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İSTANBUL ÜNİVERSİTESİ

SOSYAL BİLİMLER ENSTİTÜSÜ

ULUSLARARASI İLİŞKİLER ANABİLİM DALI

YÜKSEK LİSANS TEZİ

APPLICABILITY OF SCIENCE DIPLOMACY AND COMMITMENTS OF PARIS AGREEMENT IN REALIST THEORY: TURKEY CASE

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İstanbul, 2019

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YÜKSEK LİSANS
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Anabilim Dalı / Anasanat Dalı / Programı	:	ULUSLARARASI İLİŞKİLER (İNGİLİZCE)	Danışmanı	:	DR. ÖĞR. ÜY. MUSTAFA ÇAĞATAY ASLAN
Tez Savunma Tarihi	:	07.08.2019	Saati	:	14:00
Tez Başlığı	:	"APPLICABILITY OF SCIENCE DIPLOMACY AND COMMITMENTS OF PARIS AGREEMENT IN REALIST THEORY: TURKEY CASE"			

TEZ SAVUNMA SINAVI, İÜ Lisansüstü Eğitim-Öğretim Yönetmeliği'nin **36. Maddesi** uyarınca yapılmış,
sorulan sorulara alınan cevaplar sonunda adayın tezinin **KABULÜNE** OYBİRLİĞİ / OYÇOKLUĞUYLA karar verilmiştir.

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ÖZ

REALİST TEORİDE BİLİM DİPLOMASİSİ VE PARİS İKLİM ANLAŞMASI YÜKÜMLÜLÜKLERİNİN UYGULANABİLİRLİĞİ: TÜRKİYE ÖRNEĞİ

SERAY YILDIRIM

İklim değişikliği 21. yüzyılın en önemli sorunlarından birisi olarak kabul edilmektedir. Paris Anlaşması bilim diplomasisinin bir boyutu olan diplomaside bilimin bir ürünü olarak ortaya çıkmış olup, iklim değişikliği ile etkili bir şekilde mücadele edebilmek amacıyla bütün devletlerin ortak kararıyla 2015 senesinde imzalanmıştır. Ancak anlaşmayı imzalayan devletlerin taahhütleri, anlaşmanın temel hedeflerinin gerçekleştirilebilmesi için yetersiz kabul edilmektedir. Bu sebeple, bu tez çerçevesinde Paris Anlaşması'nın ortaya çıkma süreci, ülkelerin yetersiz taahhütlerinin sebepleri ve bilim diplomasisi kavramı üç boyutuyla birlikte incelenecektir. Bu kavramların incelenmesi açısından Türkiye iyi bir örnektir çünkü hem Türkiye'nin taahhütleri yetersiz kabul edilmiş, hem de anlaşma Türkiye Büyük Millet Meclisi tarafından hala onaylanmamıştır. Anlaşmanın yükümlülüklerinin yerine getirilmesi, Türkiye'nin ulusal çıkarlarıyla çatıştığı için, Türkiye anlaşmayı onaylamamaktadır. Bu çalışma Türkiye'nin yenilenebilir enerji potansiyeli ve enerji bağımlılığını inceleyerek, kısa vadede anlaşmanın parlamentoda onaylanması ve taahhütlerinin yerine getirilmesinin Türkiye'nin ulusal çıkarlarıyla çatışsa da, uzun vadede Türkiye'ye ekonomik ve politik bir takım katkılar sağlayacağını gösterecektir.

Anahtar Sözcükler: Bilim Diplomasisi, Paris Anlaşması, İklim Değişikliği, Yenilenebilir Enerji, Türkiye.

ABSTRACT

APPLICABILITY OF SCIENCE DIPLOMACY AND COMMITMENTS OF PARIS AGREEMENT IN REALIST THEORY: TURKEY CASE

SERAY YILDIRIM

Climate change is one of the most important challenges in 21st century. In 2015, Paris Agreement which is considered as the product of science in diplomacy dimension of science diplomacy was signed by all the nations to effectively combat with climate change. However, signatory parties' commitments to the agreement are regarded as insufficient with respect to the targets of the agreement. Therefore, within the framework of the thesis, the process of emergence of Paris Agreement, concept of science diplomacy with its three dimensions and reasons of countries' insufficient commitments will be examined. Turkey has shown to be a great example in terms of analyzing these concepts because Turkey's commitments are also regarded as insufficient and Turkey has not yet ratified the agreement due to particular incompatibilities with its national interests. Thus, the study aims to indicate that despite the particular incompatibilities in the short run, there will be potential economic and political advantages of ratification and fulfillment of the agreement for Turkey in the long run by analyzing Turkey's renewable energy potential and energy import dependency.

Key Words: Science Diplomacy, Paris Agreement, Climate Change, Renewable Energy, Turkey.

PREFACE

Paris Agreement is considered as the crucial turning point in the history of tackling with the problem of climate change. Turkey is one of the signatory parties to the agreement which has not yet ratified the agreement because of particular incompatibilities with its national interests. Since Paris Agreement is the product of science in diplomacy dimension of science diplomacy, it is crucial to examine the relationship between science diplomacy and realism which emphasizes that the countries adopt certain agreements when they see a national interest. The concept of science diplomacy has been examined by few people in the literature because of the fact that it is a new concept in international relations. Therefore, the aim of the thesis is to examine relationship between realism and science diplomacy mainly in the context of Turkey's non-ratification decision of Paris Agreement. Lastly, I would like to thank my supervisor, my family and friends for supporting me all this time.

Seray Yıldırım

İstanbul, 2019

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BAU: Business as Usual

CAT: Climate Action Tracker

CERN: The European Organization for Nuclear Research

COP: Conference of the Parties

EIT: Economies in Transition

EU: European Union

G20: Group of Twenty

GHG: Greenhouse Gas

GW: Gigawatt

INDC: Intended Nationally Determined Contribution

IPCC: Intergovernmental Panel on Climate Change

ITER: International Thermonuclear Experimental Reactor

$MtCO_2e$: Total Greenhouse Gas Emissions

Mtoe: Millions of Tonnes of Oil Equivalent

MW: Megawatt

NAFTA: the North American Free Trade Agreement

NDC: Nationally Determined Contribution

OECD: Organization for Economic Co-operation and Development

SESAME: Synchrotron-light for Experimental Science and Applications in the Middle East

TEMA: Turkish Foundation for Combating Soil Erosion for Reforestation and the Protection of Natural Habitats

UK: United Kingdom

UN: United Nations

UNESCO: United Nations Educational, Scientific and Cultural Organization

UNFCCC: United Nations Framework Convention on Climate Change

US: United States

INTRODUCTION

The way of addressing global challenges through multilateral cooperation at both global and regional level exemplifies the increasing role of multilateral diplomacy in 21st century. A new method of multilateral diplomacy that has emerged recently is the notion of 'science diplomacy' with its three dimensions, namely 'science in diplomacy', 'diplomacy for science' and 'science for diplomacy'.

Climate change is considered as one of the most urgent global challenge of today's world; unfortunately it has numerous negative impacts for our planet including increase in world's average temperature, rising in sea levels, occurrence of unpredictable weather events etc. Since 1979s several reports has been published to indicate the causation between industry-based development and greenhouse gas emissions which are primarily responsible from climate change. With the aim of tackling with climate change, series of international climate conferences were held and five assessments report on climate change were published which played crucial role in the case of signing of Paris Agreement in 2015.

Even though all the countries signed Paris Agreement, only few of the countries including Russia and Turkey have not yet ratified the agreement. On the other hand, although the United States of America ratified the agreement during President Barack Obama administration, when President Donald Trump came into power, they withdrew from the agreement. In addition to these countries, even some countries which have ratified the agreement, they are unwilling to determine ambitious goals or fulfill their commitments under the Agreement. The motives of all these countries are directly related with the countries' national interests because there

are particular incompatibilities which contradict with its national interests in the case of fulfillment of Paris Agreement's goals. Since Paris Agreement is considered as the product of 'science in diplomacy' dimension of 'science diplomacy', it is significant to analyze the relationship between science diplomacy and realism which emphasizes importance of national interests in the case of maximization of power.

In this manner, the following questions will be answered throughout the thesis: What is the relationship between science diplomacy and realism? What is the reason of Turkey's non-ratification of the agreement? What are the particular incompatibilities which contradict with Turkey's national interests? Despite the particular incompatibilities, if Turkey ratifies the agreement and fulfills its commitments whether it will be more beneficial for Turkey in the long run or not?

With regard to these questions, it will be claimed that if Turkey ratifies the agreement and fulfills its commitments according to Paris Agreement principals regardless of particular incompatibilities with its national interests in the short run, there will be particular economic and political advantages for Turkey in the long run. While answering these questions, classical realist perspective will be used throughout the thesis because of the fact that national interests, security and power are considered as the most crucial concept to understand state motivation. Also, realists support the idea that countries adopt certain agreement, when they see a national interest in the context of relationship between realism and science diplomacy.

Although Turkey's non-ratification decision can be explained in the context of relationship between realism and science diplomacy which emphasizes that science is not always made for scientific purposes but for the sake of national

interests, it can be specified that ratification and fulfillment of Paris Agreement's commitments are more compatible with Turkey's national interests in the long run. Because, main findings of the research indicate that if Turkey ratifies the agreement and fulfills its commitments, Turkey's energy import dependency mainly to Russia would decrease which eventually leads to implementation of more flexible policies in the international arena. Besides, Turkey would begin to meet considerable amount of its energy demand from its own resources and there would be several job opportunities in renewable energy sectors for Turkish citizens by means of giving importance to implementation of renewable energy policies.

The thesis will cover four chapters. In the first chapter, diplomacy and types of diplomacy, bilateral and multilateral diplomacy will initially be defined. Hence science diplomacy, as a new method of multilateral diplomacy is assumed to affect foreign policy objectives of the countries, the concept of science diplomacy will be discussed with its three dimensions by giving particular examples from each of them, namely 'science in diplomacy', 'diplomacy for science' and 'science for diplomacy'. Afterwards, the adoption of United Nations Framework Convention on Climate Change (UNFCCC) and Kyoto Protocol will be examined in order to figure out the process behind the Paris Agreement which is considered as the product of science in diplomacy dimension of science diplomacy. The last section of the chapter will be focused on the significant decisions, adopted in Paris Agreement due to fact that the agreement has an important place in order to effectively combat with climate change and minimize the impacts of the climate change in the near future.

In the second chapter, different goals of the countries will be analyzed, since each country determined different goals in order to tackle with climate change under the Paris Agreement. Mainly developed and developing countries' targets will be regarded as insufficient and incompatible with the goals of the agreement while the targets of undeveloped countries' will be regarded as sufficient and compatible. Hence the main reason of determination of different goals is directly linked with countries' national interests, the targets of the signatory parties to the agreement such as Morocco, India, European Union and its 28 member states, US, China, and Russia will be discussed and then Turkey's approach will be individually discussed in the context of relationship between realism and science diplomacy by referring to analyses of 'Climate Action Tracker' and the interview with Nuran Talu[*] which was conducted by the author of this study.

In the third chapter, the reasons of Turkey's non-ratification of the agreement will be discussed mainly in two categories. Economic reasons and absence of climate change as a norm in Turkey will initially be examined as internal reasons of Turkey's non-ratification decision. Lack of enforcement power of Paris Agreement and absence of climate change as a norm in the international community will be examined as external reasons. Even though internal and external reasons influence Turkey's decision, economic factors will be classified as main reason of Turkey's non-ratification decision due to the fact that Turkey is ineligible funding from 'Green Climate Fund' which is essential for Turkey to implement climate related plans and

[*] Nuran Talu is the former environmental bureaucrat who is currently acting as the head of 'Global Balance Association'. The association was established in Ankara in 1995 with the aim of conducting researches about sustainable development principles as well as increasing awareness both for local people and non-governmental organizations about environment.

policies. Hence economic reasons contradict with Turkey's national interests, it will be claimed that Turkey's non-ratification decision justifies the argument of realists in the context of relationship between realism and science diplomacy that science is not always made for the scientific purposes, but for the sake of national interests. The last section of the chapter will be focused on recent contributions at both international and national levels with respect to climate change so as to figure out that whether these contributions can assist to emergence of climate change as a norm in the near future or not. Besides, it will be referred to interview with Ethem Torunoğlu[*] which was conducted by the author of the study in the last section of the chapter.

In the fourth chapter, it will be initially discussed the relationship between realism and science diplomacy so as to evaluate contradiction of Turkey's national interests and fulfillment of its commitments in the long run. Subsequently, it will be specified that there will be potential economic and political advantages of ratifying the agreement and fulfillment of its commitments in the long run including decrease in Turkey's energy import dependency rate and trade deficit, creation of new job opportunities in renewable energy sectors as well as implementation of more flexible policies in the international arena. Turkey's renewable energy potential and its renewable energy targets will be analyzed in a detail way while justifying the argument. The last section of the chapter will be based on estimated total cost analyzes of Turkey's renewable energy targets in order to reach a conclusion that whether Turkey should ratify Paris Agreement and fulfill its commitments despite the particular incompatibilities with its national interests in the short run or not.

[*] Ethem Torunoğlu is currently the head of Directorate of Foreign Affairs in Çankaya Municipality.

CHAPTER 1

1.1 Introduction

In this chapter, the concept of science diplomacy as a new method of multilateral diplomacy will be initially analyzed with its three dimensions, namely 'science in diplomacy', 'diplomacy for science' and 'science for diplomacy'. Broadly speaking, first in 'science in diplomacy' dimension states or international organizations have utilized scientific information with the aim of supporting their diplomatic choices.[1] The reports issued by the Intergovernmental Panel on Climate Change (hereafter IPCC), for example significantly help the European Union (hereafter EU) to sign Paris Agreement of 2015, which is expected to weaken the dependency of the EU members on Russian natural gas resources through pushing the countries towards the production of renewable energy sources.[2] Secondly, 'diplomacy for science' dimension is mainly about using diplomacy in order to facilitate international scientific cooperation. The diplomatic engagement between leaders of the Soviet Union and the United States of America in Geneva in 1985 for example, led up to the creation of International Thermonuclear Experimental Reactor (ITER).[3] Thirdly, 'science for diplomacy' dimension is based on using science for the sake of normalization or improvement of relations between states. To illustrate, President Obama' speech in Cairo University in 2009 was based on increasing the scientific

[1] Peter D. Gluckman, et al, "Science Diplomacy: A Pragmatic Perspective from the Inside", **Center for Science Diplomacy of the American Association for the Advancement of Science (AAAS),** Science & Diplomacy, Vol.6, No.4, December 2017, p.1.
[2] Jack D. Sharples, "Russian Approaches to Energy Security and Climate Change: Russian Gas Exports to the EU", **Environmental Politics,** Vol.22, No.4, 2013, pp.686-687.
[3] Vaughan C. Turekian, Norman P. Neureiter, "Science and Diplomacy: The Past as Prologue", **Center for Science Diplomacy of the American Association for the Advancement of Science (AAAS),** Science & Diplomacy, Vol.1, No.1, March 2012, pp.1-2.

collaborations among US and Muslim majority countries in order to restore the relations which was deteriorated due to 9/11 attacks.[4]

Having explained the given three dimensions of the science diplomacy, the chapter will begin to discuss Paris Agreement, is considered as a product of 'science in diplomacy' dimension of 'science diplomacy.' The discussion on this agreement will initially be confined to the goals of both United Nations Framework Convention on Climate Change (hereafter UNFCCC) and Kyoto Protocol which are vitally important for fully understanding the process behind the Paris Agreement. Then, significant decisions included in the Paris Agreement will be examined in a detail way by referring to the importance of Paris Agreement for the international community.

1.2 Science Diplomacy

Diplomacy is described in the literature that as a *"use of dialogue, negotiation and representation in international relations."* The history of utilizing diplomatic means in state to state relations is assumed to begin with the Treaty of Westphalia of 1648 and since then diplomatic means has increasingly begun to play a central role in state affairs. Furthermore, particularly during the post-Second World War era, with the involvement of the non-state actors, including non-governmental organizations and international organizations, in decision-making processes related to state relations, bilateral nature of diplomatic relations turned into multilateral diplomacy, which can be defined as *"diplomacy of international organizations and international*

[4] Luk Van Langenhove, "Science Diplomacy: New Global Challenges, New Trend", **The S. Rajaratnam School of International Studies,** No.082, April 2016, pp.3-4.

conferences."[5] The way of addressing global challenges such as climate change, infectious diseases, accession to clean water, through multilateral cooperation at both global and regional level exemplifies the increasing role of multilateral diplomacy.[6]

A new method of multilateral diplomacy that has emerged recently is the notion of 'science diplomacy', which has been defined in different ways in the literature. Vaughan Turekian - director of the American Association for the Advancement of Science - defines that science diplomacy *"is the use and application of science cooperation to help build bridges and enhance relationships between and amongst societies, with a particular interest in working in areas where there might not be other mechanisms for engagement at an official level."*[7] Besides, Norman Neureiter - a former science and technology adviser to the US Secretary of the Department of State - expresses science diplomacy as *"an intentional effort to engage with other countries where the relationship is not good otherwise. The science allows you to deal with non-sensitive issues that both sides can work on together for the good for all."*[8] Lastly, Nina Fedoroff, who – also served the science and technology adviser to the Secretary of State and adviser to the administrator of the US Agency for International Development - defines science diplomacy as "*the use of scientific collaborations among nations to address the common problems facing twenty-first century humanity and to build constructive international*

[5] Pierre Bruno Ruffini, **Science and Diplomacy: A New Dimension of International Relations,** Springer International Publishing, 2017, p.6.
[6] Luk Van Langenhove, "Global Science Diplomacy for Multilateralism 2.0," **Center for Science Diplomacy of the American Association for the Advancement of Science (AAAS),** Science & Diplomacy, Vol.5, No.4, December 2016, pp.1-2.
[7] "Science as a Tool for International Diplomacy", **CORDIS News: European Commission**, March 2009, (available) https://cordis.europa.eu/news/rcn/30532/en, June 2, 2019.
[8] Jeremy Hsu, "Backdoor Diplomacy: How U.S. Scientists Reach Out to Frenemies", **Live Science,** April 8, 2011, (available) https://www.livescience.com/13638-science-diplomacy-soft-power.html, June 2, 2019.

partnerships."[9] All these given definitions imply the two dimensions of the science diplomacy that are 'diplomacy for science' and 'science for diplomacy'. Nevertheless, the science diplomacy also refers to the usage of scientific information by diplomats to decide which diplomatic choice on a particular issue they will make. This dimension of science diplomacy is termed 'science in diplomacy'. Beginning with this dimension of science diplomacy, the next subtitles also discuss the other two dimensions: 'diplomacy for science' and 'science for diplomacy'.

1.2.1. Science in Diplomacy

Science in diplomacy significantly affects which foreign policy objectives would be followed by countries for providing detailed reports underlining the causes and effects of the global challenges and possible solutions for them and prepared by scientific experts from different countries some of whom are also acting as advisers to policy-makers.[10] An example of science in diplomacy is considered as the studies of IPCC, was established by World Meteorological Organization and United Nations Environment Programme in 1988 upon the scientific reports, explaining possible scenarios of global warming - an issue the increasing importance of which is very obvious –. [11] The IPCC assessment reports on the climate change form the basis of leading international agreements including Kyoto Protocol of 1997 and Paris Agreement of 2015.

[9] Nina Federoff, "Science Diplomacy in the 21st Century", Vol.136, No.1, January 2009, p.9.
[10] Ruffini, **op.cit.,** p. 12.
[11] Pier Vellinga, Richard J. T. Klein, "Climate Change, Sea Level Rise and Integrated Coastal Zone Management: An IPCC Approach", **Ocean & Coastal Management,** Vol.21, 1993, pp.248-249.

