THE REPUBLIC OF TURKEY
BAHCESEHIR UNIVERSITY

THE INSTITUTE OF SOCIAL SCIENCES
EUROPEAN STUDIES PROGRAM

THE SUSTAINABLE DEVELOPMENT IN INTERNATIONAL LAW

INTERNATIONAL ENVIRONMENTAL LAW

ON

CLIMATE CHANGE

Graduate Thesis

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ISTANBUL 2008

BAHÇEŞEHİR UNIVERSITY
SOCIAL SCIENCES INSTITUTE
EUROPEAN STUDIES PROGRAM

Name of the thesis: The Sustainable Development in International Law: International Environmental Law on Climate Change
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Date of Thesis Defense:

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ACKNOWLEDGEMENTS

I would especially like to thank to my supervisor, Prof. Dr. Eser Karakas at Bahcesehir University for his enlightening supervision and to Social Sciences Institute of Bahcesehir University for their support and consultancy whilst preparing this thesis.

I am grateful to my supervisor Mr. Wojciech Trojan at United Nations High Commissioner for Refugees (UNHCR), for his generous time; mentoring, encouragement during my traineeship, and directing me to observe and work on the sustainable development of the international law.

I am extremely grateful for the supervision, generosity, and advices I received from *Prof. Mathias Jopp* at the Institut für Europäische Politik.

Thanks to *Mr. Nizar Ben Ayed*, *Mr. Matthias Waechter* and *Ms. Dagmar Roettsches* at the Institut Europeen Des Hautes Etudes Internationales who had supported me with their valuable advises, different sources and insights to the thesis.

I owe a special note of gratitude to *Ms. Gesa Brincker* and *Ms. Andrea Schilling*, I am very thankful for every opportunity they provided to me, in order to access the resources and connections to work on for my thesis.

Finally, I would like to thank to my family. I am very grateful to my parents and my brother for their support, encouragement, enthusiasm and understanding during the period that I worked on my thesis.

ISTANBUL, 2008 **AYŞEGÜL BİNALI**

ABSTRACT

THE SUSTAINABLE DEVELOPMENT IN INTERNATIONAL LAW

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European Union Relations

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May 2008, 76 Pages

The purpose of this study is to examine the methods and alternatives of the Sustainable Development in International Environmental Law on Climate Change which includes both the Sustainable Development of the International Law; the development of the international environmental law making and multinational negotiation mechanisms, and the improvements of the scientific, social, economic response mechanisms of the parties with regard to the context of the international law to create the law of sustainable development.

Climate change is a vital issue that should be coped with international legal responses; establishing effective strategies. The strategies refers to the scientific bases of the climate change; the vulnerability of the human beings and nature systems, mitigation policies and the roots of the international law making are discussed establishing the contextual bases of the international environmental law making in order to reach the Sustainable Development project in International Law.

Keywords: International Environmental Law making, International and National Response Mechanisms, Multinational negotiation mechanisms, Law of Sustainable Development, Sustainable Development Project in International Law.

ÖZET

ULUSLARARASI ÇEVRE HUKUKU'NDA DEVAMLI GELİŞİM

Binali, Aysegul

Avrupa Birliği İlişkileri

Tez Danışmanı: Prof. Dr. Eser Karakaş

İklim değişikliği modern toplumun gelişimi ve değişimi ile hayati bir konu olmuştur. Dünyanın gelişimi değişimi aynı zamanda doğal sistemlerin yüksek oranda zarar görmesi ve yaşam temel maddelerinin tehtit altına girmesine neden olmuştur. Verilerden yola çıkarak iklim değişikligini yavaşlatmak ve sonuçlarına çözüm önerileri sunmak amacıyla uluslararası politik stratejiler tasarlanması ve etkin bir şekilde uygulanması gerekmektedir. Bu nedenle uluslararası hukukta devamlı gelişim ve değişimi destekleyecek uluslararası hukuki belgeler tasarlanması gerekmektedir.

İklim değişikliği uluslararası hukukunda devamlı gelişimi başlıklı tezim; uluslarası hukuk belgelerinin ve kararlarının oluşumu, uluslarası müzakere yöntemleri, tarafların bilimsel, ekonomik ve sosyal müdahele mekanizamalarının uzun vadede iklim degişikliğinin yavaşlamasını sağlamak ve getirdiği sorunları karşılamak amacıyla nasil politikalar ve ne ceşit uluslarası hukuk yaptırımları uygulanması gerektiği uzerine öneriler sunmak amacıyla tasarlanmiş bir calişmadır.

Anahtar Kelimeler: Uluslararası hukuk belgelerinin ve kararlarının oluşumu, ulusal ve uluslararası müdahele mekanizmaları, devamlı gelişim hukuku, uluslararası hukukta devamlı gelişimin desteklenmesi.

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ABBREVIATIONS

United Nations	**: UN**
United Nations Framework Convention on Climate Change	**: UNFCCC**
Framework Convention on Climate Change	**: FCCC**
World Health Organization	**: WHO**
United Nations Environment Program	**: UNEP**
United Nations Development Program	**: UNDP**
World Bank	**: WB**
World Meteorological Organization	**: WMO**
International Council on Scientific Unions	**: ICSU**
The Advisory Group on Greenhouse Gasses	**: AGGG**
United Nations Conference on Environment and Development	**: UNCED**
The United Nations General Assembly	**: UNGA**
Organization for Economic Development and Co-operation	**: OECD**
Subsidiary Body for Scientific and Technological Advice	**: SBSTA**
Subsidiary Body for Implementation	**: SBI**
Consultative Group of Experts	**: CGE**
Expert Group on Technology Transfer	**: EGTT**
Clean Development Mechanism	**: CDM**
Least Developed Country Expert Group	**: LEG**
The Joint Implementation Supervisory Group	**: JISC**
Global Environment Facility	**: GEF**
Second Assessment Report IPCC	**: SAR**
Third Assessment Report IPCC	**: TAR**
The Conference of the Parties	**: COP**
Meeting of the Parties	**: MOP**
Environmental Protection Act	**: EPA**
Fourth Assessment Report on Climate Change-IPCC	**: AR4**
Non-governmental Organization	**: NGO**
The Group of Eight	**: G8**
European Union	**: EU**
United Kingdom	**: US**
Anno Domini, Latin for "In the Year of (Our) Lord", applied to years following 1 BC	**: AD**
Celcius	**: °C**

UNITS OF CHEMISTRY

Trifluoromethyl sulphur pentafluoride	**: SF_5CF_3**
Carbon dioxide	**: CO_2**
Sulphur	**: SO_2**
Nitrous oxide	**: N_2O**
Methane	**: CH_4**
Hydrofluorocarbon	**: HFC**
Sulphur hexafluoride	**: SF_6**
Nitrogen trifluoride	**: NF_3**
Global warming potentials	**: GWP**
Greenhouse gas emissions	**: GHG**
Chlorofluorocarbon	**: CFC**

1. INTRODUCTION

"The world is alarmed for Climate change." Projected global warming impacts are likely to cause serious consequences for humanity. Even though the limitation and adaptation policies are succeeded and the range of 60 to 80 percent reduction of greenhouse gas emissions is applied with 100 percent efficiency, it just slows the process of climate change to an acceptable rate that would allow ecosystems to adapt extreme weather conditions.

However the threat of Climate Change is serious for the Earth, the international legal responses of the world to the problem are not efficient and the mitigation policies are not implemented in all countries. They should be strengthened to bind all 2 nation states to take precautions and set up policies that would reduce the greenhouse gas emissions for the future of the Earth.

G8 2007 Submit is held from June 6 to June 8 in Germany and represented on the press by the chancellor of Germany, Mrs. Angela Merkel. The main concern of the meeting was the Climate Change. Mrs. Angela Merkel declared that the new mechanisms to enhance the binding effect of the Kyoto Protocol will be negotiated in 2009, after the proposals of the precautions and the mitigation policies are discussed in order to reach the sustainability on climate change policies.

The attempt to improve the Kyoto Protocol and increase its binding effect dates back to the United Nations Environmental and Development Conference (UNCED) in 1992. The 1992 "Earth Summit" is an essential attempt that triggered the new acts over the intergovernmental efforts to adhere the environmental problems of the Earth. The governments and the international organizations expressed the vitality of Sustainable Development of the Legal Instruments which are set up through the Environmental Impact Assessments designed by the Intergovernmental Panel on climate Change. The Agenda 21 under the UNCED had an environmental philosophy of the sustainable development and embedded the concept of "The Sustainable Development in International Law" at the hearth of the environmental development project.

The Sustainable Development of International Law means both the development of the international environmental law making mechanisms and the improvements of the scientific, social, economic response mechanisms of the parties with regard to the context of the international law to create the law of sustainable development.

The climate change is a significant issue. The UNCED goals; sustainable development of the international law, increasing awareness and implementation of mitigation policies should be penetrated into the national policies of the countries because the_Earth is warming up and the future predictions shows that the current economic gains which lead the high contribution to climate change can not overcome the economic consequences that we would live in the future. The twenty five years of multinational negotiations on the international law making within several international organizations has not been effective to increase the common will of the nation states to contribute to the slow down process. The sole world wide international legal instrument which covers the provisions on Climate Change is under the UN Mandate, The United Nations Framework convention on Climate Change and its amendment Kyoto Protocol are limited and not binding over the countries. The warming threats to the Earth still continue. On the other hand, WTO environmental sanctions over trade do not overcome the national interests.

Concerning "The future of the Earth which is our and the following generation's common Future", this thesis focuses on the enrichment of the concept of Sustainable Development in International Environmental Law over the Climate Change. The causes of Climate Change are addressed, environmental impact is completed and mitigation policies are set up in order to develop alternatives to slow down and implement these alternatives on the international and national level. The different views or interpretations of the authors or diplomats over the issue are exemplified. The study and the application methods capable of providing the essential information for the success of the environmental impact assessment and international environmental law making relating to the international governmental organizations are provided.

The scope contains five significant chapters that present the roots of the problems and the problem solving methods over the issue. The second chapter describes the scientific bases evidences and causes of the climate change and stresses on the vulnerability assessment and the mitigation policies which were agreed on so far. The third chapter focuses on the international

law making mechanisms and the international legal instruments over these scientific, social and economic assessments and the dynamics of the multinational negotiations. The fourth chapter overviews the twenty five years of the multinational negotiations over the Climate change. It works on the effectiveness of the legal instruments which were established over the social economic and ecological assessments and conclude an international theoretical perspective over the bases of the problems that triggers the parties not to abandon their political priorities. After describing the perspectives of the nation States on UNFCCC and the Kyoto Protocol, the next chapter, works on the recommendations to create effective and binding international environmental legal instruments on climate change in order to succeed in mitigation.

The purpose of the this work is to highlight the vitality of "The sustainable development in the international environmental law on climate change" which would both create the mechanisms to improve the international environmental law making mechanisms and to set up response mechanisms for the law of sustainability in environmental issues with frequent steps rather then its current gradual evolvement.

2. SCIENTIFIC BACKGROUND OF CLIMATE CHANGE

2.1 BACKGROUND OVERVIEW

One of the biggest environmental social and economic threats that the earth faces with is the Climate Change. Climate sensitivity is defined as the amount of global average surface warming following a doubling of carbon dioxide concentrations (IPCC 2001, pp. 83-85).

Climate change refers to the variability of the average state of the atmosphere in the global and the regional climate of the Earth which ranges over time scales (IPCC 2001, pp. 83-85). The actors of the climate change are the internal process to the earth; plate tectonics, volcanism, glaciations, ocean variability, external factors as solar variation, gas emissions and the human activities; as fossil fuels, aerosols, live stock and land use that increase the impact of the natural internal and the external factors.

Scientifically, the Earth absorbs the radiations from the sun and reflects them back by the atmospheric and oceanic circulations. “The incoming solar radiation energy is balanced approximately by the outgoing terrestrial radiation (IPCC 2001, pp. 1-3).” Any impact that cause gradual changes to the radiation received from the sun and reflected back to space or affect the redistribution of this energy within the atmosphere or between the land, ocean and atmosphere, affect climate.

2.1.1 Evidences of the Climate Change

I. Observations: The Fourth Assessment IPCC Report describes the changes in the Earth's climate including atmospheric composition, global average temperatures, ocean conditions, and other climate changes (IPCC 2001, pp. 1-3).
II. Changes in the atmosphere: Carbon dioxide, methane, and nitrous oxide are all long-lived greenhouse gases. "Carbon dioxide, methane, and nitrous oxide have increased markedly as a result of human activities since 1750 and now far exceed pre-industrial values (Barrett,

Court, Velasquez, 2002)." The concentration of carbon dioxide and methane in the atmosphere in 2005 (exceeds by far the natural range of the last 650,000 years The primary source of the increase in carbon dioxide and methane is fossil fuel use, and land-use changes, of methane is the human agricultural activities (IPCC, 2006).

III. Warming of the planet: Cold days, cold nights, and frost events have become fewer than the hot days, hot nights, and heat waves. Eleven of the twelve years in the period (1995-2006) rank among the top 12 warmest years in the instrumental record (since 1850). "Average Arctic temperatures increased at almost twice the global average rate in the past 100 years (UNEP 2003)."

IV. Ice, snow, permafrost, rain, and the oceans: The sea level rose during the ten years between 1993 and 2003 approximately 3.1 mm/year. "Mountain glaciers and snow cover have declined on average in both hemispheres (IPCC 2001, pp: 17)." Sea level rose at an average rate of about 1.8mm/year during the years 1961-2003.

V. Hurricanes: The hurricane intensity in the North Atlantic since the 1970s increased but there is no clear estimation in the number of hurricanes. It is more likely that more than 50 percent the hurricane occur as an outcome of the human activities (http://www.nature.org/initiatives/climatechange/issues, 2007).

2.1.2 Causes of Climate Change

"Weather is the day-to-day state of the atmosphere, and is a non-linear dynamical system. On the other hand, *climate* — the average state of weather — is fairly stable and predictable. Climate includes the average temperature, amount of precipitation, days of sunlight, and other variables that might be measured at any given site (IPCC 2001)." Climate changes have variations within the Earth's atmosphere, as an outcome of the internal and the external factors which one of them is also the cause of the other and all the causes of the climate change are also the results of it with the new values measured because they involve in the atmosphere scientific circulation cycle.

I. The Internal Variations within the Earth's Climate

The internal actors to the earth's climate change; are the plate tectonics, volcanism, glaciations, and ocean variability.

Glaciations: "Glaciers are the sensitive indicators of climate change; they contribute the natural variability and increase the impacts of global climate change. The expanding during climate cooling and the retreating during climate warming is an outcome of the natural cycle of the Earth (Barrett, Court, Velasquez Jerry, 2002)." Due to the impact of Global Warming, during the last decades, the glaciers cannot regenerate the ice lost during the summer. That effect increases the condensation and the vaporization which the layer of the atmosphere becomes thicker and causes the increase of the Global Warming (http://www.nature.org/initiatives/climatechange/issues/, 2007).

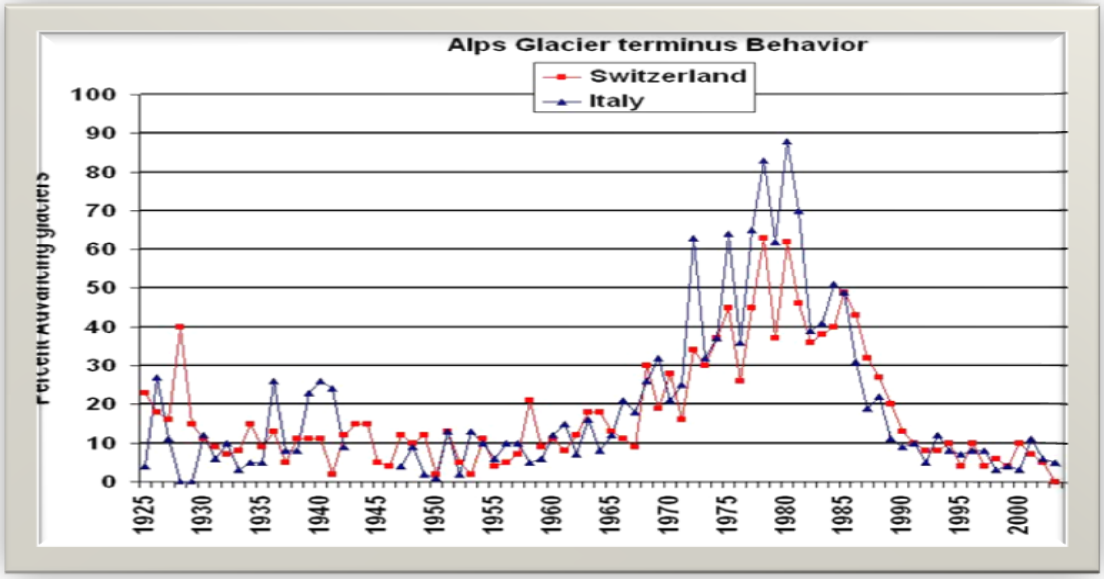

Figure 2.1: Percentage of Advancing Glaciers in the Alps in the last 80 years

Source: Nilcolhs Education. 2007. *Glacier* .[internet] (Published 2007) Available from: http://www.Boots-Plc.Com/Information/Info.Asp?id=447 [cited 11 November 2007]

Glacier terminus behavior in the Alps, indicating the percentage of advancing glaciers. The terminus data is from the Swiss and Italian Glacier Commissions. The orbital variation shapes the

glacial and interglacial cycles. The international responses set up an agenda to describe the target regions where the changes of the sea levels and ice sheets in the short term and the long term. The glacial variations; The Heinrich events (http://en.wikipedia.org/wiki/Heinrich_event, 2007) , Dansgaard–Oeschger (http :// en. wikipedia. org:80/wiki/Dansgaard–Oeschger_event, 2007) events and the Younger Dryas (http://en.wikipedia.org:80/wiki/Dansgaard–Oeschger_event, 2007) are examples of the potential for glacial variations to influence climate change even in the absence of specific orbital change.

Ocean variability: "The climate change is proved to result also from the interaction of the atmosphere and oceans. The heat is stored in the ocean and move from reservoirs. In the long term ocean has a thermohaline circulation redistributing heat which cause a dramatically impact on climate. The main examples to these climate fluctuations are the North Atlantic oscillation, El Niño Southern oscillation, Pacific decadal oscillation, and the Arctic oscillation (http://www.epa.gov/climatechange, 2007)."

The climate system responds on various time scales to the radiative forcing as the large heat capacity of the ocean and dynamic adjustment of the ice-sheets. "This means that the transient response to a change (either positive or negative) may last for thousands of years. Any changes in the radiative balance of the Earth, including those due to an increase in greenhouse gases or in aerosols, will alter the global hydrological cycle and atmospheric and oceanic circulation, thereby affecting weather patterns and regional temperatures and precipitation (http://www.epa.gov/climatechange, 2007)."

Volcanism: With the periodical changes the volcanic eruptions occur as a part of the Earth's natural cycle. This tendency is an outcome of the necessity to cool the Earth's surface and lower the atmosphere. Volcanic activities expose large amounts of sulphur (containing gases) SO_2 out into the stratosphere.

"Volcanoes are also part of the extended carbon cycle. Over very long (geological) time periods, they release carbon dioxide from the earth's interior, counteracting the uptake by sedimentary rocks and other geological carbon sinks. However, this contribution is insignificant compared to the current anthropogenic emissions (http://www.epa.gov/climatechange, 2007)."

Plate tectonics: The North and South American plates collided and formed the Isthmus of Panama three million years ago. In the long term, these geographical changes of plate tectonics move and shape oceans change the places of continents. These internal fluctuations of the Earth are the factor so of the climate change. To illustrate in the recent time, the ice age plates are repositioned due to the climate change (IPCC 2001, pp 83-85).

II. The External Actors

Solar variation: The sun is the ultimate source of essentially all heat in the climate system.

By the 11 years solar cycle -longer periods may occur- the Sun's output energy changes by small amounts (0.1 percent). Tens of thousands of years of slow variations in the Earth's orbit led to the changes in the seasonal and latitudinal distribution of solar radiation. These variations affect the climate changes during the last decades, since we observe glacial and interglacial cycles as well (IPCC 2001, pp 83-85).

Orbital variations: Whilst reaching to the Earth's surface the distribution of the sunlight changes based on the slight variations in the Earth's orbit. Therefore we determine that the solar variability interchanges into the orbital variations which are called "*Milankovitch cycles* (http://en.wikipedia.org:80/wiki/Milankovitch_cycles, 2007)". These variations are the driving factors to the glacial and interglacial cycles of the present ice-age.

Gas emissions

The following greenhouse gases are covered in the 2006 Guidelines:

. carbon dioxide (CO^2)
. methane (CH_4)
. nitrous oxide (N^2O)
. hydrofluorocarbons (HFCs)
. perfluorocarbons (PFCs)
. sulphur hexafluoride (SF_6)

. Nitrogen trifluoride (NF^3)

. trifluoromethyl sulphur pentafluoride (SF_5CF^3)

. halogenated others (e.g.,$C_4F_9OC_2H_5$, $CHF^2OCF^2OC^2F_4OCHF^2$, $CHF^2OCF^2OCHF^2$). The halogenated gases are typically emitted in smaller amounts than CO_2, CH_4 and N_2O, but may have long atmospheric lifetimes and strong radiative forcing effects.

The gases listed above have global warming potentials (GWPs) identified by the IPCC. Guidelines 2006. A GWP compares the radiative forcing of a tonne of a greenhouse gas over a given time period (e.g., 100 years) to a tonne of CO_2. These gases are utilized as substitutes to the inventory gases." Referring to the summary report of the Climate change conferences that started on 5th of may 2007; it is stated that since pre-industrial times, increasing emissions of GHG's due to human activities have led to a marked increase in atmospheric GHG concentrations. Between 1970-2004, global emissions of CO^2, CH_4, N^2O, HFCs, PFCs and SF_6, weighted by their global warming potential (GWP), have increased by 70 percent (24 percent between 1990 and 2004), from 28.7 to 49 Gigatones of carbon dioxide equivalents (IPCC 2007)."

What is Greenhouse Effect?

The life would not exist on earth, if it did not receive energy from the sun, which arrives mainly in the form of visible light. About 30 per cent of sunlight is scattered back into space by the outer atmosphere, but the rest reaches the earth's surface, which reflects it in the form of a calmer, more slow-moving type of energy called infrared radiation. "The infrared radiation released by the Earth surface, is absorbed by the water vapor, carbon dioxide the other naturally formed greenhouse gasses (http://en.wikipedia.org/wiki/Greenhouse_gas, 2007). These gases hinder the reflection of the energy to the space. The periods which attracted within each other (radiation, air circulation, vaporization, cloud formation and rain) takes the energy up to the higher levels layer and send directly to the space from there. This slow process is needed for the Earth; otherwise the Earth would be a cold and lifeless place. "This is the sort of heat thrown off by an electric grill before the bars begin to grow red (http://unfccc.int, 2007)."

