CLIMATE CHANGE AGREEMENTS AND CONFERENCES COMPERATIVE ANALYSIS OF TURKISH POLICIES

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I. Introduction

The biggest threat to human life is not comprised of wars or earthquakes, cancer or AIDS; since Earth is our only planet, global warming and climate change pose the greatest dangers to it. The International Energy Agency anticipates that greenhouse gas emissions will increase 130 percent and oil demand will climb by 70 percent by 2050.[1] Without the implementation of necessary precautions, the entire ecological system and all living beings will be devastated. Since all countries share only one atmosphere, all the countries should fight for the global warming together. This article focuses on international climate change law and clean energy policies. This work examines international legislations and conferences on climate change. This work also discusses WTO member's policies on climate change but concentrates on the United States, the European Union, China and Turkey.

This article comprises of five parts. Part one introduces the study it sets the agenda, first provides the abstract of the article and subsequently addresses the studies main questions. Finally, it determines the scope, importance and outline of the article. Part two briefly defines the climate change problem, the causes of the problem, current and future impacts of it. Part three focuses on the Climate Change Agreements and Conferences specifically on World Meteorological Organization, Montreal Protocol on Substances that Deplete the Ozone Layer, Intergovernmental Panel on Climate Change and, United Nations Framework Convention on Climate Change. Part four finally comparatively analysis climate change policies of specific WTO members; the United States, the European Union, China and

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1 *See,* Elizabeth Burleson, *Energy Policy, Intellectual Property, and Technology Transfer to Address Climate Change,* 18 *Transnat'l L. & Contemp. Probs.* 69, 70 (2009).

Turkey. The last part of the article briefly refers back to the main problem of this study, recommends alternative solutions and describes conclusion reached from prior discussion of the article.

II. Climate Change

Climate change is the biggest environmental threat of our era because of its drastic effects on human health and wealth, along with the sustainability of the earth's environment.[2] It is estimated that millions of people living in Africa are facing starvation.[3] In 2012, Hurricane Sandy caused 147 deaths, damaged hundreds of thousands of houses, and destroyed public transportation systems.[4] Due to the sea level rising, island states are facing the threat of submersion.[5] If necessary precautions are not taken before the end of the twenty-first century, wildlife, human civilization and the whole ecosystem may be extinct because of the climate change.[6]

Climate Change does not have a universally accepted definition. UNFCCC defines climate change as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods."[7]

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2 *See,* RAFEAL LEAL- ARCAS, CLIMATE CHANGE AND INTERNATIONAL TRAD 27(2013).

3 *See,* Baskut Tuncak,'"*The New Formal Climate Change and Intellectual Property",* ENVİRONMENTAL TECHNOLOGİES, INTELLECTUAL PROPERTY AND CLİMATE CHANGE, (edited by Abbe E.L. Brown), 223 (2013.)

4 Cyclone Report Hurricane Sandy (AL182012) 22 – 29 October 2012, Eric S. Blake, Todd B. Kimberlain, Robert J. Berg, John P. Cangialosi and John L. Beven II National Hurricane Center,20(2013). Available at http://www.nhc.noaa.gov /data/tcr/ AL182012 _Sandy.pdf (Last visited in 3/5/2013).

5 Maldives already lost 10 percent of its land in 2004 because of the Indian Ocean Tsunami. Maldives is under threat of submerging to due to sea level rising *See,* Spencer Weart, New Scientist, April 14 2007 quated in 2008 Clavin at 128, 129, WİLLİAM H. RODGERS, MİCHAEL ROBİNSON- DORN, JENNİFER K. BARCELOS, ANNA T. MORİTZ, CLİMATE CHANGE A READER,32 (2011).

6 *See*, James Lovelock, The Revenge of GAIA: Eart's Climate Crisis & The Fate of Humanity, 2006, xiv.: WİLLİAM H. RODGERS, MİCHAEL ROBİNSON- DORN, JENNİFER K. BARCELOS, ANNA T. MORİTZ, CLİMATE CHANGE A READER,3 (2011).

7 *See,* WİLLİAM H. RODGERS, MİCHAEL ROBİNSON- DORN, JENNİFER K. BARCELOS, ANNA T. MORİTZ CLİMATE CHANGE A READER , 29, (2011).

1. Causes of Climate Change

Humans are most likely responsible for the warming in recent decades,[8] with corresponding activities that emit greenhouse gases (hereinafter "GHG") into the atmosphere serving as major triggers for climate change.[9] Greenhouse gas [10] emissions serve as the single-most contributing factor to climate change.[11]

GHG emission sources include the global energy supply, industry, land use, land-use change and forestry; others are comprised of agriculture, transportation, commercial and residential buildings, and waste and wastewater.[12]

The world needs energy sources for industrialization, cooling and heating requirements, transportation, and electricity generation. The global energy demand continues to grow rapidly, with projections indicating an insufficient amount of oil and gas to satisfy future needs. Conversely, the cost of electricity from clean energy sources has been decreasing dramatically.[13] Petroleum, oil and gas are the most significant energy sources worldwide,[14] causing the greatest amounts of GHG emissions that

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8 The List of Worldwide Organizations that holds the position that climate change has been caused by human action. *See,* http://opr.ca.gov/s_listoforganizations.php (Last visited on 4/28/2013)

9 *See,* IPCCC, IPCCC Climate Change 2014 Synthesis Report Summary for Policymakers, 4 (2014). Available at https://www.ipcc.ch/pdf/assessment-report/ar5/syr /AR5_ SYR_FINAL_SPM.pdf (Last visited in 4/20/2015)

10 United States Environmental Protection Agency, Greenhouse Gases Emission, Available at http://epa.gov/climatechange/ghgemissions/ (Last visited 10/09/2015).

11 *An increase on the amount of GHs could change this important equilibrium, and cause a rise in surface temperature. Inevitable result is a rise on planets temperature and global warming*. *See,* LARKSHMAN GURUSWAMY, INTERNATİONAL ENVİRONMENTAL LAW 196,197 (2007).

12 *See,* Intergovernmental Panel on Climate Change [Hereinafter IPCC] (2007) *Climate Change 2007: Mitigation of Climate Change* Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer (eds). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA

13 *See,* Alexander Adam, *Technology Transfer to Combat Climate Change: Opportunities and Obligations Under TRIPS and Kyoto*, 9 J. HIGH TECH. L. 1 (2009).