To illustrate, with the publication of IPCC assessment reports on climate change, European Union had begun to play a significant role in climate negotiations by giving importance to implementation of climate related plans and policies in their agenda including reducing greenhouse gas emissions (GHG) and increasing the potential of renewable energy sources. To be more specific, when Kyoto Protocol was adopted in 1997, EU signed the protocol and promised to reduce their greenhouse gas emissions around 8% by promoting renewable energy policies which was accepted as the most ambitious target among the industrialized countries.[12]

Afterwards, with adoption of Paris Agreement climate related plans and policies were again at the center of EU's agenda and this time EU and its members promised at least 40% reduction in their GHG emissions which is directly related with decreasing their dependency to external fossil fuels.[13] Since EU is heavily depend on Russian natural gas, they aim to reduce their dependency by implementing policies with respect to renewable energy sources and increasing energy efficiency in the region in order to achieve their goal[14].

1.2.2. Diplomacy for Science

This dimension of science diplomacy, known as 'diplomacy for science', provides states with appropriate platform on which they engage in diplomatic relations for the sake of making progress in scientific areas.[15] In spite of the ongoing invasion of Afghanistan by the Soviet Union in the 1980s, for example, the

[12] Sebastian Oberthür, Claire Roche Kelly, "EU Leadership in International Climate Policy: Achievements and Challenges", **The International Spectator,** Vol.43, No.3, 2008, pp.36-37.
[13] Raymond Clemencon, "The Two Sides of the Paris Climate Agreement: Dismal Failure or Historic Breakthrough?", **Journal of Environment & Development**, Vol.25, No.1, 2016, p.14.
[14] Sharples, **op.cit.,** pp. 686-687.
[15] Gluckman, et al, **op.cit.,** pp.8-9.

diplomacy for science stimulated the establishment of the constructive relations between the US and the Soviet Union led to the meeting between the leaders of both sides in the Geneva Superpower Summit in 1985, that formed the basis for the production of 'fusion energy.*',[16] In fact, following the Summit, the US President Ronald Reagan, had emphasized the importance of 'fusion energy' by making the following statement: *"[A]s a potential way of dealing with the energy needs of the world of the future, we have…advocated international cooperation to explore the feasibility of developing fusion energy."*[17] A year later, the Soviet Union and the US, along with the European Economic Community* and Japan, agreed for the design of an international institution for the production of fusion energy for peaceful purposes, which ultimately led to the establishment of International Thermonuclear Experimental Reactor (ITER) in 2007.

Besides, opening of Synchrotron-light for Experimental Science and Applications in the Middle East (hereafter SESAME) is considered as another example of diplomacy for science dimension. Hence for many years scientists from the Middle East region had gone to abroad by means of advanced research opportunities; the countries including Cyprus, Bahrain, Egypt, Iran, Israel, Jordan, Pakistan, Palestine and Turkey began to negotiate in order to solve the issue and thus they decided to establish scientific research centre in the region in 1997 like the

* "Fusion, the nuclear reaction which powers the sun and stars, would provide mankind with a safe, environmentally responsible and almost limitless source of energy" (Ikeda, 2009:1).

[16] Kaname Ikeda, "ITER on the Road to Fusion Energy", **IOP Publishing and International Atomic Energy Agency, Nuclear Fusion,** Vol.50, No.1, December 2009, pp.3-4.

[17] Todd K. Harding, Melanie J. Khanna,, Raymond L. Orbach, "International Fusion Energy Cooperation: ITER as a Case Study in Science and Diplomacy", **Center for Science Diplomacy of the American Association for the Advancement of Science (AAAS),** Science & Diplomacy, Vol.1, No.1, March 2012, p.2.

* Since the parties reached an agreement in 1986, it should be called as "European Economic Community" which had renamed as the "Europe Union" in 1993 with the Treaty of Maastricht.

European Organization for Nuclear Research (CERN) but completely for different purpose.[18] The purpose of the project is to promote science and technology in the region and bring scientists from the Middle East by using diplomatic channels effectively among the member states and helping to reduce the tension in the region.[19] After lengthy negotiations, establishment of SESAME which is the first international research centre of Middle East was approved under the auspices of UNESCO in 2002. Afterwards, collaborations among member and observer states including European Union, US, Russian Federation, Japan, Kuwait and Switzerland led to officially opening of SESAME in 2017, in Allan, Jordan.[20]

1.2.3. Science for Diplomacy

This dimension of science diplomacy, namely 'science for diplomacy,' comes to work through promoting scientific cooperation when traditional diplomatic channels between the states are not functioning well. Such cooperation can even lead to the restoration of mutual relations.[21] The US president, Barrack Obama, for instance, made use of the science for diplomacy with the aim of restoring the US relations with some Muslim majority countries which was deteriorated as a result of growing Islamophobia particularly stemming from the September 11 attacks.[22] In his

[18] Carlos Moedas, "Science Diplomacy in the European Union", **Center for Science Diplomacy of the American Association for the Advancement of Science (AAAS),** Science & Diplomacy, Vol.5, No.1, March 2016, pp.2-3.
[19] D. Einfeld, et al, "SESAME, a Third Generation Synchrotron Light Source for the Middle East Region", **Radiation Physics and Chemistry 71,** 2004, pp.693-694.
[20] Chris Llewellyn Smith, "Synchrotron Light and the Middle East: Bringing the Region's Scientific Communities Together through SESAME", **Center for Science Diplomacy of the American Association for the Advancement of Science (AAAS),** Science & Diplomacy, Vol.1, No.4, December 2012, pp.3-4.
[21] The Royal Society, American Association for the Advancement of Science (AAAS), "New Frontiers in Science Diplomacy: Navigating the Changing Balance of Power", **RS Policy Document,** Vol.1, No.10, January 2010, p.11-12.
[22] Ruffini, **op.cit.,** p.3.

speech entitled "A New Beginning" and given in Cairo University in 2009, the President Obama aimed to implement the science for diplomacy[23] by saying the following:

> "I've come here to Cairo to seek a new beginning between the United States and Muslims around the world, one based on mutual interest and mutual respect, and one based upon the truth that America and Islam are not exclusive and need not be in competition. Instead, they overlap, and share common principles – principles of justice and progress; tolerance - and the dignity of all human beings… On science and technology, we will launch a new fund to support technological development in Muslim-majority countries, and to help transfer ideas to the marketplace so they can create more jobs. We will open centers of scientific excellence in Africa, the Middle East and Southeast Asia, and appoint new science envoys to collaborate on programs that develop new sources of energy, create green jobs, digitize records, clean water, grow new crops…"[24]

The appointments of several science envoys including Bruce Alberts (biophysicist and biochemist), Elias Zerhouni (Algerian-American, radiology and biomedical engineer) and Nobelist Ahmed Zewail (Egyptian-American, chemist) to Muslim majority countries[25] such as Egypt, Qatar and Indonesia can be regarded as a concrete result of Obama's speech.

In addition to Obama's speech in Cairo University, establishment of the European Organization for Nuclear Research (hereafter CERN) can be considered as another example of science for diplomacy dimension. Because even though CERN

[23] Thomas J. Bollyky, Paul L. Bollyky, "Obama and the Promotion of International Science", **Science** Vol.338, No.6107, November 2012, p.610.
[24] "Remarks by the President at Cairo University", **the White House President Barack Obama,** June 2009, (available) https://obamawhitehouse.archives.gov/the-press-office/remarks-president-cairo-university-6-04-09, June 2, 2019.
[25] "U.S. Science Envoy Program", **US Department of State: Diplomacy in Action,** (available) https://2009-2017.state.gov/e/oes/stc/scienceenvoy/index.htm, June 2, 2019.

was established for the scientific purposes by 12 European states[*] including the Federal Republic of Germany and France, it also aimed to strengthen the relations across Europe by using science which was deteriorated due to the First and Second World Wars. Particularly, the relation between Germany and the rest of the Europe but mainly with France was unsettled because of World War I and II.[26] However, with establishment of CERN high level of collaboration between the Federal Republic of Germany and France began for the first time aftermath of the first and second world wars. For instance, physicists of the Federal Republic of Germany and France exchanged information about ongoing scientific researches in the programme which eventually paved way for restoring the Franco-German relations[27].

1.3. Emergence of Paris Agreement as a Product of Science Diplomacy

1.3.1 Adoption of United Nations Framework Convention on Climate Change

With the industrial revolution mankind rapidly began to use fossil fuels which resulted with release of greenhouse gases - carbon dioxide, methane, ozone and nitrogen oxides - into to atmosphere.[28] Since greenhouse gases cause to heat earth surface very quickly, it is acknowledged that greenhouse gases are primarily

[*] The full list of 12 European countries are Belgium, Denmark, France, the Federal Republic of Germany, Greece, Italy, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom and Yugoslavia.

[26] Ruffini, **op.cit**., pp.94-95.

[27] Vaughan C. Turekian, et al, "The Emergence of Science Diplomacy", **Science Diplomacy,** 2014, p.9.

[28] Cüneyt Bağdatlı, Korkmaz Bellitürk, "Negative Effects of Climate Change in Turkey", **Advances in Plants & Agriculture Research,** Vol.3, No.2, January 2016, p.44.

responsible from climate change. [29] The causation between industry based development and greenhouse gas emissions has been emphasized in several reports since 1979.[30]

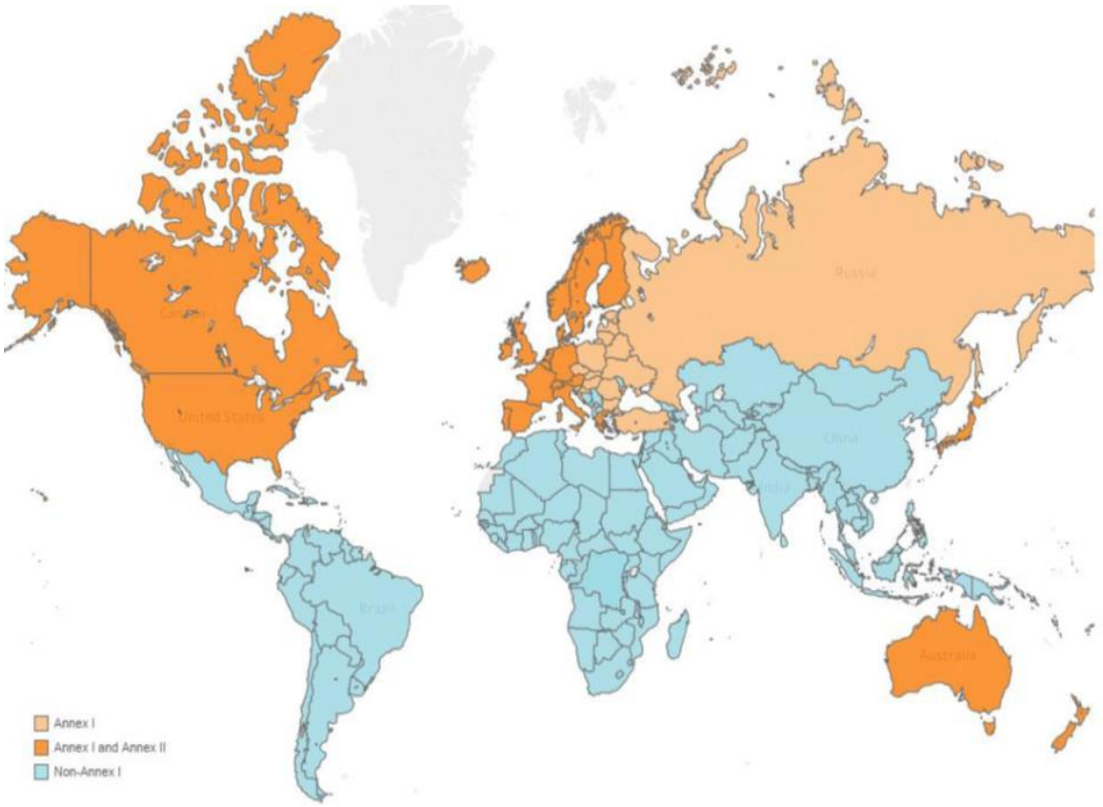
With the aim of tackling with climate change, First Assessment Report on Climate Change was published by IPCC in 1990 which announced that "*GHG emissions related to human activity were increasing and likely to intensify global warming"* and also anticipated *"an average rate of increase of global mean temperature during the next century of about 0.3°C per decade"*.[31] Publication of first assessment report subsequently led to adoption of UNFCCC. It was adopted at the Earth Summit in Rio, in June 1992 by signing of 197 countries. The Climate Convention entered into force in 1994 and it is considered as the backbone of the UN climate system. Ultimate goal of Climate Convention was stated in Article 2, is *"stabilization of greenhouse gas concentrations of in the atmosphere at the level that would prevent dangerous anthropogenic interference with the climate system."*[32]

The Climate Convention plays a decisive role in terms of structuring negotiations and solutions mechanisms during Conference of the Parties (hereafter COP) which is the supreme decision making body of the convention. Since 1995 the COP sessions have been held annually with contribution of signatory parties' representatives. It is also significant to specify that signatory countries have been

[29] İsmail Köse, "İklim Değişikliği Müzakereleri: Türkiye'nin Paris Anlaşması'ni İmza Süreci", **Ege Stratejik Araştirmalar Dergisi**, Vol.9, No.1, 2018, p.57.
[30] Eija Riitta Korhola, "The Rise and Fall of the Kyoto Protocol: Climate Change as a Political Process", **Helsinki: University of Helsinki,** November 2014, pp.22-23.
[31] Ruffini, **op.cit**., p.120.
[32] **Ibid**., p.117.

divided according to three main categories which are Annex-I, Annex-II and Non-Annex-I parties in UNFCCC (see below Map 1.1).

Map 1.1 indicates the division of the parties according to UNFCCC.



Source: Michael Schneider, "A Tangled Case: Turkey's Status under the UNFCCC and the Paris Agreement", **International Center for Climate Governance (ICCG),** No.53, July 2017, p.3.

1.3.1.1. Annex-I Parties

According to UNFCCC, Annex-I Parties must determine ambitious goals so as to reduce their GHG emissions and minimize the impacts of climate change. Industrialized countries which are the members of the Organization for Economic Co-operation and Development (hereafter OECD) and plus countries which are in the

category of economies in transition (hereafter the EIT) are classified as Annex-I Parties.[33] Accordingly, the following countries are in this group: Australia, Austria, Belarus, Belgium, Bulgaria, Canada, Croatia, Cyprus, Czech Republic, Denmark, Estonia, European Union, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, the Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom and the United States of America.[34]

1.3.1.2. Annex-II Parties

The report of UNFCCC indicates that parties which are members of OECD but not in the category of the EIT Parties are accepted as Annex-II Parties. Parties including Australia, Austria, Belgium, Canada, Denmark, European Union, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom and the United States of America are members of Annex-II Parties. It is explained in the literature that in this category, parties must *"provide financial resources to enable developing countries to undertake emissions reduction activities under the Convention and to help them adapt to adverse effects of climate change"*

[33] "Parties and Observers", **United Nations Climate Change,** (available) https://unfccc.int/parties-observers, June 3, 2019.
[34] "Type of Party to the Convention", **United Nations Climate Change,** August 2018, (available) https://unfccc.int/process/parties-non-party-stakeholders/parties-convention-and-observer-states?field_national_communications_target_id%5B515%5D=515, June 3, 2019.

as well as promoting *"development and transfer of environmentally friendly technologies to the EIT Parties and developing countries."*[35]

1.3.1.3. Non-Annex-I Parties

It is stated in the literature that mostly, developing countries are accepted as Non-Annex-I Parties. According to UNFCCC, developing countries refer to parties which are *"vulnerable to the adverse impacts of climate change, including countries with low-lying coastal areas and those prone to desertification and drought"* as well as parties whose economy heavily depends on *"fossil fuels production and commerce"* are accepted as Non-Annex-I Parties, since they are more vulnerable to impacts of climate change due to their own particular conditions.[36] Non-Annex-I Parties had not made any commitments in the case of reducing or limiting their GHG emissions during the negotiations processes because of 'common but differentiated responsibilities' principle in the Convention. Currently, 153 countries are considered as members of the Non-Annex-I Parties.[37]

[35] "Parties and Observers", **United Nations Climate Change,** (available) https://unfccc.int/parties-observers, June 3, 2019.
[36] "Parties and Observers", **United Nations Climate Change,** (available) https://unfccc.int/parties-observers, June 3, 2019.
[37] "Type of Party to the Convention", **United Nations Climate Change,** (available) https://unfccc.int/process/parties-non-party-stakeholders/parties-convention-and-observer-states?field_national_communications_target_id%5B515%5D=515&field_national_communications_target_id%5B514%5D=514, June 3, 2019.

1.3.2. The Road to Both Kyoto Protocol and Paris Agreement

After adoption of UNFCCC, Second Assessment Report on Climate Change was published in 1995 which indicated *"an average global warming of 1.3.5°C and an increase in sea level of 15-95 cm during the twenty-first century."*[38] Publication of Second Assessment Report on Climate Change and series of COP conferences - in COP-1, in Berlin, Germany, in 1995 and in COP-2, Geneva, Switzerland, in 1996 - paved way for signing of the Kyoto Protocol in COP-3, in Kyoto, Japan, in 1997.

The protocol set new targets for greenhouse gas emissions that should be fulfilled by signatory parties. While the protocol was in ratification process, Third Assessment Report on Climate Change was published by IPCC in 2001 which specified that there is a direct relationship between human activity and the increase in GHG emissions and also claimed that *"the average global temperature could rise by 1.4-5.8°C… during the twenty-first century."*[39] Nevertheless, the Protocol had been entered into force on 11 December 2005, after 7 years of its creation due to reluctance of few countries to ratify the protocol. Because the protocol was enforced with a notable delay, its targets set in 1997 had become inadequate for tackling the problem of the climate change.[40]

Afterwards, thanks to negotiations in COP conferences and publication of Fourth and Fifth Assessment Reports on Climate Change which were more alarming than the former reports, it was understood that a new climate agreement is required in order to tackle with climate change. According to Fourth Assessment Report on

[38] Ruffini, **op.cit**., p.120.
[39] Ruffini, **op.cit**., pp.120-121.
[40] Korhola, **op.cit.,** pp.26-28.