"Greenhouse gases make up only about 1 per cent of the atmosphere, but they act like a blanket around the earth, or like the glass roof of a greenhouse -- they trap heat and keep the planet some 30 C° warmer than it would be other. Human activities are making the blanket

"thicker" (http://unfccc.int, 2007). A “thicker” blanket of greenhouse gases traps more infrared radiation and raises temperatures wise. But some of the radiations are kept by the natural blanket that is formed by the water vapor, carbon dioxide and methane gas (CH_4). The natural levels of these gases are being supplemented by emissions of carbon dioxide from the burning of coal, oil, and natural gas; by additional methane and nitrous oxide produced by farming activities and changes in land use; and by several long-lived industrial gases that do not occur naturally. Consequently, the temperature of the Earth increases.

The scientists claims that at the last decades, due to the increase of the burning of the fossil fuels, in deforestation, on population, of consumption of public, the spread of carbon dioxide, methane gas, and nitrogen² monoxide into the atmosphere increased. That is the human caused factor of the climate change (http://www.globalgreen.org/programs/climate/index.html, 2007). The basic two elements of the air, oxygen and nitrogen reflect the observable sun radiation and absorb the ultraviolet radiation. The sun radiation reaches the earth surface is absorbed. This energy causes the oscillation of the atoms and their infrared radiation. These infrared radiations can not be absorbed by oxygen and nitrogen. However the CO² and CFC (chlorofluorocarbon) gases in the air, absorbs some of the infrared radiations. Absorption warms up in the atmosphere. Consequently, the earth warms up like a Car parked under the Sun. The result, known as the "enhanced greenhouse effect," is a warming of the earth's surface and lower atmosphere.

Coal, natural gasses and fossil fuels are organic matters which are formed under high pressure and rich of carbon dioxide. After using these fuels, CO² gas comes out and disperses in the atmosphere. Normally this is an element of the carbon cycle. By the increase of the fossil usage, the CO² amount in the atmosphere increases over high levels that the estimated normal level.

Greenhouse gasses Emission of the CO² due to the fossil fuel burning are virtually certain to be the dominant influence on trends in atmospheric CO² concentration during the 21st century.

The IPCC 2001 Climate Change: Impacts, Vulnerability and Adaptation Book assesses with *very high confidence*[1] that the globally averaged net effect of human activities since 1750 has been one

[1] IPCC Description: The following words have been used where appropriate to indicate judgmental estimates of confidence (based upon the collective judgment of the authors using the observational evidence, modeling results, and theory that they have examined): *very high* (95% or greater), *high* (67-95%), *medium* (33-67%), *low* (5-33%),

of warming. The 'best case' computer climate models estimate that the average global temperature will rise by 1.8° C to 4.0° C by the year 2100. A temperature increase of 0.7.4° C occurred last century and for the next two decades, a warming of about 0.2° C per decade is projected should greenhouse gas emissions continue to rise at their current pace and are allowed to double from their pre-industrial level (IPCC 2001, pp. 83-85).

A rise in temperature will be accompanied by changes in climate --in such things as cloud cover, precipitation, wind patterns, and the duration of seasons. In its Fourth Assessment Report, the IPCC projects that heat waves and heavy precipitation events are very likely to increase in frequency in the 21st century. In a world that is crowded and under stress, millions of people depend on weather patterns, such as monsoon rains, to continue as they have in the past. Changes, at a minimum, will be difficult and disruptive (IPCC 2007, pp.4).

"The Global Warming is inevitable and observable. However the Greenhouse Gas emissions have a history of 150 years of industrialization, the increases in air and ocean temperatures, rising sea levels and melting of snow and ice is a crucial threat for the Future of the Earth, due to the current and past greenhouse gas emissions (http://unfccc.int, 2007)."

Sectors and Categories: Greenhouse gas emission is estimated to the main reason to the Climate change in the last fifty years according to the researches. Greenhouse Gas Emission and removal estimates are divided into two and each sector has individual and sub categories.

At the end, the countries will set up an inventory from the sub-category because the IPCC methodologies are based on this method.

A national greenhouse gas emission is measured by summing Emission and remove of the each gas. The ships and aircraft fuel use is reported separately, because they are international transporters and does not only include the country emission contributions (IPCC 2001).

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and *very low* (5% or less). In other instances, a qualitative scale to gauge the level of scientific understanding is used: *well established*, *established-but-incomplete*, *competing explanations*, and *speculative*. The approaches used to assess confidence levels and the level of scientific understanding, and the definitions of these terms Each time these terms are used in the, they are footnoted and in *italics*.

These sectors of the Greenhouse Gas Production are processes, sources and sinks;

. Energy
. Industrial Processes and Product Use (IPPU)
. Agriculture, Forestry and Other Land Use (AFOLU)
. Waste
. Other (e.g., indirect emissions from nitrogen deposition from non-agriculture sources[2])

The highest contribution to carbon dioxide expose to the atmosphere is done by USA. All the values of the Greenhouse gas emissions are demonstrated with *ANNEX 1-Table*. The distributed values all over the world are shown with the *ANNEX 2-Table.*

What are human influences on climate change?

Human beings are closely linked to the environment. They affect the climate at the local, regional and global level. During the industrial age the interaction of the human and relatedly their impact on the environmental has increased a lot.

Referring to the summary report of the climate Change Conferences which has started on the 5th of May 2007, since pro-industrial times the green house gas emissions with 90 percent probability are increasing as an outcome of the human activities (IPCC 2007).

The human activities that affect the concentrations of the greenhouse gas emissions are the burning of fossil fuels; coal, natural gas, petroleum, the expositions of the aerosols, the land use; agriculture, deforestation, and live stock.

Fossil fuels:

[2]Estimates include N2O emissions from deposition of anthropogenic nitrogen (N) from NOx/NH3 wherever deposited and from whatever source (but not allocated to specific sectors). The reason for this is that emission factors for nitrogen deposited are of the same magnitude for agricultural sources as for other nitrogen sources, even when the N is deposited in the ocean.

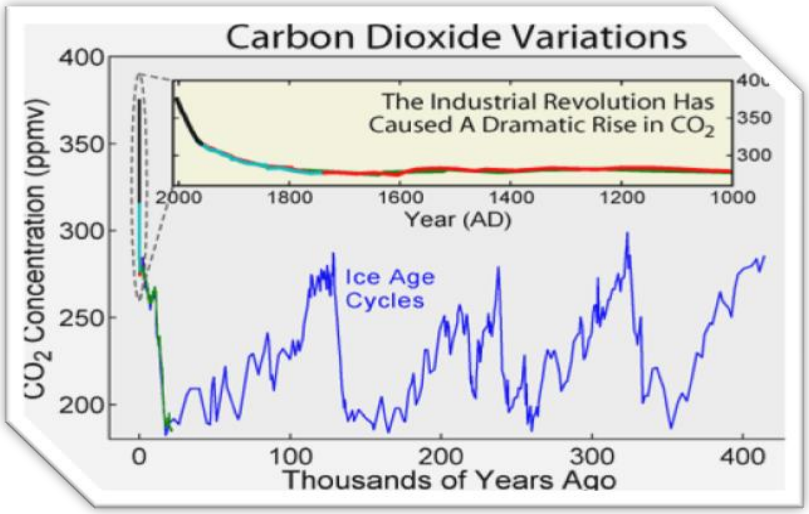

Figure 2: Carbon Dioxide Variations over the last 400.000 years; showing a rise since the Industrial Revolution

Source: Working Group II contribution to the Intergovernmental Panel on Climate Change, 2001. *International Panel on Climate Change (IPCC) Third Assessment Report – Impacts, Vulnerability and Adaptation*, p: 27 New York United States: Cambridge University Press.

Beginning with the industrial revolution, the use of fossil fuel, coal, petroleum, natural gases increased and the concentration of the CO_2 levels enhanced. It is a fact that carbon dioxide levels are substantially higher than any period in the last decades, 800.000 years. Measuring the rising methane concentrations, it is estimated that an increase of 1.4–5.6 °C between 1990 and 2100 (Rohde 2003).

Aerosols: "Anthropogenic aerosols, particularly sulphate aerosols from fossil fuel combustion, are believed to exert a cooling influence. Anthropogenic aerosols (microscopic airborne particles or droplets) in the troposphere, such as those derived from fossil fuel and biomass burning can reflect solar radiation, which leads to a cooling tendency in the climate system (IPCC 2001).

Additionally, the fluctuations in the aerosol level can alter cloud amount and their reflectivity through their effects on climate properties and life styles.

Land Use: Depending on the fossil fuel usage, we can claim that humanity's impact on climate is an outcome of the; land use; irrigation, deforestation, agriculture change the environment.

The evidence dates back to 700BC to 1AD. “The wood was used to build ships and to construct human settlements around Greece and the other Mediterranean countries; these regions were permanently changed by widespread deforestation (IPCC 2007).”In 2007, Jet Propulsion Laboratory, research results states that the average temperature of California Urban Areas is 2C° degrees higher than the rural. The difference is attributed to human development in the urban areas.

Live Stock: The 2006 United Nations Report states that the 18 percent of the Greenhouse Gas emissions is exposed by the live stock. “In addition to CO_2 emissions, livestock produces 65 percent of human-induced nitrous oxide (which has 296 times the global warming potential of CO_2) and 37 percent of human-induced methane (which has 23 times the global warming potential of CO_2) (IPCC 2007).”

2.2 VULNERABILITY OF NATURAL AND HUMAN SYSTEMS

Observational Evidences and Scientific reports indicate that the changes in the climate affected many human species biological and physical systems. The pole ward, and altitudal shifts of plants and animal shrinkage of glaciers, later freezing and earlier break-up of ice on rivers and lakes, emergence of insects, and egg-laying in birds are the examples of the impacts of climate change and human beings has a big impact on it as we have stated below (UNEP 2002).

The different regions in the world and people have been affected by the climate change regarding their vulnerability and adaptability capacity to these environmental problems. All the regions and the human beings have different vulnerability levels; poverty is an important determinant both on the individual and the regional level. The natural systems can be labeled as vulnerable depending on their geographical location and their natural exposition. The vulnerability of the human beings can be assessed regarding their economic wellbeing, gender, tradition, personal and community coping capacity (IPCC 2001).

According to the IPCC Scientific Assessment Report; in the Figure 2 below we would see the impacts of climate change on different regions and species.

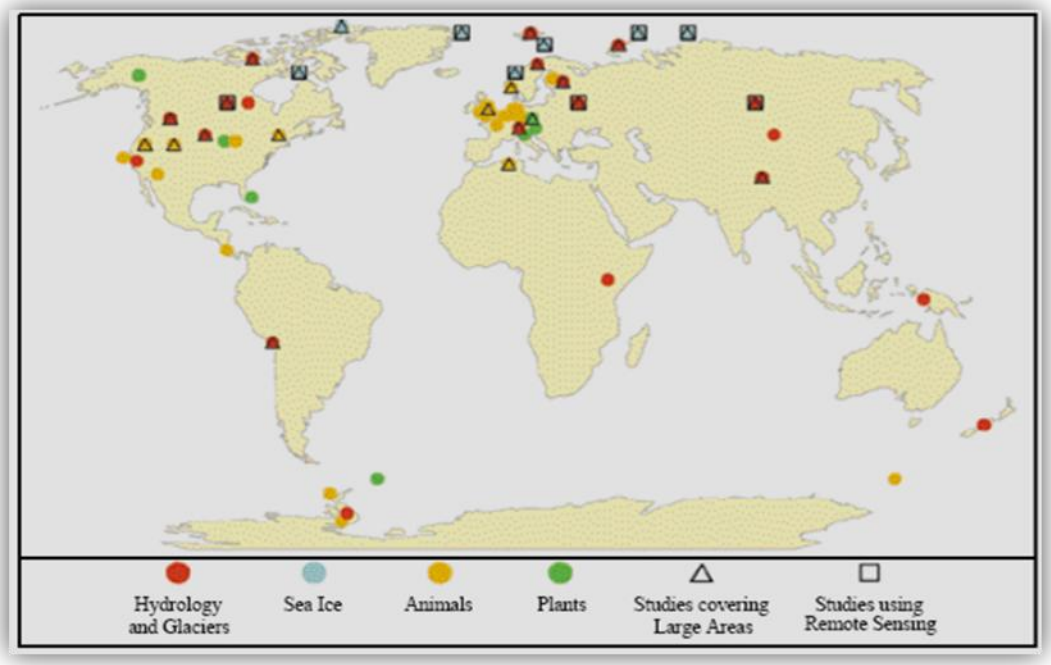

Figure 2.3: Locations At Which Systematic Long-Term Studies Meet Stringent Criteria Documenting Recent Temperature-Related Regional Climate Change Impacts On Physical And Biological Systems. Hydrology, Glacial Retreat, And Sea-Ice Data Represent Decadal to Century trends. Terrestrial and marine ecosystem data represent trends of at least 2 decades.

Source: Working Group II Contribution to the Intergovernmental Panel on Climate Change, 2001. *International Panel on Climate Change (IPCC) Third Assessment Report, Scientific Basis P: 4.* New York, United States: *Cambridge University Press.*

2.2.1 Understanding Vulnerability

Vulnerability is the degree of the adaptive capacity of the human beings and the natural environment to the physical threats as an outcome of the environmental problems Human beings are generally vulnerable to environmental threats but the gap between the poor and rich, the rural and urban, South and North changes the degree of their vulnerability. That fact might undermine the sustainable development in the developing countries. Many environmental problems pose threats to the humans, drought, floods, fire, tsunami, landslides, volcanic eruptions, environment and insect swarms. Human activities causes as explosion, chemical and radioactive contamination, and other technological incidents.

Some people live in the regions that are prone to the environmental threats; too hot, too dry, too cold. Even the places and conditions in the places that are available to live expose to environmental threats and no longer safe or human beings. Some children under age of 5 pose to epidemic diseases since they drink contaminated water The vulnerability of the human beings to the environmental changes has ecological, economic and social threats. When human beings can not cope with the environmental changes, they are seriously affected by the environmental threats.

Table 2.1 Sensitivity, Adaptive Capacity, and Vulnerability

Sensitivity is the degree to which a system is affected, either adversely or beneficially, by climate-related stimuli. Climate-related stimuli encompass all the elements of climate change, including mean climate characteristics, climate variability, and the frequency and magnitude of extremes. The effect may be direct (e.g., a change in crop yield in response to a change in the mean, range, or variability of temperature) or indirect (e.g., damages caused by an increase in the frequency of coastal flooding due to sea-level rise). Adaptive capacity is the ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences. Vulnerability is the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity and adaptive capacity.

Source: United Nations Environmental Program, CLARKE Robin, LAMB Robert, ROEWARD Dilys, 2002. *Global Environmental Outlook 2003*.UK/USA: *Earth Publications.*

2.2.2 Vulnerable Groups

Vulnerability levels of communities are different than each other. The natural and social and economic characteristic so the countries affect their coping capability with the climate change. "Wealth, technology, education, information, skills, infrastructure, access to resources and management capabilities are very important to be able to increase the adaptability (IPCC 2001)." The poverty inequalities, the availability of natural resources have direct and indirect impact on human vulnerability to environmental change. It is very hard to differentiate and estimate the vulnerability on the local regional and global level (IPCC 2001).

Developing countries, particularly the less developed countries are more vulnerable than the others in the world. Poverty is another element that increases vulnerability and disadvantages to the climate change. They have much lower capacity to cope with the problems. The poverty carries the big burden of impact, disasters, conflict, and floods. Urban populations are exposed to high levels of contaminant and particulate pollution in the air. Urban poor live in obscurity, in times of desertification and pollution.

The refugees, migrants and displaced people are lack of resources and social structure of a settled life what makes them vulnerable to environmental change. The women and children are also the vulnerable groups under the communities. Indigenous Communities are considered to be adaptable to environmental changes since their natural life based on the changes of environmental conditions. They move according to the climate conditions or the natural events as drought, floods. However by the increasing values of climate change it is certain that the natural environment is effected and the resources are scarce which is also makes the indigenous communities irremediable (UNEP 2002). To illustrate in Western Shoshone in United States of America, the government has tried nuclear weapons and the soil has been degraded. The indigenous people living in this regions in reservation are vulnerable to the environmental changes; drought, death of animal species and plants, which were resulted from this nuclear pollution.

In conclusion, these communities are considered to be more vulnerable to the climate related events such as storms, floods, droughts because of the inadequacies in social support services and systems such as water management infrastructure.

Table 2.2 - Culture and Climate Change

The culture of the indigenous peoples of the Mackenzie basin in northwest Canada is threatened by climate change. Over the past 35 years, temperatures have increased rapidly by about 1ºC a decade, with significant results such as melting permafrost, increasing numbers of landslips and forest fires, and decreasing groundwater levels. More frequent forest fires will reduce traditionally important terrestrial, aquatic and bird species. Because of a decrease in water availability, muskrats have already disappeared from the Peace Athabasca delta. Changes such as these in the ecosystem and resource base jeopardize the sustainability of traditional lifestyles that are dependent on wildlife harvested by hunting, fishing and trapping as a prime source of food, income and traditional clothing.

Source: United Nations Environmental Program, CLARKE Robin, LAMB Robert, ROEWARD Dilys, 2002. *Global Environmental Outlook 2003*. United Kingdom and United States: *Earth Scan Publications.*

2.2.3 Vulnerable Places

The environmental threats are not distributed all around the world. "Population density and distribution affect the human impact on these regions which also increase the possibility of the threat some location are more vulnerable to threat (IPCC 2001)."

Naturally some places are more vulnerable to the environmental threat flood rains, riverbanks, small islands, coastal areas. The mountains, locations near sources of pollution have been already settled. These places are vulnerable to hazards, landslides, flooding, volcanic eruption, toxic chemicals (UNEP, 2002).

It is expected that the people would prefer to settle mostly the places which are not under threat of environmental threat. On the contrary, they choose to live and work in areas prone to the environmental threats or hazards.

Additionally, some groups are vulnerable because the scarcity of the resources as land, fresh water and forests can cause conflicts. The Tigris and Euphrates rivers between Turkey and Syria cause severe conflicts regarding the distribution of water. Tigris and Euphrates River comes from Turkey to Syria and it is always used for political interests between these two countries.

2.2.4 How People are Affected

Climate Change affects health, habitat and infrastructure, economy, society and culture. The basic fields that are affected the Agriculture and the Ecosystems, Terrestrial and Freshwater Ecosystems, Coastal and Marine Ecosystems, human Settlements, energy and industry which also has a big impact for the survival of the human beings.

ANNEX 3; shows the expected impacts of the climate change

I. Human Health: In the last decade human health mostly depends on the environmental changes. The impacts of short-term weather events on human health have been further elucidated since the SAR, particularly in relation to periods of thermal stress, the modulation of air pollution impacts, the impacts of storms and floods, and the influences of seasonal and inter annual climatic variability on infectious diseases. There has been an increased understanding of the determinant of population vulnerability to adverse health impacts and the possibilities for adaptive responses (IPCC 2001, p.12).

According to the World Health Organization Report on Health (WHO1997): Impoverished populations living in rural and urban areas are at greater risk from degraded environmental conditions. Worsening environmental conditions contribute to the poorer health and poorer quality of life. Air pollution contributes to the increase of the number of diseases 7 percent of all deaths and diseases result from the water sanitation problems. (UNEP, UNDP, WB 1998)

In short term, diseases due to environmental changes is likely to have impact on developing countries than on developed ones. Dirty water, poor sanitation, using solid fuels has bad impacts on the human health.

"In developing countries, the use of solid fuel as a primary energy supply dominates the exposure of non-smokers to particle pollution, especially among women and children in rural and slum environments. In the past decade, smoke haze from forest fires has also become an important source of respiratory disease US$ 1.6 billion. Some of these people will be disabled over the longer-term, suggesting that the global impacts of marine pollution are comparable to those of diphtheria and leprosy. Eating sewage-contaminated shellfish causes an estimated 2.5 million cases of infectious hepatitis a year, of whom some 25 000 die and another 25 000 suffer long-term disability resulting from liver damage. The annual global burden on human health is estimated to equal some 3.2 million — comparable to the worldwide impact of all upper respiratory infections and intestinal worm diseases — and to cost world society some US$10 billion annually (http://gesamp.net/, 2007)".

Most of the developing countries do not have the opportunity to deal with these health problems. These regions are situated water-borne and vector-borne diseases. The impact of climate change on health will be the greatest in vulnerable lower income populations, predominantly within tropical and subtropical countries.

II. Agriculture and Food Security: The researches on the impacts of climate change to the human and natural systems states the agricultural and food security, farm incomes and prices problem might occur as an outcome of the adverse effects of the heat and drought. The CO^2 concentrations can stipulate the crop growth and yield.

Second IPCC Assessment Report on 1995 estimated that the yields of some crops in tropical locations would decrease with even minimal increases in temperature due to the fact that they are close to their maximum temperature tolerance and dry land agriculture predominates (IPCC, OMM UNEP WMO ONUE, 1995).

"Most studies indicate the global mean annual temperature increases of a few degrees or greater would prompt food prices to increase due to a slowing in the expansion of global food supply relative to growth in global food demand."(*Established but incomplete*). According to the researches the climate change would lower incomes of the vulnerable populations and increase

the absolute number of people at risk hunger. The climate change mainly because of the extreme shifts will threaten the food security in Africa (UNEP 2002).

III. Terrestrial and Fresh Water Ecosystems: Climate Change will lead to mass migrations of the freshwater fish species which is a loss of habitat for cool and cool water fishes and gain in habitat for warm water fishes. *(High confidence).* Many species are at high risk of extinction, "critically endangered" and the majority of the other will be rarer depending on the impact of the synergy between climate change rendering portions and current habitat inappropriateness for many species (IPCC 2001, P.4).

There should be some mitigation policies set and take precautions to be able to protect and prevent the possible anxieties relating to the results of the researches.

Focusing to the terrestrial problem stated in Second Assessment Reports, the timber market studies would be a good example. Timber market studies include adaptations through land and product management. There are no forestry projects that increase the capture and storage of the carbon (IPCC, OMM, UNEP, WMO, PNUE). The researches suppose a decrease in the global timber supply and increase of the prices. Consumers will lose or gain depending on the regional changes in timber productivity.

IV. Coastal and Marine Systems: Climate change has large-scale impacts on the sea surface- meaning global sea levels- decreases in ice-cover, change in salinity, wave conditions and ocean circulation. Observing these changes climate ocean regimes have been changed each year, but it decreased the fish population and the fish dependent societies (UNEP 2002).

Many coastal areas are influenced by the storms, hurricanes, storm surge floods and shore erosion which also lead to the sea-level rise.