14 For example, according to the Energy Information Forecast, Annual Energy Outlook 1996, in the United States the share of oil and gas used for transportation in 1994 is %97

contribute to climate change.[15] The average lifetime of the major greenhouse gasses can remain in the atmosphere for tens to hundreds of years.[16] That means even if greenhouse gas emissions ceased immediately, its effects are going to last for at least a decade.[17]

2. Current Impacts of Climate Change

2.1. Weather and Climate (Extreme Weather Events)

Global temperature rise, extreme weather events (unusually hot summers, extremely cold winters), drought, tropical storms, and floods[18] are the main weather-related impacts of climate change.[19] Since 1850, the last twelve years have ranked among the twelve warmest years in the records of surface of the Earth's temperature.[20] Moreover, the average Arctic temperatures have risen almost twice the worldwide average rate in the past decade.[21]

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and it will go to % 94 in 2015. *See*, MARLA E. MANSFİELD, ENERGY POLİCY THE REEL WORLD CADES AND MATERİALS ON RESOURCES, ENERGY AND ENVİRONMENT LAW, 195, (2001)

15 *See*, IPCC, 2011: IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation. Prepared by Working Group III of the Intergovernmental Panel on Climate Change [O. Edenhofer, R. Pichs-Madruga, Y. Sokona, K. Seyboth, P. Matschoss, S. Kadner, T. Zwickel, P. Eickemeier, G. Hansen, S. Schlömer, C. von Stechow (eds)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 2 (2011).

16 *See*, United States Environmental Protection Agency (Hereinafter EPA), Climate Change Indicators in the United States. Available at, http://www.epa.gov/climatechange/science/indicators/ghg/ (Last visited in 4/22/2013)

17 *Id*.

18 *See*, RİCHARD G. HİLDRETH, DAVİD R. HODAS, NİCHOLAS A. ROBİNSON, JAMES GUSTAVE SPETH, CLİMATE CHANGE LAW: MİTİGATİON AND ADAPTATİON, 13 (2009).

19 *See*, UNİTED STATES ENVİRONMENTAL PROTECTİON AGENCY , CLİMATE CHANGE INDİCATORS İN THE UNİTED STATES, 7, (2012) Available at http://www.epa.gov/climatechange/pdfs/climateindicators-full-2012.pdf (last visited in 4/22/2015) [Hereinafter EPA -2012]

20 *See*, Sytensis Report IPCC 2007, 30 (1995-2006). IPCC, *2007*: Climate Change *2007*: *Synthesis Report*. Contribution of Working Groups I, II and III to the Fourth Assessment *Report* of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland

21 *Id. 30.*

Scientific studies show that extreme weather events such as storms, floods, and hurricanes are likely to become more powerful in the coming years.[22] Abnormal increases or decreases in air temperature can cause illness and death, mostly among old, the very young and other weaker groups.[23] Lengthened exposure to excessive heat and cold can also harm crops and injure or kill livestock.[24] Water shortages, crop devastation, release of toxic chemicals, soil erosion, and biodiversity loss due to the climate change are causing shortages within global food supply.[25]

2.2. Oceans (Sea Levels Rise and Coastal Impacts)

Climate Change's main impacts on the oceans include increasing levels of acidity, sea level rise, biodiversity and productivity, heating, sea surface temperature and coastal impacts.[26] Oceans store around one third of the carbon dioxide released to the atmosphere, which helps reduce climate change; however, seawater becomes more acidic because of the increasing levels of the dissolved carbon dioxide.[27] Sea level rising, erosion, inundation, shoreline change and saltwater intrusion into coastal aquifers due to the climate change pose a big threat to small island states in the Pacific, Indian, and Atlantic Oceans.[28]

Increased ocean acidity has a dramatic effect on some marine species that build calcium carbonate shells such as oysters, clams, sea urchins, shallow water, and deep sea corals…[29] This is a big threat to food chain and marine life.[30] Moreover, coral reefs comprise the habitat of one-fourth of the

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22 EPA -2012, *Supra* note 19 at 22.

23 *Id. at* 26, 27.

24 *Id.*

25 Baskut, *Supra* Note 3 at 223.

26 RODGER & ROBİNSON & BARCELOS MORİTZ, *Supra* note 7 at 298-307.

27 Department of Commerce United States of America, the National Oceanic and Atmospheric Administration (Hereinafter NOAA) Ocean and Great Lakes Acidification Research Plan Highlights, 2010, 4. Available at http://www.research.noaa.gov/pdfs/noaa-ocean-acidification.pdf (Last visited on 5/5/2013)

28 Managing the Risks of Extreme Events and Disasters to Advance Climate Change http://www.ipcc.ch/pdf/special-reports/srex/SREX_Full_Report.pdf 18 -53.

29 NOAA, Supra Note 28 at 4.

30 When shell organism are at risk, entire marine web is also at risk. *Id* at 5.

marine species.[31] Global fishermen are also threatened by changes in reef habitat and nutrient supply.[32] Global warming changes sea surface temperature, provides energy for storms and affects weather patterns.[33] Changes in sea temperature also threaten marine species, alter migration and breeding patterns.[34]

2.3. Snow and ice

Over the last fifty years, the average temperatures in the Arctic have increased five times more than the global average, as much as 7°F.[35] In 2007, sea ice comprising an area larger than Texas and Arizona combined, melted away.[36] The Greenland ice sheet is melting and dissolving at a record rate.[37] The average sea level will rise more than 20 feet if the Greenland ice sheet completely dissolves.[38]

Since the 1960s, glaciers have usually eroded, and this melting of the glaciers has sped up the last era of the century. The length of the season that lakes stay frozen is shorter, while snow fall form has decreased.[39] Mountain glaciers, which are declining worldwide in the Himalayas, Andes, and Rocky Mountains, provide a vital source of fresh water storage.[40]

2.4. Society and Ecosystem (Wildlife and Endangered Species)

According to the IPPC Synthesis Report 2007, global warming has a negative effect on winter tourism, snow transportation, agriculture,

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31 HİLDRETH & HODAS & ROBİNSON & SPETH, *Supra* Note 18 at, 11.

32 *Id.*

33 EPA -2012, *supra* note 19 at 39.

34 *Id*. at 40.

35 HİLDRETH & HODAS & ROBİNSON & SPETH, *Supra* note 18 at, 10.

36 *Id.*

37 *Id.*

38 *Id.*

39 EPA -2012, *supra* note 19.

40 RODGER & ROBİNSON & BARCELOS MORİTZ, *Supra* note 7 at 28.

hydropower energy generation and water resources relying on snowmelt.[41] According to the EPA Climate Change Report, climate change also changes the minimum and maximum flows of streams and leaves, along with bird wintering ranges and bloom dates. It also increases the length of ragweed pollen and growing seasons.[42]

Climate change also poses challenges for various endangered species and wildlife, especially whale species, coral reefs and fisheries, and penguins.[43] The Polar bear populations, iconic symbols of climate change, are expected to decline 30 percent next 35-50 years and to disappear from Alaska. The mountain ecosystems and the Mediterranean climate are also in danger of climate change.[44]

2.5. Human Health

Climate change does not only impact the environment; another major effect from climate change is the harm to human health directly or through environmental effects.[45] According to the National Institute of Environmental Health Sciences of America, categories of human health consequences of climate change are Asthma, Respiratory Allergies, Airway Diseases, Cancer Cardiovascular Disease, Stroke,[46] Foodborne Diseases, Nutrition Heat-Related Morbidity, Mortality, Human Developmental Effects,

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41 *See,* IPCC 2007, Summary for Policymakers, in *Climate Change 2007: Synthesis Report* 53.