Climate Change which was published in 2007, the relationship between human activity and GHG emissions was confirmed and forecasted *"an average rise of the sea level between 18 cm and 59 cm by the end of the century."* In addition to fourth assessment report, Fifth Assessment Report on Climate Change was published in 2014 which claimed that *"a temperature rise of less than 2°C was considered weakly probably"* and plus predicted that there will be rise in average sea level from 26 to 82 cm by the end of the century.[41]

As a result of all these facts, the Kyoto Protocol was replaced by the Paris Agreement, was signed in COP-21, in Paris, France by 196 countries on 12 December 2015.[42] Paris Agreement entered into force on 4 November 2016, when the condition in Article 21.1[*] was met by the parties. The Paris Agreement has been regarded as a crucial turning point in the history of tackling with the problem of climate change, at least for three reasons. First, it is agreement on which all countries are agreed at least in theory.[43] Second, unlike the Kyoto Protocol, in which only the industrialized countries had agreed to take responsibility all parties, regardless of the industrialization levels, accepted to assume responsibility for the mitigation of greenhouse gas emissions in the Paris Agreement.[44] Third, the Paris Agreement

[41] Ruffini, **op.cit.,** p.121.
[42] Raphael Ollivier Mrejen, et al, "Chronicles of a Science Diplomacy Initiative on Climate Change", **Center for Science Diplomacy of the American Association for the Advancement of Science (AAAS),** Science & Diplomacy, Vol. 7, No:2, June 2018, pp.1-2.
[*] "This Agreement shall enter into force on the thirtieth day after the date on which at least 55 Parties to the Convention accounting in total for at least an estimated 55 per cent of the total global greenhouse gas emissions have deposited their instruments of ratification, acceptance, approval or accession". https://unfccc.int/sites/default/files/english_paris_agreement.pdf
[43] Etem Karakaya, "Paris Anlaşmasi: İçeriği Ve Türkiye Üzerine Bir Değerlendirme", **Sürdürülebilir Üretim ve Tüketim Derneği,** 2015, p.2.
[44] Wei D. Cameron, et al, "The Paris Agreement: What it Means for Business; We Mean Business; New York" 2016, p.2.

allows the countries to set their own targets for greenhouse gas emissions, whereas the Kyoto Protocol had set the targets on its own.[45]

1.4. Significant Decisions Adopted in Paris Agreement

Aim of the agreement is to *"strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels"* so as to reduce the risks and adverse impacts of climate change (Art.2.1).[46]

All parties have agreed to fulfill their own responsibilities in the case of mitigation of greenhouse gas emissions. It is clarified that developed countries have much more historical responsibilities in terms of increase in greenhouse gas emissions due to their rapid industrialization processes and thus they are expected to take much more responsibility for tackling the problem compared to developing and less-developed countries. This approach produced the document entitled 'common but differentiated responsibilities' policy (Art.2.2).[47]

Nevertheless, the parties have not been agreed on specific date to achieve the long-term temperature goals which were set out in Article 2. Instead, it has been decided that *"parties aim to reach global peaking of greenhouse gas emissions as soon as possible".* In order to meet the long-term temperature goal - limitation 1.5°C

[45] Annalisa Savaresi, "The Paris Agreement: A New Beginning?", **Journal of Energy & Natural Resources Law,** Vol.16, No.18, January 2015, pp.6-7.
[46] "Paris Agreement", **United Nations,** 2015, p.3.
[47] **Ibid**., p.3.

target -, greenhouse gas emissions must be reduced until when there is a *"balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century."* (Art.4.1)[48]

All parties *"shall prepare, communicate and maintain successive nationally determined contributions (hereafter NDCs) that it intends to achieve".* NDCs are expression of action plans of the individual parties which covers *"domestic mitigation measures, with the aim of achieving the objectives of such contributions"* (Art.4.2.), as well as providing *"the information necessary for clarity, transparency and understanding"* in accordance with communicating their NDCs (Art.4.8). NDCs must be prepared according to *"Common But Differentiated Responsibilities and respective capabilities, in the light of different national circumstances."* Besides, it must reflect the highest possible ambition of the parties (Art.4.3.) and all parties must revise their NDCs in every 5 years - new NDCs must be based on progressive aims beyond the party's last NDCs (Art.4.9) - .[49]

It has been decided that developed countries (Annex-II Parties) shall provide financial resources with regard to both mitigation and adaptation of existing obligations under the Convention (Art.9.1) as well as providing technology enhancement and transfer them to developing countries (Non-Annex-I Parties) with respect to reducing greenhouse gas emissions (Art.10.1). It should be underlined that although the parties agreed on providing financial resources to developing countries, concrete figures have not been specified in Paris Agreement, instead COP-21 decision has been specified the concrete figures which would be 100 billion US

[48] **Ibid**., p.4.
[49] **Ibid**., pp.4-5.

dollar per year till 2020.[50] According to COP-21 decision, concrete figures must exceed 100 billion US dollar per year after 2020 (Para.53 of the COP-21 decision).[51]

1.5. Concluding Remarks for the Chapter

In conclusion, science diplomacy which is a new method of multilateral diplomacy having increasing role in international politics was discussed in respect of its three dimensions. As a concrete example of science diplomacy, the chapter focused on the Paris Agreement of 2015 aiming to tackle climate change problem. The process leading to the emergence of Paris Agreement and its precursors - UNFCCC and Kyoto Protocol - were also examined in this chapter. Even though Paris Agreement was signed by 196 countries, it has been suggested that the success levels of the states in meeting the country-specific goals determined in the documents known as Intended Nationally Determined Contributions (INDCs). Therefore, the INDCs of some countries such as Morocco, India, China, European Union and its 28 member states, US, Russia and Turkey will be reviewed in the next chapter by referring to relationship between realism and science diplomacy.

[50] **Ibid**., pp.13-14.
[51] "Report of the Conference of the Parties on its twenty-first Session, held in Paris from 30 November to 13 December 2015", **United Nations Framework Convention on Climate Change,** January 2016, (available) https://unfccc.int/resource/docs/2015/cop21/eng/10a01.pdf, June7, 2019, p.8.

CHAPTER 2

2.1. Introduction

Intended Nationally Determined Contributions[*] (hereafter INDCs) indicate the full list of climate related plans and policies of the countries for a certain period of time. Since all the signatory parties have to prepare and revise their INDCs every 5 years as an obligation of Paris Agreement, signatory parties to the agreement specify various targets so as to tackle with climate change. The reason of determination of various targets in the case of combating with climate change is directly related with national interests of the countries. Because there is a common belief that science is not always made for scientific purposes but for the sake of national interests which is supported by realists to clarify the relationship between realism and science diplomacy.

To illustrate, in spite of Paris Agreement and series of international climate conferences, developed and developing countries continue to use fossil fuels to a large extent so as to secure their economic growth and high cost of renewable energy sources prevents them to give importance to implementation of renewable energy policies. Therefore, both developed and developing countries are unwilling to determine ambitious goals or fulfill their commitments under the Paris Agreement

[*] "Intended Nationally Determined Contributions (INDCs) identify the post-2020 voluntary national climate targets, including mitigation and adaptation, which countries committed to and which will become a binding Nationally Determined Contribution (NDC) when a country ratifies the Paris Agreement". http://spappssecext.worldbank.org/sites/indc/Pages/INDCHomeMore.aspx

which indicates that the countries' policies shape according to their national interests rather than the science, as realists stated.

To be more specific, developed countries which are also known as the biggest greenhouse gas emitters in the world including China, US, Russia, India and European Union and its 28 member states, determined insufficient goals in their INDCs in the case of reducing their greenhouse gas emissions. In addition to the biggest polluters, Turkey as a developing country with its increasing energy demand also determined inadequate goals in their INDC so as to tackle with climate change. However, when undeveloped country examples are examined, the commitments of these countries are considered as sufficient and compatible with the targets of Paris Agreement. For instance, Morocco determined more ambitious goals in the case of reducing their GHG emissions. Since the country is an undeveloped country and has very low current and historical responsibility, determination of the ambitious goals does not affect severely the economic growth of the country or in other words, does not seem to contradict with the national interests of the country at least for now.

Therefore, different approaches that were stated in INDCs of Morocco, India, European Union and its 28 member states, US, China, and Russia will be analyzed and then Turkey's approach will be analyzed individually in this chapter by referring to analyses of 'Climate Action Tracker[*]' (hereafter CAT). For the case of Turkey, the

[*] "The Climate Action Tracker (CAT) is an independent scientific analysis produced by three research organisations tracking climate action since 2009." For more information about 'The Climate Action Tracker': https://climateactiontracker.org/about/

chapter will also include the interpretation of the interview with Nuran Talu[*] which was conducted by the author of this study.

2.2. Intended Nationally Determined Contributions of Particular Countries

Although 196 parties signed Paris Agreement, currently 181 countries ratified the agreement. Countries, Angola, Equatorial Guinea, Eritrea, Guinea-Bissau, Iran, Iraq, Kyrgyzstan, Lebanon, Libya, Oman, Russian Federation, San Marino, South Sudan, Suriname, Uzbekistan, Turkey and Yemen have not yet ratified the agreement[1]. However, all the countries had prepared and submitted their INDCs. It is significant to specify that countries' INDCs are classified according to six main categories by CAT which are 'critically insufficient', 'highly insufficient', 'insufficient', '2°c compatible', '1.5°c Paris Agreement compatible' and 'role model'. Initially, even though 'role model' category refers to idea that the goals of the countries which are classified in this category are accepted as beyond Paris Agreement's 1.5°C limit and more ambitious in the case of tackling with climate change, to be concrete, analyses of CAT indicate that none of the countries' INDCs is classified in 'role model' category.[2]

[*] Nuran Talu is the former environmental bureaucrat who is currently acting as the head of 'Global Balance Association'. The association was established in Ankara in 1995 with the aim of conducting researches about sustainable development principles as well as increasing awareness both for local people and non-governmental organizations about environment.

[1] "Paris Agreement", **United Nations Treaty Collection,** (available) https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&lang=_en&clang=_en, June 3, 2019.

[2] "Countries", **Climate Action Tracker,** (available) https://climateactiontracker.org/countries/, June 3, 2019.

Secondly, INDC of Morocco is considered in the category of '1.5°C Paris Agreement compatible' which means countries' pledges are consistent with target of Paris Agreement, is limiting global temperature 1.5°C.[3] According to INDC of Morocco[4], the country aims 32% reduction in their greenhouse gas emissions by 2030, since Morocco has very low historical and current responsibility in terms of release of greenhouse gases into the atmosphere; their commitments for Paris Agreement are accepted as sufficient.

Thirdly, INDC of India is in the category of '2°C compatible' which means commitments of the countries are compatible to hold global temperature around 2°C instead of 1.5°C limit. According to Indian INDC, the country plans to reduce greenhouse gas emissions 33% to 35% by 2030 from 2005 level as well as achieving *"40 percent cumulative electric power installed capacity from non-fossil fuel based energy resources by 2030"*[5] which could be achieved one decade earlier than they targeted thanks to adoption of its National Electricity Plan in 2018. Even though pledges of the India is acknowledged as favorable due to the fact that India is the fourth biggest greenhouse gas emitter in the world with 6.65%[6] of total greenhouse gas emissions, analyses indicate that India is still using fossil fuels substantially to

[3] "Country Summary: Morocco", **Climate Action Tracker**, (available) https://climateactiontracker.org/countries/morocco/, June 3, 2019.
[4] "INDC Morocco", **INDC Submission-UNFCCC**, June 5, 2015, (available) https://www4.unfccc.int/sites/submissions/INDC/Published%20Documents/Morocco/1/Morocco%20INDC%20submitted%20to%20UNFCCC%20-%205%20june%202015.pdf, June 3, 2019, p.5.
[5] "India's Intended Nationally Determined Contribution: Working Towards Climate Justice", **INDC Submission-UNFCCC,** 2015, (available) https://www4.unfccc.int/sites/submissions/INDC/Published%20Documents/India/1/INDIA%20INDC%20TO%20UNFCCC.pdf, June 3, 2019, p.29-30.
[6] Johannes Friedrich, Mengpin Ge, Andrew Pickens, "This Interactive Chart Explains World's Top 10 Emitters, and How They've Changed", **World Resources Institute,** April 11, 2017, (available) https://www.wri.org/blog/2017/04/interactive-chart-explains-worlds-top-10-emitters-and-how-theyve-changed, June 3, 2019.

meet its energy demand, to illustrate, coal consumption rate increased 4.8% in 2017 compared to previous years.[7]

Fourthly, INDCs of European Union and its 28 member states as well as US are considered as 'insufficient' which means if countries determine goals to tackle with climate change like EU and its member states and US, in this scenario, it is expected that global average temperature would exceed over 2°C and up to 3°C. According to INDCs of EU and its Member States, they aim to reduce at least 40% in greenhouse gas emissions by 2030 which is not adequate in terms of combating with climate change because of the fact that EU and its member states are the third largest greenhouse gas emitters in the world and they are responsible from 9.6% greenhouse gas emissions in total. Therefore, in 2018 The European Parliament has called its members to increase their reduction goals from 40% to 55% which is more compatible with the targets of Paris Agreement.[8] In addition, although US ratified the Paris Agreement during the Obama administration and prepared its INDC in a detail way, when Donald Trump came into power, they withdrew from the agreement and refused to fulfill its pledges under the Paris Agreement. Therefore, US is listed in 'critically insufficient' category, even though they would be listed in 'insufficient' category by CAT's specialists in the case of its INDC.[9] According to INDC of US, the country aims to reduce greenhouse gas emissions *"26% to 28% below their 2005*

[7] "Country Summary: India", **Climate Action Tracker,** (available) https://climateactiontracker.org/countries/india/, June 3, 2019.
[8] "Country Summary: EU", **Climate Action Tracker**, (available), https://climateactiontracker.org/countries/eu/, June 3, 2019.
[9] "Country Summary: USA", **Climate Action Tracker,** (available) https://climateactiontracker.org/countries/usa/, June 4, 2019.

levels by 2025,"[10] hence currently US is the second biggest greenhouse gas emitter in the world and they have much more historical responsibility compared to other countries, their commitments seem inadequate and inequitable.[11]

Fifthly, INDC of China is regarded as 'highly insufficient' category which refers that if countries determine goals to tackle with climate change like China, in this scenario, it is expected that global average temperature would reach between 3°C and 4°C which is not compatible with the target of Paris Agreement.[12] Because according to China's INDC, it was stated that the 'peak year[*]' of its greenhouse gas emissions will be in 2030 and they will make the best effort to achieve peak year early[13] instead of determination of specific reduction targets for 2030. Since China is the biggest greenhouse gas emitter in the world with approximately 30%, their pledges for Paris Agreement are accepted as insufficient mitigation goals.[14]

Lastly, INDC of Russia is classified as 'critically insufficient' category which means that if countries determine goals to tackle with climate change like Russia, in this scenario, it is expected that global average temperature would exceed 4°C which is not consistent with the target of Paris Agreement; hence Paris Agreement aims to

[10] Joseph E. Aldy, William A. Pizer, Keigo Akimoto, "Comparing Emissions Mitigation Efforts Across Countries", **SSRN Electronic Journal,** June 2015, p.13.
[11] Johannes Friedrich, Mengpin Ge, Andrew Pickens, "This Interactive Chart Explains World's Top 10 Emitters, and How They've Changed", **World Resources Institute,** April 11, 2017, (available) https://www.wri.org/blog/2017/04/interactive-chart-explains-worlds-top-10-emitters-and-how-theyve-changed, June 3, 2019.
[12] "Country Summary: China", **Climate Action Tracker,** (available) https://climateactiontracker.org/countries/china/fair-share/, June 4, 2019.
[*] Peak year is the year that countries begin to decrease their carbon dioxide emissions.
[13] Aldy, Pizer, Akimoto, **op.cit.,** p.13.
[14] Johannes Friedrich, Mengpin Ge, Andrew Pickens, "This Interactive Chart Explains World's Top 10 Emitters, and How They've Changed", **World Resources Institute**, April 11, 2017, (available) https://www.wri.org/blog/2017/04/interactive-chart-explains-worlds-top-10-emitters-and-how-theyve-changed, June 3, 2019.

hold warming below 2°C[15]. Even though Russia signed the Paris Agreement and submitted their INDC, up to now, they have not yet ratified the Agreement because of particular incompatibilities with its national interests. For instance, according to Russian INDC, the country did not propose a significant amount of reduction in greenhouse gas emissions. Their target for Paris Agreement is to *"limit its emissions to 25% to 30% below their 1990 levels by 2030"*[16] which is not adequate when it can be considered the fact that Russia is the fifth largest greenhouse gas emitter in the world.[17] Besides, Russian business and political elites concern implications of policies about reducing greenhouse gas emissions which were targeted in Paris Agreement. Hence Russian economy is heavily based on fossil fuels particularly on natural gas that makes Russia more vulnerable to risks which stem from implication of policies about reducing the usage of fossil fuels in order to tackle with climate change. Therefore, significant amount of Russian companies opposed to the agreement and even supported not to ratify the agreement. As a result of these, Russian officials decided to postpone ratification of Paris Agreement to 2019 or 2020 so as to evaluate long term risks for Russian economy as well as evaluating economic outcomes of implementation of the agreement.[18]

[15] "Country Summary: Russian Federation", **Climate Action Tracker**, (available) https://climateactiontracker.org/countries/russian-federation/fair-share/, June 4, 2019.
[16] Aldy, Pizer, Akimoto, **op.cit**., p.13.
[17] Johannes Friedrich, Mengpin Ge, Andrew Pickens, "This Interactive Chart Explains World's Top 10 Emitters, and How They've Changed", **World Resources Institute**, April 11, 2017, (available) https://www.wri.org/blog/2017/04/interactive-chart-explains-worlds-top-10-emitters-and-how-theyve-changed, June 3, 2019.
[18] Igor Makarov, Y.-H. Henry Chen, Sergey Paltsev, "Finding Itself in a Post-Paris World: Russia in the New Global Energy Landscape", **MIT Center for Energy and Environmental Policy Research,** December 2017, pp.2-3.

2.3. Intended Nationally Determined Contributions of Turkey

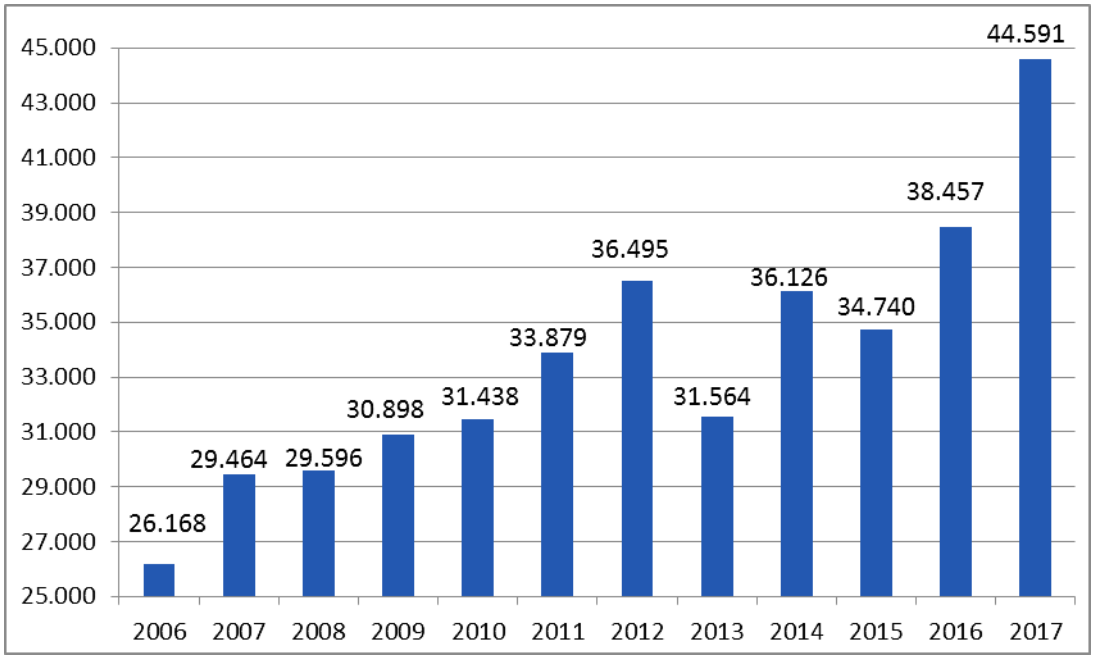
According to analyses of CAT, Turkey's INDC is also listed in "critically insufficient" category like Russia due to both non-ratification of Paris Agreement and their insufficient targets about renewable and non-renewable energy sources particularly for their coal policies. Turkey is one of the few countries that has not yet ratified the agreement because of both internal and external reasons - which will be explained in a detail way in the next section -. In addition to non-ratification, even though Turkey's total GHG emissions ($MtCO_2e$) rate was 207,8 in 1990, it went up to 125% and reached 467,6 $MtCO_2e$ in 2014. Hence Paris Agreement aims to reach net zero emissions in the second half of the 21st century, Turkey need to return total GHG emissions rate in 2010. However, according to Turkey's INDC, Turkey plans to reduce *"up to 21 percent reduction in GHG emissions from the Business as Usual (BAU) level by 2030"*[19] which means that 461 million ton more GHG emissions will occur until 2030. Since occurrence of GHG is directly linked with using fossil fuels, it can be claimed that fossil fuels will be the center of Turkish economy at least until 2030.[20]

Besides, analyses indicate that Turkey continues to meet their energy demand from coal by building new coal-fired power plants which cause to increase in Turkey's coal consumption and production rate every year. To illustrate, Turkey's coal consumption rate increased 6.1% in 2017 compared to previous year (see below

[19] Thomas Day, Sofia Gonzales, Lina Röschel, "Co-benefits of Climate Action: Assessing Turkey's Climate Pledge", **Climate Action Network**, October 2016, p.1.
[20] "Republic of Turkey Intended Nationally Determined Contribution", **INDC Submission-UNFCCC**, 2015, (available) https://www4.unfccc.int/sites/submissions/INDC/Published%20Documents/Turkey/1/The_INDC_of_TURKEY_v.15.19.30.pdf, June 4, 2019, p.2.