V. Human Settlements, Energy and Industry: Human settlements might be affected in three different ways; Populations will directly be affected through the extreme weather conditions, with health problems and migration. The direct impact on the human settlements can be flooding, landslides or sea-level rise.

The economic sectors that support the settlements will change in resource productivity and specific industries. Some aspect of physical infrastructure, building, urban services, and specific industries may be directly affected (UNEP 2002). Settlements which do not have much economic opportunities and based on agriculture forestry and fisheries will be more vulnerable than the diversified settlement.

"Industrial, transportation and commercial infrastructure is vulnerable to the same hazards as settlement infrastructure" (UNEP 2002). Depending on the increase in space-cooling and decrease in space-heating the energy demand is expected to increase. So that can result with the changes in the productivity of some companies comparing to the others.

When the settlement policies change the placement of the industrial sectors will also change, so that will affect the productivity capabilities and measurement of the companies.

VI. Economic Losses: Human beings are dependent on the ecosystems economically through the good and services; marketed good and services for food/forestry and production water usage (http://wwf.org, 2007).

Total losses in the developing countries would be much more than the developing countries however developing countries would be affected economically in large scales. The potential economic losses of the countries from non-marketed goods would me much more higher than the marketed goods since the human beings are more vulnerable to the non-marketed goods.

2.3 MITIGATION POLICIES

2.3.1 Targeting the Human Beings and Natural Systems

I. Assessing and Measuring Vulnerability: Vulnerability assessment measures the seriousness of the potential threats and the level of these threats in the human beings and the ecosystems. It is essential to increase the capacity of the governments to adapt to the future environmental threats. In the long term planning the governments, and should foster institutional responsiveness to increasing vulnerability (IPCC 2001).

Assessing the vulnerability; the location of vulnerable populations, their wellbeing and levels of vulnerability, the geographical scale and high income countries and their sub groups which are also considered to be vulnerable, the risks to environmental capacity to provide goods and services, the preventive steps that can be taken to improve environmental conditions and reeducate the impacts of the human impacts on the environment. In addition it should be kept in mind that the human vulnerability changes over time. In the broader sense the sustainable development make the vulnerability assessment necessary that it will both facilitate to cope with the possible environmental threats and decrease the human and economic drawbacks of it in the future.

II. Reducing Vulnerability: With the economic aspect of the globalization, the economic gap between the people increased. “The poor got poorer and the rich got richer” Si the vulnerability gap is gradually increasing as well. This is a prior issue that will target the vulnerable which will set strategies to reduce poverty as prior element of sustainable development.

III. Reducing Exposure to Threats: Reducing the risks, that impacts of the climate on human beings and the natural systems by setting strategies to reduce the human exposure to environmental threats by reinforcing infrastructure. Better environmental management improved policies to protect environment and ecosystems. Restoration is the cost-effective solution that structuring a new capacity which also may move threat to other places

In the broader sense the sustainable development make the vulnerability assessment necessary that it will both facilitate to cope with the possible environmental threats and decrease the human and economic drawbacks of it in the future.

2.3.2 Targeting Governmental Policies

I. Reducing Greenhouse Gas Emissions: It is essential to set up policies to limit the green house emissions to cope with the climate change over the coming decades that could offset the projected growth of global emissions or reduce emissions below current levels, taking into account financial and cost benefits.

Table 2.3 - Technological Mitigation Policies in Sectors

Sector	Key mitigation technologies and practices currently commercially available	Key mitigation technologies and practices projected to be commercialized before 2030
Energy Supply	Improved supply and distribution efficiency; fuel switching from coal to gas; nuclear power; renewable heat and power (hydropower, solar, wind, geothermal and bioenergy); combined heat and power; early applications of CCS (e.g. storage of removed CO_2 from natural gas)	Carbon Capture and Storage (CCS) for gas, biomass and coal-fired electricity generating facilities; advanced nuclear power; advanced renewable energy, including tidal and waves energy, concentrating solar, and solar PV.
Transport	More fuel efficient vehicles; hybrid vehicles; cleaner diesel vehicles; biofuels; modal shifts from road transport to rail and public transport systems; non-motorized transport (cycling, walking); land-use and transport planning	Second generation biofuels; higher efficiency aircraft; advanced electric and hybrid vehicles with more powerful and reliable batteries
Buildings	Efficient lighting and daylighting; more efficient electrical appliances and heating and cooling devices; improved cook stoves, improved insulation; passive and active solar design for heating and cooling; alternative refrigeration fluids, recovery and recycle of fluorinated gases	Integrated design of commercial buildings including technologies, such as intelligent meters that provide feedback and control; solar PV integrated in buildings
Industry	More efficient end-use electrical equipment; heat and power recovery; material recycling and substitution; control of non-CO_2 gas emissions; and a wide array of process-specific technologies	Advanced energy efficiency; CCS for cement, ammonia, and iron manufacture; inert electrodes for aluminum manufacture
Agriculture	Improved crop and grazing land management to increase soil carbon storage; restoration of cultivated peaty soils; improved rice cultivation techniques and livestock and manure management	Improvements of crop yields

	to reduce CH_4 emissions; improved energy efficiency	
Forestry/forests	Afforestation; reforestation; forest management; reduced deforestation; harvested wood product management; use of forestry products for bioenergy to replace fossil fuel use	Tree species improvement to increase biomass productivity and carbon sequestration. Improved remote sensing technologies for analysis of vegetation/ soil carbon sequestration
Waste	Landfill methane recovery; waste incineration with energy recovery; composting of organic waste; controlled waste water treatment; recycling	Biocovers and biofilters to optimize CH_4 oxidation

Source: Fourth Assessment Report, 2007: Wikipedia

www.en.wikipedia.org/wiki/IPCC_Fourth_Assessment_Report, **[internet] Publisher IPCC.**

(cited May 13, 2007)

There was a high agreement and much evidence that by 2050 stabilization of greenhouse gasses could be achieved.

II. Reinforcing Coping Capacity: The progress and improvement in the coping capacity "The ability to cope with threats includes the ability to absorb impacts by guarding against or adapting to them.
III. Expanding Forests: Trees and other green plants, using only sunlight for energy, take carbon dioxide out of the atmosphere, releasing oxygen and storing carbon in a safe and useful way. A tree has the capacity to release 1,7kg oxygen and absorb 2,3kg Carbon dioxide in one hour. "Forests, which provide all kinds of undervalued benefits for mankind, can be major allies in the battle against climate change and global warming if only humans start planting them and stop cutting them down." Changing agricultural methods will also be effective to handle the agriculture and food security problem.
IV. Changing Lifestyles: People on mostly traditions and fashions, mostly they do not behave considering the human health or their impact on environment. Traditions and habits could both have drawbacks and positive impacts on the environmental conditions.
V. Early Warning: To strengthen the early warning mechanism is a very important response mechanism to climate change in order to decrease the vulnerability of the human beings.

VI. Adaptation and Planning: Adaptation both refers to "physical adjustments and technical measures; changing or influencing the behavior, economic activities and social organization. (IPCC 2007)" to be more compatible with existing or emerging conditions to threat.

Environmental impacts assessment is the significant source of the implementation policies.

2.4 THE HARMONY OF SCIENCE AND LAW- ENVIRONMENTAL IMPACT ASSESSMENT

The governments need to assess the impacts of the climate change and set up mitigation and adaptation policies due to the environmental threats to be able to increase the coping capacity of the human beings.

The significance of the impacts of the climate change on human beings and the nature, as the increase in threats and problems with Human Health, Agriculture, Food Security, Terrestrial and Freshwater Ecosystem, Coastal Zones and Marine Ecosystems, Human Settlements Energy and Industry and the Economic Losses demonstrates the importance of the mitigation and adaptation policies to reduce vulnerability, to reduce, exposure to threat, increasing coping capacity, adapting to threat by processing science and policy interaction.

The law making is very important that it will target the mitigation policies and adaptation policies since it will utilize the sanctions over the countries to enhance the effectiveness of the implementation and facilitation to be able to reach the goal.

From the perspective of international environmental law making, two expectations about the scientific consensus need to be critically addressed. First, the science on climate change's causes, its effects, and approaches to successful intervention will continue to converge. Second science will drive an effective international legal response. The use of hierarchies of law by which to judge various options to suggest that the law has a role in objectifying judgments and

values (Di Mento 2003, p.34). In addition it demonstrates that there is a link between law and ecology in <<"Environmental Impact Assessment">>[3]

Environmental impact assessment is essential to be successful in coping with climate change and reducing the impacts of it. It merges environmental scientific researches and international environmental law which will drive the governments to set up international legal responses and establish mitigation and adaptation policies. Environmental law engages the developer of a proponent of a project or policy in the decision making process. The laws and regulations have major impact on greenhouse gas emissions because they affect the governments, business behavior; multinational corporations, national enterprises and media, and public habits; people.

Consequently to be able to reach sustainable development in reducing the impacts of the climate change, the environmental ecology; scientific assessments, international law and policy making has to develop in harmony.

[3] A process to identify the likely consequences for the biological, geological and physical human health and welfare of implementing particular activities, policy and plans, particularly arising from the participation of those likely to be affected, and for conveying this information to those responsible for sanctioning the proposal at a stage when it can materially affect their decision, or their ongoing regulation: Based on the definition given by R.E. Munn(ed.) Environmental impact Assessment; Principles and Procedures (New York, John Willey, 1979)

3. THE INTERGOVERNMENTAL RESPONSES

3.1 International Environmental Law

"Environmental law is a body of law, which is a system of complex and interlocking statues, common law, treaties, conventions, regulations and policies which seek to protect the natural environment which may be affected, or endangered by human activities (http://legal-definitions.info/environmental-law)." Environmental law aims to regulate and influence behaviors in order to promote environmental quality. The international community concluded that the world environment would be sacrificed in the absence of international legal instruments.

There are different types of environmental legal instruments based on the subject that it relates to. Some regulate the level and the quantity of the human activities that has impacts on environment, and the others have precaution principles to be able to prevent a possible human impact on the environment. Environmental law has roots to 1960s in the main industrial economies during the last century environmental law has gained critical importance means of promoting sustainable development "sustainability. Environmental reforms are organized referring to the on precautionary principle, public participation, environmental justice, and the polluter pays principle under sustainable development principles (Richardson & Wood 2006, p.25).

The improvement of international environmental law making has three stages (Di Mento 2003). The first stage is the acts that are taken to set up principles and framework for further action of the members of the international community. They are generally considered as monitoring, research and exchange of information. Second stage is focused on the environmental impact assessment; which foresaw the mission reduction and technology changes, and, the governmental implementation and compliance. Third stage has started in 90's which this evolution reflected upon the cooperation of the members states since the century has crucial alarms for the environment. Richardson & Wood 2006, p.25).

These stages have been evaluated by the multinational negotiations during the centuries and produced the environmental legal instruments through the decades. There is a growing

expectation that multinational negotiations should be transparent, accessible, responsible and equitable to the public. By time, the consensus is achieved and a new treaty or agreement came into force. How does this process work?

A complete study of multilateral environmental negotiation requires and examination of the precipitants to the negotiations, the pre-negotiation process, the actual process and procedures that diplomats use to negotiate the text of a treaty, and the post-agreement negotiation phase. The multilateral environmental agreements (MEA) set up autonomous institutional agreements which they lead to the development of the legal instruments. They include meeting of parties, conferences of parties, and also a secretariat a, subsidiary bodies that are specialized in the functions or goals (Chasek 2001).

3.2 MULTINATIONAL NEGOTIATIONS

Multilateral environmental negotiations contain six phases: precipitants, issue definition, statement of initial positions; drafting/formulation building, final bargaining/details, and ratification/implementation. The first two phases represent the pre-negotiation period, the next phases compromise the actual negotiations, and the final phase is the post-agreement negotiation process.

I. "Agenda Setting: The international community takes the environmental problem into the agenda of the negotiations (Holder 2006, p.41)."
II. "Issue Definition; the technical experts, government delegates and scientists work together to define the scope and the magnitude and establish a common working group to persists the sustainable development (Di Mento 2006, p.14)."
III. Statement of positions by the participants and the signatory countries; In this phase government's state their initial positions on the environmental problem at hand, its causes, effects, and possible solutions, and start to form initial conditions
IV. Formula Setting Draft; this is the phase where delegates begin to forge consensus on the nature and provisions of the basic agreement.
V. Negotiations; this is where the governments have to work out the final, often contentious details of the agreement.

VI. Ratification implementation; this phase takes place after the agreement has been adopted. During this phase, the agreement usually ratified, enters into force, and is, it is hoped, implemented by the parties (www.un.org, 2007)."

The turning points are between these negotiations stages that improve and shape the phases of negotiation. These can be influenced by the different events, and differentiate or characterized. They cannot exist and progress without the other, their sustainability complete and promotes each other.

The first turning point is motivated by the external events, however the second turning point influenced by both the external and internal events as a phase of call for calls, comment and stalemate (Holder 2006, p.67). The third and fourth turning points tend to be motivated within the process. Media and NGO affect the process and the decision by their positions. The final point is influenced by the time-deadline. In this point NGO and Media support is mostly strong and adoption of the agreement (Chasek 2001).

This model demonstrates, by analyzing the negotiations in terms of phases and turning points. This model of negotiation enables to analyze and implies the strategies of multinational negotiation to more regional ones, to negotiations on different environmental issues, and to negotiations both within and outside the UN system.

The main important legal instruments of environmental law are "Customary law and Soft Law". These do not have strict borderlines that differentiate one from the other. The point which a principle achieves the Customary Law Status is not defined (www.law.cornell.edu/topics/international.html 2007)

"The Stockholm declaration's principle 21 and principle 2 of the Rio declaration regarding the state sovereignty over all of the nations natural resources and the responsibility cause environmental degradation the precautionary principle, the principle of prevention, the principle of sustainable development, the polluter pays principle, the principle of good neighborliness, the international cooperation, and the principles of common but differentiated diplomacy (UNEP 1972)."

A few of these principles are considered Soft law which is not binding until they turn into hard law by achieving the legal instruments; as binding agreements and treaties. Some consider customary law as the main source of International Law however there are a few internal environmental customary laws. They are not mostly international legally binding. International law does not forbid a developing country for exploiting an international watercourse. "Customary law plays a limited role in state practice on environmental issues. As norms of environmental protection continue to make their way into international relations, however custom will play a somewhat more significant role (Di Mento 2006)."

Additionally international juridical decisions taken are crucial for the development of the international environmental decision making. However the procedure adoption of the international law depend on the legal system of the country which will also determine the time being, and the structure that the international law will come into force to the domestic law. In a monist unified legal order no separate implementing measure is needed to adopt the law, it is ipso facto entitled and replace the existing law. In a dualist system, international law is discrete from the domestic law. The treaty has no legal impact on the domestic legislation of law. In dualist states the national legislatures needs a defined period to harmonize the international law into domestic law.

To illustrate in the European Community the judicial decisions and all the other international agreements are binding over the member states if the European commission regards and ratifies them. But in the dualist states, the adoption of these instruments to the national law is harder and takes time. During this period the law is harmonized and merged into the domestic law. After the adaptation the second stage is the compliance and Implementation. The enforced principles and Instruments of Control Influence/changes the national position and implementation. Is it effective to be able to protect the World Environment?

3.3 COMPLIANCE AND IMPLEMENTATION ENFORCEMENT

I. Jurisdiction is a wide concept that has many meanings and varying degrees and reach of legal institutions. Environmental law has many international jurisdictional cases concerning environment. WTO is one of these challenges that the environment faces since the dispute settlement procedure for conflict resolution between environmental protection and free trade objectives (Holder 2006, p.46).

II. Norms socially enforced and they have the sanctioning principality that distinguishes norms from other cultural products or social constructions. In highly organized societies, the norms or laws have invoking procedures and judgments through legal institutions to be able to enforce them. These norms generally relate to individual violations of mores or to the adjustment of proprietary relationships.

III. Enforceable Norms there are absolutist terms in international environmental law to prevent the individual endangering to the environment. The ecosystem embraces the principles of sustainability after the 1992 Convention. The norms are shared internationally within the negotiations and binding treaty includes the norms artificiated (Di Mento 2003, P: 75). International environment involve such complex analyses that there is no clear predictor of whether an action violates a norm. It is composed of 7 elements "(a) geographic, hydrographic, hydrological, ecological, and other factor of natural character"

IV. Impacts on Sovereignty the effectiveness of the law is an outcome of its solid body which does not allow any optional voluntary compliance to its provisions. On the "Article 2(1) d of the Vienna Convention, "a unilateral statement, however phrased or named, made by a state when signing, ratifying, accepting, approving or acceding to a treaty, whereby it purports to exclude or to modify the legal effect of certain provisions of the treaty in their application to that state (http://www.worldtradelaw.net/misc/viennaconvention.pdf, 1969)." On that point after the ratification procedure the sovereignty would be limited on the restrictive levels of the international legal instrument.

Sovereignty is clearly compromised under some instruments of international environmental protection (Di Mento 2003). In World organizations, The WTO Free Trade rules challenges the environmental law still persists. The policy makers, politicians, and business people generally accept the assumption that free trade promotes environmental protection. The economic interests

have always been the main focus of the countries which has been prioritized by the all members of the international community. At the last five-ten years it is recognized that the environmental protection has a vital importance.

Considering the concepts of sanctions and enforcement; European Union is one of the best implementers. The European Court of Justice implies sanctions to the member states unless they do not comply with the principles of the existing law. European Union as a regional organization not just for its member states but also for its candidate countries and the countries within the scope of the neighboring policy have a different policy since they do not legally bound to European Union (ec.europa.eu/community_law/eulaw/index_en.htm, 2007). If these countries do not comply with the international agreements or the required development levels, European Union uses the Carrot and Stick Policy in terms of promoting the sustainable development and democracy to these countries.

Additionally the countries have different policies which could be either sanctions or enforcement with analytical optional alternative policies. Many international negotiations conclude that there are more effective means of compliance than sanctions and enforcement. Agenda 21 states that sovereign states should develop policy options to fulfill the implementation of the environmental protection (Di Mento 2003, p.81).

3.4 THE LAW OF SUSTAINABLE DEVELOPMENT

The sustainable development of the international environmental law will bring the sustainable development in the environmental response mechanisms, “the law of sustainable development”. The development of the structure of international environmental law making; the procedures of the negotiations, the adoption and response mechanisms to the critical issues, also brings the sustainable development of the policy making of the parties of the international environmental law to set up mitigations policies to slow down the climate change and increase the coping capacity of the human beings**.**

4. SUSTAINABLE DEVELOPMENT IN INTERNATIONAL LAW MAKING

United Nations Framework Convention directly works with the intergovernmental Panel on Climate Change. IPCC with the assessment reports influence the decision making and advancing into knowledge.

In 1990 the First Assessment Report has been issued with the Negotiating committee. It included the important environmental assessments and policy options on the way reaching to the Framework convention on Climate Change.

"The work ethics, the culture and principles of the IPCC has been evaluated in 16 years. The analytical capacity and the creative research of the IPCC create a good capacity worldwide to meet the challenges ahead (WMO&UNEP 2004)." The working group is a worldwide group and they have the greatest capacity to meet worldwide challenges.

The forth assessment report includes the cross-cutting themes; a comprehensive treatment of water, sustainable development, technology, integration of mitigation and adaptation (WMO&UNEP 2004)."

4.1 FIRST STAGE 70'S-80'S

In 1979 First World climate change has been organized by the World Meteorological Organization. The main concern of the Conference was "The man's activities influence on earth may cause regional and global changes of climate (Benedick 1997)." Future estimations were the course of global climate change in planning for future development of society (www.unfccc.int, 2007).

In the 80's Greenhouse Gasses became the main focus of the very small community; World Meteorological Organization, International Council on Scientific Unions. The world cannot predict positive scenarios due to the significant warming of the climate change.

In 1985 WMO, UNEP and ICSU organized a conference with the title of "The Assessment of the Role of Carbon Dioxide of other Greenhouse Gases in Climate Variations and Associated Impacts." In the conference "as a result of the increasing greenhouse gases it is now believed that in the first half of the next century (21st century) a rise of global mean temperature could occur which is greater than in any man's history." statement was concluded. It is also added that permanent researches on climate is needed that the old researchers cannot be reliable; sea level rises, warming appears to be inevitable and the future levels of the warming would depend on the policies on greenhouse gas emissions.

Moreover in order to reach the periodic assessments it was essential to create a body to put forward scientific knowledge on climate change and its implications. The Advisory Group on Greenhouse Gasses (AGGG) was set up by WMO, UNEP and ICSU in 2004.

In 1987 the 10th conference was organized by the WMO with the objective of setting up an internationally balanced and coordinated scientific assessment group which would facilitate to understand the impact of Greenhouse Gas emissions to Earth and to the social-economic conditions.

WMO Executive Council and Secretary General of WMO, in coordination with the Executive Director of the UNEP decided to set up an Ad-hoc environmental mechanism to provide scientific assessments of climate change (http://biopact.com 2007). Executive Director of UNEP and Secretary General of the WMO agreed the assessment should be channeled in two phases; providing scientific confirmation and formulation of realistic mitigation and adaptation policies at the national and global level (Richardson, Wood, 2006).

In 1988 the Arctic Ozone hole has been the main focus of the negotiations since manmade chemicals increased this threat concern over acid rain forest destruction in Europe and the experiences that they had increased the awareness and the sensitivity of the public. They have succeeded in it.

In 1988 Toronto Conference on the changing atmosphere implications for global security was sponsored by the WMO, UNEP, and Canadian Governments. Its main focus was reducing the Greenhouse Gasses and Improving the Energy Efficiency (Benedick 1997, p.5). Following

several important conferences was organized by seven big nations-G7- leading several important conferences on climate change and ozone layer. WMO and UNEP decided to create the Intergovernmental Panel on Climate change depending on the development goals to set up and develop scientific assessment and form efficient mitigation and adaptation policies. By the support of NGO's it is decide to work with the objective independent scientist for the future of the world.

4.1.1 The Establishment of the IPCC

As its 40 the Session WMO Executive Council decided to establish the IPCC. The UNEP Governing council prioritized. It was suggested that the Panel should consider the need for:

(a) Identification of uncertainties and gaps in our present knowledge with regard to climate changes and its potential impacts, and preparation of a plan of action over the short- term in filling these gaps;

(b) Identification of information needed to evaluate policy implications of climate change and response strategies;

(c) Review of current and planned national/international policies related to the greenhouse gas issue;

(d) Scientific and environmental assessments of all aspects of the greenhouse gas issue and the transfer of these assessments and other relevant information to governments and intergovernmental organizations to be taken into account in their policies on social and economic development and environmental programs (WMO, UNEP 2004).

WMO and UNEP set up the IPCC Secretariat at WMO headquarters in Geneva. In November 1988 the IPCC held its first Plenary Session the Panel agreed to establish three working groups that would prepare assessment reports on:

- Available scientific information on climate change,
- Environmental and socio-economic impacts of climate change, and
- Formulation of response strategies (UNEP, WMO 2003).