42 EPA -2012, *supra* note 19.

43 RODGER & ROBİNSON & BARCELOS MORİTZ, *supra* note 7 at 338-359; 308-311: 316-327.

44 HİLDRETH & HODAS & ROBİNSON & SPETH, *supra* note 18 at 16.

45 *See,* A Human Perspective of Climate Change, Centers for Disease and Control Prevention, The Interagency Working Group on Climate Change and Health Available at http://www.cdc.gov/climateandhealth/pubs/HHCC_Final_508.pdf,3 (Last visited in 4/22/2015)

46 'Over the past three decades, more than 7,000 Americans were reported to have died as a direct result of heat-related illnesses, such as heat stroke. '[46] EPA -2012, *supra* note 19 at, 9.

Mental Health, Stress-Related Disorders, Neurological Diseases and Disorders, Vector-borne, Zoonotic Diseases, and Waterborne Diseases.[47]

3. Future Impacts of Climate Change

Foreseeable future changes are a warmer atmosphere, a warmer and more acidic ocean, higher sea levels, and bigger changes in precipitation patterns.[48] Oceans store heat and the climate is going to have negative impacts spanning the next several decades or possibly for hundreds of years.[49] The International Energy Agency warns about the future effects of climate change: "Global energy-related CO2 emissions in 2011 increased by 3.2% to reach a record high of 31.2 Gt. In the New Policies Scenario, our central scenario, CO2 emissions increase to 37 Gt in 2035, corresponding to a 50% probability of limiting the long term average global temperature increase to 3.6 °C relative to pre-industrial levels, and a 6% probability of limiting it to 2 °C."[50]

Indeed, the result of 3.6 °C degree change is more than we expected. Eighteen thousand years ago during the ice age, average temperatures were about 6 degrees lower than today. As a result, North America was covered with ice sheets including New York, which was under ice that was one mile deep.[51] In a similar scenario, a complete melting of the Greenland ice and West Antarctic ice sheet melt is expected to cause almost a 40 foot rise (12.192 meters) in the average sea level.[52] If the fact that more than seventy percent of the world's population lives in coastal areas is considered, billions of people would lose their homes, cities and states.[53]

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47 *See*, Centers for Disease Control and Prevention, Climate and Health, available at http://www.cdc.gov/climateandhealth/pubs/HHCC_Final_508.pdf (last visited in 4/22/2015)

48 *See*, EPA Climate Change Indicators in the United States, Available at http://www.epa.gov/climatechange/science/future.html (Last visited on 05.02.2013)

49 *Id.*

50 *See*, OECD, INTERNATİONAL ENERGY AGENCY, WORLD ENERGY OUTLOOK, 241 (2012). [hereinafter ENERGY OUTLOOK 2012]

51 RODGER & ROBİNSON & BARCELOS MORİTZ, *supra* note 7 at 108.

52 HİLDRETH & HODAS & ROBİNSON & SPETH, *supra* note 18.

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The IPCC 2012 Report finds it is either likely (or very likely) that there will be an increase in the length, frequency and/or intensity of heat waves and droughts, average and extreme sea levels, the average maximum wind speed of tropical cyclones, the frequency of heavy precipitation events and the frequency and severity of extreme weather events.[54] These climate changes will impact our food supply chain, fresh water resources, infrastructure, ecosystems, and even our own health.[55]

III. International Climate Change Agreements and Conferences

Although climate change is the most significant challenge in our era[56] it is not a new concept.[57] In 1827, Joseph Fourier was the first scientist who advocated that the earth's atmosphere warms the surface due to greenhouse gasses.[58] In 1957, 67 scientists worldwide were involved in an international scientific project known as The International Geophysical Year that was devoted to understand universal processes and the respective human effect on them, and founded a system of monitoring stations.[59] In the 20th century many international conferences and multilateral environmental agreements united towards the climate change threat.

1. World Meteorological Organization WMO

In 1979 as a response to environmental concerns, the World Meteorological Organization[60] (hereinafter "WMO"), Food and Agriculture

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54 *See*, OECD, INTERNATİONAL ENERGY AGENCY, WORLD ENERGY OUTLOOK, 248 (2012). [hereinafter ENERGY OUTLOOK 2012]

55 *See*, EPA Climate Change Indicators in the United States, Available at http://www.epa.gov/climatechange/science/future.html (Last visited on 05.02.2013)

56 Edited by ROSEMARY RAYFUSE, SHİRLEY SCOT, CLİMATE CHANGE İN THE ERA OF CLİMATE CHANGE, 118 (2012).

57 For further reading of climate change history. JAMES RODGER FLEMİNG, HISTORICAL PERSPECTİVES OF CLİMATE CHANGE, (1998).

58 *See*, MİCHEAL GRUBB WİTH CHRİSTİAN VROLİJK, DUNCAN BRACK, THE KYOTO PROTOCOL, A GUİDE AND ASSESSMENT, 3 (2013).

59 *Id*. at 3. *See*, also NASA History, Available at http://www.nas.edu/history/igy/, last visited on 05.02.2013). For further reading J. TUZO WİLSON, *IGY, THE YEAR OF THE NEW MOONS* ALFRED A. KNOPF, NEW YORK, (1961).

60 *See*, World Metrological Organization, Available at http://www.wmo.int/pages/index _en.html (Last visited on 8/21/2013)

Organization[61] (hereinafter "FAO"), and World Health Organization[62] (hereinafter "WHO") organized the first World Climate Conference.[63] The first World Conference led to the establishment of the World Climate Program which studies the predictability of climate, human effect on climate and develops and maintains a global climate observing system.[64]

The First Climate Change Conference did not require any policy actions; however, it arranged a major global forum dedicated solely to climate change and established the foundations of the following series of conferences related to climate change.[65] The Second Climate Change Conference in 1990, followed by the Third Climate Change Conference in 2009, were both sponsored by WMO.[66]

2. Montreal Protocol on Substances that Deplete the Ozone Layer 1987

In 1987, 24 countries signed the Montreal Protocol on Substances that Deplete the Ozone Layer (hereinafter the "Montreal Protocol"), the first international agreement to challenge the danger of ozone depletion.[67] Parties to the Montreal Protocol acknowledged that global emission of certain materials can substantially deplete or change the ozone layer, likely resulting in harmful effects on human health and the environment; parties

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61 *See,* Food and Agriculture Organization of United States, Available at http://www.fao.org/home/en/ (Last visited on 8/21/2013)

62 *See,* World Health Organization, Available at http://www.who.int/en/ (Last visited on 8/21/2013)

63 *Supra Note 61.*

64 *Id.*

65 *See,* Agrawala, Shardul. "Context and Early Origins of the Intergovernmental Panel on Climate Change." Climatic Change Volume 39(4) Springer Journals 607: 605-620, (1998)