Table 2.1) which contradicts with the goal of Paris Agreement, is to reduce usage of non-renewable energy sources particularly coal in the near future. Furthermore, even though Turkey is responsible from 0.93% of global greenhouse gas emissions in the world[21], its energy demand increases by 6-7% every year as a developing country with its increasing population which is why Turkey's INDC targets are classified as unfair and insufficient.[22]

Table 2.1 indicates Turkey's coal consumption rate in terms of TOE (tones of equivalent) mt unit during the years between 2006 and 2017.



Source: "Turkey Coal Consumption" (available) https://www.ceicdata.com/en/indicator/turkey/coal-consumption, June 4, 2019.

[21] Johannes Friedrich, Mengpin Ge, Andrew Pickens, "This Interactive Chart Explains World's Top 10 Emitters, and How They've Changed", **World Resources Institute**, April 11, 2017, (available) https://www.wri.org/blog/2017/04/interactive-chart-explains-worlds-top-10-emitters-and-how-theyve-changed, June 4, 2019.

[22] "Country Summary: Turkey", **Climate Action Tracker,** (available) https://climateactiontracker.org/countries/turkey/, June 4, 2019.

In addition to analyses of CAT, Turkey's INDC is claimed to be insufficient one because of three reasons. First and most importantly, it was stated that the goals in Turkey's INDC are inadequate and technically easy to achieve. Particularly, Turkey's goals about implementation of renewable energy policies are not adequate, when we consider the Turkey's renewable energy potential. Besides, hence Turkey's GHG emissions rate has been increasing day by day; reduction target about GHG emissions which is up to 21% reduction from the 'business as usual' level by 2030 is not considered as a sufficient reduction target. Therefore, the idea of determination of more ambitious goals should be supported in order to effectively combat with climate change and minimize adverse impacts of climate change. Secondly, Paris Agreement aims to reach more global action than ever by giving significant roles to non-governmental organizations. Because it is comprehended that states are not only necessary but also new actors including non-governmental organizations are essential in the case of determination of more ambitious goals in order to tackle with climate change. However, since Turkey's INDC was prepared without any contribution of non-governmental organizations, it was specified that preparation process of Turkey's INDC contradicts with principles of the agreement. Thirdly, it was claimed that Turkey's INDCs is insufficient because Turkey gave priority to implement mitigation policies instead of adaptation policies in their INDC. It is significant to specify that adaptation policies are accepted as one of the key principles of the agreement due to the fact that adaptation policies assist countries to cope with current and the future impacts of climate change as well as minimizing the dangerous impacts of climate change. Therefore, 'Article 7' of the Paris Agreement emphasizes the importance of adaptation policies by stating that adaptation policies should be

applied to the same extent as mitigation policies so as to achieve success in the case of dealing with climate change.[23] As a result of all these facts, Turkey's INDC is considered as an insufficient one.

2.4. Concluding Remarks for the Chapter

In conclusion, INDCs are regarded as essential in order to implement successfully climate related plans and policies and achieve the targets of Paris Agreement. However, hence each country determines different goals in terms of implementation of renewable energy policies and reducing the usage of fossil fuels by considering their own economic growth, various goals were determined in countries' INDCs which subsequently led to categorization of countries' INDCs by the specialists. The categorization of countries' INDCs is crucial in order to examine the relationship between realism and science diplomacy, since realists support the idea that countries' policies shape according to their national interests rather than the science.

For Paris Agreement, it can be stated that policies of most of the developed and developing countries justify the realists because developed and developing countries were determined insufficient reduction and renewable energy goals to tackle with climate change compared to undeveloped countries. Since developed and developing countries need considerable amount of energy every year and renewable energy sources are costly compared to fossil fuels, they are unwilling to implement renewable energy policies.

[23] Nuran Talu, Personal interview, Ankara, April 4, 2019.

Therefore, in this chapter, countries' INDCs were analyzed by giving example from INDCs of the biggest greenhouse gas emitters in the world including China, India, Russia, US, EU and its 28 member states and INDC of Turkey as a developing country with its increasing energy demand as well as INDC of Morocco as an undeveloped country with its very low current and historical responsibility.

Even though Turkey prepared its INDC, they have not yet ratified the agreement because of particular incompatibilities with its national interests. Therefore, the next chapter will be mainly focused on the reasons of Turkey's non-ratification of the agreement decision by referring to relationship between realism and science diplomacy.

CHAPTER 3

3.1. Introduction

Although Turkey signed the Paris Agreement and prepared its INDC in a detailed way, they have not yet ratified the agreement due to both internal and external reasons. Even though internal and external reasons influence Turkey's decision including lack of enforcement power of the agreement and absence of climate change as a norm both in Turkey and abroad, economic factors are considered as the main reason of Turkey's non-ratification of the agreement which is also crucial to clarify the relationship between realism and science diplomacy. Because Turkish officials stated many times that it is significant for Turkey to be eligible for receiving fund from 'Green Climate Fund' in order to implement climate related plans and policies including increasing the renewable energy potential of Turkey. However, Turkey cannot benefit from the fund because of its controversial classification in UNFCCC.

Thus, it can be stated that since economic factors contradict with Turkey's national interests particularly the economic ones, Turkey has not yet ratified the agreement which justifies the argument of realists in the context of relationship between realism and science diplomacy that countries adopt certain agreement, when they see a national interest. Therefore, in this chapter, Turkey's problematic classification in UNFCCC which is directly related with funding issue and absence of climate change as a norm in Turkey will initially be examined as internal reasons of Turkey's non-ratification of the agreement. Then, lack of enforcement power of

Paris Agreement and absence of climate change as a norm in the international community will be examined as external reasons.

Afterwards, hence recent contributions are considered as significant actions in the case of emergence of climate change as a norm in the international community in the near future, recent contributions at international level such as adoption of comprehensive act on climate change in particular countries and implementation of climate related plans and policies in the municipalities, particularly Çankaya Municipality at national level will be analyzed. For the case of Çankaya Municipality, the chapter will also include the interpretation of the interview with Ethem Torunoğlu[*] which was conducted by the author of this study.

3.2. Reasons of Turkey's Non-Ratification of Paris Agreement

3.2.1. Internal Reasons of Turkey's Non-Ratification of Paris Agreement

3.2.1.1. Economic Factors

Turkey's problematic classification in UNFCCC which is directly linked with funding issue can be regarded as one of the most significant reason of Turkey's non-ratification of Paris Agreement. To begin with, it is clarified in the literature that Turkey heavily meets its energy demand from fossil fuels particularly from coal which causes to increase in greenhouse gas emissions rate of Turkey. To illustrate, according to analyses, it is expected that Turkey's greenhouse gas emissions rate will

[*] Ethem Torunoğlu is currently the head of Directorate of Foreign Affairs in Çankaya Municipality.

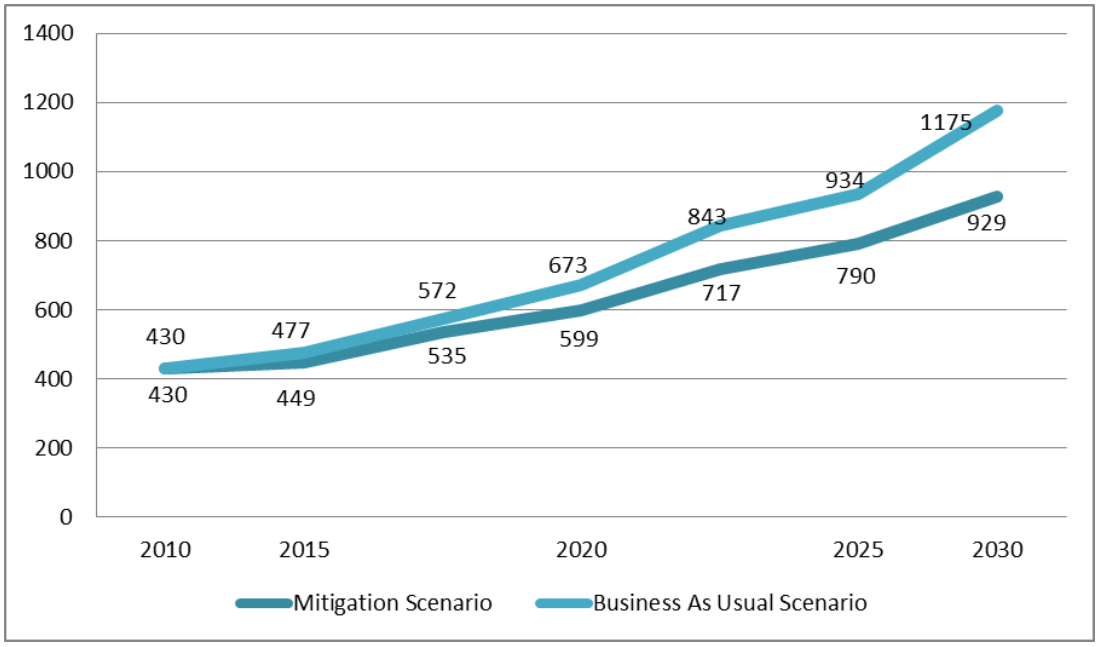
be six times higher in 2025 compared to 1990 levels due to coal policies of Turkey.[1] Therefore, as Turkey stated in their INDC, they plan *"up to 21 percent reduction in GHG emissions from the Business as Usual (BAU) level by 2030"* (see below Table 3.1). Since energy sector has the largest share with regard to greenhouse gas emissions which is followed by industrial processes, waste sector and agriculture, Turkey determined particular plans and policies[*] so as to reduce greenhouse gas emissions in these sectors. However, as it is stated in Turkey's INDC, it is essential for Turkey to *"receive international financial, technological, technical and capacity building support, including finance from the Green Climate Fund"* as well as using domestic sources to successfully implement all the plans and policies.[2]

[1] Wietze Lise, "Decomposition of CO2 Emissions over 1980-2003 in Turkey", **Nota di Lavoro,** No. 24.2005, Fondazione Eni Enrico Mattei (FEEM), Milano, 2005, pp.2-13.

[*] In Turkey's INDC, all the plans and policies about energy, industry, transport, buildings and urban transformation, agriculture, waste and forestry sectors were expressed in a detail way.

[2] "Republic of Turkey Intended Nationally Determined Contribution", **INDC Submission-UNFCCC**, 2015, (available) https://www4.unfccc.int/sites/submissions/INDC/Published%20Documents/Turkey/1/The_INDC_of_TURKEY_v.15.19.30.pdf, June 4, 2019, pp.1-3.

Table 3.1 indicates the mitigation target of Turkey for 2030 which will be expected around 21% (246 MT) reduction.



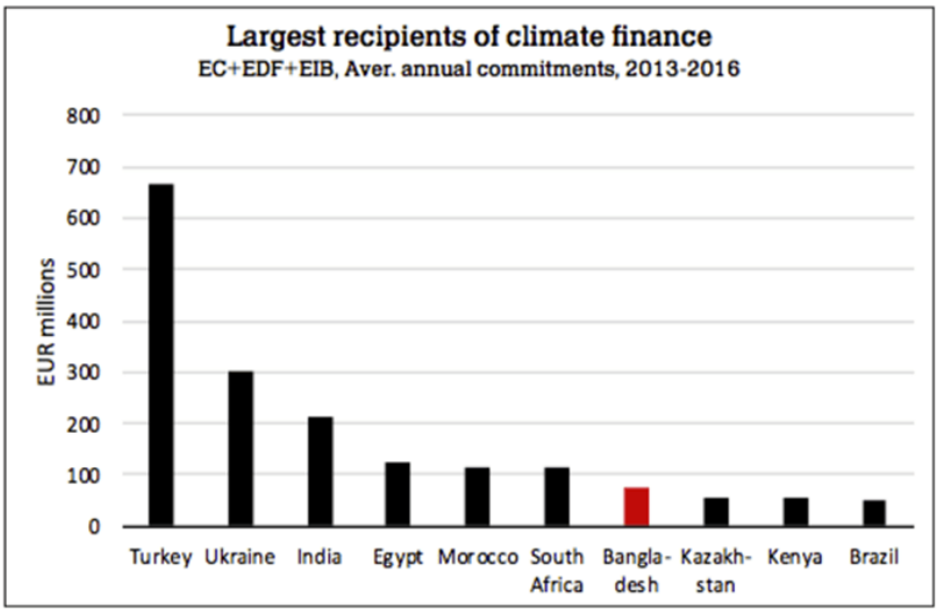
Source: "Republic of Turkey Intended Nationally Determined Contribution", **INDC Submission-UNFCCC,** 2015, (available) https://www4.unfccc.int/sites/submissions/INDC/Published%20Documents/Turkey/1/The_INDC_of_TURKEY_v.15.19.30.pdf, June 4, 2019, p.5.

Currently, Turkey is eligible for receiving fund from climate finance mechanisms including the Global Environmental Facility - which is the main financial body of UNFCCC -, Clean Technology Fund and European Union Institutions such as European Commission, European Development Fund, and European Investment Bank.[3] It is significant to specify that Turkey was the single largest recipients with €667 million per year between 2013 and 2016 from EU institutions[4] (see below Figure 3.1) and they received $231 million from both Clean

[3] Michael Schneider, "A Tangled Case – Turkey's Status under the UNFCCC and the Paris Agreement", **International Center for Climate Governance (ICCG),** No.53, July 2017, p.6.
[4] Vince Chadwick, "Questions Raised about EU Climate Financing As Turkey Takes Biggest Share", April 18, 2018, (available) https://www.devex.com/news/questions-raised-about-eu-climate-financing-as-turkey-takes-biggest-share-92562, June 6, 2019.

Technology Fund and the Global Environmental Facility between 2013 and 2016[5]. In addition to these climate finance mechanisms, as Turkish officials stated many times, it is crucial for Turkey to receive fund from other climate finance mechanisms like Green Climate Fund so as to implement climate related plans and policies successfully.

Figure 3.1 indicates the largest climate finance recipients from the European Union institutions during the years between 2013 and 2016.



Source: Vince Chadwick, "Questions Raised about EU Climate Financing as Turkey Takes Biggest Share", April 18, 2018, (available) https://www.devex.com/news/questions-raised-about-eu-climate-financing-as-turkey-takes-biggest-share-92562, June 6, 2019.

[5] Jocelyn Timperley, "The Carbon Brief Profile: Turkey", **Carbon Brief Clear on Climate,** May 3, 2018, (available), https://www.carbonbrief.org/carbon-brief-profile-turkey, June 6, 2019.

‘Green Climate Fund’ is a unique global platform which was created in COP-16, convened in Cancun, Mexico in 2010 under the umbrella of UNFCCC in order to assist to developing countries financially in the case of reducing greenhouse gas emissions as well as helping vulnerable societies for tackling with impacts of climate change.[6] It is argued in the literature that on several occasions including G20 Summit in Hamburg, Turkish officials stated that it is essential to receive fund from ‘Green Climate Fund’ for reducing greenhouse gas emissions and implementing certain projects and policies which are compatible with UN climate targets. However, Turkey does not receive fund due to its controversial classification in UNFCCC.

When UNFCCC was adopted at the ‘Earth Summit’ in Rio in 1992, at first Turkey was included in both Annex-I and Annex-II parties, as an the Organization for Economic Co-operation and Development member country.[7] Annex-II parties are accepted as developed countries and they must provide both technological and financial assistance to developing countries without benefit from the fund. In contrast, although Annex-I parties are also accepted as developed countries, their responsibility is to determine more ambitious goals in the case of reducing their GHG emissions. Therefore, Turkey rejected to be part of the both Annex-I and Annex-II parties by referring to ‘common but differentiated responsibilities’ principle and specified that developed countries had much more historical responsibility compared to Turkey and thus it is not fair Turkey to be in the category of both Annex-I and Annex-II parties.

[6] Richard J.T. Klein and Annett Möhner, “The Political Dimension of Vulnerability: Implications for the Green Climate Fund”. **IDS Bulletin,** Vol.42, No.3, May 2011, p.15.
[7] Schneider, **op.cit**., pp.3-4.

Therefore, in 2000 Turkey stated its withdrawal from Annex-II Parties while remaining on Annex-I. Afterwards, in COP-7 gathered, in Marrakech, Morocco in 2001, the alteration of Turkey's status in UNFCCC was accepted and Turkey was classified as 'Annex-I with special circumstances' which is not defined clearly by UNFCCC. [8] Subsequently, in COP-21 in Paris, France in 2015, when Paris Agreement was signed, countries were categorized as 'developed' and 'developing' ones instead of 'Annex-I', 'Annex-II' and 'Non-Annex-I Parties'. However, categorization of countries is still based on the classification in UNFCCC, which means that since Turkey is in the category of 'Annex-I with special circumstances', they are accepted as developed country in Paris Agreement which makes Turkey ineligible for funding.[9]

Therefore, recently Turkish authorities have proposed an official discussion point on Turkey's utterly removal from the Annex-I parties in COP-24 which was held in Katowice, Poland in 2018. However, Turkey's demand was rejected due to more significant subjects on the COP-24 agenda [10] and Turkey still remains its position in 'Annex-I with special circumstances'. As a result, hence Turkey's current status in UNFCCC (Annex-I with special circumstances) does not permit Turkey to benefit from the fund, 'Green Climate Fund' which plays a crucial role in the case of implementing climate related plans and policies effectively, Turkish authorities are reluctant to ratify the agreement.

[8] Ali Kerem Kayhan, "Country Report: Turkey, Turkey's Climate Change Dilemma", **The IUCN Academy of Environmental Law**, No.5, 2014, p.270.
[9] İsmail Köse, "İklim Değişikliği Müzakereleri: Türkiye'nin Paris Anlaşmasi'ni İmza Süreci", **Ege Stratejik Araştirmalar Dergisi,** Vol.9, No.1, 2018, pp.72-73.
[10] Çiğdem Tuğaç, "Türkiye'de Kentsel İklim Değişikliği için Eko-Kompakt Kentler", **Ankara Üniversitesi Ernst Reuter İskân ve Şehircilik Uygulama ve Araştırma Merkezi Yayınları,** No.23, January 2019, pp.50-51.

3.2.1.2 Absence of Climate Change as a Norm in Turkey

Norms play an essential role to shape both domestic and international objectives of the countries. Since the norms are accepted as the most appropriate one, states are motivated by the norms in the case of following particular policies willingly.[11] Therefore, absence of climate change as a norm in Turkey can be considered as another internal reason of Turkey's non-ratification of Paris Agreement. Even though several non-governmental organizations in Turkey have called Turkish officials to ratify the agreement and fulfilling its commitments by emphasizing the importance of combating with climate change particularly for Turkey and the world, statements of non-governmental organizations can be regarded as weak actions in the case of shaping climate related plans and policies of Turkey. Because of the fact that climate change has not been accepted as a norm in Turkey and in the international community like human rights or democratization movements which will be explained in a detail way in external reasons of Turkey's non-ratification of the agreement section.