The United Nations General Assembly (UNGA): UNGA set the need for international cooperation on climate change with a view to adopt the effective policies to climate change (Richardson & Wood 2006, p.71).

In 1988 the 43rd UNGA resolution on the "Protection of the global climate for present and future generations of mankind" requested a comprehensive description to

(a) The state of knowledge of the science of climate and climatic change;

(b) Programmes and studies on the social and economic impact of climate change, including global warming;

(c) Possible response strategies to delay, limit or mitigate the impact of adverse climate change;

(d) The identification and possible strengthening of relevant existing international legal instruments having a bearing on climate;

(e) Elements for inclusion in a possible future international convention on climate"

In 1989 the 44th and 45th Sessions of UNGA working with IPCC convened the United Nations Conference on Environment and Development (UNCED) in June 1992. Climate change was a top priority at this high-level forum (Di Mento 2003, p.54). Some international and regional organizations became aware of the significant threat of climate change and discussed climate change. The UN General Assembly welcomed the decision by UNEP and WMO to start work on a climate treaty.

In 1990 Un General Assembly established the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change (Benedick 1997).

As a response to the requests on 30th of August 1990 IPCC prepared First Assessment report. The Working group first worked on the scientific assessment with various topics modeling observed climatic variations, radiative forcing, and greenhouse gasses. The Working Group second assessed the impacts of the climate change on agriculture forestry, natural terrestrial ecosystems, hydrology and water resources, human settlements, oceans and coastal areas. The Working Group third worked on the response strategies to define mitigate and adaptive responses and the impacts of energy, industry, forestry, human activities and coastal zone management (Holder 2006).

The resource use and management subgroup focused on natural resources of common interest; food, water, land and biological resources.

The summary for policy makers include flexible and progressive approach to compromising shorter term mitigation and adaptation measures and proposals for more intensive action over the long-term. The group developed positive impacts to set up a framework convention. Moreover they proposed the full contribution to the IPCC activities to the developing countries.

To establish IPCC was to be able to keep update d all the information regarding the climate change.

4.2 SECOND STAGE 90'S

4.2.1 First IPCC Report -1990

As a response to the requests on 30th of August 1990 IPCC Prepared First Assessment report.

The Working Group First; worked on the scientific aspects of climate change and various topics modeling observed climatic variations, radiative forcing, and greenhouse gasses.

The Working Group Second; evaluated the environmental and socio-economic impacts of the climate change on agriculture forestry, natural terrestrial ecosystems, hydrology and water resources, human settlements, oceans and coastal areas.

The Working Group Third; worked on the realistic response strategies to define mitigate and adaptive responses and the impacts of energy, industry, forestry, human activities and coastal zone management (UNEP & WMO 2006).

The resource use and management subgroup focused on natural resources of common interest; food, water, land and biological resources.

The summary for policy makers include flexible and progressive approach to compromising shorter term mitigation and adaptation measures and proposals for more intensive action over the long-term.[4]

The group developed positive impacts to set up a framework convention. Moreover they proposed the full contribution to the IPCC activities to the developing countries.

4.2.2 1992 IPCC Supplementary Reports

The purpose of establishing IPCC was to keep updated all the information referring the climate change.

"IPCC issued supplementary reports annually.

•assessment of national net greenhouse gas emissions, a task, which eventually became the national greenhouse gas inventories program,

•predictions of regional distributions of climate change and associated impact studies,

• energy and industry related issues,

• agriculture and forestry related issues,

• vulnerability to sea level rise, and

•Emissions scenarios, which resulted in the six so-called IS92 scenarios (Di Mento 2003)."

4.2.3 1992 United Nations Conference on Environment and Development (UNCED)

The UNCED was a unique conference that was held in Rio de Janeiro, Brazil from 3rd to 14th of June 1992. Its goal was to conclude and "<<Earth Summit>>

[4] DI MENTO, Joseph F. C. *The Global Environment And International Law*, the University of Texas Press, printed in United States of America, 2003

(http://www.un.org/geninfo/bp/enviro.html 2007)" and to begin the "<<New Ecologic Order>> (http://www.un.org/geninfo/bp/enviro.html 2007)".

176 countries and 30.000 Participants, 103 Head of States of Governments, NGO's which had the consultative status attended the conference which began with the title "World is under the threat of the environmental problems which is impossible to ignore and this reality lead to the global security" in the opening session (UNEP 2007).

What we address with the New Ecologic Order Goal,

- The Scarcity of water and its future
- New reliance of the public transportation to be able to reduce the vehicle greenhouse gas emission
- Health problems results from the air pollution.
- Alternative resources of energy to be able to reduce the fossil fuels which is a direct effect to climate change.
- Systematic scrutiny of patterns of production, the production of the toxic components, lead in gasoline, poisonous waste (WMO, UNEP 2004).

One of the important decisions including the priority of the human rights law was the agreement on "not to carry out any activities on the lands of indigenous people that would create environmental degradation or that would be culturally appropriate (WMO, UNEP 2004)."

"During the UNCED preparatory process the governments and the international organizations conducted their positions to increase the effectiveness of the existing legal instruments related to the environment and development. They reviewed the multinational negotiation processes and recommendations for the future practices (Holder 2004)." The composition and the role of the governments and international organizations were enhanced in the negotiating process, "the increased participation of the developing countries has altered the focus and the substance of multilateral environmental negotiations. The solid result was environmental focus on the other subjects related to the sustainable development issues; human settlement, poverty, consumption rather than focusing solely on environment (WMO, UNEP 2004).

“At the Earth summit the Convention on Biological Diversity was opened to signature (Chasek 2001).” The sustainable development concerned absorbed in the spirit of the UNCED which would also affect the future agreements. The preliminary setting for the Framework Convention on Climate Change has been prepared. Both biological diversity Convention and the Framework convention on climate change were binding legal instruments (Richardson, Wood 2006).

The Earth summit resulted with the following decisions:

- Rio Declaration on Environment and Development
- Agenda 21
- Convention on biological Diversity
- Forest principles
- Framework convention on Climate Change

At the UN General Assembly 44/228 Resolution has presented the analysis that UNCED will deal with the international law and institutions (http://www.unep.org/law/About_prog/montevideo_prog.asp 2007). The major paradigm concerning the International Law was the transformation from the concept of “International Environmental Law” to the “Law of sustainable development and the sustainable development of the Law concerning the development of responsive and adaptive capabilities to the climate change.”

The concept of the development of the international environmental resources dates back to the 1981 “<<Montevideo Program for the development and Periodic Review of Environmental Law>> (UNEP, WMO 2005)”, and continued with the UNEP sponsored meeting of the senior government Officials Expert in Environmental Law, which was held in Rio de Janeiro from October 30 to November 2, 1991. At the end the United Nations Conference in 1992 on Environment and Development has established decisions and new legal instruments to be able to guarantee the harmony of the sustainable development concept and the law.

In conclusion, UNCED was one of the turning points to the Climate Change since its results both increased the interest and the contribution of the governments to contribute to the development of

the scientific assessments and strengthened the concern of the nation states to the importance of the sustainable development in international law.

4.2.4 Adoption of United Nations Framework Convention on Climate Change

The UNFCCC was adopted on 9 May 1992, and opened for signature in June 1992 at the UN Conference on Environment and Development UNCED 92. The Convention entered into force on 21 March 1994. Under the Convention, a "Subsidiary Body for Scientific and Technological Advice" (SBSTA) is established.

The convention is a legally binging instrument; an intergovernmental response to the Climate Change. "It recognizes that the climate system is a shared resource whose stability can be affected by industrial and other emissions of carbon dioxide and other greenhouse gases (WMO, UNEP 2004)." The Convention enjoys near universal membership, with 191 countries having ratified.

"The parties to the United Nations Framework Convention on Climate Change have the following responsibilities (Albrecht 2002);"

- work to get information and share information on greenhouse gas emissions, national policies and best practices
- launch national strategies for addressing greenhouse gas emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries
- cooperate in preparing for adaptation to the impacts of climate change.

Responsibility: The industrialized countries; the Organization for Economic Development and Co-operation (OECD) members and the 12 "economies in transition" (countries in Central and Eastern Europe, including some states formerly belonging to the Soviet Union) carry the heavy burden since they are the source of most past and current greenhouse gas emissions.

The industrialized nations decided to develop financial support to the developing countries to cope with the impacts of the climate change[5]. The grant and loans are managed by the "Global Environment Facility" (Veon 2004) which was established as a World Bank pilot project in 1991 provides funding for implementation of treaties that target global warming, biodiversity, international waters and ozone depletion. It is jointly implemented by the World Bank, UN Development Program and UNEP. Views of its record determine not only approaches to implementing law but also the choice of substantive provisions of the future treaties (Albrecht 2002)."

At the UNCED conferences, the governments and the international organizations conducted that "It is essential to increase the effectiveness of the existing legal instruments related to the environment and development. They reviewed the multinational negotiation processes and recommendations for the future practices (www.unfcc.int 2007)." At the multinational negotiations of the UNFCCC we can identify the updated multinational negotiation system which was also described in Chapter 3.3.1 of Multinational Negotiations Model.

4.2.5 1992 United Nations Framework Convention on Climate Change

ANNEX 4: The original document The Framework Convention on Climate Change.

I. Objectives of the Negotiations: The aim was to set up the legal capacity achieve the stabilization of the carbon dioxide and other greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

- Agenda Setting: The historical legal and scientific background takes the attention of the world to the serious threat of the climate change. Observations and researches state that human activities are the main factors that damage the climate.
- Step 1: The Toronto meeting (1988) and the establishment of the IPCC by the WMO and UNEP in 1988.

[5] The Convention determines the developing countries are vulnerable to environmental change.

- Issue Definition: The first meeting of the IPCC was held in 1988 which estimated and declared the scientific assessments and established three working groups. (See: Chapter 4.4.1 the establishment of the IPCC).

Daniel Bodansky in the" Prologue to the Climate Change Convention states that the "Protection of Global Climate Change for Present and Future Generations of Mankind" of 6 December 1988, the UN General Assembly the resolution 43/53, established the IPCC and alarmed the governmental, intergovernmental, non-governmental organizations and the scientific institutions to respond to climate change (Bodansky 1994).

Second Climate change conference in Geneva in October 1990, the head and UNEP called to set up an ad hoc working group of governmental representatives to prepare the Framework Convention on Climate Change.

- First Step: The IPCC recommended, on 11th of December 1990, the 45th Session of the UN General assembly adopted a resolution which foresees the importance of the scientific researches and the resolution took control of the negotiating process from UNEP, WMO and put it under the direct control of the General Assembly (Berkeley 1994).

- Position Statement of Participants and Signatory Countries: The fits meeting of the Intergovernmental Committee took place in Virginia. With a host of observers from the international organizations and environmental NGOs, 107 states attended the opening meeting. The different approaches of the countries were discussed and gap between the South and North has emerged.

United States and United Kingdom prepared drafts to the Convention. "Much of the first meeting was spent on procedural matters including the formation of the groups. Developing countries appeared to be split into three camps: minor greenhouse gas emitters that were concerned about the climate change and wanted the developed world to act quickly; major greenhouse gas emitters that saw climate change as along term as along term threat, were willing to help mitigate it, but needed financial and technical assistance to do so; and a small but vocal group that was concerned that efforts to cut greenhouse emissions would damage their economies (Di Mento 2003)."

United Kingdom proposed a fiscal instrument to be able to achieve equal carbon cuts. France change their position separating from the European common positions proffering carbon cuts based on per capita circulations and Japan took the same position. The Nordic countries, among environmental leaders, did not admit to a freeze on the gas by 2000 in line with the EC position. Switzerland and Austria committed to strengthen the policies to cut the greenhouse gas emissions of traffic and other resources (Di Mento 2003).

US and Japan proposed the idea of the last review was entitled "pledge and review" which targets the reduction of greenhouse gas emissions setting up a general response and sustained review mechanism; states should commit themselves to a process. They would establish their greenhouse gas limitation strategies but would submit those strategies for regular review by other parties to the treaty. However the India and China rejected the proposal as well as the NGOs (Chasek 2001).

- Step 3: Working Group 2 calls for a proposal and discussion text that would serve the next negotiations. Working Group 1 spent the third session producing even longer compilations of alternative proposals, and governments continued to the climate change views (Bodansky 1993).

- Drafting: There was widespread talk over the corridors on the importance and policy responses to be able to set up a proposal framework to the United Nations Conference on environment and development. Most decisions are reached by consensus). Member countries often form alliances to increase efficiency and maximize influence during negotiations (Albrech 2002).

In the Working Group 1 with the contributions of the differentiated commitments set up targets and timetable to reduce the greenhouse gas emissions and to propose policies for implementation.

In the Working Group 2 the financial resources and technology, research priorities, information exchange, access to information, institutions, institutions, and the role of NGOs resulted with the different aspects of North and south

As a result, the Intergovernmental committee decides to hold a committee to finalize the convention from 30 April to 8th of May 1992 to finalize the convention.

- Step 4: A few time left to the United Nations Conference on environment and development in Rio and there was as a great deal of international and domestic pressure to complete the convention The significance of the convention which is planned to be called for signature were known. The major efforts were done by the government to finalize the convention until UNCED.
- Negotiations: In New York on 30 April 1992, the fifth Session of the INC was resumed; targets and timetables were set to be able to stabilize carbon emission, financing the convention (Di Mento 2003).

- Turning Point 5: Global environment facility was confirmed to be operating the fund until other provisions were made. Regarding the matter of commitments,

"The chair proposed "An ongoing review process that would give substance to the political commitments without actually setting targets and timetables (Di Mento 2003)."

- Ratification/Implementation: At the UNCED the convention was opened for signature in June 1992 in Rio de Janeiro. On 21 December 1993, the convention received its fiftieth instrument of ratification and entered into force on 21 March 1994. On 22 of May 2000, European Union and 181 countries had ratified the convention. In order to strengthen the convention the INC met six more times. "For the first meeting of the Conference of the Parties, and work out numerous implementation details, including those related to the financial mechanism. The conference of the Parties met six times between 1995 and 2000 (Albrecht 2002, p.102)."

With The Framework Convention on Climate Change, the parties are required to formulate and implement control mechanisms for the causes of the climate change. An effective mitigation police could be offered as the education and training of the public and international public on the importance of the causes of the climate change and people's contribution in it.

The developed countries/industrialized countries established new policies to limit anthropogenic emissions of greenhouse gases and to enhance the capacity of their sinks and reservoirs for the stabilization of such gases (www.unfcc.int 2007).

"Parties are required to cooperate in the establishment and promotion of networks and programs of research into and systematic observation of climate change (WMO, UNEP 2004)."

II. UNFCCC

The UNFCCC Secretariat

"A secretariat staffed by international civil servants supports the Convention and its supporting bodies. It makes practical arrangements for meetings, compiles and distributes statistics and information, and assists member countries in meeting their commitments under the Convention. The secretariat is based in Bonn, Germany (www.unfcc.int 2007)."

The Conference of the Parties (COP) analyzes the status of the Climate change and the effectiveness of the treaty. It is the prime authority of the Convention. It is an association of all parties and meets annually for a period of two weeks. These sessions are attended by several thousand government delegates, observer organizations, and journalists.

"*A Subsidiary Body for Scientific and Technological Advice (SBSTA*) counsels the Conference of the Parties on matters of climate, the environment, technology, and method. It meets twice a year (www.unep.org 2007)."

"*A Subsidiary Body for Implementation* (SBI) helps review how the Convention is being applied, for example by analyzing the national communications submitted by member countries. It also deals with financial and administrative matters (www.unep .org 2007)."

The expert groups A Consultative Group of Experts (CGE), Least Developed Country Expert Group (LEG), and Expert Group on Technology Transfer (EGTT) *Partner agencies*: Global Environment Facility (GEF).

4.2.6 Agenda "21"[6]

The agenda 21 is a program run by the United Nations related to sustainable development. The action is considered by the contribution at the global, natural and local level by organizations of the UN, governments and major groups. The full text of agenda 21 was revealed at the UNCED. There are 40 chapters in Agenda 21, divided into four sections. All told the document was over 900 pages.

Summing up there are four main sections, Social and Economic Dimensions, Conservation and Management of Resources for Development, strengthening the role of Major Groups and Means of Implementation.

The United Nations Division for sustainable development and the Commission on Sustainable Development acts as preparatory committee under the summits and sessions on the implementation of Agenda 21.

4.2.7 1994 IPCC Special Report

IPCC addressed selected key topic of particular interest to UNFCCC and provides updated information on "Radiative Forcing of Climate Change". Additionally, it estimated methane and aerosol forcing and the values of the global warming factor.

1995 Conference of the Parties-1: The first conference of the Parties to the UNFCCC, it clarified the functions of the sub bodies and the parties. In the conference the review processed and the countries reported their implementations. In conclusion the levels of greenhouse gas emission has been projected which was essential for the preparatory process of the IPCC Second Report.

COP-1 agreed to organize the Berlin Mandate, a process aiming at strengthened commitments for Parties included in Annex I to the Convention. The Mandate specified that:

[6] "21" represents the 21st Century

"The process will be carried out in the light of the best available scientific information and assessment on climate change and its impacts, as well as relevant technical, social and economic information including, inter alia, reports of the IPCC (WMO, UNEP 2004)."

4.2.8 1995 Second IPCC Assessment Report

In 1991 the IPCC has decided to prepare the Second IPCC report which included a new subject area of socio-economic aspects of the climate change. Working Group 2-3 worked on this project and the range of the membership was extended to the all WMO and UNEP members.

Working group 1 highlighted the considerable changes done since 1990. Working Group 2 broadened the scope of the assessments and worked on the economic and technical feasibility of potential adaptation and mitigation strategies.Working Gorup 3 adressed the socio–econmic dimesdions of the climate change.

1996-Conference of the Parties-2: "The IPCC Second Assessment Report (SAR) was presented to the Second Conference of the Parties. In the Geneva Ministerial Declaration Ministers and other heads of delegations present at COP-2:" It evaluated the Second Assessment Report.

The Conference "Welcomes the commitment of the Intergovernmental Panel on Climate Change to undertake the work programme requested in support of the Subsidiary Body for Scientific and Technological Advice and the Ad Hoc Group on the Berlin Mandate; and urges continuing cooperation between the Convention bodies and the Intergovernmental Panel on Climate Change (http://www.cbd.int/convention/cops.shtml 2007)."

4.3 THIRD STAGE 21ST CENTURY

In the 21st Century we observe the decisions and the multinational negotiation procedures in the international law making. UNCED principles regarding the Sustainable development in International law and the Agenda 21 projects tried to be implemented in the world to save the world and prevent the possible impacts of the climate change.

The Berlin Mandate process led to the adoption of the Kyoto Protocol at COP-3.

The first conference of the parties, which gathered in Berlin in 1995, agreed to initiate negotiations on a protocol or other legal instruments that would strengthen commitments under convention and address emissions reductions beyond the year 2000. After 8 negotiations sessions of the Ad hoc group on the Berlin Mandate between 1995 and 1997, the Kyoto Protocol was adopted by the third conference of the parties in Kyoto, Japan, in December 1997.

The negotiation text prepared under the Berlin mandate served as the basis for a COP3 agreement known as the Kyoto Protocol to the Framework Convention on Climate Change.

4.3.1 Kyoto Protocol

The International Agreement which was built on the Framework convention of the Climate Change. Kyoto sets legally binding targets and timetables for cutting the greenhouse gas emissions of the industrialized countries.

After the Convention entered into force in 1994, by 1995 governments had begun negotiations on a protocol-an international agreement linked to the existing treaty, but standing on its own. The text of Kyoto Protocol was adopted unanimously in 1997 and entered into force on 16th February 2005.

Major target of the Kyoto protocol is the mandatory limitations over the greenhouse gas emissions, with a view of reducing below the 5 percent existing 1990 levels in the commitment period 2008-2012. In order to achieve this goal, it set up new mechanisms emissions trading,

clean development mechanism and joint implementation. Emissions trading buy and sell greenhouse-gas emissions "units" and "credits." Clean development mechanism provides a system for financing emissions-reducing or emissions-avoiding projects in developing nations. Joint implementation; refers to the industrialized countries which are granted "emissions reduction units" for financing projects in other developed countries - a system likely to increase efficiency and reduce the global-warming output of the "transition economies" of Central and Eastern Europe (www.unfcc.int 2007).

Commitments under the protocol are;

This level varies from nation to nation however the overall percent of the developed countries are 5 percent 1990 levels.

The protocol has flexibility in how countries may meet the targets. They can follow different way to achieve the goal of reducing greenhouse gas emissions.

Kyoto Protocol is not only has to be effective against a world wide problem, but also it has to be politically acceptable. The negotiations set the instructions how to operate since it is hard to move step forward when the international interest are favored by countries. **"**More states are now attaching greater political and economic importance to natural resources and the environment. As the effects of environmental degradation on present and future negotiations become clear, the costs of global environmental and resources conservation are also rising for all states. Meanwhile, the linkages among global environmental, economic, trade, and security issues are becoming increasingly apparent as was demonstrated during negotiation of the Kyoto Protocol to the Framework convention on Climate change and the Cartagena Protocol on biosafety. The rules which would set up the rules to operate were called <<"Marrakesh Accords">> (http://unfccc.int/cop7/documents/accords_draft.pdf 2007)."

There is a delicate balance with international treaties. Those appealing enough to gain widespread support often aren't strong enough to solve the problems they focus on. (Because the Framework Convention was judged to have this weakness, despite its many valuable provisions, the Protocol was created to supplement it.) Yet treaties with real "teeth" may have difficulty attracting enough widespread support to be effective.

Some mechanisms of the Protocol had enough support that they were set up in advance of the Protocol's entry into force. The Clean Development Mechanism, for example - through which industrialized countries can partly meet their binding emissions targets through "credits" earned by sponsoring greenhouse-gas-reducing projects in developing countries already, had an executive board before the Kyoto Protocol entered into force on 16 February 2005.

*ANNEX 5***:** The Kyoto Protocol Full Document

I. Bodies of KYOTO

The Conference of the Parties (COP)/ Meeting of the Parties (MOP): The COP works as the meeting of the parties to the Kyoto Protocol. Parties to the Protocol are able to participate in the COP/MOP as observers, but without the right to take decisions. The functions of the COP/MOP relating to the Protocol are similar to those carried out by the COP for the Convention

The Decision and the multinational negotiation have been ruled regarding the international action on climate change. The Parties to the Kyoto Protocol also formally adopted the "rulebook" of the 1997 Kyoto Protocol, the so-called 'Marrakesh accords', which sets the framework for implementation of the Protocol.

The two permanent subsidiary bodies established under the Convention are The Subsidiary Body for Scientific and Technological Advice (SBSTA) and the Subsidiary Body for Implementation (SBI), also serve the COP/MOP.