66 See, World Meteorological Organization, Climate Change Conferences Available at http://www.wmo.int/pages/themes/climate/international_wcc.php#a (Last visited on 8/2013)

67 *See,* H. Christian Sorensen, International Agreements - Montreal Protocol on Substances that Deplete the Ozone Layer, 29 HARV. INT'L LJ. 185, 188-91 (1988).

were required to take applicable measures to protect human health and the environment.[68]

The Montreal Protocol declared that a special provision is obliged to meet the essentials of developing countries.[69] According to the Montreal Protocol, ozone-depleting substances could only trade between parties of the Protocol. Furthermore, the Montreal Protocol has articles aiming funding and transfer of ozone–friendly technologies between developed and developing countries.[70]

3. Intergovernmental Panel on Climate Change 1988

In 1989, the WMO established the Intergovernmental Panel on Climate Change was established and the United Nations Environment Program[71] (hereinafter "UNEP") for the need of broad balanced information on climate change.[72] The First IPCC Assessment Report of 1990 discussed the importance of climate change as a topic deserving a political platform among countries to challenge its results.[73] It also played a leading role in the creation of the United Nations Framework Convention on Climate Change (hereinafter "UNFCCC").[74]

The IPCC has provided the most comprehensive scientific reports worldwide assessment reports on climate change on a regular basis.[75] The

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68 *See*, *Montreal Protocol on Substances that Deplete the Ozone Layer*, *opened for signature, Sept. 16, 1987, reprinted in 26 I.L.M. 1550*(*1987*).

69 *Id.*

70 ARCAS, *Supra* note at 2 at 92, 93.

71 See, UNEP, Available at http://www.unep.org/ (Last visited in 9/22/2013).

72 *See*, Intergovernmental Panel on Climate Change, History. Available at http://www.ipcc.ch/organization/organization_history.shtml#.Uj88y1vn_IU (Last visited in 9/21/2013).

73 *Id.*

74 GRUBB & VROLIJK &BRACK, *SUPRA* note 59 at 4.

75 See, Understanding Climate Change 22 Years of IPCC Assessment, IPCC 2010.1. Available at http://www.ipcc.ch/pdf/press/ipcc_leaflets_2010/ipcc-brochure _under standing.pdf (Last visited in 9/21/2013) the Intergovernmental Panel on Climate Change For further reading on IPCC *See*, Structural and Process History of the Intergovernmental Panel on Climate Change, Climatic Change Volume 39(4) Springer Journals, 621-624,(1998).

IPCC second Assessment Report of 1995 provided key input into the way adoption of the Kyoto Protocol in 1997. The third Assessment Report came out in 2001. In 2007, "The Intergovernmental Panel on Climate Change and Albert Arnold (Al) Gore Jr. were awarded the Nobel Peace Prize "for their efforts to build up and disseminate greater knowledge about man-made climate change, and to lay the foundations for the measures that are needed to counteract such change."[76]

In 2014, IPCC released its fifth Assessment Report evaluating the climate change causes, current and future risks, future adaption and mitigation.[77] The Report emphasized the human effect on the climate system and the record level of greenhouse gasses emissions.[78] The Report also highlighted that climate change would increase the threat of violent conflicts such as poverty and economic problems.

The future risk assessed as higher for low income developing countries lacking planned mitigation experience.[79] The Report stated:

"Effective adaptation and mitigation responses will depend on policies and measures across multiple scales: international, regional, national and sub-national. Policies across all scales supporting technology development, diffusion and transfer, as well as finance for responses to climate change, can complement and enhance the effectiveness of policies that directly promote adaptation and mitigation… Technology policy includes technology-push (e.g., publicly-funded R&D) and demand-pull (e.g., governmental procurement programs… However, the success of technology transfer may involve not only the provision of finance and information, but also strengthening of policy and regulatory environments and capacities to

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76 *See,* IPCCC History, Available at http://www.ipcc.ch/organization/organization_history.shtml#.Uj9XOFvn_IV Last visited in (4/20/2014)

77 *See,* IPCCC 2014: Climate Change 2014: Synthesis Report, Contribution of Working Groups I, II, and III. To the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing team R.K. Pachauri and L.A. Meyer (eds)], IPCCC, Geneva, Switzerland 151 pp Available at https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full.pdf (Last visited in 4/20/2015).

78 *Id.*

79 *Id.*

absorb, employ and improve technologies appropriate to local circumstances"[80]

Encouraging technological assistance, innovation and investments in climate change friendly technology and its transfer were provided as solutions for climate change. Patent pool and technology transfer law are highlighted as institutional adaption paths.[81]

4. United Nations Framework Convention on Climate Change

The United Nations Framework Convention on Climate Change[82] (Hereinafter "UNFCCC") is the key international treaty to reduce global warming and a very significant step in the development of climate change law.[83] In 1992, UNFCCC was signed at the United Nations Conference on Environment and Development in Rio de Janeiro.[84] UNFCCC Article 2 sets the objectives of the convention as follows: "The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner."[85]

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80 *Id*. at 104.

81 *Id.*

82 See, United Nations Framework Convention on Climate Change, *771 U.N.T.S. 107*, 165; *S. Treaty Doc No. 102-38* (*1992*); *U.N. Doc.* A/*AC.237/18* (*Part II*)/*Add.1*; *31 I.L.M. 849* (*1992*) [hereinafter "UNFCCC"]. For the text of the convention *See,* http://unfccc.int/resource/docs/convkp/conveng.pdf

83 *See,* INTERNATİONAL LAW İN THE ERA OF CLİMATE CHANGE EDİTED BY ROSEMARY RAYFUSE, SHİRLEY V.SCOTT(CLİMATE CHANGE AND INTERNATİONAL LAW) CATHERİNE REDGWELL P. 118-119 (2012).

84 ARCAS, *supra* note at 2 at 182.

85 UNFCCC, s*upra* note 83 art. 2.

Currently the UNFCCC has 195[86] parties and they differ on their potential to accomplish the convention's goals. Parties of the convention have built several means, including financial and technological transfer, by which members could cooperate to achieve these goals. Contrary to the Kyoto Protocol, the UNFCCC did not set any binding GHG emission objectives.[87] The UFCCC requested that developed countries limit their emission of greenhouse gasses, with a target of keeping these emissions no higher than their 1990 level in the year of 2000.[88] Furthermore, the Kyoto Protocol set binding goals to limit their emissions approximately five percent below 1990 levels by the period 2008-2012.[89] The UNFCCC holds annually meetings with its parties called conference of parties (hereinafter "COP").[90] However the Kyoto Protocol, the Bali Action Plan, the Cancun Agreements, the Durban Outcomes and the Doha Climate Gateway are recognized as the key conferences. [91]

4.1. Kyoto Protocol 1997

In 1997, the Kyoto Protocol was adopted as the first protocol of UNFCCC.[92] Moreover, the Kyoto Conference is the most significant COP of the UNFCCC, since it is establishing principles and comprehensive plans

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86 Status of Ratification of UNFCCC Convention Available at http://unfccc.int/essential _background/convention/status_of_ratification/items/2631txt.php (Last visited 8/22/ 2013)

87 *See*, Alexander Adam, *Technology Transfer to Combat Climate Change: Opportunities and Obligations Under TRIPS and Kyoto*, 4,5 J. HIGH TECH. L. 1 (2009).