Climate change is one of the most urgent issues of today's world; unfortunately it has numerous negative impacts for our planet including increase in world's average temperature, rising in sea levels - because of melting of polar ice caps -, unpredictable weather events like hurricanes, floods, storms, hails and droughts, as well as decline in biodiversity.[12] It is significant to specify that negative impacts of climate change vary from region to region. To illustrate, some small

[11] Kamil Zwolski, Christian Kaunert, "The EU and Climate Security: A Case of Successful Norm Entrepreneurship?" **European Security**, 20, No.1, 2011, pp.27-28.
[12] Cüneyt Bağdatli, Korkmaz Bellitürk, "Negative Effects of Climate Change in Turkey", **Advances in Plants & Agriculture Research,** Vol.3, No.2, January 2016, p.44.

island countries in the Pacific region are vulnerable to impacts of climate change. It is highly possible that if rising in sea level maintains some small island countries such as Tuvalu, Kiribati and the Maldives as well as large small island countries including Fiji, Puerto Rico and Samoa is expected to disappear in the forthcoming years due to their geographical location.[13] In addition, coastal areas of US, including Florida[14], Netherlands, along with Bangladesh are in great danger due to increase in sea level; hence all these areas are slightly above the sea levels.[15] On the other hand, The Amazon has suffered from drought and significant number of forest fires in the recent years because of decrease in rainfall and global warming which negatively affects the lives of species in the Amazon region. Therefore, if global warming continues, it is highly possible to result with loss of species and alteration of ecosystem in the near future, as The Amazon contains millions of species and tropical forests[16].

Furthermore, countries which are located in Mediterranean Basin like Turkey will encounter with adverse impacts of climate change because it is specified that Mediterranean Basin is the region which will be affected severely by climate change in the near future. It is expected that global temperature will increase 2,5–4 degrees particularly for Aegean and Eastern Anatolia regions within 20-50 years which will cause to *"increase in unpredictable weather events for Turkey, the decline in*

[13] Ilan Kelman, Jennifer J. West, "Climate Change and Small Island Developing States: A Critical Review", **Ecological and Environmental Anthropology**, Vol.5, No.1, 2009, pp.3-4.
[14] Donald Scavia, et al, "Climate Change Impacts on U.S. Coastal and Marine Ecosystems", **Publications, Agencies and Staff of the U.S. Department of Commerce,** Vol.25, No.2, April 2002, p.150.
[15] Robert J. Nicholls, Nobuo Mimura, "Regional Issues Raised by Sea-Level Rise and Their Policy Implications", **Climate Research,** Vol.11, 1998, pp.10-13.
[16] Yadvinder Malhi et al, "Climate Change, Deforestation, and the Fate of the Amazon", **Science,** Vol.319, February 2008, pp.169-170.

rainfall, yield losses in crops that require regular watering, biodiversity loss, and due to the decrease in precipitation groundwater, wetlands and losses in water storage stands."[17]

If increase in temperature and decrease in rainfall continues as it is estimated, southern parts of Turkey will be in great danger because of drought. In particular, drought is regarded as one of the most dangerous weather event in terms of its consequences, hence it leads to increase in forest fires and decrease in both agricultural products and water level as well as ecological damage.[18] According to the United Nations World Water Development Report, water scarcity issue will reach the serious level in Turkey except from the Black sea region within 30 years due to decrease trend in precipitation compared to previous years and thus it is highly possible that Turkey could be one of the water-poor countries in 2050 with its growing population.[19] In addition, it is reported that Turkey could face with significant issues in food production particularly in rural areas in the near future, since regular watering is essential for the food production.[20]

Besides, the fifth assessment report on climate change indicates that annual average temperature has increased in Turkey in the last 42 years[21] - average temperature was 14.3 in 2015, while it was around 13.5 during 1981-2010-.[22] According to analyses, if global warming continues, annual average temperature will

[17] Bağdatli, Bellitürk, **op.cit**., p.44.
[18] Levent Kurnaz, "Drought in Turkey", **Istanbul Policy Center**, April 2014, pp.4-5.
[19] United Nations World Water Assessment Programme, "The United Nations World Water Development Report 2016: Water and Jobs", **UNESCO**, Paris, 2016, p.19.
[20] Bağdatlı, Bellitürk, **op.cit**., p.44; Köse, **op.cit**., p.67.
[21] Murat Türkeş, et al, "İklim Değişikliğinde Son Gelişmeler: IPCC 2013 Raporu", **Istanbul Policy Center**, December 2013, p.20.
[22] Köse **op.cit**., p.69.

increase 5-6°C for western parts of Turkey, 3-4°C for eastern and southeastern parts of Turkey during summer season as well as 2-3°C increase during winter season in 2070. Additionally, it is expected that there will be increase in rainfall around 10-20% in Black see region in contrast; there will be decrease in rainfall around 30% in southern parts of Turkey.[23] Since there is a direct relationship between occurrence of unpredictable weather events and increase in temperature, it could be stated that number of unpredictable weather events have increased in Turkey in the recent years. To illustrate, while number of floods were 140 in 1963, more than 160 floods experienced in 2010.[24]

As a result of all these facts, several times various non-governmental organizations have emphasized the importance of ratifying the Paris Agreement for Turkey as well as fulfilling and revising its commitments so as to combat with climate change and minimize its adverse effects. Initially, 'Climate Network[*]' called Turkish decision makers to ratify Paris Agreement and determine more ambitious goals in their INDC on 3 November 2016, was the day before the Paris Agreement entered into force. In their statement, they underlined the importance of Paris Agreement by referring to Turkey's geographical location because if global average temperature continues to rise, Mediterranean region will be affected severely compared to other regions. Therefore, they stated that Turkey should progressively

[23] Nuran Talu, **Türkiye'de İklim Değişikliği Siyaseti,** Ankara, Phoenix, November 28, 2015, p.313.
[24] Bağdatlı, Bellitürk, **op.cit.,** p.44.
[*] "NGOs in Turkey, founded the 'Climate Network' to express their common concerns and solutions about climate change… the Network was established with the contribution of Buğday Association, The Nature Assosiation , Nature Conservation Center, Eurosolar Turkey, Greenpeace Mediterrean, Friends of Kadıköylü Science, Culture and Art Association (KADOS), Turkish Foundation for Combating Soil Erosion, for Restoration and the Protection of Natural Habitats (TEMA), WWF Turkey and 350 Ankara". http://www.tema.org.tr/web_14966-2_2/entitialfocus.aspx?primary_id=916&target=categorial1&type=155&detail=single

revise its INDC in order to cope with climate change and minimize its impacts. Besides, they also expressed their concerns about Turkey's non-ratification of the agreement. Since the agreement aims to create a framework about the process of moving to low carbon economy, it is highly possible that turkey would be outside of future negotiations and discussions about climate related plans and policies.[25]

On 8 October 2018, IPCC published special report on 'Global Warming of 1.5°C'. Hence the world has already experienced with the results of 1°C warming including increase in sea levels, melting of polar ice caps and occurrence of extreme weather events, the report highlights the significance of limiting global warming to 1.5°C. The report indicates that if global warming is limited to 1.5°C as it was aimed in the Paris Agreement, it would reduce the impacts on ecosystem, biodiversity, human health, food security, livelihoods as well as rising in the sea level and number of extreme weather events.[26] Subsequently, on 16 October 2018, the Turkish Foundation for Combating Soil Erosion for Reforestation and the Protection of Natural Habitats (hereafter TEMA Foundation) made a similar statement with 'Climate Network' and stated that Turkish officials should urgently ratify the agreement and strengthen its pledges by referring to IPCC special report on 'Global Warming of 1.5°C.'[27]

[25] "İklim Ağı, Türkiye'yi Paris Anlaşması'nı Onaylamaya Çağırıyor", **TEMA,** November 3, 2016, (available) http://www.tema.org.tr/web_14966-2_1/entitialfocus.aspx?primary_id=1643&target=categorial1&type=2&detail=single, June 6, 2019.
[26] Valérie Masson-Delmotte et al, "Summary for Policy Makers: Global Warming of 1.5°C. An IPCC Special Report on the Impacts of Global Warming of 1.5°C above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty", **World Meteorological Organization,** Geneva, Switzerland, 2018, pp.9-11.
[27] "Türkiye Paris Anlaşması'nı Onaylayarak Harekete Geçmeli", **TEMA,** October 16, 2018, (available) http://www.tema.org.tr/web_14966-

Lastly, on 2 December 2018, 26 non-governmental organizations including Yeşil Düşünce Derneği, Yeryüzü Derneği, Ekoloji Kolektifi, Greenpeace Akdeniz, World Wide Fund for Nature Turkey and lots of local environmental organizations called Turkish officials to take immediate action, before COP-24 which was held in Katowice, Poland in December 2018. These non-governmental organizations made a statement and criticized Turkey's approach during climate negotiations by implying the importance of Paris Agreement and its targets; hence Turkey will be affected negatively from the impacts of climate change due to its geographical location. In particular, non-governmental organizations supported the idea that Turkey should ratify Paris Agreement in its parliament as soon as possible and should give priority to determine more ambitious commitments primarily about reducing usage of non-renewable sources and increasing usage of renewable sources instead of focusing on Turkey's removal from Annex-I countries so as to be eligible for funding from 'Green Climate Fund'[28]. However, since climate change has not been accepted as a norm in Turkey, statements of all these non-governmental organizations have not affected Turkish officials' decisions about ratifying and fulfilling the commitments of Paris Agreement.

2_1/entitialfocus.aspx?primary_id=2053&type=2&target=categorial1&detail=single&sp_table=&sp_primary=&sp_table_extra, June 6, 2019.

[28] "COP 24 için sivil toplum tek ses: Türkiye Paris Anlaşması'nı onaylasın!", **Yeşil Gazete**, December 2, 2018, (available) https://yesilgazete.org/blog/2018/12/02/cop-24-icin-sivil-toplum-tek-ses-turkiye-paris-anlasmasini-onaylasin/, June 5, 2019.

3.2.2. External Reasons of Turkey's Non-Ratification of Paris Agreement

3.2.2.1. Lack of Enforcement Power of Paris Agreement

Paris Agreement is considered as a hybrid of both legally binding and non-binding provisions; only provision about determination of countries' INDCs is accepted as a legally binding provision. Therefore, it can be claimed that lack of enforcement power of Paris Agreement also influences Turkey's decision not to ratify the agreement as an external reason, since lack of enforcement power causes to non-ratification or withdrawal from the agreement by the biggest greenhouse gas emitters in the world such as Russia and US.

To begin with, Paris Agreement is not legally binding agreement except for the provision that countries must determine their own INDCs and progressively revise them every five years. It is important to state that both legally binding and non-binding provisions make Paris Agreement as a flexible agreement. Even though flexibility of the Paris Agreement is weakness of the agreement, it seems reasonable as it is compared with previous climate agreement, Kyoto Protocol. Because in Kyoto Protocol countries did not determine their own goals instead the protocol set the targets for the signatory parties. Therefore, Kyoto Protocol entered into force after 7 years of its creation and its targets became inadequate so as to tackle with climate change because of unwillingness of the countries to ratify the Protocol. Thus, it was decided in Paris Agreement that hence INDCs contain full list of climate related plans and policies of the countries; determination of INDCs by each country is classified as legally binding in order to evaluate the contributions of the countries.

However, most of the time countries determine insufficient goals while they are tackling with climate change which can be seen in the example of EU and its 28 member states' INDCs. According to their INDCs, they plan to reduce at least 40% in greenhouse gas emissions by 2030 which was also considered as an insufficient goal by the European Parliament; hence EU is the third largest greenhouse gas emitter in the world. Therefore, in 2018 The European Parliament has called its members to increase their reduction goals from 40% to 55%. [29] As a result of these, it can be stated that even legally binding part of Paris Agreement is regarded as a flexible.

Moreover, since the agreement is not legally binding except for INDC part, the biggest greenhouse gas emitters in the world like Russia has not yet ratified the agreement or although US ratified the agreement during the Obama administration, when Donald Trump came into power, they withdrew from the agreement. It is also believed that US withdrawal from the agreement would lead to domino effect and influence the decisions of the other countries. For instance, Turkey has already begun to consider its position in the agreement because during the G20 summit in Hamburg in 2017, President Erdoğan said that *"the Turkish parliament was unlikely to ratify the Paris Agreement because of the USA's decision to pull out of it, as well as its refusal to abide by its obligations under it and its abandonment of its financial aid pledges."* [30] Since there is a lack of enforcement power in the agreement; the biggest

[29] "Country Summary: EU", **Climate Action Tracker,** (available), https://climateactiontracker.org/countries/eu/, June 7, 2019.
[30] Sergey Chestnoy, Dinara Gershinkova, "USA Withdrawal from Paris Agreement – What Next?", **International Organisations Research Journal**, Vol.12, No.4, 2017, pp.222-223.

emitters are unwilling to take part in the agreement which also plays decisive role in Turkey's decision not to ratify the agreement.

3.2.2.2. Absence of Climate Change as a Norm in International Community

Hence norms play a decisive role in terms of shaping both domestic and international objectives of the countries, it is significant to underline. When there is a norm; most of the time countries are motivated by the norm and willing to follow policies about that specific content, since it is assumed to be the most appropriate or legitimate one which can be seen in the example of democratization process of Central and Eastern European Countries and emergence of human rights as a norm particularly after World War II in the international community.[31] However, since climate change has not been accepted as a norm in the international community, it also affects Turkey's decision not to ratify the agreement.

To begin with, since 1990s democracy as a norm was successfully applied by the European Union during the accession process of Central and Eastern European Countries because with the fall of communism, former communist states inspired by the idea of being member of the EU due to *"geopolitical, sociocultural and economic benefits."* However, countries had to make progress towards democratization that was compatible with the EU's one of the requirement so as to be member of the EU. Although some post-communist states immediately began transition from illiberal democracy to liberal democracy, other post-communist states

[31] Frank Schimmelfennig, Ulrich Sedelmeier, "Governance by Conditionality: EU Rule Transfer to the Candidate Countries of Central and Eastern Europe", **Journal of European Public Policy**, Vol.11, No.4, 2004, p.675.

continued to be governed by illiberal democracies. [32] To illustrate, thanks to democratization movements in countries including Hungary, Estonia, Poland, Slovenia and Czech Republic accession process was begun with judgment of Luxembourg European Council in 1997. In contrast, countries like Slovakia, Bulgaria, Romania, Latvia and Lithuania were not invited to accession negotiations due to their insufficient democratization process.[33]

To be more specific, insufficient democratization process turned into successful democratization process in Slovakia case by means of EU's democratization requirement. In Slovakia, there was a highly authoritarian regime under the rule of Prime Minister, Vladimir Meciar and he was not in favor of accepting the EU requirements particularly about democratization. Besides, in his illiberal regime, there were limited political participation, suppression of opposition groups and concentration of power among illiberal elites as well as exploitation of ethnic nationalism. However, impacts of ongoing democratization process among the Central and Eastern European countries such as cooperation between western actors and local nongovernmental organizations along with gathering of opposition parties against Meciar regime began to be seen in Slovakia in order to fulfill EU's democratization requirement. Subsequently, these movements resulted with watershed election in 1998. After the election, Meciar government replaced with Mikulas Dzurinda government who was keen to follow EU's requirements including

[32] Milada Anna Vachudova, "Democratization in Postcommunist Europe: Illiberal Regimes and the Leverage of International Actors", **Center for European Studies Working Paper Series,** Vol.139, 2006, pp.2-6.
[33] Tim Haughton, "When does the EU Make a Difference? Conditionality and the Accession Process in Central and Eastern Europe", **Political Studies Review**, Vol.5, No.2, April 2007, pp.237-238.

democratization process in the country which eventually led to opening of accession negotiations with EU.[34]

Besides, emergence of human rights as a norm particularly after world war II in the international community can be regarded as an another example of success of norms in the case of shaping countries' objectives. During World War II, one of the most horrifying crimes, genocide was committed by Nazis, when Nazis intentionally and systematically killed millions of Jews and Roma people due to their understanding of racial and biological inferiority of these groups.[35] Aftermath of World War II, International Military Tribunal at Nuremberg was held during 1945 and 1946 by the allied forces so as to punish Nazi war criminals who were responsible from genocide, war crimes and crimes against humanity.[36] In addition to Nuremberg Trials, after World War II Universal Declaration of Human Rights was adopted by United Nations in 1948 which emphasizes the importance of equality and dignity of all people without taking into consideration race, color, language, religion and sex.[37] With adoption of Universal Declaration of Human Rights, protection of human rights became worldwide issue, since then both international and non-governmental organizations have played a crucial role in order to prevent human right violations in the world. In consequence of emergence of human rights as a norm

[34] Vachudova, **op.cit**., pp.16-20.
[35] Daniel Levy, Natan Sznaider, "The Institutionalization of Cosmopolitan Morality: the Holocaust and Human Rights", **Journal of Human Rights,** Vol.3, No.2, June 2004, pp.147-148.
[36] Dieter Kastrup, "From Nuremberg to Rome and Beyond: The Fight against Genocide, War Crimes, and Crimes against Humanity", **Fordham International Law Journal,** Vol.23, No.2, 1999, pp.405-406.
[37] "Universal Declaration of Human Rights", **United Nations,** 2016, (available), https://www.un.org/en/udhrbook/pdf/udhr_booklet_en_web.pdf, June 7, 2019, pp.4-6.

in the international community, almost all nations' legislation was affected from these movements.[38]

Although examples of democratization process of Central and Eastern European Countries and emergence of human rights as a norm particularly after World War II in the international community indicate the importance of norms in the case of shaping countries' objectives, since climate change has not been accepted as a norm in the international community, it also affects Turkey's decision not to ratify the agreement.

3.3. Recent Contributions to Emergence of Climate Change as a Norm in International Community in the Near Future

3.3.1. Recent Contributions at International Level

The number of the countries, have comprehensive law on climate change has been increasing day by day. Even though climate change has not been accepted as a norm in the international community, in some countries including UK, Austria, some states of Germany, France and Sweden have begun to adopt a comprehensive law on climate change in recent years so as to effectively combat with climate change. In addition to these countries, comprehensive proposal of climate change act was sent to Netherlands parliament in 2018 which contains the goals about cutting GHG emissions 49% until 2030 and 95% until 2050 compared to 1990 levels by implementing policies in electricity, industry, built environment, traffic and transport, and agriculture sectors and promoting sustainable development goals

[38] Md. Kamruzzaman, Shashi Kanto Das, "The Evaluation of Human Rights: An Overview in Historical Perspective", **American Journal of Service Science and Management,** Vol.3, No.2, 2016, pp.6-11; Kastrup, **op.cit**., p.405.

across the country.[39] Thus, it can be stated that although climate change has not been accepted as a norm in the international community, all these movements can eventually contribute to emergence of climate change as a norm in the international community in the near future.