CDM Executive Board "The CDM Executive Board supervises the CDM under the Kyoto Protocol and prepares decisions for the COP/MOP. It undertakes a variety of tasks relating to the day-to-day operation of the CDM, including the accreditation of operational entities."

Joint Implementation Supervisory Committee "The Joint Implementation Supervisory Committee (JISC), under the authority and guidance of the COP/MOP, inter alia, supervises the verification the meetings generated by JI projects following the verification procedure under the JISC (www.unfcc.int)."

Compliance although the Kyoto protocol has been adopted by 1997, but it has still not been put into effect since the 55/55 target has not yet been achieved. There has been a general reluctance to accept the agreement since controversy surrounds a number of issues. The UNFCCC, the IPCC has organization different conferences to declare the urgency of the issue however the target could not be achieved yet.

Penalties for Non-Compliance / Withdraw There are no penalties for the non-compliers unless the do not follow the targets. The financial penalties, trade sanctions, and emissions penalties have been offered for future climate change agreements. No legal instrument for these penalties has been established yet.

The only sanction is, any country can withdraw from the treaty after ratifying it by simply giving one year's notice.

The Signatory Countries to Kyoto Protocol:

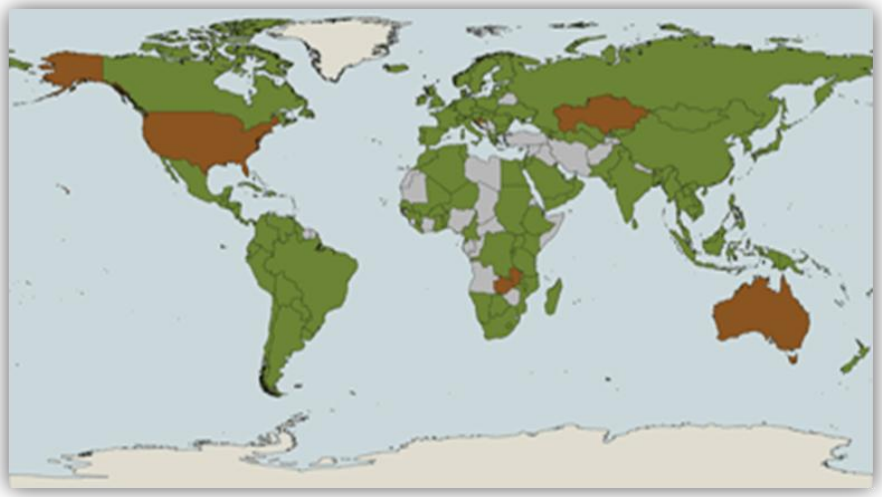

Figure 4.1: This Map Depicts The Countries That Have Ratified Or Signed The Kyoto Protocol As Of June, 2005. Ratifying Countries Are Indicated In Green. Those Countries That Have Signed, But Not Ratified The Kyoto Protocol Are Indicated In Light Brown. Those Countries That Have Neither Signed Nor Ratified The Agreement Are Depicted In Grey. The Terms Of The Kyoto Protocol Necessitated Ratification By 55 Parties To The Convention, Including Annex I Parties Accounting For 55 Percent Of That Group's Carbon Dioxide Emissions In 1990, Before It Could Enter Into Force. This Occurred On February 16th, 2005, With Ratification Of 152 Parties, Totaling An Annex I Emission Percentage Of 61.6 Percent.

Source: World Resources Institute, 2007. *Signatory Countries to Kyoto.(Internet)* http://earthtrends.wri.org/text/climate-atmosphere/map-504.html. [cited 12 December, 2007]

Country Positions

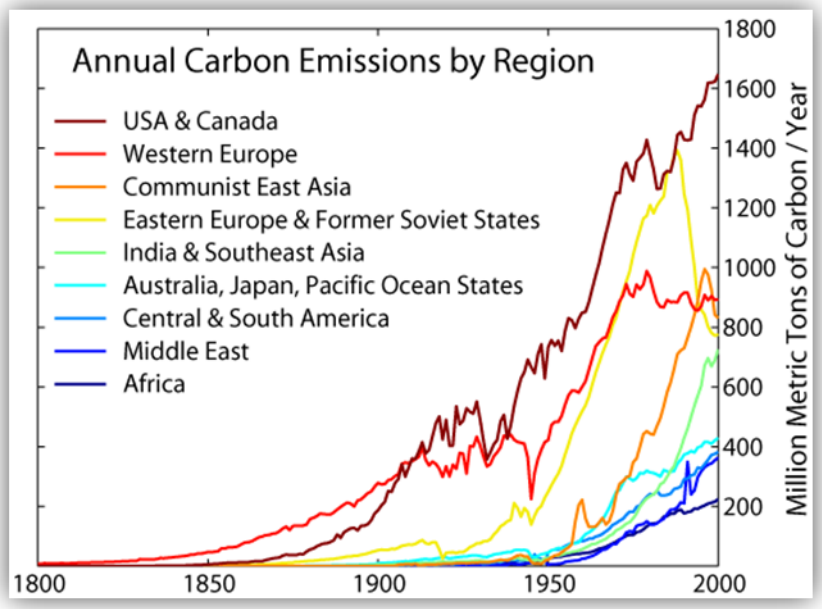

Figure 4.2: Carbon Emissions from Various Global Regions during the Period 1800-2000 Ad

Source: Carbon Dioxide Information Analysis Center 2007. *Carbon Emissions (online)* http://www.energy.gov/ (cited 7 May 2007)

This figure shows the annual fossil fuel carbon dioxide emissions, in million metric tons of carbon, for a variety of non-overlapping regions covering the Earth.

Australia: Although Australia is one of the big emitters, the she was banned with 8 percent limitation on the greenhouse gasses regarding due to the fact that it I a small and electivity dependent country on coal which they used as a negotiation tool and resulted with advantage (http://en.wikipedia.org/wiki/Kyoto_Protocol 2007).

However Australia did not ratify the Agreement claiming that will cost to the economies when the employment decrease in coal based fields. The fact that the big populations such as China and India did not have any obligation on reduction since they do not involve in the Annex 1 as a developing country, was the other reason that Australia did not want to ratify the Kyoto Protocol.

Even if Australia were to shut down all of its coal fired power stations it would not negate this increase (Baliunas 2002).

The Australian government is already doing enough to cut emissions; and has already discussed $300 million over the next three years to reduce Greenhouse gas emissions. The opposition claims ratifying the protocol is a "risk free" prospect as they claim Australia would already be meeting the obligations the protocol would impose (www.usgs.gov 2008).

In 2005, Australia was the world's largest emitter per capita of greenhouse gases (http://www.greenpeace.org/international/campaigns/climate-change 2008) Analysis has projected Australia's greenhouse gas emissions at 109 percent of the 1990 emissions level over the period 2008–12. This is above the limitation of the 108 percent Kyoto Protocol limitation. In 2007, the UNFCCC reports that Australia's 2004 greenhouse gas emissions were at 125 percent of 1990 levels. Australia meets the potentials of the Kyoto protocol even though she does not ratify the Protocol (Baliunas 2002).

The Australian government agreed to sign the Asia Pacific Asia Pacific Partnership on Clean Development and Climate at the ASEAN regional forum on 28 July 2005.along with the United States.

In Australia, the environmental matters are held related to the Constitution of Australia (http://www.greenpeace.org/international/campaigns/climate-change 2008), under the jurisdiction of the States.

Greenpeace have called Clause 3.7 of the Kyoto Protocol the "Australia Clause", as Australia was the major beneficiary (http://www.usgs.gov/ 2008). The clause allows for Annex 1 countries with high rates of land clearing in 1990 to consider that year a base level. Greenpeace argues that Australia even in 1990 has high levels of clean land commitments, and it is hard to compare Australia's baseline with the other countries.

Canada: On December 17, 2002, Canada ratified the treaty that came into force in February 2005, requiring it to reduce emissions to 6 percent below 1990 levels during the 2008-2012 commitment periods. The public support was very high but the opponents had some anxieties on

the energy arguments that would affect the business sector. Since the US companies would imply these rules but the Canadians which will economically hurt them (Lopaz, Toman 2006).

Additionally the government of Alberta (Canada's primary oil and gas producer) and the federal government opposed to the discussions of Kyoto protocol which would lead a threat to the national unity of Canada (Veon 2004).

On May 2, 2006, The UN climate change conference in Nairobi criticized by the environmental groups and by other governments for its climate change positions, as they reported that environmental funding designed to meet the Kyoto standards had been cut, while the Harper government develops a new plan to take its place (www.biopact.com 2008).

"In May 2007 Friends of the Earth sued the Canadian federal government for failing to meet its Kyoto Protocol obligations to cut greenhouse gas emissions linked to global warming (Maclean 2006). This was based on a clause in the Canadian Environmental Protection Act that requires Ottawa to "prevent air pollution that violates an international agreement binding on Canada," Canada's obligation to the treaty begins in 2008."

People's Republic of China: Despite being criticized by Australia and the United states not to be considered under the Annex 1 of the Kyoto protocol China has gradual policies regarding climate change which will also be balanced by their population politics.

In 2004 the People's Republic of China committed 54 percent of the USA emissions. Various predictions see China overtaking the US in total greenhouse emissions between late 2007 and 2010.

The Chinese government insists that the gas emissions level of any given country is a multiplication of its per capita emission and its population. "The country's energy intensity - measured as energy consumption per unit of GDP - was lowered by 47 percent between 1991 and 2005; from 1950 to 2002, China's carbon dioxide emissions from fossil sources accounted for only 9.33 percent of the global total in the same period, and in 2004, its per-capita emission of carbon dioxide from fossil sources was 3.65 tons, which is 87 percent of the world average and

33 percent of that of Organization for Economic Co-operation and Development countries (Ma Kai 2008)."

In June of 2007, China presented a 62-page climate change plan had merged the climate change mitigation policies at the hearth of the energy policies but still reserved the rights of developing countries "flexible treatment on greenhouse gas emissions" to cut greenhouse gas emissions and the developed countries should take the lead on the target which refers to the "common but differentiated responsibility" principle, as agreed up in the UNFCCC should be applied.

European Union: Both the EU (as the European Community) and its member states are signatories to the Kyoto treaty.

On May 31, 2002, the fifteen member of the European union announced the EU produces around 22 percent of global greenhouse gas emissions, and has agreed to a cut, on average, by 8 percent from 1990 emission levels. On 10 January 2007, the European Commission declared plans roots for European Union Common Energy policy that included a unilateral 20 percent reduction in GHG emissions by 2020 (www.usgs.gov 2008).

The EU has consistently been one of the major nominal supporters of the Kyoto Protocol, negotiating hard to get wavering countries on board.

In December 2002, the EU set up a strategy of the Emissions trading system in an effort to meet these targets. Quotas were introduced in six key industries: energy, steel, cement, glass, brick making, and paper/cardboard. There are also fines for member nations that fail to meet their obligations, starting at €40/ton of carbon dioxide in 2005, and rising to €100/ton in 2008. Current EU projections suggest that by 2008 the EU will be at 4.7 percent below 1990 levels (Albrecht 2002, p.32).

The European Union has put the Common position on limitation of 15 percent in all member states rather than the 8 percent limitation. . This may mean that the region's 1990 baseline level is inflated compared to that of other developed countries, thus giving European economies a potential competitive advantage over the U.S.

Council of European Union declared at the meeting on 2nd of March 2007, the Article 17 states "Environmental technologies and eco-innovation contribute to achieving the aims of the Lisbon Strategy for Growth and Jobs, including combating climate change. Member States are determined to promote eco-innovations through an ambitious approach, taking full advantage of lead markets in areas such as sustainable and safe low carbon technologies, renewable energies and energy and resource efficiency. The European Council invites the Commission to present proposals for achieving an integrated strategy for the promotion of eco-innovation early in 2008 (http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/ec/93135.pdf 2008)."

India: Comparatively to other world economies, India's economy is the least energy intensive. India signed and ratified the Protocol in August, 2002. At the G-8 meeting in June 2005, India pointed out following the principle of common but differentiated responsibility, India maintains that the major responsibility of curbing emission rests with the developed countries, which are responsible for the cause of the emissions over along period of time.

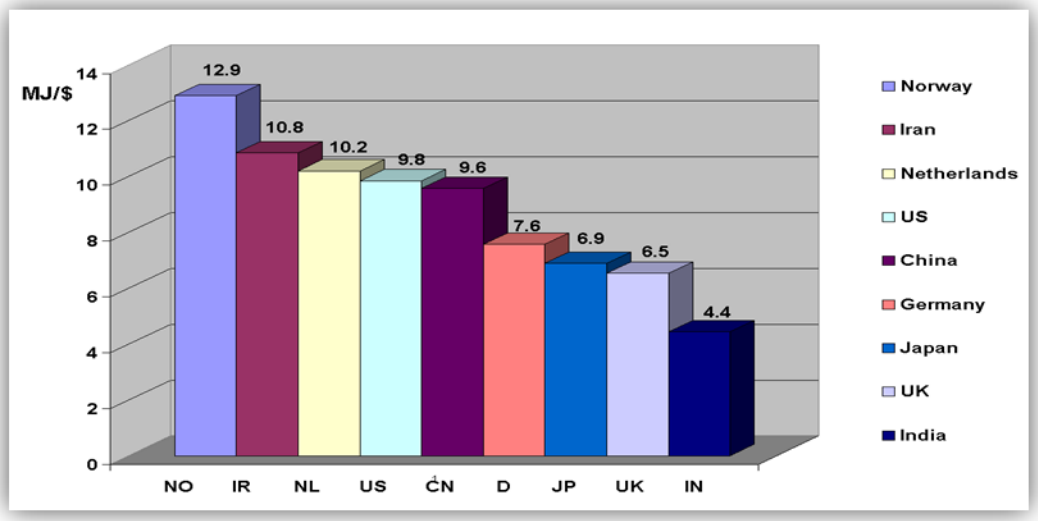

Figure 4.3: The Energy Intensive in The World

Source: Franc, Van Mierlo 2007. *The Energy Intensive in the World. (online)* http://www.eia.doe.gov/pub/international/iealf/tablee1p.xls. [cited November 13, 2007)

On November 4, 2004 Vladimir Putin approved the treaty on November 4, 2004 and Russia officially notified the United Nations of its ratification on November 18, 2004. The issue of

Russian ratification was particularly closely watched in the international community, as the accord was brought into force 90 days after Russian ratification.

The Kyoto Protocol have provisions to emit the greenhouse gas emissions to a limit of increase or decrease from their 1990 levels. By the collapse of the Soviet Union the levels of the greenhouse gas emissions was also collapsed. Regarding the fact, Russia should have no problem meeting its commitments under Kyoto, as its current emission levels are substantially below its limitations (KORPPOO, ANNA 2000).

It is not definite yet if Russia will benefit from selling emissions credits to the parties of the Kyoto Protocol

United States: The United States has signed the Kyoto Protocol but never ratified it, which mind it is not binding on U.S (http://www.globalgreen.org/programs/climate/index.html 2007).

The current President, George W. Bush, has determined that the Protocol is fatally flawed; because the exemptions were granted to China and India (the world's second largest emitter of carbon dioxide). Bush also opposes the treaty because of the strain he believes the treaty would put on the economy; he emphasizes the uncertainties which are present in the climate change issue.

Local states in the United States: In January 18, 2007, eight Northeastern US states are involved in the Regional Greenhouse Gas Initiative (RGGI), which is a state level emissions capping and trading program (http://www.globalgreen.org/programs/climate/index.html 2008).

Participating states: Maine, New Hampshire, Vermont, Connecticut, New York, New Jersey, Delaware, Massachusetts, Maryland joins June 30, 2007.

Observer states and regions: Pennsylvania, District of Columbia, Eastern Canadian Provinces, Rhode Island.

California legislature by Arnold Schwarzenegger decided to reduce the state's greenhouse-gas emissions, which rank at 12th-largest in the world, by 25 percent by the year 2020. This puts

California at the close levels of the Kyoto Protocol at a later date than the 2008-2012 Kyoto commitment periods (http://www.greenpeace.org/international/campaigns/climate-change 2008).

Large participating cities: Annapolis; Austin; Boston; Chicago; Denver; Lansing, Michigan; Little Rock; Los Angeles; Madison, Wisconsin; Minneapolis; New Orleans; New York City; Philadelphia; Portland; Providence; Salt Lake City; San Francisco; San Jose; Seattle; Tacoma; West Palm Beach (Albrecht 2002).

4.3.2 2001 Third IPCC Assessment Report

The preparation work of the third IPCC Report date back to the 1997 The report of the Working Group 1 evaluated observational records, the causes, the means of the causes that lead to the climate change, and it focused on the impact of human activities. Working Group 2 worked on the impact vulnerability assessments of the human beings and places and mitigation adaptation opportunities their costs and benefits. Working Group worked on the mitigation options in the various sectors, their costs and benefits, as well as the barriers and opportunities, policies and measures (IPCC 2001).

2001 COP-7 expresses it s appreciation for the Third assessment report (TAR) and presented a climate Change Regime summary (WMO, UNEP 2004).

Climate Change Regime: Its ultimate objective is the "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. This 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"

. The regime is guided by several principles

- Precautionary principle
- Common but differentiated responsibilities
- Sustainability

- Leadership principle

Both developed and the developing countries have adopted mitigation policies and projects to increase its effectiveness.

2002- COP 8 the New Delhi ministerial declaration on Climate Change and Sustainable development, the ministers and the other heads of the delegation presented;

"with concern the findings of the IPCC Third Assessment Report, which confirms that significant cuts in global greenhouse gas emissions will be necessary to meet the ultimate objective of the Convention, and recognizing the on-going consideration in the Subsidiary Body for Scientific and Technological Advice of the implications of this report,"

2003 COP-9 It was requested to focus on exchanging information and sharing experiences on the scientific, technical and socio-economic impacts of the climate change. Proposals of the practical opportunities to COP with the implementation challenges of the Convention.

4.3.3 2007 Fourth IPCC Assessment Report

Table 1: Schedule of IPCC Events of Climate Change That Leads To the Fourth Assessment Report

2 - 5 April	8th Session of Working Group II Brussels, Belgium
30 April - 3 May	9th Session of Working Group III Bangkok, Thailand
4 May	26th Session of the IPCC Bangkok, Thailand
5 - 6 May	Synthesis Report 2-bis Core Writing Team meeting* Bangkok, Thailand
31 July – 3 August	Synthesis Report 3rd Core Writing Team meeting* Colorado, USA
18-20 September	IPCC Expert Meeting on New Scenarios, The Netherlands

Source: United Nations Framework Convention on Climate Change, 2007. *IPCC Assessment Report* (online) www.unfccc.int. [cited on November 13, 2007)

Regarding the IPCC Meetings that started on 2nd of April until 6 of May in various countries and were held in other countries; The IPCC decided to continue preparing comprehensive assessment reports in order to emphasize new findings. The structure and mandates of the Working Groups did not change. . "In order to ensure a better treatment and coordination of matters that are dealt with in more than one Working Group the following cross-cutting themes were identified, uncertainty and risk, regional integration, integration of mitigation and adaptation, Article 2 of the UNFCCC and key vulnerabilities, sustainable development, water, and technology IPCC 2007)." The Fourth Assessment Report (AR4) is scheduled to be finalized in the year 2007.

The working group 1 worked on the following;

From the Summary, we highlight only the following findings:

- "a *general* overview of future impacts of climate change on: fresh water resources, on ecosystems and biodiversity, on the production of food, fibre and forest products, on coastal systems and low-lying areas, on industry, settlement and society, on human health
- impacts on 'developing countries' (in Africa, Asia and Latin America)
- estimates of the *magnitudes* of impacts for a range of possible increases in global average temperature
- estimates of the *magnitudes* of impacts caused by altered frequencies and intensities of *extreme weather, climate, and sea level events*
- An overview of the current state of knowledge about responding to climate change (IPCC 2007)."

Between May 4-18 2007 of intense negotiations in Bangkok, scientists, economists and policy makers of the Working Group III of the Intergovernmental Panel on Climate Change (IPCC) have published their contribution to the Fourth Assessment Report on Climate Change (AR4). It focuses on the scientific, technological, environmental, economic and social aspects of the mitigation of climate change.

In the report; the mitigation policies in the medium term and long term after 2030 regarding technical, scientific and technological assessment was presented. The report confirms the

widespread use of agricultural land for biomass production for energy can have both positive and negative environmental impacts and negative or positive implications for food security.

The *Summary* further looks at long term mitigation options (after 2030),

Mitigation in the short and medium term (until 2030): The Summary for Policymakers reports that the economic potential for the mitigation of global greenhouse gas emissions over the coming decades, that could offset the projected growth of global emissions or reduce emissions below current levels', taking into account financial and social costs and benefits.

Mitigation in the long term (after 2030): The IPCC reported that the efforts to set up adaptation and mitigation policies would have a large influence on the ability to stabilize atmospheric greenhouse gasses at lower levels, and that the lower the ultimate stabilization levels. "There was high agreement and much evidence that stabilization could be achieved by 2050 using currently available technologies, provided appropriate and effective incentives were put in place for their development, acquisition, deployment and diffusion, and that barriers were removed (IPCC 2001)".

4.3.4 G8 Meetings 6-8 of June 2007

The Group of Eight (G8) is an international forum of the governments of Canada, France, Germany, Italy, Japan, Russia, the United Kingdom, the United States and European Commission as well. The issue annual reports, and each year one of the countries take the responsibility of presidency. The president country or group prepares the agenda. In 2007 the presidency belongs to Germany.

Global warming at G-8 Agenda: G-8 discussed on the urgency of the cutting greenhouse gas emission 50 percent by 2050. "Leaders of the G8 nations have agreed to seek "substantial" cuts in emissions in an effort to tackle climate change."

German Chancellor Angela Merkel said the G8 would negotiate within a UN framework to seek a replacement for the Kyoto Protocol by the end of 2009.

No mandatory target was set for the cuts, but Mrs. Merkel's preference for a 50 percent emissions cut by the year 2050 was included in the agreed statement."

The economy ministers if UNFCCC, and the major economies, talked about the climate protection projects in developing countries. British Prime Minister Tony Blair agreed on the idea; however French President Sarkozy supported the significance of the binding figures for emission reduction. This was opposed by US president George W. Bush until the other major greenhouse gas emitting countries make similar comments.

The United Nations Climate Change Conference in Bali, Indonesia and Bangkok

The Bali Roadmap was adopted at the conference which is an essential step for the transformation of the climate Change understanding. The Bali Roadmap consists of various types of scope actions that assume a secure climate future. March 31 to April 4 2008, after a road map towards strengthened international action on climate change reached in Bali, Indonesia, the latest round of negotiations shifted to the neighboring country of Thailand and its capital, Bangkok.