88 See, Jonathan B. Wiener, 'Global Environmental Regulation: Instrument Choice in Legal Context' (1999) 108 Yale L. J. 677 at 687, 688.

89 *Id.*

90 ARCAS, *supra* note 2 at 187.

91 *See*, United Nations Framework Convention on Climate Change Available at http://unfccc.int/2860.php (Last visited on 8/22/2013).

92 *See*, Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 10, 1997, U.N. Doc FCCC/CP/1997/7/Add.1, 37 I.L.M. 22 (1998). [hereinafter "Kyoto Protocol"]

for nations.[93] Most importantly, the Kyoto Protocol requires specific binding commitments to reduce GHG emission for industrialized countries.[94]

The Kyoto Protocol presented a three market based mechanism:

1. Emission Trading Carbon Market: Emission trading, defined in Article 17 of the Kyoto Protocol, grants countries with spare emission units the right to sell these excess unused capacities to countries that are above their targets. [95]

2. Clean Development Mechanism : Clean Development, as stated in Article 12 of the Kyoto Protocol, allows countries under the Protocol (Annex B Party) committed to emission-reduction or emission-limitation to implement emission-reduction projects in developing countries. Those projects can earn saleable certified emission reduction credits that count towards Kyoto's targets. [96]

3. Joint Implementation: This mechanism, as defined in Article 6 of the Protocol, allows an Annex B Party country with an emission-reduction or emission-limitation commitment, to earn emission reduction units (ERUs) from an emission-reduction or emission-removal project in another country under the Protocol, which can be counted towards meeting the Kyoto target. Joint implementation is a flexible and cost-effective method that helps parties to reach their Kyoto targets. Furthermore, the host party benefits from foreign investments and technology transfer.[97]

The Kyoto Protocol acknowledged that due to their respective industrialization periods, developed countries are responsible for the current high levels of GHS emission.[98] Thus, Kyoto Protocol set down stricter

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93 GRUBB & VROLİJK &BRACK, *Supra* note 59 at 61.

94 *Id.*

95 Kyoto Protocol, *supra* note at 93 art. 17.

96 *Id.* art. 12.

97 *Id.* art. 6.

98 *See,* PATRİCİA BİRNİE ET AL., INTERNATİONAL LAW AND THE ENVİRONMENT, 133-34 (2009)

responsibilities for developed countries.[99] In contrast, there is no commitment for the developing nations.[100]

The US signed but did not ratify the Kyoto Protocol, since the Protocol exempts developing countries like China and India and would result serious harm to the US economy.[101] On December 15, 2012, Canada withdrew from the Kyoto Protocol. [102] Similar to the US, Canada also claimed that the main polluter countries are not parties to the Protocol which makes it ineffective. [103]

Barrett criticized the Kyoto Protocol because of its generous emission limits and enforcement weakness and noted that: "A climate treaty must achieve three things. It must get countries to participate; it must get participants to comply; and it must do both of these things even as it requires that parties reduce their emissions substantially. The Kyoto Protocol satisfies none of these conditions."[104]

Deepa Badrinarayana noted that even though the most polluter developing countries such as China and India obliged with the Kyoto Protocol, these countries do not have sophisticated legislations and market systems. Developing countries can't execute the emissions trading scheme Scott successfully.[105]

4.2. Bali Action Plan 2007

In 2007, the Conference of Parties to the UNFCCC met in Bali to plan for post-Kyoto and to hold discussions on a new international climate

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99 *Kyoto Protocol opened for signature Mar. 16, 1998, entered into force* Feb. 16, 2005. Kyoto Protocol *Supra* note at 93.

100 *Id.*

101 *See*, John C. Dernbach & Seema Kakade, Climate Change Law: An Introduction, 29 Energy L. J.1, 12, (2008).

102 See, Statues of Ratification of the Kyoto Protocol Available at http://unfccc.int/kyoto_protocol/status_of_ratification/items/2613.php (Last visited on 7/21/2013)

103 *See,* Deepa Badrinarayana, The Kyoto Protocol's Emissions Trading Scheme: Realistic or Unjust Solution for Potential Developing Nation Signatories?, 42 Envtl. L. Rep. News & Analysis 11157, 11158 (2012).

104 *See,* Scott Barrett, Climate Treaties and the Imperative of Enforcement, 24 Oxford Rev. Econ. Pol'y 239, 258 (2008).

105 *Id.*

convention.[106] The Bali Action plan was adopted as a result of the Bali Conference.[107] The Ad Hoc Working Group on Long-term Cooperative Action (hereinafter "AWG-LCA") was launched to manage a broad process to enable the full, efficient and sustained application of the Convention through long-term joint action, at the moment up to and beyond 2012.[108]

The establishment of the Adaptation Fund provided a mechanism to target financing diverse climate change projects. The Bali Conference also supported improving the scope and content of the Article 9 review of the Kyoto Protocol, development on technology transfer, and reducing emissions from the permanent destruction of forests.[109]

4.3. Cancun Agreements

In 2010, the Conference of the Parties to the UNFCCC was held in Cancun, Mexico, and resulted in the Cancun Agreements.[110] Parties to the Cancun Agreements are obliged to remain under a maximum temperature rise of 2 degrees Celsius above pre-industrial levels and then to strive to lower 1.5 Celsius degrees in the near future.[111] Moreover, the Cancun Agreements provided opportunities to advance the spread of new climate-friendly technologies; it also established the Green Climate Fund that is designed to provide assistance from developed countries to developing countries.[112]

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106 Lin Feng, Jason Buhi, The Copenhagen Accord and the Silent Incorporation of the Polluter Pays Principle in International Climate Law: An Analysis of Sino-American Diplomacy at Copenhagen and Beyond, 18 Buff. Envtl. L.J. 1, 19-20 (2011).

107 *See* Conference of the Parties to the Framework Convention on Climate Change, Thirteenth Session, Bali, Dec. 3-15, 2007, *Report of the Conference of the Parties on its Thirteenth Session, Held in Bali From 3 to 15 December* 2007, UN DOC FCCC/CP/2007/6/Add.1 (Mar. 14, 2008)

108 decision 1/CP.13 *Id.*

109 Feng & Buhi, *supra* note 107 at 19-20.

110 Cancun Agreements, UN Doc. UNFCCC/CP/2010/7/Add.1, 15 March 2011, at 2 (LCA Decision) and Decision 1/CMP.6

111 *See*, Lavanya Rajamani, The Climate Regime in Evolution: The Disagreements That Survive the Cancun Agreements, 5 Carbon & Climate L. Rev. 136, 138 (2011).