For the first time, UK adopted a law on climate change in 2008 which contained comprehensive mitigation and adaptation plans and policies on energy, pollution, land use, transport and transition to low carbon economy as well as cutting 80% of GHG emissions until 2050 as a long term goal. Also, with adoption of law on climate change independent and advisory 'Climate Change Committee' was established in order to prepare annual reports and make suggestions for the current plans and policies.[40] In 2018, 'Ten years of Climate Change Act' report was published which proved that adoption of law on climate change assisted UK to fulfill its climate related plans and policies effectively. To illustrate, the report indicates that UK's GHG emissions rate fell systematically which were 41% below the 1990 levels in 2016. It is significant to state that although there is a considerable amount of decrease in UK's GHG emissions, UK economy continued to grow during the same period.[41]

In addition to UK, the climate change act was enacted in Austria in 2011. The act is based on reducing GHG emissions particularly in energy, industry, transport, management, waste and agriculture sectors by implementing mitigation measures for

[39] Nuran Talu, Habip Kocaman, "Türkiye'de İklim Değişikliği ile Mücadelede Politikalar, Yasal ve Kurumsal Yapı", **İklim Değişikliği Alanında Ortak Çabaların Desteklenmesi AB-Türkiye Projesi, Eğitim Modülü**. 2019, pp.56-57.
[40] **Ibid**., p.53.
[41] Sam Fankhauser, Alina Averchenkova, Jared Finnegan, "10 Years of the UK Climate Change Act", **Grantham Research Institute on Climate Change, The Environment and the Centre for Climate Change Economics and Policy,** April 2018, pp.1-24.

the period 2013 and 2020. With adoption of the climate change act, 'National Climate Protection Committee' was established to meet annually for making suggestions about climate related plans and policies with contributions of representatives of non-governmental organizations, parliamentary parties and specialists from the science and industry sectors. In addition, there is another law in Austria, 'The Climate and Energy Fund' which is also directly linked with combating with climate change. Aim of 'The Climate and Energy Fund' is to develop sustainable energy potential of Austria by decreasing the energy consumption in the country and making researches about usage of the renewable energy sources.[42]

Although some states of Germany adopted a law on climate change such as North Rhine-Westphalia and Baden-Württemberg, there is no general law on climate change in Germany. Since North Rhine-Westphalia is the most populous region in Germany and has the highest rate of total GHG emissions of Germany, In January 2013, a law on climate protection act was enacted in North Rhine-Westphalia state so as to monitor climate change and adaptation policies in the region. Subsequently, in July 2013, law on climate change was adopted in Baden-Württemberg region of Germany in order to combat with climate change by reducing GHG emissions in the region because Baden-Württemberg region is known as significant industrial region of Germany which means that the region causes to occurrence of considerable amount of GHG emissions every year. By means of adoption of climate change act in some states of Germany and support of non-governmental organizations, a draft of climate change act at national level was prepared which includes goals about cutting GHG emissions until 2030. If the draft of climate change act becomes a law in

[42] Talu, Kocaman, **op.cit**., pp.55-56.

Germany, it is believed that the act will contribute Germany to fulfill its climate relevant plans and policies effectively.[43]

Furthermore, 'Energy Transition for Green Grow Act' legislation was adopted in France in 2015. The act aims to achieve sustainable development goals until 2050 by promoting policies about increasing usage of renewable energy sources - 32% by 2030 -, reducing GHG emissions – by 40% by 2030 from 1990 levels - and reducing the role of generating electricity from non-renewable sources - by 30% by 2030 from 2012 levels-. It is estimated that the adoption of 'Energy Transition for Green Grow Act' will contribute to France in terms of transition to clean energy in the near future, since the act is described as an ambitious climate legislation by the international community.[44]

Lastly, in 2018 comprehensive climate change act was passed in Swedish parliament which includes implementation of particular plans and policies about reducing GHG emissions and transition to clean energy economy by promoting cooperation at government, business and society levels. 'The Climate Change Act of Sweden' emphasizes the importance of sustainable development for protection of environment and ecosystem. Also, it is significant to specify that Sweden strengthened its commitments with adoption of the climate change act. For instance, according to 'Climate Change Act of Sweden', it was planned to reach net zero carbon emissions in 2045 which is 5 years earlier than it is planned.[45]

[43] **Ibid**., p.55.
[44] **Ibid**., pp.54-55.
[45] **Ibid**., p.54.

3.3.2. Recent Contributions at National Level

With Paris Agreement it is comprehended that not only governments but also local governments, non-governmental organizations, international organizations and businesses have essential role for combating with climate change and thus in recent years, some municipalities have begun to implement their own climate related plans and policies in Turkey. Çankaya Municipality is one of those municipalities. It was stated that implementing climate related plans and policies in municipality level would contribute to ratification process of Paris Agreement because it is believed that all these policies create synergy first in regional then national level which would eventually influence decision makers in the case of ratification process of Paris Agreement and will contribute to emergence of climate change as a norm in Turkey with contributions of other municipalities as well. It was also specified that thanks to implementing climate relevant plans and policies; the municipality raises awareness about climate change both for local people and non-governmental organizations at the same time. Signing of 'Covenant Mayors for Climate & Energy', implementing 'Climate Resilience through Rain Harvesting Project', opening of biological ponds and installment of wind turbine can be regarded as concrete examples of some of the climate related plans and policies of Çankaya Municipality. Besides, it is significant to clarify that most of the time the municipality benefits from the European Union or World Bank funding programs in order to implement all these policies.[46]

[46] Ethem Torunoğlu, Personal interview, Ankara, March 26, 2019.

Initially, on 22 April 2015 Çankaya Municipality became party to 'Covenant of Mayors for Climate & Energy[*]' movement whose aim is to *"bring together local and regional authorities voluntarily committing to implementing the EU's climate and energy objectives on their territory."* In 2008, the movement was started with support of European Commission and today more than 6500 local governments are party to the 'Covenant of Mayors' movement.[47] As a result of signing of 'Covenant of Mayors for Climate & Energy', Çankaya Municipality promised to reduce GHG emissions by 25% until 2020 in Çankaya region.

Afterwards, Sustainable Energy Action Plan 2015-2020 was published by the municipality which indicates particular policies and plans mainly in three categories so as to meet GHG emissions targets until 2020. Those categories are energy consumption in buildings, equipment/facilities - municipal building & facilities, homes, tertiary buildings & facilities and municipal public lighting - energy consumption in transport - municipal vehicle fleet, public transport municipal buses, public transport subway, intra city vehicles, transit & bus terminal - and other emissions - solid waste disposal, wastewater treatment-. If the municipality fulfills its commitments by applying reduction policies in these categories, it is expected that there will be 0.2498 (24.98%) reduction in GHG emissions in 2020 - 2,546,287.48 - compared to GHG emissions rate in 2015 - 3,394,354.62 - which is crucial, since the

[*] In addition to Çankaya Municipality, lots of municipalities signed the "Covenant of Mayors for Climate and Energy" in Turkey. To see list of all the municipalities: https://www.covenantofmayors.eu/about/covenant-community/signatories.html

[47] Covenant of Mayors", **Çankaya Municipality**, (available), http://en.cankaya.bel.tr/Projects/International-Projects/Covenant-Of-Mayors, June 7, 2019.

analyses indicate that there will be around 8% increase in GHG emissions in 2020 - 3,654,432.50 - for Çankaya district without any reduction policies.[48]

Moreover, 'Climate Resilience through Rain Harvesting Project' was the first project of Çankaya Municipality which was granted from the European Union and the project was implemented the year between 2016 and 2017. The aim of the project was to *"raise awareness to promote conservation and sustainability of nature and biodiversity, particularly at the local level through the involvement of its villages and farmers at grassroots level in a participatory manner."*[49] It is significant to specify that 'Climate Resilience through Rain Harvesting Project' is the method which is suggested by IPCC specialists under climate change adaptation policy options. Rain harvesting is collecting of the rainwater into surface, subsurface, soil or storage in order to reuse the rainwater, when it is needed. Therefore, rain harvesting contributes to managing water sources efficiently, increasing irrigation capacity for agricultural crops as well as dealing with effects of drought. Hence it is highly possible that there would be decrease in rainfall rate and increase in drought across Turkey except for Black sea region due to climate change in the near future, implementation of rain harvesting project plays a crucial role in the case of tackling with impacts of climate change.[50]

[48] Çankaya Municipality, **"Sustainable Energy Action Plan (SEAP) 2015-2020",** Ankara, Boyut Tanıtım Publications, 2017, pp.73-74.
[49] "Climate Resilience through Harvesting", **Çankaya Municipality,** (available) http://en.cankaya.bel.tr/Projects/International-Projects/Climate-Resilience-Through-Rain-Harvesting, June 12, 2019.
[50] Ed. By Müge Tokuş Çoşgun, Gülin Özdemir **"Yağmur Hasadı Uygulamalarına Giriş Rehberi: İklim Değişikliğine Uyum Kapsamında Bir Çözüm Önerisi",** Ankara, Peyzaj Araştırmaları Derneği, 2017, pp.2-7.

Furthermore, for the first time in Ankara the municipality built biological ponds mainly in three significant parks in the district, Yaşar Kemal Park, Ahlatlıbel Atatürk Park and Çankaya Park.[51] It is also important to specify that biological pond in Ahlatlıbel Atatürk Park received special jury award by 'the Turkish Healthy Cities Association' in 2015.[52] Biological ponds play significant role in terms of sustainable development and combating with water scarcity. The ponds were built without using any chemical material and it does their own cleanings by means of the certain materials inside the ponds as well as helping *"water saving through the utilization of the same water."*[53]

Lastly, the municipality built its own wind turbine so as to meet its energy demand from renewable energy sources. The wind turbine installed in Ahlatlıbel Atatürk Sports and Social Facilities in the district. Since the wind turbine was produced by the workers in the municipality by using the municipalities' own resources, it has an important place for the municipality and it is stated that target of the municipality is to install wind turbine to almost all the parks in the district.[54]

[51] "Biological Ponds", **Çankaya Municipality,** (available), http://en.cankaya.bel.tr/Services/Parks/Biological-Ponds, June 7,2019.
[52] "Biyolojik Gölet'e özel ödül", **Hürriyet,** September 4, 2015. (available), http://www.hurriyet.com.tr/biyolojik-golete-ozel-odul-29990215, June 7, 2019.
[53] Çankaya Municipality, **op.cit**., p.55.
[54] **Ibid**., p.54.

3.4. Concluding Remarks for the Chapter

In conclusion, since Turkey has not yet ratified Paris Agreement, it is significant to comprehend Turkey's motivations. The motivations of Turkey were analyzed in this chapter by dividing into two main categories as internal and external reasons. Turkey's problematic classification in UNFCCC which is directly related with funding issue and absence of climate change as a norm in Turkey can be regarded as internal reasons of Turkey's non-ratification of the agreement. On the other hand, absence of both enforcement power of Paris Agreement and climate change as a norm in the international community can be considered as external reasons of Turkey's decision. Afterwards, recent contributions at both international and national level with regard to climate change such as adoption of comprehensive law on climate change in several countries and implementation of climate related plans and policies in the municipality were examined. The recent contributions are considered as crucial, since they would eventually lead to emergence of climate change as a norm in the international community and Turkey in the near future.

Besides, it is important to state that even though all the internal and external reasons influence Turkey's decision not to ratify the agreement, economic factors are regarded as the main reason of Turkey's decision due to the fact that Turkish officials desire to be eligible for funding from the 'Green Climate Fund' in order to implement climate related plans and policies. However, hence Turkey's problematic classification in UNFCCC does not permit Turkey to be eligible for funding; Turkey has to use its own domestic sources to implement all the climate related plans and polices.

Therefore, since economic factors contradict with Turkey's national interests particularly the economic ones, Turkey has not yet ratified the agreement which justifies the argument of realists in the context of relationship between realism and science diplomacy that countries adopt certain agreement, when they see a national interest. However, if Turkey ratifies the agreement and fulfills its commitments despite the economic incompatibilities, analyzes indicate that there will be particular economic and political advantages for Turkey in the long run which will be examined in a detail way in the next chapter.

CHAPTER 4

4.1. Introduction

In this chapter, the relationship between realism and science diplomacy will be examined in a detail way by referring to Turkey's non-ratification of the agreement decision. Because Turkey is reluctant to both follow requirements made by the agreement and ratify the agreement in the near future due to particular incompatibilities with its national interest. Currently, Turkey is considered as energy import dependent country and analyses indicate that energy demand of Turkey increases every year around 6% or 7% as a developing country with its growing population which also causes to occurrence of considerable amount of trade deficit for Turkey each year. Therefore, it is crucial for Turkey to diminish its energy import dependency by giving importance to implementation of renewable energy policies. Hence Turkey has significant potential in renewable energy sources; it is highly possible that Turkey would decrease its energy import dependency by meeting its energy demand from its own renewable energy sources.

Therefore, although ratification of Paris Agreement contradicts with Turkey's national interests particularly the economic ones in the short run, it can be specified that there will be potential economic and political advantages of ratifying the agreement and fulfillment of its commitments in the long run including decrease in Turkey's energy import dependency rate and Turkey's trade deficit, creation of new job opportunities in renewable energy sectors as well as implementation of more flexible policies in the international arena. Thus, all these possible economic and political advantages will be examined in this chapter in a detail way by analyzing

Turkey's renewable energy potential and estimated cost of Turkey's renewable energy targets in order to reach a conclusion that whether Turkey should ratify Paris Agreement despite the particular incompatibilities with its national interests in the short run or not.

4.2. Relationship between Realism and Science Diplomacy

Realism is one of the central theories of international relations. It is clarified in the literature that realism gained importance particularly after World War II as a rejection of idealism with the writings of Edward Hallett Carr and Hans Morgenthau. Since there is a state-centric understanding in realism, states are accepted as the primary actor in the case of determination of main interests in the international system.[1] In addition to state-centric understanding, power is also significant concept in realism because it is believed that only through power states can survive and pursue its first and main interest which is survival.[2] Besides, it is specified that hence states are considered as rational actors in realism, there is a maximization of power at a lower cost with higher gain, but concept of power is measured with material capacity of the state like military or physical power rather than the soft power.[3] Therefore, power is seen as one of the most important concept to understand state motivation for realists as well as security and national interests.

[1] Chris Brown, Kirsten Ainley, **"Understanding International Relations"**, third edition, New York, Palgrave Macmillan, 2005, p.91.
[2] John Baylis, Steve Smith, Patricia Owens, **"The Globalization of World Politics: An Introduction to International Relations"**, Oxford University Press, 2017, p.107.
[3] Jill Steans, et all, **"An Introduction to International Relations Theory: Perspectives and Themes",** third edition, New York, Routledge, 2010, pp.54-59.

With respect to relationship between realism and science diplomacy, it is stated that there is a strong connection between science diplomacy and national interests of the countries and it is specified that science is not always made for scientific purposes but for the sake of national interests. It is also explained in the literature that states apply science diplomacy or adopt a certain agreement, when they see a national interest. For instance, first scientific collaborations which were agreed on arm control and non-proliferation subjects; since these subjects are reflection of countries' national security concerns. However, the dimension of science diplomacy is known as 'science in diplomacy' which is based on global challenges including climate change; do not directly reflect the particular interests of each country. Therefore, most of the time countries are unwilling to take part in tackling with those challenges which can be seen in the practice part of the both Kyoto Protocol in 1997 and Paris Agreement in 2015.[4]

Currently, Turkey is classified as one of those unwilling countries because although Turkey signed the Paris Agreement, they have not yet ratified the agreement due to particular incompatibilities with its national interests which are mainly related with economic interests. Since Turkey's problematic classification in UNFCCC makes Turkey ineligible for funding from the 'Green Climate Fund', economic factors are regarded as problematic in the case of pursuing Turkey's climate change policies. Thus, Turkey is reluctant to both follow requirements made by the agreement and ratify the agreement in the near future, as realists supported the relationship between national interests and science in diplomacy perspective.

[4] Elif Özkaragöz Doğan "Science Diplomacy in the Global Age: Examples from Turkey and the World", **Middle East Technical University**, May 2015, pp.22-23.

However, when it is analyzed carefully, it can be claimed that if Turkey ratifies the agreement and fulfills its commitments in every 5 years according to Paris Agreement principals regardless of particular incompatibilities with its national interests, there will be particular economic and political advantages for Turkey in the long run. Because Turkey is considered as the first place among the OECD countries in terms of growing energy demand over the last 15 years and energy sector has the largest share in Turkey's greenhouse gas emissions - which is followed by industrial processes, waste sector and agriculture - . Besides, it is clarified in the literature that energy sector in Turkey heavily depends on non-renewable energy sources or in other words fossil fuels including coal, oil and natural gas which are primarily responsible for the greenhouse gases in the atmosphere.[5]

Furthermore, according to analyses, currently, Turkey *"is able to meet only around 26 per cent of its total energy demand from domestic resources,"*[6] because it has limited capacity in the case of non-renewable energy sources. Although Turkey has significant potential in terms of coal reserves, it is crucial to emphasize that most of the coal reserves are consist of lignite (brown coal) which is largely responsible from global warming.[7] Besides, Turkey's energy import dependency mainly on oil

[5] Nedim Bülent Damar, "Paris İklim Değişikliği Anlaşması COP 21 ve Türkiye", **Elektrik Mühendisliği Journal,** No.456, March 2016, p.70.
[6] Olga Rosca, "EBRD Welcomes Turkey's National Energy Efficiency Action Plan", **European Bank for Reconstruction and Development,** January 11, 2018 (available) https://www.ebrd.com/news/2018/ebrd-welcomes-turkeys-national-energy-efficiency-action-plan.html, June 18, 2019.
[7] Esra Deniz Güner, Emine Su Turan, "Yenilenebilir Enerji Kaynaklarının Küresel İklim Değişikliği Üzerine Etkisi", **Journal of Natural Hazards and Environment**, Vol.3, No.1, January 2017, p.52.

and natural gas has begun to increase in the last decade. For instance, while energy import dependency rate of Turkey was 67% in 2002, it went up to 75% in 2017.[8]

Therefore, even though Turkey has limited capacity in terms of fossil fuels and is dependent to foreign suppliers, they have significant potential in renewable energy sources including solar, wind, geothermal and hydroelectric. When it is considered the Turkey's energy import dependency rate, if Turkey increases its renewable energy potential, it is highly possible that Turkey can begin to meet considerable amount its energy demand from renewable energy sources and Turkey's energy dependency to foreign suppliers can diminish in the long run.

4.3. Political Advantages of Ratifying Paris Agreement and Fulfillment of its Commitments for Turkey in the Long Run

Turkey heavily meets its energy demand from fossil fuels and they have limited sources in terms of fossil fuels mainly of natural gas and oil which makes Turkey dependent to foreign suppliers particularly to Russia. Hence currently Turkey is considered as energy import dependent country, dependency theory is significant in order to examine the Turkey's situation. Dependency theory is mostly used to explain the underdevelopment reasons of the undeveloped countries mainly the Latin American countries. Most of the time, economic development of developing or undeveloped countries is based on their economic relations with developed countries. However, after a certain period of time, developing or undeveloped countries are considered as under the political or economic influence of developed countries which

[8] Özgür Gürbüz, "Enerjide Cebimiz Delik", **Birgün,** January 20, 2017 (available) https://www.birgun.net/haber-detay/enerjide-cebimiz-delik-143828.html, June 18, 2019.

eventually affects their foreign policy objectives, since the countries are strongly tied with each other due to their economic relations.[9] Therefore, dependency theory is crucial to figure out the relationship between dependency and foreign policy objectives of the countries. When a country is heavily dependent to another country, this situation eventually affects the countries' foreign policy objectives and causes to implementation of stable policies against dependent country due to its strong economic, political or cultural ties which can be seen in the example of economic dependency of Mexico to US and energy dependency of Turkey to Russia relations.

To begin with, the relationship between US and Mexico is regarded as concrete example of dependency theory because of the strong relations particularly the economic relations between US and Mexico. Initially, signing of the North American Free Trade Agreement (NAFTA) in 1994 which includes particular trade and investments regulations for the signatory parties including United States of America, Canada and Mexico have contributed o development of the economic ties between US and Mexico throughout the years. Today, Mexico is considered as one of the most significant economic partner of US and plus Mexico is in the third place after Canada and China in terms of suppliers of US's imports. Even though Mexico is the third largest partner of US in the case of trade, US is the biggest trading partner of Mexico. Besides, US is responsible from significant amount of foreign direct investments in Mexico, hence foreign direct investments provide finance and technology to host country, it is accepted as essential for the economy of developing

[9] Ronald Chilcote, "Dependency: A Critical Synthesis of the Literature", **Latin American Perspectives,** Vol.1, No.1, 1974, pp.4-7.

countries.[10] It is also significant to specify that since Mexico and US are neighboring countries, tourism plays an important role in US and Mexico relations because of the fact that considerable amount of tourists from US have visited Mexico every year which also contribute to Mexican economy in the case of tourism revenues.