During the conference the Bali Action Plan and Bangkok Conference the course for a new negotiating process designed to tackle climate change and the content of Article 9 of the Kyoto Protocol which was aimed to complete by 2009 was discussed. It also evaluated the projects on technology transfer and on reducing emissions from deforestation.

4.4 SUCCESSES AND FAILURES IN INTERNATIONAL ENVIRONMENTAL LAW ON CLIMATE CHANGE

By the means of the legal international environmental instruments, it was targeted to cope with the Climate Change setting up mitigation policies and implementing them. The development of the environmental impact assessment; the scientific assessments, environmental law making, setting mitigation policies and implementing them with projects and plans have evolved through the history starting from 1979 until the current meetings.

With the sustainable development in international law, the response mechanisms of the countries have been strengthened complying with the Sustainable development in international law principle of the UNCED. But these improvements are not enough since a reduction of greenhouse gas emissions in the range of 60 to 80 percent was necessary just to slow the process of climate change to an acceptable rate that would allow ecosystems to adapt, even though this limitation and the mitigation policies are implemented at 100 percent effectiveness, the Kyoto Protocol is coupled with the lack of penalties, no consequences for non-compliance, since it does not have any legacy regarding compliance. This fact criticized by the NGOS, scientific community: as it stands, the Kyoto Protocol is completely unbinding and is embodies as something neglectable (http://climatechange.sea.ca/kyoto_protocol.html 2008). Even if the decisions continuously progress the implementation process still could not reach to a point that would lead to the implementation of the biggest contributors.

The environmental impact assessment in order to reach the climate change stability has five stages; first the scientific assessment stages which is done by the IPCC and several national enterprises or associations, second is the effective international law making which includes the attention to the issue, the negotiation techniques, the national responses, the time length of the negotiations, signature and ratification, third is the governmental mitigation policies which also covers the NGOS, Media, National Enterprises, Business corporate, fourth is the plans and projects and the fifth the last scientific assessments that would evaluate the completed environmental act. In the world we are still on the second stage. Kyoto Protocol was signed but there are still countries that did not ratify the Protocol yet, pursuing their national interests. We insist on the urgency of the climate change problem and the attempts are blocked for several reasons which are generally the result of the Real Politik of the countries.

How can we pursue the project of “The sustainable development in international law” in order to reach the climate change stability? Which precautions are vital to restructure international environmental law in order to be sustainable in mitigation policies, the projects and plans and consequently the successful climate change impact assessment at the fifth stage?

5. DISCUSSION ON RESTRUCTURING INTERNATIONAL ENVIRONMENTAL LAW ON CLIMATE CHANGE

"The sustainable development in international law" provision of the UNCED is a significant element in international environmental law to reach the sustainability in environmental protection. The restructuring of the international environmental law is essential since the climate change stability in the world is trying to be reached by means of the multinational negotiations and their consequences; treaties.

The environmental impact assessment identifies the likely consequences for the biological, geological and physical human health and welfare of implementing particular activities. It has five stages; first the scientific assessment stages which is done by the IPCC and several national enterprises or associations, second is the effective international law making which includes the attention to the issue, the negotiation techniques, the national responses, the time length of the negotiations, signature and ratification, third is the governmental mitigation policies which also covers the NGOs, Media, National Enterprises, Business corporate, fourth is the plans and projects and the fifth the last scientific assessments that would evaluate the completed environmental act. However the world is on the Second Stage because of the prior national interests of the countries.

This is a vital project that determines the world environmental status for the hundred years which we will inherit to other generations. But the evidence of the climate change is critical and shows that we need to follow urgent support in order to create projects for the climate change stability.

How can we complete our climate change stability project making effective international environmental law to reach the sustainable development in international environmental protection?

5.1 EFFECTIVE INTERNATIONAL ENVIRONMENTAL LAW MAKING ON CLIMATE CHANGE

The significance of the climate change problem is increasingly recognized which is on the international agenda for twenty five years. But the impacts of the climate change are increasing everyday and have drawbacks to the world environment. The existing international protocol on Climate Change is Kyoto Protocol and is still ineffective

The main deficiencies of the international law making on climate change should be addresses. These deficiencies are the diplomatic ethics of the international negotiations, the creation of international norms, the patterns of the effective multinational environmental negotiations, the absence of the binding effect of the international treaties and the Secretariat Design.

Expect new environment concepts and idealist worldviews should be strengthened on the course of the international activities, including politics, trade and development. Under standing of "The Earth is Common Property of all human beings and Climate change has negative impacts on it" is a significant interpretation that should be rooted on the heart of the international negotiations." Climate change stability is an ideal project based on Reality which should be far from the realist national politics.

5.2 RECOMMENDATIONS FOR THE DIPLOMATIC ETHICS OF INTERNATIONAL NEGOTIATIONS

Common good perspective is an ideal project that will moderate the interpretations and the contributions of the sovereign states during the negotiations.

Some advocates believe that the concept of the stronger international property law will be effective for the resolution of the climate change debates. They argue for example that all common environmental shares such as air and fresh water should be placed under international regulation which would attempter the countries claims on national interests (Di Mento 2003).

The priority of the international environmental law should be achieved since it will affect all the other fields of the law since it threatens our life.

Incentives for cooperation should be strengthened that the interactive environmental diplomacy should be held, the trustworthiness and the accuracy of info that is provided is very important and activate the contribution of the countries positively. Mostly the members are not confident about how to do it for unprecedented environmental problems. To illustrate the US claims not to sign the Kyoto Protocol is based on the economic burden that the provision carries and since it would bring some responsibilities it would affect the competitiveness of the US against the other economic powers but the developing countries which doe not take place in the Annex 1 of the Kyoto Protocol where the industrialized countries took place.

But if the environmental concerns are prioritized rather than the other economic, social and political incentives this would not cause a problem.

Joint participation of the governments and contribution of the NGOs is essential. The NGOs are the factors that raise awareness to the issues with their experiences rather then the scientific results. They create connections between the scientific results and the social experiences. The equal participation of the governments is vital that it is a common decision regarding the world environment and also the scientific information is trustful that the IPCC has an independent worldwide aspect of research.

The value of flexibility mechanism to combat climate change should be enhanced that the nation states should tolerate and adapt the cultural and national interpretations on subjects of environmental law. It is extremely difficult to negotiate between groups when the political cultures are very different. “For example; EU where green party politics is a driving force never found a way to compromise with US where the environmental movement is increasingly working with industries to influence change (Di Mento 2003)”.

5.3 HOW THE NORMS SHOULD BE CREATED, WHAT ARE THE PHASES OF TRANSNATIONAL PROCESS?

The dynamics of the norm creation depends on the cultural interpretation as well. The internationalization and the phases of the international norm creation strengthen the stability and sustainable development of the policies and projects that is discussed over the international norm. Phases of transnational processes of norm creation; relations setting and the discussions relate to the internalization of the new interpretation of international norm into the other parties' international normative system.

5.4 THE PATTERNS OF THE EFFECTIVE MULTINATIONAL ENVIRONMENTAL NEGOTIATIONS

In international law the hortatory approaches are always efficient but since climate change is maintaining its threats we should follow shorter and radical ways that would enhance the time being of the response mechanisms.

Issue definition phase is very important. The government delegates explore the scientific and technical dimensions of the issue, but also represent an opportunity for the delegates to get to know each other. Transparency reporting and data collection, the mechanisms of verification and monitoring crisis should be strengthened (Chasek 2001).

When the first draft is designed by the secretariat the period to reach the signatory stage is easier, it is a testimonial to the success of the negotiations. When the negotiating time is shorter, the provisions in the resulting are stronger, since it is not moderated by the national interests. Negotiations may take less time but when the draft is not designed by the secretariat then they need to look for other mechanisms. The characteristic features of the diplomats are important; it is essential to seek and to support committed leaders who prioritize compliance within international agreements. Persistence and charisma effective generalize to the largest global discussions.

At the end of the process if there are still outstanding issues towards the end of the process, the nation's states should raise them. Rather than postponing it is important to solve them on time. "One of the most important ways for governments to improve the negotiation of the environmental agreements is to keep abreast of the phases and the process." On many occasions governments enter the process late and try to reopen text where consensus may have already been achieved.

During the negotiations after the positions raised the response mechanisms should be created that governments can meet during the interim period before the agreement enters into force. If the governments cannot keep abreast of the phases and processes, then it would be hard, problem creating, a reason for deadlock or that would cause problems in the ratification period which would also be negative for the national of that country/s and international development These meetings are important, positive implications for environmental management as they keep the international dialogue alive.

Retrieving from the comment, the dispute settlement is also an important phase in the multinational negotiations that also would be considered under the responsibilities of the Secretariat. If the dispute settlement is not successful then the improvement in the phases is not possible. This problem would affect the capacity building as well.

5.5 RECOMMENDATIONS TO ACTIVATE THE BINDING AFFECT OF THE INTERNATIONAL ENVIRONMENTAL LAW THE CASE STUDY: KYOTO PROTOCOL

Hortatory approaches are the preferred patterns of international negotiations. But the response mechanisms and the development structures make the implications slower. Since the climate change is not a subject that we can try and review the policies or responses many times, we should follow command and control approaches by means of sanctions and enforcement. Climate change; some nations will adopt self controlling rules without the need of supranational org, but others will not, External pressure will be necessary, including providing national leaders for a support that is essential unpopular domestically The Kyoto Protocol does not have any sanctions

or penalties which puts it under the concept of Soft law. In the protocol some sanctions and liability on greenhouse gas emissions are not accurate. We should create a system of; timetables, defining tables, monitoring and certifying emission reductions, taxation strategies, trade sanctions, financial penalties (Chasek 2001).

Considering the Trade sanctions European Union has a very efficient Carrot and Stick policy over the member. The products which are not produced by the private "<<European Union standards>> (http://ec.europa.eu/trade/issues/global/development/trta/index_en.htm 2008)" cannot be traded among the member countries or as an import from the other countries.

Penalties must be assessed for failure to pay or different political sanctions. A common international body on environment especially on climate change can be established through discussion of the all countries in the world that would have sanctions and penalties over the countries which means the provisions or the possible developed provisions of the Kyoto Protocol would be binding. The European Court of human rights which is a body of European Council is a binding international body that strengthens the responses and reactions of the parties on the human rights issues which could be a model an International Binding environmental Body. In 1989 Hague, French prime minister Norway and Holland; a creation of world environmental body to draw up global regulations-impose sanctions on noncompliance –environmental law (Di Mento 2003).

In 1997 the Institute of International Law adopted a resolution declaring that the "breach of an obligation of environmental protection established under international law engages responsibility of the state, entailing as a consequence the obligation to reestablish the original the original position or to pay compensation" It called for environmental regimes "to include specific rules on responsibility and liability" and "strict liability of operators as the normal standard (JPIDI 1997)"

5.6 IS UNFCCC IS AN EFFICIENT BODY?

The agents of Environmental law as any other type of growing human expertise, should be subjected to systematic analysis and evaluation.

The UNFCCC secretariat and design is effective. The agency raises the questions efficiently and in line with the updated researches of the IPCC, and national governments scientific and mitigation works.

Regarding the point of the implementation, UNFCCC is blocked by the positions of the United States regarding the tolerated conditions of the developing countries within the Kyoto Protocol. The United States is very influential in the structure of the United Nation's bodies. For example even in the conventions on human rights and humanitarian intervention, it is apparent that the ethnical relevance is separately differentiated that the US has interested in. That means until the United States is convinced about the relevance of the convention and the Kyoto Protocol to her interests or priorities or until the United States changes her understanding and interpretation to the Climate Change problem, the Kyoto Protocol provisions and inefficiency will stay stable rather than reaching the climate change stability with efficient international responses and mitigation policies.

6. CONCLUSION

"The World is alarmed for climate change. The Earth is warming up."

The Intergovernmental Panel on Climate Change which produces the scientific, vulnerability adaptation and mitigation sources for the negotiations of the climate change, in the Fourth Assessment Reports of 2007, has stressed that surface temperature rates are increased. Eleven of the last twelve years between 1995 and 2006 are ranked among the 12 warmest years of global surface temperature since 1850. The average temperature of the global ocean has increased; glaciers and snow cover have declined. The new data demonstrates that losses from the ice sheets of Greenland and Antarctica contributed to sea level rise over 1993 to 2003. Global average sea level rose at an average rate of 1.8 between 1961 and 2003. The estimations show that scenario of the average Earth temperature increases is lowest 1.8°C, and highest 4.0°C. These changes in the atmosphere affect and in the near future would affect more, the vulnerable groups and the regions by causing problems for health, agriculture, food security, terrestrial and freshwater ecosystems, coastal zones and maritime zones, human settlements, energy and industry.

The immediate acts should be taken by the countries, relating all these proposals and the mitigation policies to real life. The strategies should be set up to reduce greenhouse gasses by the nations states, expanding forests and transforming the negative impacts of human activities to positive impacts of life styles, reinforcing coping capacity according to the vulnerability levels of the human beings and the regions, and adapting to the future possible impacts of the climate change.

Regarding the severity of the issue and the necessity to the international legal responses, the governments should set up binding legal instruments through the United Nations Environment and Development Programme, Agenda 21 Project (1992), which adopted the concept of the sustainable development in international law, the new aspects of the environmental philosophy of the sustainable development. The concept of the "Sustainable development in international Law" involves both the Sustainable Development of the International Law which means the development of the international environmental law making mechanisms and the improvements

of the scientific, social, economic response mechanisms of the parties with regard to the context of the international law to create the law of sustainable development.

Twenty five years of Multinational negotiations which bases on the data of the IPCC, nation states and the principles of the United Nations Law making are negotiated in detail by discussing all the possible provisions that could be taken into account in order to reach the climate change stability; mainly reducing the greenhouse gas emissions which is stated to be one of the main reasons of the Climate Change. The United Nations Framework Convention and its amendment the Kyoto Protocol are in force but not binding on the countries. However there are countries who have already limited their greenhouse gas emissions, there are some which did not ratify the Kyoto Protocol although they were determined as the head greenhouse gas emitters. Some of the developing countries, which are not in the Annex 1 of the Kyoto Protocol that specifies the limitations of the greenhouse gas emissions, are also the high committers of the greenhouse gas emissions. But it is costly for the developing countries to provide mitigations policies due to the cost of the precautions. Consequently, over these problems, the conflicts within the Kyoto Protocol emerge. Apparently some developed countries do not want to abandon their economic interests and some oppose to the financial support to the developing to cope with the impact of the climate change.

The problem is urgent, even 60 percent to 80percent of greenhouse gas emission limitation successes just to slow down the climate change process. Kyoto Protocol still remains as a soft law but could be developed and transformed into hard law. This question is raised in the chapter five by recommendations to restructure in international environmental law.

Fist of all the interpretation of the “The Earth is our Common Wealth” should be strengthened that would lead to the moderate and supportive and efficient negotiations. During the negotiations, the ethics of the multinational negotiations should be strengthened, the incentives for cooperation should be strengthened, and the interactive environmental policy should be encouraged.

Economic powers should realize the importance of the problem and prioritize the climate change problem over their economic interests as energy politics and trade politics. Joint participation of the governments and contribution of the NGOs to the negotiation process are essential. The

NGOs are the significant factors that raise the issues with their social experiences rather than scientific assessments. They create connections between the scientific results and the social experience. Additionally, the value of flexibility mechanism to combat climate change should be enhanced that the nation states should tolerate and adapt the cultural and national interpretations on subjects of environmental law. It is extremely difficult to negotiate between groups when the political cultures are very different.

Regarding the development of the content, we should also refer to the norms, which are under the customary law. The dynamics of the norm creation and its internationalization affect the phases of the international norm creation. It strengthens the stability and sustainable development of the policies and projects that is discussed over the international norm.

Concerning the provisions of the multinational agreements, it is always important and preferable to follow hortatory approaches but the significance of the climate change transforms aspect of the approaches. The sanctions penalties and a new type of mitigation policy mechanism should be set up; creating a system of timetables, monitoring and certifying emission reductions, trade sanctions, taxation strategies, financial penalties.

A legally binding International Court, which would be responsible of monitoring and certifying of the implementation, compliance of the countries with the provisions of the new legally binding instruments as a part of the sustainable development project can be established. UNFCCC Secretariat and the parties of FCCC and the Kyoto Protocol should initialize the attempts in order to improve the phases of project of Climate Change Stability.

This is a vital project that would determine the world environmental status for the hundred years which we will inherit to other generations. When the law of sustainable development in Climate Change and the social, economic response mechanisms to it are established; when the world of idealism that established its dynamics on the realities exhort the nations states to abandon their Real Politics, we would claim to the Future of the Earth to “Our Future”.

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APPENDICES

APPENDIX1- Increase in GHG Emission since 1990

Below is a list of the change in GHG emissions from 1990 to 2004 for some countries that are part of the Climate Change Convention as reported by the United Nations.

Country	Change in GHG Emissions (1990-2004)	EU Assigned Objective for 2012	Treaty Obligation 2008-2012
Germany	-17%	-21%	-8%
Canada	+27%	N/A	-6%
Australia	+25%	N/A	N/A
Spain	+49%	+15%	-8%
United States	+16%	N/A	N/A
Norway	+10%	N/A	+1%
New Zealand	+21%	N/A	0%
France	-0.8%	0%	-8%
Greece	+27%	+25%	-8%
Ireland	+23%	+13%	-8%
Japan	+6.5%	N/A	-6%
United Kingdom	-14%	-12.5%	-8%
Portugal	+41%	+27%	-8%
EU-15	-0.8%	N/A	-8%

Source: United Nations Framework Convention on Climate Change, 2008. (online) www.unfccc.int

APPENDIX 2 -The distributed values of the World Greenhouse Gas Emissions

1	**ANTARCTIC FISHERIES**	**61.12**	*108*	**CUBA**	**0.75**
2	**U.S. VIRGIN ISLANDS**	**29.91**	*109*	**ST. KITTS-NEVIS**	**0.69**
3	**QATAR**	**19.65**	*110*	**LATVIA**	**0.67**
4	**NETHERLAND ANTILLES**	**12.61**	*111*	**SAINT HELENA**	**0.67**
5	**BAHRAIN**	**7.70**	*112*	**MAURITIUS**	**0.67**
6	**GUAM**	**7.17**	*113*	**BRITISH VIRGIN ISLANDS**	**0.66**
7	**UNITED ARAB EMIRATES**	**6.17**	*114*	**FRENCH POLYNESIA**	**0.64**
8	**KUWAIT**	**5.97**	*115*	**BOTSWANA**	**0.64**
9	**TRINIDAD AND TOBAGO**	**5.58**	*116*	**SAINT LUCIA**	**0.62**
10	**UNITED STATES OF AMERICA**	**5.40**	*117*	**PUERTO RICO**	**0.61**
11	**LUXEMBOURG**	**5.31**	*118*	**EGYPT**	**0.61**
12	**FALKLAND ISLANDS (MALVINAS)**	**5.24**	*119*	**PANAMA**	**0.61**
13	**ARUBA**	**5.20**	*120*	**CHINA (MAINLAND)**	**0.60**
14	**BRUNEI (DARUSSALAM)**	**5.08**	*121*	**GRENADA**	**0.57**
15	**WAKE ISLAND**	**5.02**	*122*	**GUYANA**	**0.57**
16	**AUSTRALIA**	**4.91**	*123*	**ECUADOR**	**0.55**
17	**SAUDI ARABIA**	**4.77**	*124*	**TUNISIA**	**0.53**
18	**SINGAPORE**	**3.90**	*125*	**MALDIVES**	**0.50**
19	**CANADA**	**3.87**	*126*	**BRAZIL**	**0.50**
20	**FAEROE ISLANDS**	**3.84**	*127*	**REPUBLIC OF MOLDOVA**	**0.49**
21	**PALAU**	**3.48**	*128*	**URUGUAY**	**0.44**
22	**ESTONIA**	**3.19**	*129*	**COOK ISLANDS**	**0.42**
23	**CZECH REPUBLIC**	**3.16**	*130*	**NIUE**	**0.42**
24	**NAURU**	**3.07**	*131*	**ST. VINCENT & THE GRENADINES**	**0.41**
25	**IRELAND**	**3.04**	*132*	**COSTA RICA**	**0.39**
26	**NORWAY**	**3.03**	*133*	**DOMINICA**	**0.38**
27	**LIBYAN ARAB JAMAHIRIYAH**	**2.95**	*134*	**COLOMBIA**	**0.38**
28	**ISRAEL**	**2.85**	*135*	**BOLIVIA**	**0.36**
29	**FINLAND**	**2.82**	*136*	**INDONESIA**	**0.35**
30	**BELGIUM**	**2.72**	*137*	**MOROCCO**	**0.35**
31	**GREENLAND**	**2.71**	*138*	**TONGA**	**0.33**
32	**RUSSIAN FEDERATION**	**2.69**	*139*	**GEORGIA**	**0.32**
33	**TAIWAN**	**2.68**	*140*	**ZIMBABWE**	**0.32**
34	**MONTSERRAT**	**2.68**	*141*	**MAURITANIA**	**0.31**
35	**GERMANY**	**2.61**	*142*	**PERU**	**0.31**

