. The participation of private sector in developing reliable renewable energy sources in the Kingdom could be promoted through implementing some multi-level economic frameworks that could be selected on the basis of technologies, applications and goals of development process” (UNFCCC, 2018d, p. 8). “The Kingdom has taken a number of research initiatives in order to ensure increased share of clean fuel in national fuel mix” (UNFCCC, 2018d, p. 58).
Energy Transition	“As a result of the ever-increasing demand of primary energy resources in the Saudi Arabia such as electricity, transportation, water and the industrial sectors, measures have been taken to control the escalating internal demand for the primary energy resources and also various measures have been taken to address this demand including by developing and deploying renewable energy sources in addition to other measures” (UNFCCC, 2016b, p. 6). “Developing and deploying renewable energy have been considered among the most sustainable and reliable sources of energy in the Kingdom to meet the increased internal demand for the primary energy, thus, minimize the opportunity cost of lost export revenues” (UNFCCC, 2016b, p. 6). “The Kingdom is among the first nations in the world that initiated unique programs on solar energy applications and utilizations, including, the SOLERAS, a Saudi Arabia-USA joint program on solar energy applications, initiated in 1977 and HYSOLAR, a Saudi Arabia-German joint program on solar hydrogen production and utilization, initiated 1986” (UNFCCC, 2016b, p. 6).

	“The SEEC plans to enforce the first phase of new rules for fuel-saving tires. It has planned to launch a campaign to reduce fuel consumption in the country targeting the drivers. It aims to rationalize energy consumption by choosing vehicles that consume less fuel and saving fuel by driving more efficiently” (UNFCCC, 2016b, pp. 44-45). “Saudi Arabia possesses a natural potential for solar and wind power and local energy consumption is projected to increase substantially by 2030. The Kingdom has taken initiatives and expects to increase the share of renewable energy capacity in the total energy mix by 9.5 GW by 2023. KSA will seek to localize a significant portion of the renewable energy value chain in the Saudi economy, including research & development and manufacturing. KSA is in the process of reviewing and developing the legal and regulatory framework that allows the private sector to invest in the renewable energy sector” (UNFCCC, 2018d, p. 8). “The long term renewable energy strategy under Saudi Arabia’s National Renewable Energy Program is working towards carbon avoidance commitments and directly supported by Saudi Arabia’s National Transformation Program and Vision 2030” (UNFCCC, 2018d, p. 52). “The oil industry in the Kingdom has been deploying a number of renewable energy sources mainly solar energy systems” (UNFCCC, 2018d, p. 52). “The rapid development in manufacturing and applications for the wind energy industry has increased the benefits of wind energy exploitation. KSA has developed the renewable resource atlas of Saudi Arabia which provides newly collected and historical wind resource monitoring data and satellite-based modeled data for developers, researchers, government institutions and policy-makers” (UNFCCC, 2018d, p. 54). “The adoption of energy-efficient technologies and renewable energy sources supported by energy conservation policies plays an important role in maintaining sustainable development of the Kingdom. The Kingdom embarked on a massive experiment that can help in the assessment of the potential of the utilization of biomass as a source of energy” (UNFCCC, 2018d, p. 55).
TURKEY	
Natural Resources	“The domestic energy resources of Turkey, especially in terms of oil and natural gas reserves are quite limited and are not adequate to meet the national demands. Turkey was able to meet only around 26 % of its total energy demand from its own domestic resources in 2016. Turkey is dependent on imported fuels, and 91.3% of the oil supply and 99.7% of the natural gas supply was imported. Energy import dependency is increasing due to the growing energy demand” (UNFCCC, 2019d, p. 32).

Strategic Location	“It is surrounded by Georgia, Armenia, Nakhichevan and Iran in the east; Bulgaria and Greece in the west; Syria and Iraq in the south; and by the Black, Mediterranean, Aegean and Marmara Seas in three directions. Turkey acts as a bridge between Asia and Europe with the straits of Istanbul and Dardanelles” (UNFCCC, 2019d, p. 27). “Surrounded by seas on three sides, acting as a natural bridge between Asia and Europe, and with unique geopolitical importance, Turkey has been a cradle of great civilizations throughout history” (UNFCCC, 2019d, p. 45).
Energy Management	“Energy efficiency is a crucially important component of the National Energy and Mining Policy in terms of security of supply. Accordingly, in the National Energy Efficiency Action Plan (2017-2023), the importance of sustainable development along with competitive and green growth has been a topic of interest” (UNFCCC, 2019d, p. 36). “Turkish energy markets have been undergoing tremendous changes over the last two decades. Turkey made a radical decision in 2001 to liberalize its electricity sector, establishing a competitive market under the regulation and monitoring of an independent regulatory agency. Over the last two decades, private sector made sizeable investments and played a significant role in the development of energy industry” (UNFCCC, 2019d, pp. 87-88).
Energy Security	“Turkey’s Energy Policy gives top priority to decreasing import dependency by improving security of supply and utilizing renewable energy sources to the maximum extent in an environmentally sound manner. Therefore, the priority of Turkey in the forthcoming period will be reducing dependency on the imports by realizing its domestic and renewable energy potential along with providing the energy supply security” (UNFCCC, 2019d, p. 87).
Energy Transition	“The share of fossil fuels in total primary energy supply was 82% in 1990, and 87.3% in 2016. The share of renewables, on the other hand, was 12.4% in 2016” (UNFCCC, 2019d, p. 32). “In 2016, 12% (16.9 Million TOE) of Turkey’s total primary energy supply was met by renewable energy sources. As of the end of 2016, 17% of the renewable energy supply in Turkey was from biomass sources, 34% from hydraulic sources, 36% from geothermal sources, 8% from wind, and 5% from solar energy” (UNFCCC, 2019d, p. 34). “In terms of power generation, renewable energy installed capacity reached to 34582 MW (44.1% of total installed capacity) in 2016. More than 90% of the renewable energy was generated from the hydraulic sources and wind. Turkey has an important renewable energy sources potential, however; an important part of this potential is not yet utilized” (UNFCCC, 2019d, p. 34).

	“During 1990-2016 periods, the share of natural gas in total energy consumption increased considerably from 6% to 29%, while the share of liquid fuels decreased from 43% to 28%. The share of coal decreased from 32% to 30%” (UNFCCC, 2019d, p. 57). “There are fuel shifts in sectoral energy consumption from liquid fuels to natural gas” (UNFCCC, 2019d, p. 57). “There was an accelerated increase in wind installed capacity from 5.751 MW in 2016 to 6.516 MW in the year 2017. Renewable Law which came into force in 2005 later revised in 2011 provided some supporting mechanism for purchasing electricity from solar, biomass, geothermal, wind and hydraulic energy. In the year 2017, solar power plants installed capacity raised to 3.421 MW” (UNFCCC, 2020g, p. 14).
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