Hence Mexico is heavily dependent to US that makes Mexico more fragile in the case of economic growth. Because analyzes indicate that low rate of economic growth has been observed in Mexican economy over the years. Since Mexican economy is closely linked with US economy, when there is a recession or crisis in US economy, it also negatively affects Mexican economy. For instance, Mexican economy was severely affected from recession in 2001 and the global economic downturn in 2009 compared to US or any other developed countries' economies.[11] As a result of all these facts, even though high level of Mexican economic dependency to US makes Mexico more vulnerable and fragile, it can be stated that Mexico is needed to US more than US is needed to Mexico in order to develop economically which prevents Mexico to implement flexible policies against US in the international arena due to their strong economic ties.

In addition to US-Mexico relationship, Turkey's relations with Russia can be explained in terms of dependency theory but in the context of energy dependency rather than economic dependency. Because Turkey's energy demand increases by 6-7% every year as a developing country with its increasing population and plus Turkey depends on foreign suppliers to a large extent in order to meet its energy

[10] Robert O'Brien, Marc Williams, **"Global Political Economy: Evolution and Dynamics",** Fourth edition, China, Palgrave Macmillian, 2013, pp.134-137.
[11] M. Angeles Villarreal, "U.S.-Mexico Economic Relations: Trends, Issues, and Implications", **Washington, D.C.: Library of Congress**, **Congressional Research Service,** version 51, March 2019, pp.1-12.

demand from the fossil fuels mostly the natural gas and oil demand. Since Russia is considered as the biggest natural gas exporter to the world, Turkey meets considerable amount of its natural gas demand from Russia.

Even though there is a bilateral relationship between Turkey and Russia in particular industries such as agriculture, chemical, textile and automotive, historically the energy sector has the biggest role in their relationship. The relationship between Turkey and Russia in the energy sector is assumed to begin in 1980s. Initially, in 1984, Turkey and Soviet Union signed an agreement about natural gas purchase which was valid for 25 years. Since then the relationship between two sides in the energy sector has systematically increased. Today, Turkey supplies more than half of its natural gas demand from Russia which is around 53% which indicates that Turkey is heavily dependent on Russian natural gas to meet its energy demand.[12] Besides, it is significant to state that energy import from foreign suppliers causes to emergence of trade deficit which is considerably high for Turkey also. To illustrate, according to analyses, half of trade deficit of Turkey comes from energy import.[13]

Since Turkey is heavily dependent to Russia in terms of energy, it is significant for Turkey to decrease its energy dependency to foreign suppliers because of the fact that dependency affects foreign policy objectives of the countries and eventually causes implementation of stable policies against dependent country due to strong ties between both sides. Therefore, if Turkey ratifies Paris Agreement and fulfills its commitments in accordance with renewable energy policies, it is highly

[12] Gulmira Rzayeva, "Gas Supply Changes in Turkey", **The Oxford Institute for Energy Studies,** Energy Insight: 24, January 2018, p.2.
[13] Remi Bourgeot, "Russia- Turkey: A Relationship Shaped by Energy." **Russie. Nei. Visions,** no. 69, March 2013, pp.7-9.

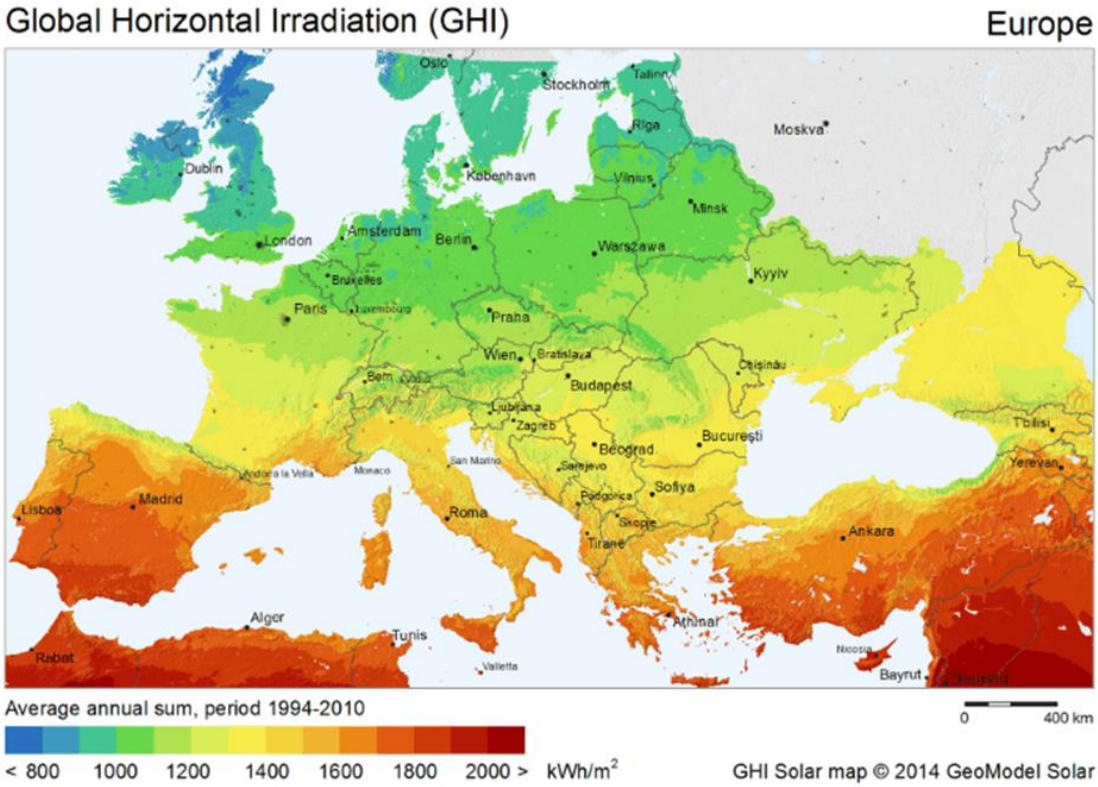
possible that Turkey's energy import dependency to Russia would decrease in the near future and cause to implementation of more flexible policies against Russia in the international arena which can be considered as the political advantages of ratification of Paris Agreement for Turkey in the long run.

4.4. Economic Advantages of Ratifying Paris Agreement and Fulfillment of its Commitments for Turkey in the Long Run

If Turkey ratifies the agreement and fulfills its commitments with respect to renewable energy sources, there will be several economic advantages for Turkey in the long run including decrease in Turkey's energy import dependency rate and Turkey's trade deficit, creation of new job opportunities in renewable energy sectors as well as meeting its energy demands from its own domestic resources.

Initially, Turkey has significant potential in renewable energy sources including solar, wind, hydroelectric and geothermal energy by means of its geographical location. According to Republic of Turkey Ministry of Energy and Natural Resources' data, Turkey is considered as a high solar energy potential particularly The Southeast Anatolia region due to its geographical location (see below map 4.1).

Map 4.1 indicates solar energy potential of Turkey.



Source: "Türkiye'de Güneş Enerjisi Potansiyali", **Ekolojist** October 9, 2017 (available) http://ekolojist.net/turkiyede-gunes-enerjisi-potansiyeli/ June 19, 2019.

In recent years, Turkey has visibly increased its solar energy potential. To illustrate, even though total installed capacity of solar power plant was 248 megawatt (hereafter MW) - 0.248 gigawatt (hereafter GW) - in 2015, it went up to 4,723 MW (0.004723 GW) by the end of June 2018, and then it went up to 5,063 MW (0.005063 GW) by the end of 2018[14] which is still not sufficient considering the Turkey's solar energy potential (see below Table 4.1). Besides, it is significant to state that there are considerable amount of job opportunities particularly for women

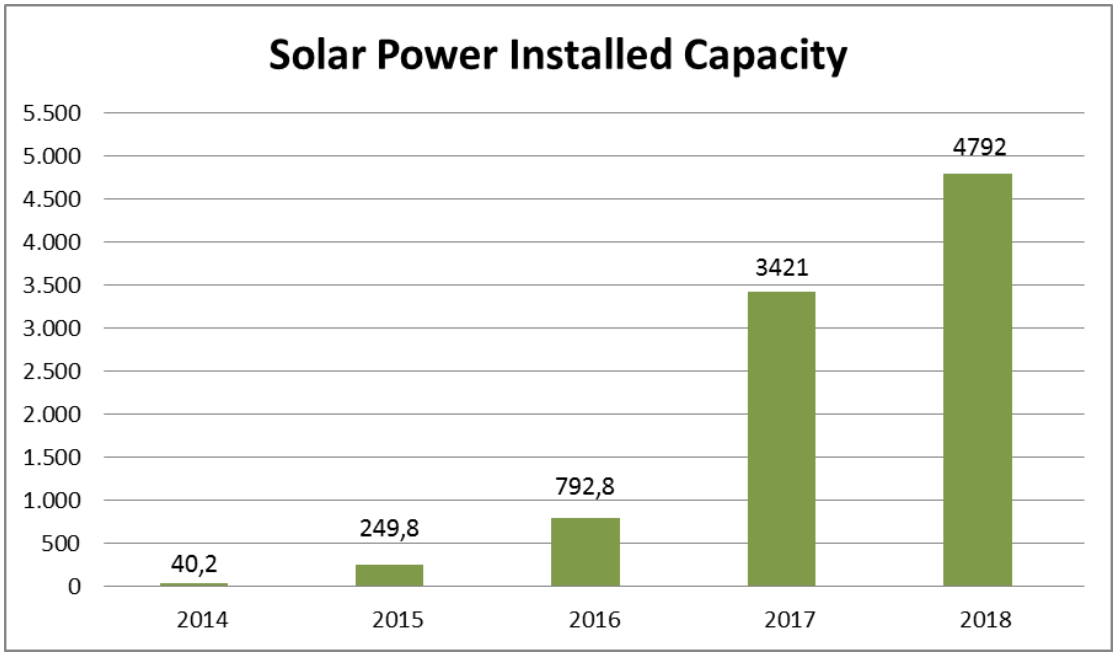
[14] "Solar", **Republic of Turkey Ministry of Energy and Natural Resources,** (available) https://www.enerji.gov.tr/en-US/Pages/Solar, June 19, 2019.

in solar energy sector. To illustrate, one of the private companies which specialize on installment of solar power plant opened an introductory course about production of solar panels in 2017, in Muş, is the city in the Eastern Anatolia region of Turkey. Since there are not any qualified workers in this sector, the course was opened so as to teach workers basic techniques of production of solar panels for a short period of time. After training process, the workers will have chance to work in the solar power plant factory in the region. The most important point in here is that mostly women were educated in the course by means of their tendency to handiworks.[15] Therefore, if Turkey's solar energy capacity increases by implementing renewable energy policies including opening factories, it would contribute to provide employment opportunities particularly for women in Turkey; hence women are more suitable for production of solar panels compared to men thanks to their small hands and good skills at handiworks. Thus, if Turkey fulfills its commitments as they stated in their INDC about solar energy targets which is to reach 10 GW (10000 MW) solar energy potential until 2030, it is expected that there will be around 13,000 employment opportunities in solar energy sector as well as meeting its energy demand from solar power plants.[16]

[15] İbrahim Yaldiz, Mehmet Can Alkaş, "Kadınlar 'Güneş Paneli' Üretecek", **Anadolu Ajansı**, August 8, 2017 (available) https://www.aa.com.tr/tr/yasam/kadinlar-gunes-paneli-uretecek/874599, June 19, 2019.

[16] Thomas Day , Sofia Gonzales, Lina Röschel, "İklim Hareketine Geçmenin Yan Faydaları: Türkiye İklim Taahhüdünün Değerlendirilmesi", Trans. by Ayşe Bereket, **Climate Action Network Europe,** October 2016, p.5.

Table 4.1 indicates total solar power installed capacity of Turkey in terms of MW during the years between 2014 and 2018.



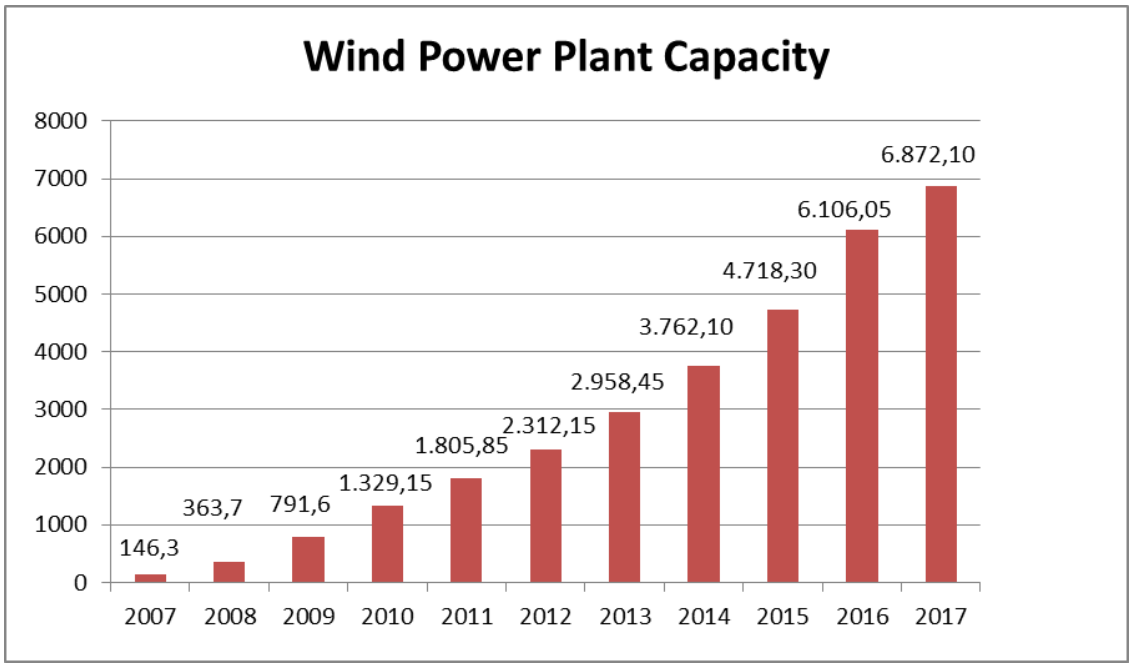
Source: Cüneyt Selçuk Güngör, "Güneş Enerjisi Nereye Gidiyor? Maliyetler Düştü Mü?", **Enerji Portalı,** February 27, 2019, (available) https://www.enerjiportali.com/gunes-enerjisi-nereye-gidiyor-maliyetler-dustu-mu/ June 19, 2019.

Recently, there has been growing demand for wind energy in the world, since it is accepted as one of the easiest way of generating electricity and its cost is cheaper than the fossil fuels. In addition to solar energy potential, Turkey is ranked in the first place among the EU countries with regard to wind energy potential. To illustrate, Turkey's wind energy potential is seven times higher than Germany's potential and two times higher than Spain's potential.[17] According to Republic of Turkey Ministry of Energy and Natural Resources' data, although Turkey has notable wind energy potential - which is estimated around 48,000 MW (48 GW) -, its total installed

[17] Eren Alper Yılmaz, Hatice Can Öziç, "Renewable Energy Potential and Future Aims of Turkey", **Ordu University Journal of Social Science Research**, Vol.8, No.3, November 11, 2018, pp.530-531.

capacity of wind power plant was only 7,005 MW (0.007005 GW) by the end of 2018 which is insufficient considering the Turkey's potential[18] (see below table 4.2). Therefore, Turkey desires to achieve 16 GW (16000 MW) wind energy potential until 2030 by fulfilling its INDC commitments. Thanks to fulfillment of wind energy targets in Turkey's INDC, it is expected that there will be 12,000 employment opportunities which was only 6000 in 2012 in wind energy sector as well as meeting Turkey's energy demand from wind power plants.[19]

Table 4.2 indicates total wind power plant capacity of Turkey in terms of MW during the years between 2007 and 2017.



Source: "Turkey Wind Energy Statistics Report", **Turkish Wind Energy Association,** January 2018, p.5.

[18] "Wind", **Republic of Turkey Ministry of Energy and Natural Resources**, (available) https://www.enerji.gov.tr/en-US/Pages/Wind, June 19, 2019.
[19] Day , Gonzales, Röschel, **op.cit.,** p.5.

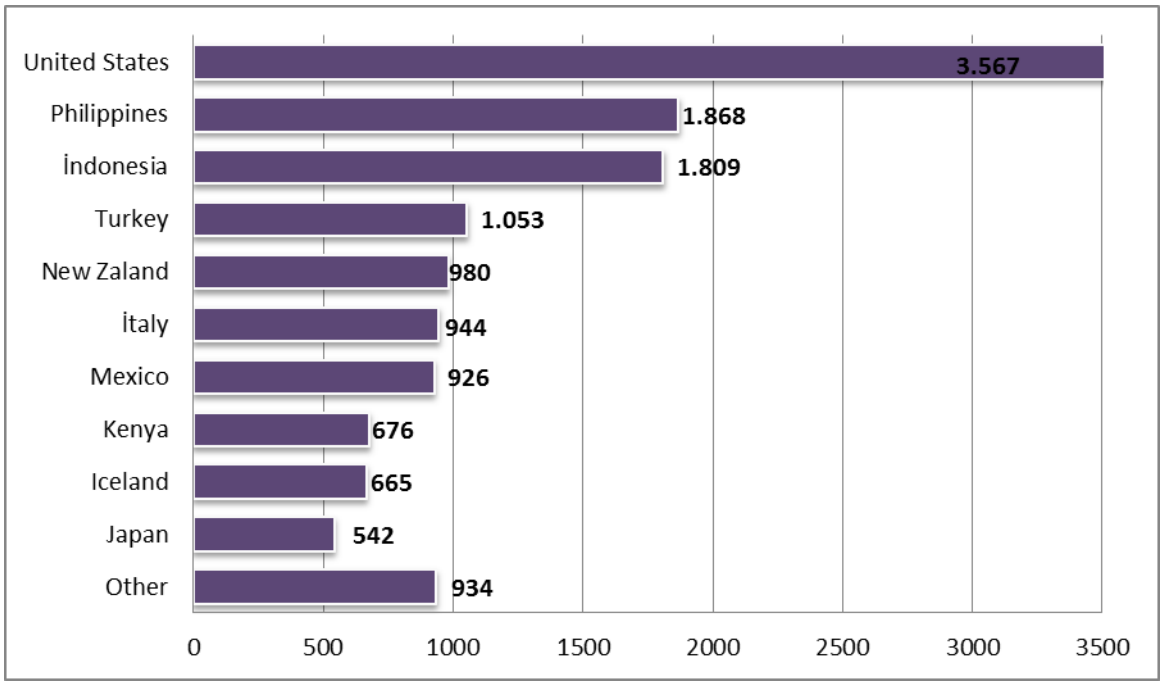
Besides, according to Republic of Turkey Ministry of Energy and Natural Resources' data, hydroelectric energy has an important place in Turkey's renewable energy policies, hence *"the theoretical hydroelectricity potential of our country is 1% of theoretical potential of the world, while its economic potential is 16% of the economic potential of Europe.*" Most of Turkey's hydroelectric energy need is met by Atatürk, Keban, Karakaya and Altınkaya dams[20] and it is specified that total installed capacity of hydroelectric power plant was 27,912 MW (0.027912 GW) by the end of 2018 which is equal to 32% of the total potential of Turkey.[21] In Turkey's INDC it is stated that Turkey aims to achieve full hydroelectric potential until 2030 which is anticipated around 36 GW (36000 MW)[22] and if Turkey fulfills its commitments, analyses indicate that there would be remarkable employment opportunities in hydroelectric energy sector as well as meeting considerable amount of Turkey's energy demand from hydroelectric energy in 2030.[23]

Lastly, geothermal energy is also accepted as one of the domestic renewable energy sources of Turkey. It is specified by Republic of Turkey Ministry of Energy and Natural Resources that "*90% of our geothermal resources are low and medium enthalpy geothermal areas which are suitable for direct applications (heating, thermal tourism, industrial usage, etc.), while 10% are suitable for indirect applications (generation of electricity).*" According to analyzes, total installed capacity of Turkey's geothermal power plant was 1053 MW (1.053 GW) and Turkey

[20] Yılmaz, Öziç , **op.cit.,** p.532.
[21] "Hydraulics", **Republic of Turkey Ministry of Energy and Natural Resources**, (available) https://www.enerji.gov.tr/en-US/Pages/Hydraulics, June 19, 2019.
[22] Day , Gonzales, Röschel, **op.cit**., p.5.
[23] Fatma Ağpak, Ömer Özçiçek, "Bir İstihdam Politikasi Araci Olarak Yenilenebilir Enerji", **İktisadi ve İdari Bilimler Fakültesi Dergisi**, Vol.11, No.2, April 2018, p.118.

is considered among top 5 countries in terms of generating electricity from geothermal energy along with US, Philippines, Indonesia and New Zealand[24] (see below Table 4.3). Since Turkey has already achieved its INDC target about geothermal energy which was to achieve 1 GW (1000 MW), if Turkey progressively revises it geothermal energy targets and increases its geothermal energy potential until 2030, it is anticipated that Turkey may provide significant amount of its energy demand from geothermal energy.[25]

Table 4.3 indicates top 10 countries which have the highest total installed geothermal capacities in terms of MW.