36	**UNITED KINGDOM**	**2.69**	*143*	**INDIA**	**0.29**
37	**JAPAN**	**2.55**	*144*	**EL SALVADOR**	**0.29**
38	**REPUBLIC OF KOREA**	**2.47**	*145*	**PHILIPPINES**	**0.28**
39	**GREECE**	**2.44**	*146*	**NAMIBIA**	**0.27**
40	**NETHERLANDS**	**2.39**	*147*	**WESTERN SAHARA**	**0.26**
41	**CYPRUS**	**2.32**	*148*	**YRGYZSTAN**	**0.26**
42	**DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA**	**2.31**	*149*	**ARMENIA**	**0.25**
43	**NEW ZEALAND**	**2.28**	*150*	**ALBANIA**	**0.25**
44	**DENMARK**	**2.28**	*151*	**FIJI**	**0.24**
45	**OMAN**	**2.25**	*152*	**GUATEMALA**	**0.24**
46	**KAZAKHSTAN**	**2.22**	*153*	**SAMOA**	**0.22**
47	**GIBRALTAR**	**2.20**	*154*	**PAKISTAN**	**0.21**
48	**NEW CALEDONIA**	**2.16**	*155*	**HONDURAS**	**0.20**
49	**ST. PIERRE & MIQUELON**	**2.15**	*156*	**VIET NAM**	**0.20**
50	**POLAND**	**2.13**	*157*	**NICARAGUA**	**0.20**
51	**ICELAND**	**2.10**	*158*	**PARAGUAY**	**0.18**
52	**CAYMAN ISLANDS**	**2.05**	*159*	**SAO TOME & PRINCIPE**	**0.18**
53	**AUSTRIA**	**2.05**	*160*	**TAJIKISTAN**	**0.18**
54	**SOUTH AFRICA**	**2.04**	*161*	**COTE D IVOIRE**	**0.17**
55	**ITALY (INCLUDING SAN MARINO)**	**2.02**	*162*	**DJIBOUTI**	**0.17**
56	**BERMUDA**	**2.01**	*163*	**CONGO**	**0.16**
57	**SLOVENIA**	**2.01**	*164*	**SRI LANKA**	**0.14**
58	**TURKMENISTAN**	**1.99**	*165*	**PAPUA NEW GUINEA**	**0.14**
59	**MALTA**	**1.96**	*166*	**ANGOLA**	**0.13**
60	**SPAIN**	**1.95**	*167*	**YEMEN**	**0.13**
61	**UKRAINE**	**1.89**	*168*	**EQUATORIAL GUINEA**	**0.12**
62	**SLOVAKIA**	**1.79**	*169*	**REPUBLIC OF CAMEROON**	**0.12**
63	**VENEZUELA**	**1.78**	*170*	**SENEGAL**	**0.12**
64	**MALAYSIA**	**1.69**	*171*	**SWAZILAND**	**0.11**
65	**FRANCE (INCLUDING MONACO)**	**1.68**	*172*	**VANUATU**	**0.11**
66	**PORTUGAL**	**1.63**	*173*	**TOGO**	**0.11**
67	**BAHAMAS**	**1.62**	*174*	**SOLOMON ISLANDS**	**0.10**
68	**BELARUS**	**1.61**	*175*	**CAPE VERDE**	**0.09**
69	**FRENCH GUIANA**	**1.52**	*176*	**GHANA**	**0.09**
70	**MACEDONIA**	**1.50**	*177*	**NIGERIA**	**0.09**
71	**ANTIGUA & BARBUDA**	**1.48**	*178*	**KENYA**	**0.08**
72	**MARTINIQUE**	**1.47**	*179*	**KIRIBATI**	**0.08**
73	**HUNGARY**	**1.47**	*180*	**BENIN**	**0.07**
74	**SWITZERLAND**	**1.46**	*181*	**GUINEA BISSAU**	**0.06**

75	**BULGARIA**	**1.45**	*182*	**BANGLADESH**	**0.06**
76	**SWEDEN**	**1.44**	*183*	**GAMBIA**	**0.05**
77	**ISLAMIC REPUBLIC OF IRAN**	**1.33**	*184*	**MYANMAR**	**0.05**
78	**HONG KONG**	**1.33**	*185*	**BHUTAN**	**0.05**
79	**SURINAME**	**1.33**	*186*	**HAITI**	**0.05**
80	**BOSNIA-HERZEGOVINIA**	**1.32**	*187*	**ZAMBIA**	**0.05**
81	**UZBEKISTAN**	**1.31**	*188*	**SUDAN**	**0.05**
82	**CROATIA**	**1.22**	*189*	**ERITREA**	**0.05**
83	**BARBADOS**	**1.20**	*190*	**GUINEA**	**0.04**
84	**MEXICO**	**1.19**	*191*	**NEPAL**	**0.04**
85	**LEBANON**	**1.18**	*192*	**MADAGASCAR**	**0.04**
86	**AMERICAN SAMOA**	**1.15**	*193*	**LIBERIA**	
87	**JAMAICA**	**1.12**	*194*	**SIERRA LEONE**	**0.04**
88	**FEDERAL REPUBLIC OF YUGOSLAVIA**	**1.07**	*195*	**UNITED REPUBLIC OF TANZANIA**	**0.03**
89	**CHILE**	**1.07**	*196*	**COMOROS**	**0.03**
90	**ROMANIA**	**1.05**	*197*	**NIGER**	**0.03**
91	**GUADELOUPE**	**1.05**	*198*	**BURKINA FASO**	**0.02**
92	**MACAU**	**1.02**	*199*	**LAO PEOPLE'S DEMOCRATIC REPUBLIC**	**0.02**
93	**ARGENTINA**	**1.02**	*200*	**RWANDA**	**0.02**
94	**AZERBAIJAN**	**0.99**	*201*	**CENTRAL AFRICAN REPUBLIC**	**0.02**
95	**TURKEY**	**0.93**	*202*	**UGANDA**	**0.02**
96	**REUNION**	**0.92**	*203*	**MALAWI**	**0.02**
97	**IRAQ**	**0.91**	*204*	**MOZAMBIQUE**	**0.02**
98	**SYRIAN ARAB REPUBLIC**	**0.91**	*205*	**ZAIRE**	**0.01**
99	**LITHUANIA**	**0.88**	*206*	**MALI**	**0.01**
100	**THAILAND**	**0.87**	*207*	**AFGHANISTAN**	**0.01**
	JORDAN	**0.86**	*208*	**CAMBODIA**	**0.01**
102	**MONGOLIA**	**0.86**	*209*	**BURUNDI**	**0.01**
103	**BELIZE**	**0.85**	*210*	**CHAD**	**0.00**
104	**DOMINICAN REPUBLIC**	**0.81**	*211*	**TURKS AND CAICOS ISLANDS**	**0.00**
105	**ALGERIA**	**0.80**	*212*	**ETHIOPIA**	
106	**GABON**	**0.79**			
107	**SEYCHELLES**	**0.76**			

Source: Climate Change 2007. (online) www.iklimdegisikligi.org (accessed in May 2007)

APPENDIX 3 – The Expected Impacts of the Climate Change

Table SPM-1: Examples of impacts resulting from projected changes in extreme climate events.

Projected Changes during the 21st Century in Extreme Climate Phenomena and their Likelihood[a]	Representative Examples of Projected Impacts[b] *(all high confidence of occurrence in some areas[c])*
Simple Extremes	
Higher maximum temperatures; more hot days and heat waves[d] over nearly all land areas (*very likely*[a])	• Increased incidence of death and serious illness in older age groups and urban poor [4.7] • Increased heat stress in livestock and wildlife [4.2 and 4.3] • Shift in tourist destinations [Table TS-4 and 5.8] • Increased risk of damage to a number of crops [4.2] • Increased electric cooling demand and reduced energy supply reliability [Table TS-4 and 4.5]
Higher (increasing) minimum temperatures; fewer cold days, frost days, and cold waves[d] over nearly all land areas (*very likely*[a])	• Decreased cold-related human morbidity and mortality [4.7] • Decreased risk of damage to a number of crops, and increased risk to others [4.2] • Extended range and activity of some pest and disease vectors [4.2 and 4.3] • Reduced heating energy demand [4.5]
More intense precipitation events (*very likely*[a] over many areas)	• Increased flood, landslide, avalanche, and mudslide damage [4.5] • Increased soil erosion [5.2.4] • Increased flood runoff could increase recharge of some floodplain aquifers [4.1] • Increased pressure on government and private flood insurance systems and disaster relief [Table TS-4 and 4.6]
Complex Extremes	
Increased summer drying over most mid-latitude continental interiors and associated risk of drought (*likely*[a])	• Decreased crop yields [4.2] • Increased damage to building foundations caused by ground shrinkage [Table TS-4] • Decreased water resource quantity and quality [4.1 and 4.5] • Increased risk of forest fire [5.4.2]
Increase in tropical cyclone peak wind intensities, mean and peak precipitation intensities (*likely*[a] over some areas)[e]	• Increased risks to human life, risk of infectious disease epidemics, and many other risks [4.7] • Increased coastal erosion and damage to coastal buildings and infrastructure [4.5 and 7.2.4] • Increased damage to coastal ecosystems such as coral reefs and mangroves [4.4]
Intensified droughts and floods associated with El Niño events in many different regions (*likely*[a]) (see also under droughts and intense precipitation events)	• Decreased agricultural and rangeland productivity in drought- and flood-prone regions [4.3] • Decreased hydro-power potential in drought-prone regions [5.1.1 and Figure TS-7]
Increased Asian summer monsoon precipitation variability (*likely*[a])	• Increased flood and drought magnitude and damages in temperate and tropical Asia [5.2.4]
Increased intensity of mid-latitude storms (little agreement between current models)[d]	• Increased risks to human life and health [4.7] • Increased property and infrastructure losses [Table TS-4] • Increased damage to coastal ecosystems [4.4]

[a]Likelihood refers to judgmental estimates of confidence used by TAR WGI: *very likely* (90-99% chance); *likely* (66-90% chance). Unless otherwise stated, information on climate phenomena is taken from the Summary for Policymakers, TAR WGI.
[b]These impacts can be lessened by appropriate response measures.
[c]High confidence refers to probabilities between 67 and 95% as described in Footnote 6.
[d]Information from TAR WGI, Technical Summary, Section F.5.
[e]Changes in regional distribution of tropical cyclones are possible but have not been established.

Source: United Nations Environmental Program, Clark R., Roeward D. 2003. *Global Environmental Outlook. United Kingdom and United States:* Earth Scan Publications.

APPENDIX 4 – The Original Document the Framework Convention on Climate Change

Source: United Nations Framework Convention on climate change 2007. (online) www.unfccc.int (accessed on May 2007)

The Parties to this Convention,

Acknowledging that change in the Earth's climate and its adverse effects are a common concern of humankind,

Concerned that human activities have been substantially increasing the atmospheric concentrations of greenhouse gases, that these increases enhance the natural greenhouse effect, and that this will result on average in an additional warming of the Earth's surface and atmosphere and may adversely affect natural ecosystems and humankind,

Noting that the largest share of historical and current global emissions of greenhouse gases has originated in developed countries, that per capita emissions in developing countries are still relatively low and that the share of global emissions originating in developing countries will grow to meet their social and development needs,

Aware of the role and importance in terrestrial and marine ecosystems of sinks and reservoirs of greenhouse gases,

Noting that there are many uncertainties in predictions of climate change, particularly with regard to the timing, magnitude and regional patterns thereof,

Acknowledging that the global nature of climate change calls for the widest possible cooperation by all countries and their participation in an effective and appropriate international response, in accordance with their common but differentiated responsibilities and respective capabilities and their social and economic conditions,

Recalling the pertinent provisions of the Declaration of the United Nations Conference on the Human Environment, adopted at Stockholm on 16 June 1972,

Recalling also that States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction,

Reaffirming the principle of sovereignty of States in international cooperation to address climate change,

Recognizing that States should enact effective environmental legislation, that environmental standards, management objectives and priorities should reflect the environmental and developmental context to which they apply, and that standards applied by some countries may be inappropriate and of unwarranted economic and social cost to other countries, in particular

developing countries,

Recalling the provisions of General Assembly resolution 44/228 of 22 December 1989 on the United Nations Conference on Environment and Development, and resolutions 43/53 of 6 December 1988, 44/207 of 22 December 1989, 45/212 of 21 December 1990 and 46/169 of 19 December 1991 on protection of global climate for present and future generations of mankind,

Recalling also the provisions of General Assembly resolution 44/206 of 22 December 1989 on the possible adverse effects of sea-level rise on islands and coastal areas, particularly low-lying coastal areas and the pertinent provisions of General Assembly resolution 44/172 of 19 December 1989 on the implementation of the Plan of Action to Combat Desertification,

Recalling further the Vienna Convention for the Protection of the Ozone Layer, 1985, and the Montreal Protocol on Substances that Deplete the Ozone Layer, 1987, as adjusted and amended on 29 June 1990,

Noting the Ministerial Declaration of the Second World Climate Conference adopted on 7 November 1990,

Conscious of the valuable analytical work being conducted by many States on climate change and of the important contributions of the World Meteorological Organization, the United Nations Environment Programme and other organs, organizations and bodies of the United Nations system, as well as other international and intergovernmental bodies, to the exchange of results of scientific research and the coordination of research,

Recognizing that steps required to understand and address climate change will be environmentally, socially and economically most effective if they are based on relevant scientific, technical and economic considerations and continually re-evaluated in the light of new findings in these areas,

Recognizing that various actions to address climate change can be justified economically in their own right and can also help in solving other environmental problems,

Recognizing also the need for developed countries to take immediate action in a flexible manner on the basis of clear priorities, as a first step towards comprehensive response strategies at the global, national and, where agreed, regional levels that take into account all greenhouse gases, with due consideration of their relative contributions to the enhancement of the greenhouse effect,

Recognizing further that low-lying and other small island countries, countries with low-lying coastal, arid and semi-arid areas or areas liable to floods, drought and desertification, and developing countries with fragile mountainous ecosystems are particularly vulnerable to the adverse effects of climate change,

Recognizing the special difficulties of those countries, especially developing countries, whose economies are particularly dependent on fossil fuel production, use and exportation, as a

consequence of action taken on limiting greenhouse gas emissions,

Affirming that responses to climate change should be coordinated with social and economic development in an integrated manner with a view to avoiding adverse impacts on the latter, taking into full account the legitimate priority needs of developing countries for the achievement of sustained economic growth and the eradication of poverty,

Recognizing that all countries, especially developing countries, need access to resources required to achieve sustainable social and economic development and that, in order for developing countries to progress towards that goal, their energy consumption will need to grow taking into account the possibilities for achieving greater energy efficiency and for controlling greenhouse gas emissions in general, including through the application of new technologies on terms which make such an application economically and socially beneficial,

Determined to protect the climate system for present and future generations,

Have agreed as follows:

ARTICLE 1
DEFINITIONS*

For the purposes of this Convention:

1. "Adverse effects of climate change" means changes in the physical environment or biota resulting from climate change which have significant deleterious effects on the composition, resilience or productivity of natural and managed ecosystems or on the operation of socio-economic systems or on human health and welfare.

2. "Climate change" means 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.

3. "Climate system" means the totality of the atmosphere, hydrosphere, biosphere and geosphere and their interactions.

4. "Emissions" means the release of greenhouse gases and/or their precursors into the atmosphere over a specified area and period of time.

5. "Greenhouse gases" means those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and re-emit infrared radiation.

6. "Regional economic integration organization" means an organization constituted by sovereign States of a given region which has competence in respect of matters governed by this Convention or its protocols and has been duly authorized, in accordance with its internal

procedures, to sign, ratify, accept, approve or accede to the instruments concerned.

7. "Reservoir" means a component or components of the climate system where a greenhouse gas or a precursor of a greenhouse gas is stored.

8. "Sink" means any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere.

9. "Source" means any process or activity which releases a greenhouse gas, an aerosol or a precursor of a greenhouse gas into the atmosphere.

* Titles of articles are included solely to assist the reader.

ARTICLE 2
OBJECTIVE

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.

ARTICLE 3
PRINCIPLES

In their actions to achieve the objective of the Convention and to implement its provisions, the Parties shall be guided, INTER ALIA, by the following:

1. The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof.

2. The specific needs and special circumstances of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change, and of those Parties, especially developing country Parties, that would have to bear a disproportionate or abnormal burden under the Convention, should be given full consideration.

3. The Parties should take precautionary measures to anticipate, prevent or minimize the

causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost. To achieve this, such policies and measures should take into account different socio-economic contexts, be comprehensive, cover all relevant sources, sinks and reservoirs of greenhouse gases and adaptation, and comprise all economic sectors. Efforts to address climate change may be carried out cooperatively by interested Parties.

4. The Parties have a right to, and should, promote sustainable development. Policies and measures to protect the climate system against human-induced change should be appropriate for the specific conditions of each Party and should be integrated with national development programmes, taking into account that economic development is essential for adopting measures to address climate change.

5. The Parties should cooperate to promote a supportive and open international economic system that would lead to sustainable economic growth and development in all Parties, particularly developing country Parties, thus enabling them better to address the problems of climate change. Measures taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade.

ARTICLE 4
COMMITMENTS

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1. All Parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances, shall:

(a) Develop, periodically update, publish and make available to the Conference of the Parties, in accordance with Article 12, national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, using comparable methodologies to be agreed upon by the Conference of the Parties;

(b) Formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, and measures to facilitate adequate adaptation to climate change;

(c) Promote and cooperate in the development, application and diffusion, including transfer, of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases not controlled by the Montreal Protocol in all relevant sectors, including the energy, transport, industry, agriculture, forestry and waste management sectors;

(d) Promote sustainable management, and promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs of all greenhouse gases not controlled by the Montreal Protocol, including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems;

(e) Cooperate in preparing for adaptation to the impacts of climate change; develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture, and for the protection and rehabilitation of areas, particularly in Africa, affected by drought and desertification, as well as floods;

(f) Take climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions, and employ appropriate methods, for example impact assessments, formulated and determined nationally, with a view to minimizing adverse effects on the economy, on public health and on the quality of the environment, of projects or measures undertaken by them to mitigate or adapt to climate change;

(g) Promote and cooperate in scientific, technological, technical, socio-economic and other research, systematic observation and development of data archives related to the climate system and intended to further the understanding and to reduce or eliminate the remaining uncertainties regarding the causes, effects, magnitude and timing of climate change and the economic and social consequences of various response strategies;

(h) Promote and cooperate in the full, open and prompt exchange of relevant scientific, technological, technical, socio-economic and legal information related to the climate system and climate change, and to the economic and social consequences of various response strategies;

(i) Promote and cooperate in education, training and public awareness related to climate change and encourage the widest participation in this process, including that of non-governmental organizations; and

(j) Communicate to the Conference of the Parties information related to implementation, in accordance with Article 12.

2. The developed country Parties and other Parties included in Annex I commit themselves specifically as provided for in the following:

(a) Each of these Parties shall adopt national1 policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs. These policies and measures will demonstrate that developed countries are taking the lead in modifying longer-term trends in anthropogenic emissions consistent with the objective of the Convention, recognizing that the return by the end of the present decade to earlier levels of anthropogenic emissions of carbon dioxide and other greenhouse gases not controlled by the Montreal Protocol would contribute to such modification, and taking into account the differences in these Parties' starting points and approaches, economic structures and resource bases, the need to maintain strong and sustainable economic growth, available technologies and other individual

circumstances, as well as the need for equitable and appropriate contributions by each of these Parties to the global effort regarding that objective. These Parties may implement such policies and measures jointly with other Parties and may assist other Parties in contributing to the achievement of the objective of the Convention and, in particular, that of this subparagraph;

(b) In order to promote progress to this end, each of these Parties shall communicate, within six months of the entry into force of the Convention for it and periodically thereafter, and in accordance with Article 12, detailed information on its policies and measures referred to in subparagraph (a) above, as well as on its resulting projected anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol for the period referred to in subparagraph (a), with the aim of returning individually or jointly to their 1990 levels these anthropogenic emissions of carbon dioxide and other greenhouse gases not controlled by the Montreal Protocol. This information will be reviewed by the Conference of the Parties, at its first session and periodically thereafter, in accordance with Article 7;

(c) Calculations of emissions by sources and removals by sinks of greenhouse gases for the purposes of subparagraph (b) above should take into account the best available scientific knowledge, including of the effective capacity of sinks and the respective contributions of such gases to climate change. The Conference of the Parties shall consider and agree on methodologies for these calculations at its first session and review them regularly thereafter;

(d) The Conference of the Parties shall, at its first session, review the adequacy of subparagraphs (a) and (b) above. Such review shall be carried out in the light of the best available scientific information and assessment on climate change and its impacts, as well as relevant technical, social and economic information. Based on this review, the Conference of the Parties shall take appropriate action, which may include the adoption of amendments to the commitments in subparagraphs (a) and (b) above. The Conference of the Parties, at its first session, shall also take decisions regarding criteria for joint implementation as indicated in subparagraph (a) above. A second review of subparagraphs (a) and (b) shall take place not later than 31 December 1998, and thereafter at regular intervals determined by the Conference of the Parties, until the objective of the Convention is met;

(e) Each of these Parties shall :

i) Coordinate as appropriate with other such Parties, relevant economic and administrative instruments developed to achieve the objective of the Convention; and

(ii) Identify and periodically review its own policies and practices which encourage activities that lead to greater levels of anthropogenic emissions of greenhouse gases not controlled by the Montreal Protocol than would otherwise occur;

(f) The Conference of the Parties shall review, not later than 31 December 1998, available information with a view to taking decisions regarding such amendments to the lists in Annexes I and II as may be appropriate, with the approval of the Party concerned;

(g) Any Party not included in Annex I may, in its instrument of ratification, acceptance, approval or accession, or at any time thereafter, notify the Depositary that it intends to be

bound by subparagraphs (a) and (b) above. The Depositary shall inform the other signatories and Parties of any such notification.

3. The developed country Parties and other developed Parties included in Annex II shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1. They shall also provide such financial resources, including for the transfer of technology, needed by the developing country Parties to meet the agreed full incremental costs of implementing measures that are covered by paragraph 1 of this Article and that are agreed between a developing country Party and the international entity or entities referred to in Article 11, in accordance with that Article. The implementation of these commitments shall take into account the need for adequacy and predictability in the flow of funds and the importance of appropriate burden sharing among the developed country Parties.

4. The developed country Parties and other developed Parties included in Annex II shall also assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects.

5. The developed country Parties and other developed Parties included in Annex II shall take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention. In this process, the developed country Parties shall support the development and enhancement of endogenous capacities and technologies of developing country Parties. Other Parties and organizations in a position to do so may also assist in facilitating the transfer of such technologies.

6. In the implementation of their commitments under paragraph 2 above, a certain degree of flexibility shall be allowed by the Conference of the Parties to the Parties included in Annex I undergoing the process of transition to a market economy, in order to enhance the ability of these Parties to address climate change, including with regard to the historical level of anthropogenic emissions of greenhouse gases not controlled by the Montreal Protocol chosen as a reference.

7. The extent to which developing country Parties will effectively implement their commitments under the Convention will depend on the effective implementation by developed country Parties of their commitments under the Convention related to financial resources and transfer of technology and will take fully into account that economic and social development and poverty eradication are the first and overriding priorities of the developing country Parties.

8. In the implementation of the commitments in this Article, the Parties shall give full consideration to what actions are necessary under the Convention, including actions related to funding, insurance and the transfer of technology, to meet the specific needs and concerns of developing country Parties arising from the adverse effects of climate change and/or the impact of the implementation of response measures, especially on:

(a) Small island countries;

(b) Countries with low-lying coastal areas;

(c) Countries with arid and semi-arid areas, forested areas and areas liable to forest decay;

(d) Countries with areas prone to natural disasters;

(e) Countries with areas liable to drought and desertification;

(f) Countries with areas of high urban atmospheric pollution;

(g) Countries with areas with fragile ecosystems, including mountainous ecosystems;

(h) Countries whose economies are highly dependent on income generated from the production, processing and export, and/or on consumption of fossil fuels and associated energy-intensive products; and

(i) Land-locked and transit countries.

Further, the Conference of the Parties may take actions, as appropriate, with respect to this paragraph.

9. The Parties shall take full account of the specific needs and special situations of the least developed countries in their actions with regard to funding and transfer of technology.

10. The Parties shall, in accordance with Article 10, take into consideration in the implementation of the commitments of the Convention the situation of Parties, particularly developing country Parties, with economies that are vulnerable to the adverse effects of the implementation of measures to respond to climate change. This applies notably to Parties with economies that are highly dependent on income generated from the production, processing and export, and/or consumption of fossil fuels and associated energy-intensive products and/or the use of fossil fuels for which such Parties have serious difficulties in switching to alternatives.