112 ARCAS, *Supra* note 2 at 201-213.

Prior to the Cancun Conference in 2009, the Conference of Parties to UNFCCC held a conference in Copenhagen, which aimed to establish a climate treaty for the post Kyoto period. The outcome of the conference was the Copenhagen Accord did not succeed due to its political commitments rather than legal commitment.[113] No additional change occurred on the Cancun Agreements, as only new objectives were added.[114]

The lack of the legal form of the future regime after the expiration of the Kyoto Protocol, and the levels of differential treatment between developed and developing nations' problems were left unsolved.[115] Mathew Rimmer noted that the only consensus reached under the Copenhagen and the Cancun Agreements was the establishment of a Technology Mechanism, which would require a long time and much effort to make it functional.[116]

4.4. Durban Platform

In 2011, the Conference of Parties to the UNFCCC met in Durban, South Africa.[117] The outcomes of the Durban Conference were surprisingly more than expected. Highlights of the Conference included the parties' decision to extend the Kyoto Protocol for a second commitment period, their discussions regarding a new global mechanism called Durban Platform for Enhanced Action, and the establishment of the institutions defined in the Cancun Agreements.[118] The Durban Platform only extended the commitment period and did not adopt formal implementations to the Kyoto Protocol.[119] Parties to the Conference agreed to adopt an international climate treaty as soon as possible, but 2015 at the latest.[120]

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113 *See,* Professor Steven Ferrey, Cubing the Kyoto Protocol: Post-Copenhagen Regulatory Reforms to Reset the Global Thermostat, 28 UCLA J. Envtl. L. & Pol'y 343 (2010).

114 *Id.*

115 Rajamani, *Supra* note 112 at 138.

116 *See*, MATHEW RİMMER, INTELLECTUAL PROPERTY AND CLİMATE CHANGE INVENTİNG CLEAN TECHNOLOGİES INTELLECTUAL PROPERTY AND ENVİRONMENT, 82 (2011).

117 *See*, Durban Platform, UN Doc. No. FCCC/CP/2011/9/Add.1, 15 March 2012, Available at http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf (Last visited 8/25/2013)

118 ARCAS, *Supra* note 2 at 213.

119 Id. at214

120 Id. at 215

Arcas notes that there are different views on the Durban Meeting's success; some think that it brings a new hope for a new multinational climate agreement. Others claim that Durban is insufficient as a current, binding and equitable agreement mandatory to prevent the devastating impacts of climate change.[121]

4.5. Doha Climate Gateway

In 2012, the Conference of Parties to the UNFCCC held a conference in Doha, Qatar. In Doha, Conference of Parties amended the Kyoto Protocol; thus, these amendments were called the Doha Amendments.[122] The Doha Amendments extended the Kyoto Protocol for 8 years and started in 2013.[123] The Conference Parties decided to establish The Clean Climate Fund in Korea and planned to start working in the second half of 2013. They planned to sign a prospective international climate agreement planned in 2015 and enter into force in 2020.[124] David Campbell argued that the Doha Agreement is the most embarrassing agreement in the history of the environment, since it does not set any carbon emission limit for developing countries.[125]

4.6. Warsaw Outcomes

In 2013 Conference of Parties agreed that members to prepare an initial draft text for Climate Change Agreement that will enter into force in 2020, by December 2014 and present a formal draft text by May 2015.[126] Parties also concluded that climate change is real and developed countries should provide developing countries 100 billion annually by 2020 to support

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121 Id at 217,218.

122 *See*, Doha amendment to the Kyoto Protocol, Available at http://unfccc.int/files/kyoto_protocol/application/pdf/kp_doha_amendment_english.pdf (Last Visited on 8/25/2013)

123 *Id.*

124 *See*, UNFCCC, Doha Climatwe Gateway Avaliable at http://unfccc.int/key_steps/doha_climate_gateway/items/7389.php#Specific_Outcomes (Last Visited on 8/25/2013)

125 See, David Campbell, After Doha: what has climate change policy accomplished? Journal of Environmental Law (2013) 25 (1): 125-136.

126 *See*, UNFCCC Warsaw Outcomes Available at ,http://unfccc.int/key_steps/warsaw_outcomes/items/8006.php(Last visited in 4/22/2015).

developing countries in their climate change fight.[127]Also technical workshops are suggested as the best way of scaling up the finance. Last but not least parties launched Warsaw International Mechanism for Loss and Damage that will work on losses and damages related to long term climate change impacts in developing countries.[128]

4.7. Draft of the Universal Climate Change Treaty

The final draft of the Climate Change treaty supposed to be finalized in December 2015 and, enter into force in 2020.[129] In May 2015 Conference will be held in Paris and a binding climate change agreement is going to be discussed.[130] In February 2015 Ad Hoc Working Group on the Durban Platform for Enhanced Action and advanced unedited draft of the treaty is prepared.[131] Draft empathized: finding additional financial sources for the transfer of technology into developing countries, patent pools and Climate Change funds to provide to pay for intellectual property rights of green technology.[132] Draft does not refer to WTO not TRIPS directly.[133]-

5. CLIMATE CHANGE POLICIES OF WTO MEMBERS

5.1. The United States

The United States is the biggest energy creator and user in the world. However, China has recently exceeded the level of emission of greenhouse gasses of the U.S. Nonetheless, the energy consumption in the U.S. per

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127 *Id.*

128 See, Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts, Available at http://unfccc.int/adaptation/workstreams/loss_and_damage /items/8134.php (Last visited in 4/22/2015).

129 See, Warsaw outcomes, Available at http://unfccc.int/key_steps/warsaw_outcomes /items/8006.php (4/22/2015)

130 *Id.*

131 See, Ad Hoc Working Group on the Durban Platform for Enhanced Action, Work of the Contact Group on Item 3 Negotiating text Advance unedited version 12 February 2015 Available at https://unfccc.int/files/bodies/awg/application/pdf/negotiating_text_ 1202 2015@2200.pdf (Last visited in 4/22/2015)

132 I*d.*

133 *Id.*

capita is eight times higher than China and twice as high as in Western Europe.[134]

Although US is a party to the UNFCCC and Kyoto Agreement was signed, it has been never ratified.[135] President George W. Bush (2000-2008) clearly disagreed with the Protocol since it is binding only for developed countries, and, exempting large polluter developing countries such as China and India would cause harm to the U.S. economy. Moreover, Bush did not acknowledge human effect on climate until his second term.[136]

In 2007, the U.S. Supreme Court decided at Massa Commonwealth of Massachusetts et al. v. Environmental Protection Agency et al. that requires U.S. Environmental Agency (hereinafter "EPA") to regulate GHG emissions under the Clean Air Act.[137] President Obama asked Federal Agencies to make reduction of GHG emissions a priority.[138] President Obama confirmed the U.S. plan to reduce GHG emissions by 17% lower than 2005 levels until 2020 according to the 2009 Copenhagen Accord.[139]

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134 *See*, John C. Dernbach & Seema Kakade Climate Change Law: An Introduction 29 Energy L.J. 1, 2008, at 5 , U.S. Dep't of State, U.S. Climate Action Report- 2002: Third National Communication of the United States of America under the United Nations Framework Convention on Climate Change 14 (2002), Available at http:// yosemite.epa.gov/oar/globalwarming.nsf/UniqueKeyLookup/SHSU5BWHU6/ $File/uscar.pdf Press Release, Office of the Press Secretary, President Bush Discusses Global Climate Change (June 11, 2001), Available at http://www.whitehouse.gov/ news/releases/2001/06/20010611-2.html.