Source: Eren Günüç, "Türkiye'nin Jeotermal Enerji Kurulu Gücü 1053 MW oldu", **Jeotermal Haberler,** November 7, 2017 (available) http://www.jeotermalhaberler.com/turkiyenin-jeotermal-enerji-kurulu-gucu-1053-mw-oldu/, June 19, 2019.

[24] "Geothermal", Republic of Turkey Ministry of Energy and Natural Resources, (available) https://www.enerji.gov.tr/en-US/Pages/Geothermal, June 19, 2019.
[25] Day , Gonzales, Röschel, **op.cit.,** p.6.

Hence Turkey has significant potential in the case of renewable energy sources, analyzes indicate that if Turkey fulfills its commitments with regard to renewable energy sources as it is stated in its INDC until 2030, it is expected that coal, oil and natural gas import dependency rate in Turkey will decrease at least 13 millions of tonnes of oil equivalent (hereafter Mtoe) and thus around 6 billion US dollar will be retrenched. In addition to 2030 targets, if Turkey progressively revises its INDC according to 100% renewable energy policies until 2050, it is estimated that coal, oil and natural gas import dependency rate in Turkey will decrease at least 41 Mtoe and thus around 17 billion US dollar will be retrenched from these sectors which is equal to 54 Mtoe reduction in energy import dependency rate and 23 billion US dollar saving in total which will also contribute to decrease in Turkey's trade deficit.[26]

To begin with, Turkey's coal consumption rate increased more than double between 1990 and 2012 and plus with regard to analyses in 2014, Turkey was able to meet 44% of its total coal demand from its own domestic resources, the rest of the coal demand - 66% - was imported from Russia, Colombia, US, and South Africa. Therefore, analyses indicate that fulfillment of 2030 targets will lead to 7 Mtoe decrease in coal sector as well as contribution to Turkish economy around 1.2 billion US dollar. Additionally, implementation of 100% renewable energy policies until 2050 will cause to 23 Mtoe decrease and 0.9 billion US dollar will be retrenched which means that in total there will be 29 Mtoe reductions and 2.1 saving in coal sector. Nevertheless, Turkey has considerable amount of oil consumption in transportation sector, to illustrate; 74% of total oil consumption belonged to

[26] Day , Gonzales, Röschel, **op.cit.,** pp.2-7.

transportation sector in 2016 and thus if Turkey fulfill its commitments until 2030, it provides Turkey to 3 Mtoe reduction and 3 billion US dollar saving in transportation sector. Besides, thanks to implementation of 100% renewable energy policies until 2050, it is expected that there will be 10 Mtoe decrease and 10 billion US dollar will be retrenched from transportation sector which will be 13 Mtoe decrease and 13 billion US dollar saving in total. Lastly, Turkey heavily depends on foreign suppliers in terms of natural gas demand and it is anticipated that Turkey's natural gas demand will continue to increase particularly between 2012 and 2030. Therefore, if Turkey fulfills it INDC targets until 2030, it is highly possible that there will be 3 Mtoe reduction and plus 2 billion US dollar savings in this area. In addition to 2030 targets, if Turkey implements 100% renewable energy policies, it will lead to 9 Mtoe reduction in natural gas sector as well as contribution to Turkish economy around 6 billion US dollar which is equivalent to 12 Mtoe decrease and 8 billion US dollar saving in total in the future.[27]

Moreover, hence non-renewable energy sources are threat for our environment, they play a major role not only sending greenhouse gases into the atmosphere, but also in air, water and soil pollution - and on human health in terms of certain diseases like asthma, typhoid and cholera which are directly related with air, soil and water pollution -. In contrast, renewable energy sources including solar, wind, hydroelectric or geothermal energy are known as environmentally friendly energy sources which do not have any negative impacts for our environment - and on

[27] **Ibid.,** pp.3-4.

human health - regarding air, water or soil pollution.[28] With regard to analyses, particularly three major cities in Turkey, Istanbul, Ankara and Izmir - 30% of total population of Turkey live in those cities - have high levels of air pollution and also analyses show that if Turkey continues to implement current policies about non-renewable energy resources, premature deaths may triple between 2012 and 2030 due to air pollution. Hence air pollution causes 2876 premature deaths each year in Turkey, it is significant for Turkey to fulfill its INDC targets because it is anticipated that 10,000 premature deaths can be prevented by means of fulfillment of its INDC targets. Additionally, if Turkey implements 100% renewable energy policies until 2050 by revising its INDC, at least 25,000 premature deaths can be prevented in the country which equals to prevention of 35,000 premature deaths in total.[29]

4.5. Estimated Total Cost of Turkey's Renewable Energy Targets

Although Turkey has significant potential in renewable energy sources, currently Turkey is considered as an energy import dependent country. Since there are several economic and political advantages of ratification and fulfillment of Paris Agreement in the long run, it is important for Turkey to increase its renewable energy potential. However, hence renewable energy sources are regarded as more expensive compared to non-renewable energy sources, it is crucial to find out the total cost of Turkey's renewable energy targets so as to reach a conclusion that whether Turkey should ratify Paris Agreement despite the particular incompatibilities with its national interests in the short run or not.

[28] Marilena Kampa, Elias Castanas, "Human Health Effects of Air Pollution", **Environmental Pollution,** Vol.151, 2008, pp.363-364.
[29] Day , Gonzales, Röschel, **op.cit.,** pp.5-7.

To begin with, Turkey determined particular policies with regard to renewable energy sources in their INDC and aims to achieve those policies until 2030. In addition to Turkey's INDC targets, Turkey also determined particular renewable energy policies to achieve until 2023. However, it is significant to specify that there is an inconsistency in Turkey's solar and wind energy targets for 2023 and 2030. Because according to Turkey's INDC, although Turkey aims to achieve 10 GW (10,000 MW) solar energy and 16 GW (16,000 MW) wind energy until 2030, [30] their targets for 2023 are to achieve 20 GW (20,000 MW) wind energy, 5 GW (5000 MW) - at least 3 GW (3000 MW) - solar energy.[31] With respect to hydroelectric and geothermal energy targets for 2023 and 2030, it was specified that Turkey aims to achieve full potential of hydroelectric energy and 1 GW (1000 MW) - at least 0.6 GW (600 MW) - in geothermal energy.

Since estimated total cost analyzes of renewable energy targets is mostly based on Turkey's renewable energy targets for 2023, analyzes indicate that total cost of renewable energy sources will be around 21 million US dollar which is calculated according to data in Table 4.4[32] (see below). Besides, analyses show that when Turkey fulfills its commitments as it is stated in its INDC until 2030 and revises them until 2050, it is expected that coal, oil and natural gas import dependency rate in Turkey will decrease at least 54 Mtoe and 23 billion US dollar will be retrenched from these sectors.[33]

[30] **Ibid.,** pp.5-6.
[31] Republic of Turkey Ministry of Energy and Natural Resources, "Türkiye Ulusal Yenilenebilir Enerji Eylem Plani", December 2014, p.22.
[32] Adem Uğurlu, Cihan Gokcol, "An overview of Turkey's Renewable Energy Trend", **Journal of Energy Systems,** Vol.1, No.4, December 29, 2017, p.151.
[33] Day , Gonzales, Röschel, **op.cit.,** p.7.

Thus, it can be concluded that although Turkey's problematic classification in UNFCCC makes Turkey ineligible for funding from 'Green Climate Fund' which is crucial to implement climate related plans and policies, if Turkey decreases incentives with respect to fossil fuels and increasing incentives of renewable energy sources which can be supported by the laws as well so as to take attention of both foreign and public investors and continues to benefit from eligible funds including Global Environmental Facility and European Union institutions, the renewable energy targets can successfully be implemented in the next decades. Besides, if the government supports the municipalities with regard to increasing the cooperation with European Union or World Bank funding programs which are significant for implementation of climate related plans and policies at regional level, the usage of renewable energy sources can also be increased.

Moreover, even though estimated total cost analyze of Turkey's renewable energy targets is considerably high, it is anticipated that Turkey's energy demand will continue to increase as a developing country with its growing population which will be resulted with significant amount of increase in Turkey's energy import dependency and trade deficit in the near future. Therefore, although there are particular incompatibilities with Turkey's national interests mainly the economic ones in the case of ratification and fulfillment of Paris Agreement in the short run, economic and political advantages of implementation of renewable energy policies will be much more compared to disadvantages in the long run in spite of high cost of renewable energy sources.

Table 4.4 indicates estimated cost of renewable energy sources.

Renewable Energy sources	feed-in tariff (USD/MWh)	Max. domestic Component incentive (USD/MHh)	Max. total price for power (USD/MWh)
Hydraulic	73	23	96
Wind	73	37	110
Solar (PV)	133	133	266
Biomass	133	56	189
Geothermal	105	27	132

Source: Adem Uğurlu, Cihan Gokcol, "An overview of Turkey's Renewable Energy Trend", **Journal of Energy Systems,** Vol.1, No.4, December 29, 2017, p.151.

4.6. Concluding Remarks for the Chapter

With regard to relationship between realism and science diplomacy, realists support the idea that science is not always made for scientific purposes but for the sake of national interests and countries adopt certain agreement when they see a national interests. The dimension of science diplomacy is known as 'science in diplomacy' which is based on global challenges including climate change; do not directly reflect the particular interests of each country. Therefore, most of the time countries are unwilling to take part in tackling with those challenges which can be seen in the practice part of Paris Agreement in 2015. Since problematic classification in UNFCCC makes Turkey ineligible for funding from 'Green Climate Fund' which contradicts with Turkey's national interests mainly the economic ones, currently Turkey is accepted as one of those unwilling countries.

However, although the principals of Paris Agreement seems to contradict with Turkey's national interests in the short run, if Turkey fulfills its commitments in accordance with renewable energy targets until 2030 and progressively revises its

commitments until 2050, its advantages for Turkey would be much more compared to disadvantages in the long run. Because currently Turkey is energy import dependent country and its energy demand increases around 6% or 7% every year. Besides, Turkey meets most of its energy demand from fossil fuels; hence Turkey has significant potential in renewable energy sources, it is essential for Turkey to increase the usage of renewable energy sources. However, estimated total cost of Turkey's renewable energy targets is considerably high and Turkey is not eligible funding from 'Green Climate Fund'. Therefore, if Turkey decreases incentives of fossil fuels and increasing incentives of renewable energy sources so as to take attention of both foreign and public investors and continues to benefit from eligible funds including Global Environmental Facility and European Union institutions as well as supporting the municipalities to implement their climate related plans and policies at regional level, renewable energy targets can be successfully implemented in the next decades.

In this manner, Turkey would begin to meet considerable amount of its energy demand from its own domestic resources and Turkey's energy import dependency and trade deficit would begin to diminish. Besides, there would be new job opportunities in renewable energy sectors. Lastly, it would assist Turkey to implement more flexible policies in international arena; hence Turkey's energy import dependency to foreign suppliers would decrease in the long run.

CONCLUDING REMARKS

The role of multilateral diplomacy in 21st century has increased and caused to emergence of science diplomacy with its three dimensions, a new method of multilateral diplomacy. Since multilateral diplomacy emphasizes the cooperation at international level, it is essential for solving the global issues including climate change.

Climate change is one of the most important issues of today's world. With the industrial revolution mankind were rapidly used the fossil fuels which are primarily responsible from climate change. Since then the adverse impacts of climate change had been specified in the several assessment reports which were alarming for the future of the planet. As a result of publication of the assessment reports and with the efforts of the international community, for the first time all the countries gathered and signed the Paris Agreement in 2015 to effectively combat with climate change. That's why Paris Agreement is considered as the product of science in diplomacy dimension of science diplomacy.

The main goal of the agreement is to hold global average temperature below 2°C through promoting the implementation of renewable energy policies and increasing the usage of renewable energy sources in the case of meeting energy demands of the countries rather than fossil fuels in order to minimize the impacts of climate change.

Hence the agreement emphasizes the importance of implementation of renewable energy policies, some of the countries such as Turkey and Russia have not yet ratified the agreement or withdrew from the agreement like US because of the

fact that alteration of current energy policies contradict with its national interests. Besides, with regard to fulfillment of the agreement's commitments, it was stated that some of the developed and developing countries which have already ratified the agreement are also unwilling to alter their current policies. Because developed and developing countries need significant amount of energy to meet its energy demands every year. Since the cost of renewable energy sources is considerably high compared to fossil fuels, most of the developed and developing countries determined insufficient goals in the case of combating with climate change so as to secure their economic growths. In contrast, undeveloped countries' targets are mainly considered as the compatible with the targets of the agreement due to the fact that undeveloped countries have very low historical and current responsibilities in terms of release of greenhouse gases into the atmosphere which indicates that alteration of current policies does not contradict with its national interests at least in the short run.

In this manner, since the motives of the countries with regard to ratification and fulfillment of the agreement are directly linked with countries' national interests, the relationship between realism and science diplomacy were examined throughout the thesis. In realism, states are motivated by pursuit of the national interests in order to maximize the power. Therefore, realists support the idea that countries adopt certain agreement, when they see a national interest. With respect to relationship between realism and science diplomacy, they claim that science is not always made for the scientific purposes, but for the sake of national interests which was justified throughout the thesis while the analyzing motives of the countries particularly of Turkey.

Because although Turkey signed the agreement, they have not yet ratified the agreement due to particular reasons which were classified as internal and external reasons in the thesis. Economic factors and absence of climate change as a norm in Turkey were classified as internal reasons of Turkey's non-ratification decision while lack of enforcement power of the agreement and absence of climate change as a norm in the international community were classified as external reasons.

Even though all these internal and external reasons influence Turkey's non-ratification decision, economic factors were considered as the main reason of Turkey's non-ratification of the agreement throughout the thesis. As Turkish officials stated many times that it is essential for Turkey to be eligible for receiving fund from 'Green Climate Fund' in order to implement climate related plans and policies including increasing the renewable energy potential of Turkey. However, currently Turkey is classified as 'Annex-I with special circumstances' in UNFCCC. Since 'Annex-I countries' are considered as developed countries, they are ineligible for funding from 'Green Climate Fund' which is merely eligible for developing and undeveloped countries, Non-Annex-I countries.

Thus, hence Turkey's problematic classification in UNFCCC makes Turkey ineligible for funding from the fund, Turkey is reluctant to both follow requirements made by the agreement and ratify the agreement in the near future which justifies the argument of realists in the context of relationship between realism and science diplomacy that countries adopt certain agreement, when they see a national interest. Even though economic factors contradict with Turkey's national interests particularly the economic ones in the short run, it was claimed that there will be potential

economic and political advantages of ratifying the agreement and fulfillment of its commitments in the long run.

Hence Turkey meets most of its energy demand from fossil fuels and has limited sources with regard to fossil fuels; Turkey is considered as energy import dependent country. Today, Turkey supplies more than half of its natural gas demand from Russia which also leads to occurrence of considerable amount of trade deficit for Turkey each year. Since Turkey needs Russia to meet its energy demand, high level of energy dependency affects foreign policy objectives of Turkey and causes to implementation of stable policies against Russia.

Therefore, it was supported that since Turkey has significant potential in renewable energy sources including solar, wind, hydroelectric and geothermal energy by means of its geographical location; it is highly possible that Turkey would decrease its energy import dependency and trade deficit by meeting its energy demand from its own domestic sources.

However, according to analyzes, currently Turkey's total install capacity is 5,063 MW in solar energy, 7,005 MW in wind energy, 27,912 MW in hydroelectric energy and 1053 MW in geothermal energy which are not sufficient considering the Turkey's renewable energy potential.

Therefore, Turkey determined renewable energy targets to increase the usage of renewable energy sources until 2023 which are to achieve 20 GW in wind energy, 5 GW in solar energy, 1 GW in geothermal energy and full potential in hydroelectric energy. If Turkey progressively revises its renewable energy targets until 2050, it is

expected that coal, oil and natural gas import dependency rate in Turkey will decrease at least 54 Mtoe and 23 billion US dollar will be retrenched from these sectors.

However, since estimated total cost of Turkey's renewable energy targets is considerably high around 21 million US dollars and Turkey is not eligible for funding from 'Green Climate Fund', it is essential for Turkey to achieve renewable energy targets and reduce its energy dependency to acceptable level. Because Turkey is considered as the first place among the OECD countries in terms of growing energy demand over the last 15 years because of the fact that energy demand of Turkey increases every year around 6% or 7% as a developing country with its growing population.

Thus, if Turkey takes attention of both foreign and public investors by decreasing incentives of fossil fuels and increasing incentives of renewable energy sources and continues to benefit from eligible funds from including Global Environmental Facility and European Union institutions as well as supporting the municipalities in the case of increasing the cooperation with European Union and World Bank funding programs, the renewable energy targets can be successfully implemented in the next decades.

In this manner, Turkey would begin to meet considerable amount of its energy demand from its own resources and Turkey's energy import dependency and trade deficit would decrease which leads to implementation of more flexible policies in the international arena. In addition, there would be new job opportunities in renewable energy sectors. All these economic and potential impacts of fulfillment of

renewable energy targets justifies the main argument of the thesis that if Turkey ratifies the agreement and fulfills its commitments according to Paris Agreement principals regardless of particular incompatibilities with its national interests, there will be particular economic and political advantages for Turkey in the long run.

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APPENDIX 1

INTERVIEW QUESTIONS

1. What is the importance of Paris Agreement for the international community?
2. What are the reasons of Turkey' non-ratification decision with regard to Paris Agreement?
3. Does Turkey's commitments are compatible with the targets of the agreement? If it is not, what should be the new commitments particularly in which areas?
4. Can Turkey achieve its targets which were stated in their Intended Nationally Determined Contribution (INDC)?
5. If Turkey ratifies and fulfills the agreement, does Turkey's energy import dependency can decrease?
6. If Turkey ratifies the agreement and fulfills its commitments; will there be any potential economic or political advantages for Turkey in the long run?
7. What are the renewable energy targets of Turkey for the forthcoming years?
8. What are the climate related plans and policies of the municipality?
9. Which climate related plans and policies were implemented until now?
10. Does the municipality benefit from any funding programs while implementing climate related plans and policies?

APPENDIX 2

LIST OF INTERVIEWS

1. Nuran Talu, Ankara, April 4, 2019.
2. Ethem Torunoğlu, Ankara, March 26, 2019.