135 *See*, Eugene E. Smar, Scott Watson, Chapter17 United States, INTERNATİONAL ENVİRONMENTAL LAW, THE PRACTİTİONERS GUİDE TO THE LAWS OF THE PLANET, 302(edited by Roger R. Martella, Brett Grosko, 2014).

136 *See*, Lin Feng, Jason Buhi, The Copenhagen Accord and the Silent Incorporation of the Polluter Pays Principle in International Climate Law: An Analysis of Sino-American Diplomacy at Copenhagen and Beyond, 18 Buff. Envtl. L.J. 1, 21-24 (2011).

137 *See*, ERKIKI J. HOLLO& KATI KULOVESI & MICHEAL MEHLING EDITORS, CLIMATE CHANGE AND LAW, Climate Change law in United States Facing Structural and Procedural Limits, Micheal Mechling, David John Frenklil, 473, (2013).

138 *See*, Lori Glover, Encouraging Strategic Policy Making in the Climate Change Context: Agencies Should Bear the Burden of Proving that decisions not to prepare a Programmatic Impact are Reasonable 43 Rutgers L.J. 371, 372 6 Exec. Order No. 13,514, 74 Fed. Reg. 194 (Oct. 5, 2009).

139 *Id*. at. 474.

5.2. The European Union and Its Emission Trade System

European Union (hereinafter "EU") is the leader of the GHG emission battle, contrary to other regions and countries; the EU has seen emissions decrease by 15.4% between 1990 -2010. [140] However, this success is not merely because of environmentalism; instead, the desire to lower energy dependency on energy imports and to increase energy security are the EU's other motivations.[141]

In 2005, the European Union established Emission Trading System (hereinafter "ETS") as the first international trade system in the world. The aim of the ETS is to reach the Kyoto Protocol targets.[142] There is a pollutant limit (cap) for entities that cause GHG emissions. Companies have a permit to pollute the environment if the amount is under this settled limit. This permit has exchange; companies can sell and buy from each other.[143]

The number of permits has been reduced over time, and in this manner, the EU aims to reduce GHG emissions. On the other hand, the EU's ETS does not apply to all energy sectors or all greenhouse gasses.[144] The EU's ETS applies to carbon dioxide, which constitutes 40% of the EU GHG emissions.[145] The ETS had successful environmental results, since the EU reached its emission reduction targets under the Kyoto Protocol. [146]

5.3. China

Until 2004, China's Government's priority was the development of the economy and respectively they gave a low priority to climate change. In

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140 *See*, ERKİKİ J. HOLLO & KATİ KULOVESİ & MİCHEAL MEHLİNG EDİTORS, CLİMATE CHANGE AND LAW, CLİMATE LAW AND POLİCY İN THE EUROPEAN UNION: ACCİDENTAL SUCCESS OR DELİBERATE LEADERSHİP? 509, 510 (2013).

141 *Id.* 521.

142 *See*, John C. Dernbach & Seema Kakade Climate Change Law: An Introduction 29 Energy L.J. 1, 2008, at 12-14 , U.S. Dep't of State, U.S. Climate Action Report- 2002.

143 *Id.*

144 *Id.*

145 *See*, Frank Venmans, "A literature-based multi-criteria evaluation of the EU ETS," Renewable and Sustainable Energy Reviews, Elsevier, vol. 16(8),5493-5510.(2012).

146 *Id.*

2004, President Hu Jintao called for environmental issues and the acknowledged climate change threat.[147]

In 2007, China accepted a National Climate Change Program addressing basic principles, policy objectives and active measures to address climate change through 2010. In 2008, the State Environmental Protection Administration was promoted to full ministry status. In 2009, President Hu announced that China would unilaterally reduce its "carbon intensity" - by 40 to 45 percent from 2005 levels by 2020 and that China would invest and develop renewable and nuclear energy.[148]

5.4. Turkey

During the last quarter of the twentieth century, Turkish environmental law started to grow.[149] In 1983, its first environmental law entered into force.[150] Although Turkey is still under the average emission per capita as compared to other OECD countries, its greenhouse gases emissions increased from 170 million to 372 million tons from 1990 to 2007.[151] During the time period from 1990 to 2008, Turkey created the greatest GHG emissions of any of the Kyoto Protocol's Annex 1 countries.[152]

In 2006, promotion of clean technologies were incorporated into the principles of environmental law[153] Article 18 was also modified by the same Amendment Law requiring the establishment of a climate change battle fund.[154] In accordance with these amendments, a number of regulations

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147 *See*, Lin Feng, Jason Buhi, The Copenhagen Accord and the Silent Incorporation of the Polluter Pays Principle in International Climate Law: An Analysis of Sino-American Diplomacy at Copenhagen and Beyond, 18 Buff. Envtl. L.J. 1, 24-28 (2011).

148 *Id.*

149 Constitution of 1982 recognized the right to a healthy environment. Turkish Republic Constitution Article 56.*See*, Nilufer Oral, Basak Basoglu, Chapter 43 Turkey, INTERNATİONAL ENVİRONMENTAL LAW, THE PRACTİTİONERS GUİDE TO THE LAWS OF THE PLANET, 850 (edited by Roger R. Martella, Brett Grosko, 2014)

150 I*d.*

151 *Id.*

152 ARCAS, *Supra* note 2 at, 255.

153 1983 of Turkish Environmental Law (Amended in 2006) Article 3.

154 1983 of Turkish Environmental Law (Amended in 2006) Article 18.

were adopted including the following: Air Pollution from Climate Warning, Control of Motor Vehicles, and Measurements against the emission of gaseous and particulate pollutants from Internal Combustion Engines to be installed in Non Road Machinery.[155]

The energy sector still remains responsible for almost 80 percent of the greenhouse gas emissions in Turkey.[156] As a developing nation, Turkey's energy demands are growing rapidly; however, Turkey still exports almost 70 percent of its energy needs.[157] Almost ninety percent of Turkey's energy needs have been satisfied from fossil fuels.[158] However, in 2014, fossil fuels caused the biggest work disaster in Turkey's history; a coal mine collapsed which caused the death of many Turkish miners in Soma.[159]

Turkey signed the UNFCCC Convention in 2004.[160] The UNFCCC Doha Conference recognized Turkey's special circumstances and urged parties to: " …assist them in implementing their national climate change strategies and action plans and developing their low-emission development strategies or plans in accordance with decision 1/CP.16; 95. Requests the secretariat to prepare, for consideration by the Subsidiary Body for Implementation at its thirty-eighth session, a technical paper identifying opportunities for Annex I Parties whose special circumstances are recognized by the Conference of the Parties to benefit, at least until 2020, from support from relevant bodies established under the Convention and

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155 See, Nilufer Oral, Basak Basoglu, Chapter 43 Turkey, INTERNATİONAL ENVİRONMENTAL LAW, THE PRACTİTİONERS GUİDE TO THE LAWS OF THE PLANET, 851 (edited by Roger R. Martella, Brett Grosko, 2014)

156 *Id*. at 852.

157 *Id*. at 852.

158 "Turkey has pledged to develop 30 percent of its total installed capacity from renewable sources by 2023. The objective is to add 34 GW of hydropower, 20 GW of wind energy, 5 GW of solar energy, 1 GW of geothermal and 1 GW of biomass. The country also aims to have 10 percent of its transportation sector needs met by renewable energy" February 16, 2015. Available at http://www.hurriyetdailynews.com/turkey-develops-action-plan-for-renewable-energy-with-ebrd.aspx?pageID=238&nID=78444&NewsCatID=348 (last visited in 4/22/2015).

159 *See*, Turkey ends Soma mine disaster rescue, death toll 301 Available at http://www .bbc.com/news/world-europe-27455367 (Last visited in 4/22/2015)

160 *Id*. at 852.

other relevant bodies and institutions to enhance mitigation, adaptation, technology, capacity-building and access to finance.."[161]

After the Soma disasters, and in accordance with UNFCCC decisions, Turkey developed an action plan for renewable energy with the European Bank for Reconstruction and Development.[162] Although Turkey enjoys a special status under Annex B of the Kyoto Protocol[163] and has been recognized by the Cancun Agreement,[164] as a European Union candidate it prepared its Turkish National Renewable Action Plan to comply with the European Union's target level of 27% domestic energy generation from renewable energy sources.

6. Conclusion

Climate change is the most urgent problem of our era. Global energy demand and greenhouse gases emissions increases rapidly. Climate change has negative effects on extreme weather conditions, submerging of island states, mitigation of animals and human, clean water, food, and human health. Although there is no mutual definition for climate change, all scientists agree on the major reason of for the GHG emission is the burn of the fossil fuels. Human demand of energy is growing rapidly. Therefore, promoting climate friendly renewable energies technologies and their transfer is crucial to fight with climate change.

UNFCC Convention recommends that developed countries promote, facilitate and finance the transfer of technology to other countries, particularly to those that are developing; this helps these nations implement the Convention's objectives of using climate friendly technology.[165] The role of technology and intellectual property in avoiding climate change has increasingly become the central focus of all these meetings. UNFCCC first

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161 *See,* UNFCCC/CP/2012/8/Add.1 28 February 2013.

162 *See,* UNFCCC/CP/2012/8/Add.1 28 February 2013.

163 The scope of special circumstance is not determined. Turkey does not have an emission limit or commitment under Kyoto Protocol.

164 Although Turkey is under Annex 1 of the Cancun Agreement it still has a special membership status.

165 *See,* United Nations Framework Convention on Climate Change, art. 4, May. 9, 1992, S. Treaty Doc. No. 102-38, 1771 U.N.T.S. 170.

adopted the Kyoto Protocol; its Article 10 recommends that parties endorse, enable and fund the transfer of environmentally sound technologies targeting emerging countries and requests the establishment of financing for technology transfer.[166] The Kyoto Protocol presented the Clean Development Mechanism (hereinafter "CDM")[167] to reduce greenhouse gases emissions by encouraging the private sector to invest in developing nations.[168]

During the Copenhagen meetings, the convention's parties could not reach consensus regarding the effects of intellectual property rights on technology transfer, spurring its most significant debate.[169] Developing countries[170] supported the idea that clean technology patents provide a significant barrier to technology transfer.[171] In contrast, developed countries adopted a different viewpoint in that intellectual property rights created incentives for the private sector to engage with technology transfer.[172] Additionally, the United States and the European Union proclaimed that intellectual property rights issues should be eliminated from the Copenhagen discussions since TRIPS already deals with these matters.[173]

As a result of the Cancun Agreement, the developed countries agreed to transfer public and private funds gradually rising to USD 100 billion per year by 2020 to promote specific mitigation actions by developing countries.[174] The Cancun Agreement also launched the Cancun Adaption

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166 Id at Article 3(15)

167 *See*, Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 10, 1997, U.N. Doc. FCCC/CP/1997/L.7/Add.1, 37 I.L.M. 22 [hereinafter Kyoto Protocol] Article 12

168 Rimmer, *Supra* Note 117 at 43.

169 *Id.*

170 *See,* Developing countries gathered under the name of Group 77 list of the countries are available at http:/www.g77org/ (Last visited in 10/23/2012).

171 *Id*.

172 *Id.*

173 Estelle Derclaye, Not Only Innovation but Also Collaboration, Funding, Goodwill and Commitment: Which Role for Patent Laws in Post-Copenhagen Climate Change Action (2010) 9 J. Marshall Rev. Intell. Prop. L. 658.

174 *See,* Joshua D. Sarnoff, The Patent System and Climate Change (2011) 16 Va. J.L. & Tech. 301, 303

Framework, Adaptation Committee, Green Climate Fund and a technology mechanism including a Technology Executive Committee and a network of Climate Innovation Centers.[175] Finally, the Durban Negotiations creates a second commitment period under the Kyoto Protocol, implements the Cancun Agreements and requires the launch of a process for an international climate agreement binding for all members by December 2015.[176]

UNFCCC presents the Technology Executive, Committee, the Climate Technology Centre and Network, Technology Information Clearing House, Climate Change Fund and, forthcoming draft of UNFCCC's global climate change agreement. Prospective international climate change agreement should be binding for all countries including the US and China. The European Union ETS is developed according to the Kyoto goals and indeed it is very successful. A similar mechanism may be developed for the international climate change agreement and it should include more countries. Turkey should adopt and modify its legislation according to these International Agreements and adopt the EU standards. However, as a developing country, Turkey should also take the advantage of these International Organizations and Agreements. Last but last least alternative solutions may be used for climate change battle such as climate change funds, patent pools, climate change licenses, and prize mechanism.

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175 *See, Earth Negotiations Bulletin Vol. 12 No. 594 Published by the International Institute for Sustainable Development (IIS D) Tuesday, 26 November Tuesday, 26 November 2013 Vol. 12 No. 594 Page 2* http://www.iisd.ca/download/pdf/enb12594e.pdf

176 Paris Agreement *See,* Remi Moncel, Unconstructive Ambiguity in the Durban Climate Deal of Cop 17 / Cmp 7 (2012) 12 Sustainable Dev. L. & Pol'y 6.

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