ARTICLE 5
RESEARCH AND SYSTEMATIC OBSERVATION

In carrying out their commitments under Article 4, paragraph 1(g), the Parties shall:

(a) Support and further develop, as appropriate, international and intergovernmental programmes and networks or organizations aimed at defining, conducting, assessing and financing research, data collection and systematic observation, taking into account the need to minimize duplication of effort;

(b) Support international and intergovernmental efforts to strengthen systematic observation and national scientific and technical research capacities and capabilities, particularly in developing countries, and to promote access to, and the exchange of, data and analyses thereof

obtained from areas beyond national jurisdiction; and

(c) Take into account the particular concerns and needs of developing countries and cooperate in improving their endogenous capacities and capabilities to participate in the efforts referred to in subparagraphs (a) and (b) above.

ARTICLE 6
EDUCATION, TRAINING AND PUBLIC AWARENESS

In carrying out their commitments under Article 4, paragraph 1(i), the Parties shall:

(a) Promote and facilitate at the national and, as appropriate, subregional and regional levels, and in accordance with national laws and regulations, and within their respective capacities:

(i) The development and implementation of educational and public awareness programmes on climate change and its effects;

(ii) Public access to information on climate change and its effects;

(iii) Public participation in addressing climate change and its effects and developing adequate responses; and

(iv) Training of scientific, technical and managerial personnel.

(b) Cooperate in and promote, at the international level, and, where appropriate, using existing bodies:

(i) The development and exchange of educational and public awareness material on climate change and its effects; and

(ii) The development and implementation of education and training programmes, including the strengthening of national institutions and the exchange or secondment of personnel to train experts in this field, in particular for developing countries.

ARTICLE 7
CONFERENCE OF THE PARTIES

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1. A Conference of the Parties is hereby established.

2. The Conference of the Parties, as the supreme body of this Convention, shall keep under regular review the implementation of the Convention and any related legal instruments that the

Conference of the Parties may adopt, and shall make, within its mandate, the decisions necessary to promote the effective implementation of the Convention. To this end, it shall:

(a) Periodically examine the obligations of the Parties and the institutional arrangements under the Convention, in the light of the objective of the Convention, the experience gained in its implementation and the evolution of scientific and technological knowledge;

(b) Promote and facilitate the exchange of information on measures adopted by the Parties to address climate change and its effects, taking into account the differing circumstances, responsibilities and capabilities of the Parties and their respective commitments under the Convention;

(c) Facilitate, at the request of two or more Parties, the coordination of measures adopted by them to address climate change and its effects, taking into account the differing circumstances, responsibilities and capabilities of the Parties and their respective commitments under the Convention;

(d) Promote and guide, in accordance with the objective and provisions of the Convention, the development and periodic refinement of comparable methodologies, to be agreed on by the Conference of the Parties, inter alia, for preparing inventories of greenhouse gas emissions by sources and removals by sinks, and for evaluating the effectiveness of measures to limit the emissions and enhance the removals of these gases;

(e) Assess, on the basis of all information made available to it in accordance with the provisions of the Convention, the implementation of the Convention by the Parties, the overall effects of the measures taken pursuant to the Convention, in particular environmental, economic and social effects as well as their cumulative impacts and the extent to which progress towards the objective of the Convention is being achieved;

(f) Consider and adopt regular reports on the implementation of the Convention and ensure their publication;

(g) Make recommendations on any matters necessary for the implementation of the Convention;

(h) Seek to mobilize financial resources in accordance with Article 4, paragraphs 3, 4 and 5, and Article 11;

(i) Establish such subsidiary bodies as are deemed necessary for the implementation of the Convention;

(j) Review reports submitted by its subsidiary bodies and provide guidance to them;

(k) Agree upon and adopt, by consensus, rules of procedure and financial rules for itself and for any subsidiary bodies;

(l) Seek and utilize, where appropriate, the services and cooperation of, and information

provided by, competent international organizations and intergovernmental and non-governmental bodies; and

(m) Exercise such other functions as are required for the achievement of the objective of the Convention as well as all other functions assigned to it under the Convention.

3. The Conference of the Parties shall, at its first session, adopt its own rules of procedure as well as those of the subsidiary bodies established by the Convention, which shall include decision-making procedures for matters not already covered by decision- making procedures stipulated in the Convention. Such procedures may include specified majorities required for the adoption of particular decisions.

4. The first session of the Conference of the Parties shall be convened by the interim secretariat referred to in Article 21 and shall take place not later than one year after the date of entry into force of the Convention. Thereafter, ordinary sessions of the Conference of the Parties shall be held every year unless otherwise decided by the Conference of the Parties.

5. Extraordinary sessions of the Conference of the Parties shall be held at such other times as may be deemed necessary by the Conference, or at the written request of any Party, provided that, within six months of the request being communicated to the Parties by the secretariat, it is supported by at least one third of the Parties.

6. The United Nations, its specialized agencies and the International Atomic Energy Agency, as well as any State member thereof or observers thereto not Party to the Convention, may be represented at sessions of the Conference of the Parties as observers. Any body or agency, whether national or international, governmental or non- governmental, which is qualified in matters covered by the Convention, and which has informed the secretariat of its wish to be represented at a session of the Conference of the Parties as an observer, may be so admitted unless at least one third of the Parties present object. The admission and participation of observers shall be subject to the rules of procedure adopted by the Conference of the Parties.

ARTICLE 8
SECRETARIAT

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1. A secretariat is hereby established.

2. The functions of the secretariat shall be:

(a) To make arrangements for sessions of the Conference of the Parties and its subsidiary bodies established under the Convention and to provide them with services as required;

(b) To compile and transmit reports submitted to it;

(c) To facilitate assistance to the Parties, particularly developing country Parties, on request, in the compilation and communication of information required in accordance with the provisions

of the Convention;

(d) To prepare reports on its activities and present them to the Conference of the Parties;

(e) To ensure the necessary coordination with the secretariats of other relevant international bodies;

(f) To enter, under the overall guidance of the Conference of the Parties, into such administrative and contractual arrangements as may be required for the effective discharge of its functions; and

(g) To perform the other secretariat functions specified in the Convention and in any of its protocols and such other functions as may be determined by the Conference of the Parties.

3. The Conference of the Parties, at its first session, shall designate a permanent secretariat and make arrangements for its functioning.

ARTICLE 9
SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE

1. A subsidiary body for scientific and technological advice is hereby established to provide the Conference of the Parties and, as appropriate, its other subsidiary bodies with timely information and advice on scientific and technological matters relating to the Convention. This body shall be open to participation by all Parties and shall be multidisciplinary. It shall comprise government representatives competent in the relevant field of expertise. It shall report regularly to the Conference of the Parties on all aspects of its work.

2. Under the guidance of the Conference of the Parties, and drawing upon existing competent international bodies, this body shall:

(a) Provide assessments of the state of scientific knowledge relating to climate change and its effects;

(b) Prepare scientific assessments on the effects of measures taken in the implementation of the Convention;

(c) Identify innovative, efficient and state-of-the-art technologies and know-how and advise on the ways and means of promoting development and/or transferring such technologies;

(d) Provide advice on scientific programmes, international cooperation in research and development related to climate change, as well as on ways and means of supporting endogenous capacity-building in developing countries; and

(e) Respond to scientific, technological and methodological questions that the Conference of

the Parties and its subsidiary bodies may put to the body.

3. The functions and terms of reference of this body may be further elaborated by the Conference of the Parties.

ARTICLE 10
SUBSIDIARY BODY FOR IMPLEMENTATION

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1. A subsidiary body for implementation is hereby established to assist the Conference of the Parties in the assessment and review of the effective implementation of the Convention. This body shall be open to participation by all Parties and comprise government representatives who are experts on matters related to climate change. It shall report regularly to the Conference of the Parties on all aspects of its work.

2. Under the guidance of the Conference of the Parties, this body shall:

(a) Consider the information communicated in accordance with Article 12, paragraph 1, to assess the overall aggregated effect of the steps taken by the Parties in the light of the latest scientific assessments concerning climate change;

(b) Consider the information communicated in accordance with Article 12, paragraph 2, in order to assist the Conference of the Parties in carrying out the reviews required by Article 4, paragraph 2(d); and

(c) Assist the Conference of the Parties, as appropriate, in the preparation and implementation of its decisions.

ARTICLE 11
FINANCIAL MECHANISM

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1. A mechanism for the provision of financial resources on a grant or concessional basis, including for the transfer of technology, is hereby defined. It shall function under the guidance of and be accountable to the Conference of the Parties, which shall decide on its policies, programme priorities and eligibility criteria related to this Convention. Its operation shall be entrusted to one or more existing international entities.

2. The financial mechanism shall have an equitable and balanced representation of all Parties within a transparent system of governance.

3. The Conference of the Parties and the entity or entities entrusted with the operation of the financial mechanism shall agree upon arrangements to give effect to the above paragraphs,

which shall include the following:

(a) Modalities to ensure that the funded projects to address climate change are in conformity with the policies, programme priorities and eligibility criteria established by the Conference of the Parties;

(b) Modalities by which a particular funding decision may be reconsidered in light of these policies, programme priorities and eligibility criteria;

(c) Provision by the entity or entities of regular reports to the Conference of the Parties on its funding operations, which is consistent with the requirement for accountability set out in paragraph 1 above; and

(d) Determination in a predictable and identifiable manner of the amount of funding necessary and available for the implementation of this Convention and the conditions under which that amount shall be periodically reviewed.

4. The Conference of the Parties shall make arrangements to implement the above- mentioned provisions at its first session, reviewing and taking into account the interim arrangements referred to in Article 21, paragraph 3, and shall decide whether these interim arrangements shall be maintained. Within four years thereafter, the Conference of the Parties shall review the financial mechanism and take appropriate measures.

5. The developed country Parties may also provide and developing country Parties avail themselves of, financial resources related to the implementation of the Convention through bilateral, regional and other multilateral channels.

ARTICLE 12
COMMUNICATION OF INFORMATION RELATED TO IMPLEMENTATION

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1. In accordance with Article 4, paragraph 1, each Party shall communicate to the Conference of the Parties, through the secretariat, the following elements of information:

(a) A national inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, to the extent its capacities permit, using comparable methodologies to be promoted and agreed upon by the Conference of the Parties;

(b) A general description of steps taken or envisaged by the Party to implement the Convention; and

(c) Any other information that the Party considers relevant to the achievement of the objective of the Convention and suitable for inclusion in its communication, including, if feasible, material relevant for calculations of global emission trends.

2. Each developed country Party and each other Party included in Annex I shall incorporate in its communication the following elements of information:

(a) A detailed description of the policies and measures that it has adopted to implement its commitment under Article 4, paragraphs 2(a) and 2(b); and

(b) A specific estimate of the effects that the policies and measures referred to in subparagraph (a) immediately above will have on anthropogenic emissions by its sources and removals by its sinks of greenhouse gases during the period referred to in Article 4, paragraph 2(a).

3. In addition, each developed country Party and each other developed Party included in Annex II shall incorporate details of measures taken in accordance with Article 4, paragraphs 3, 4 and 5.

4. Developing country Parties may, on a voluntary basis, propose projects for financing, including specific technologies, materials, equipment, techniques or practices that would be needed to implement such projects, along with, if possible, an estimate of all incremental costs, of the reductions of emissions and increments of removals of greenhouse gases, as well as an estimate of the consequent benefits.

5. Each developed country Party and each other Party included in Annex I shall make its initial communication within six months of the entry into force of the Convention for that Party. Each Party not so listed shall make its initial communication within three years of the entry into force of the Convention for that Party, or of the availability of financial resources in accordance with Article 4, paragraph 3. Parties that are least developed countries may make their initial communication at their discretion. The frequency of subsequent communications by all Parties shall be determined by the Conference of the Parties, taking into account the differentiated timetable set by this paragraph.

6. Information communicated by Parties under this Article shall be transmitted by the secretariat as soon as possible to the Conference of the Parties and to any subsidiary bodies concerned. If necessary, the procedures for the communication of information may be further considered by the Conference of the Parties.

7. From its first session, the Conference of the Parties shall arrange for the provision to developing country Parties of technical and financial support, on request, in compiling and communicating information under this Article, as well as in identifying the technical and financial needs associated with proposed projects and response measures under Article 4. Such support may be provided by other Parties, by competent international organizations and by the secretariat, as appropriate.

8. Any group of Parties may, subject to guidelines adopted by the Conference of the Parties, and to prior notification to the Conference of the Parties, make a joint communication in fulfillment of their obligations under this Article, provided that such a communication includes information on the fulfillment by each of these Parties of its individual obligations under the Convention.

9. Information received by the secretariat that is designated by a Party as confidential, in accordance with criteria to be established by the Conference of the Parties, shall be aggregated by the secretariat to protect its confidentiality before being made available to any of the bodies involved in the communication and review of information.

10. Subject to paragraph 9 above, and without prejudice to the ability of any Party to make public its communication at any time, the secretariat shall make communications by Parties under this Article publicly available at the time they are submitted to the Conference of the Parties.

ARTICLE 13
RESOLUTION OF QUESTIONS REGARDING IMPLEMENTATION

The Conference of the Parties shall, at its first session, consider the establishment of a multilateral consultative process, available to Parties on their request, for the resolution of questions regarding the implementation of the Convention.

ARTICLE 14
SETTLEMENT OF DISPUTES

1. In the event of a dispute between any two or more Parties concerning the interpretation or application of the Convention, the Parties concerned shall seek a settlement of the dispute through negotiation or any other peaceful means of their own choice.

2. When ratifying, accepting, approving or acceding to the Convention, or at any time thereafter, a Party which is not a regional economic integration organization may declare in a written instrument submitted to the Depositary that, in respect of any dispute concerning the interpretation or application of the Convention, it recognizes as compulsory ipso facto and without special agreement, in relation to any Party accepting the same obligation:

(a) Submission of the dispute to the International Court of Justice, and/or

(b) Arbitration in accordance with procedures to be adopted by the Conference of the Parties as soon as practicable, in an annex on arbitration.

A Party which is a regional economic integration organization may make a declaration with like effect in relation to arbitration in accordance with the procedures referred to in subparagraph (b) above.

3. A declaration made under paragraph 2 above shall remain in force until it expires in accordance with its terms or until three months after written notice of its revocation has been deposited with the Depositary.

4. A new declaration, a notice of revocation or the expiry of a declaration shall not in any way affect proceedings pending before the International Court of Justice or the arbitral tribunal, unless the parties to the dispute otherwise agree.

5. Subject to the operation of paragraph 2 above, if after twelve months following notification by one Party to another that a dispute exists between them, the Parties concerned have not been able to settle their dispute through the means mentioned in paragraph 1 above, the dispute shall be submitted, at the request of any of the parties to the dispute, to conciliation.

6. A conciliation commission shall be created upon the request of one of the parties to the dispute. The commission shall be composed of an equal number of members appointed by each party concerned and a chairman chosen jointly by the members appointed by each party. The commission shall render a recommendatory award, which the parties shall consider in good faith.

7. Additional procedures relating to conciliation shall be adopted by the Conference of the Parties, as soon as practicable, in an annex on conciliation.

8. The provisions of this Article shall apply to any related legal instrument which the Conference of the Parties may adopt, unless the instrument provides otherwise.

ARTICLE 15
AMENDMENTS TO THE CONVENTION

1. Any Party may propose amendments to the Convention.

2. Amendments to the Convention shall be adopted at an ordinary session of the Conference of the Parties. The text of any proposed amendment to the Convention shall be communicated to the Parties by the secretariat at least six months before the meeting at which it is proposed for adoption. The secretariat shall also communicate proposed amendments to the signatories to the Convention and, for information, to the Depositary.

3. The Parties shall make every effort to reach agreement on any proposed amendment to the Convention by consensus. If all efforts at consensus have been exhausted, and no agreement reached, the amendment shall as a last resort be adopted by a three-fourths majority vote of the Parties present and voting at the meeting. The adopted amendment shall be communicated by the secretariat to the Depositary, who shall circulate it to all Parties for their acceptance.

4. Instruments of acceptance in respect of an amendment shall be deposited with the Depositary. An amendment adopted in accordance with paragraph 3 above shall enter into force for those Parties having accepted it on the ninetieth day after the date of receipt by the Depositary of an instrument of acceptance by at least three fourths of the Parties to the Convention.

5. The amendment shall enter into force for any other Party on the ninetieth day after the date

on which that Party deposits with the Depositary its instrument of acceptance of the said amendment.

6. For the purposes of this Article, "Parties present and voting" means Parties present and casting an affirmative or negative vote.

ARTICLE 16
ADOPTION AND AMENDMENT OF ANNEXES TO THE CONVENTION

1. Annexes to the Convention shall form an integral part thereof and, unless otherwise expressly provided, a reference to the Convention constitutes at the same time a reference to any annexes thereto. Without prejudice to the provisions of Article 14, paragraphs 2(b) and 7, such annexes shall be restricted to lists, forms and any other material of a descriptive nature that is of a scientific, technical, procedural or administrative character.

2. Annexes to the Convention shall be proposed and adopted in accordance with the procedure set forth in Article 15, paragraphs 2, 3 and 4.

3. An annex that has been adopted in accordance with paragraph 2 above shall enter into force for all Parties to the Convention six months after the date of the communication by the Depositary to such Parties of the adoption of the annex, except for those Parties that have notified the Depositary, in writing, within that period of their non-acceptance of the annex. The annex shall enter into force for Parties which withdraw their notification of non-acceptance on the ninetieth day after the date on which withdrawal of such notification has been received by the Depositary.

4. The proposal, adoption and entry into force of amendments to annexes to the Convention shall be subject to the same procedure as that for the proposal, adoption and entry into force of annexes to the Convention in accordance with paragraphs 2 and 3 above.

5.If the adoption of an annex or an amendment to an annex involves an amendment to the Convention, that annex or amendment to an annex shall not enter into force until such time as the amendment to the Convention enters into force.

ARTICLE 17
PROTOCOLS

1. The Conference of the Parties may, at any ordinary session, adopt protocols to the Convention.

2. The text of any proposed protocol shall be communicated to the Parties by the secretariat at least six months before such a session.

3. The requirements for the entry into force of any protocol shall be established by that

instrument.

4. Only Parties to the Convention may be Parties to a protocol.

5. Decisions under any protocol shall be taken only by the Parties to the protocol concerned.

ARTICLE 18
RIGHT TO VOTE

1. Each Party to the Convention shall have one vote, except as provided for in paragraph 2 below.

2. Regional economic integration organizations, in matters within their competence, shall exercise their right to vote with a number of votes equal to the number of their member States that are Parties to the Convention. Such an organization shall not exercise its right to vote if any of its member States exercises its right, and vice versa.

ARTICLE 19
DEPOSITARY

The Secretary-General of the United Nations shall be the Depositary of the Convention and of protocols adopted in accordance with Article 17.

ARTICLE 20
SIGNATURE

This Convention shall be open for signature by States Members of the United Nations or of any of its specialized agencies or that are Parties to the Statute of the International Court of Justice and by regional economic integration organizations at Rio de Janeiro, during the United Nations Conference on Environment and Development, and thereafter at United Nations Headquarters in New York from 20 June 1992 to 19 June 1993.

ARTICLE 21
INTERIM ARRANGEMENTS

1. The secretariat functions referred to in Article 8 will be carried out on an interim basis by the secretariat established by the General Assembly of the United Nations in its resolution 45/212 of 21 December 1990, until the completion of the first session of the Conference of the Parties.

2. The head of the interim secretariat referred to in paragraph 1 above will cooperate closely with the Intergovernmental Panel on Climate Change to ensure that the Panel can respond to the need for objective scientific and technical advice. Other relevant scientific bodies could also be consulted.

3. The Global Environment Facility of the United Nations Development Programme, the United Nations Environment Programme and the International Bank for Reconstruction and Development shall be the international entity entrusted with the operation of the financial mechanism referred to in Article 11 on an interim basis. In this connection, the Global Environment Facility should be appropriately restructured and its membership made universal to enable it to fulfil the requirements of Article 11.

ARTICLE 22
RATIFICATION, ACCEPTANCE, APPROVAL OR ACCESSION

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1. The Convention shall be subject to ratification, acceptance, approval or accession by States and by regional economic integration organizations. It shall be open for accession from the day after the date on which the Convention is closed for signature. Instruments of ratification, acceptance, approval or accession shall be deposited with the Depositary.

2. Any regional economic integration organization which becomes a Party to the Convention without any of its member States being a Party shall be bound by all the obligations under the Convention. In the case of such organizations, one or more of whose member States is a Party to the Convention, the organization and its member States shall decide on their respective responsibilities for the performance of their obligations under the Convention. In such cases, the organization and the member States shall not be entitled to exercise rights under the Convention concurrently.

3. In their instruments of ratification, acceptance, approval or accession, regional economic integration organizations shall declare the extent of their competence with respect to the matters governed by the Convention. These organizations shall also inform the Depositary, who shall in turn inform the Parties, of any substantial modification in the extent of their competence.

ARTICLE 23
ENTRY INTO FORCE

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1. The Convention shall enter into force on the ninetieth day after the date of deposit of the fiftieth instrument of ratification, acceptance, approval or accession.

2. For each State or regional economic integration organization that ratifies, accepts or approves the Convention or accedes thereto after the deposit of the fiftieth instrument of ratification, acceptance, approval or accession, the Convention shall enter into force on the ninetieth day after the date of deposit by such State or regional economic integration

organization of its instrument of ratification, acceptance, approval or accession.

3. For the purposes of paragraphs 1 and 2 above, any instrument deposited by a regional economic integration organization shall not be counted as additional to those deposited by States members of the organization.

ARTICLE 24
RESERVATIONS

No reservations may be made to the Convention.

ARTICLE 25
WITHDRAWAL

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1. At any time after three years from the date on which the Convention has entered into force for a Party, that Party may withdraw from the Convention by giving written notification to the Depositary.

2. Any such withdrawal shall take effect upon expiry of one year from the date of receipt by the Depositary of the notification of withdrawal, or on such later date as may be specified in the notification of withdrawal.

3. Any Party that withdraws from the Convention shall be considered as also having withdrawn from any protocol to which it is a Party.

ARTICLE 26
AUTHENTIC TEXTS

The original of this Convention, of which the Arabic, Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Secretary- General of the United Nations.

IN WITNESS WHEREOF the undersigned, being duly authorized to that effect, have signed this Convention.

DONE at New York this ninth day of May one thousand nine hundred and ninety- two.

ANNEX I AND ANNEX II COUNTRIES

Annex I

- Australia
- Austria
- Belarus*
- Belgium
- Bulgaria*
- Canada
- Czechoslovakia*
- Denmark
- European Economic Community
- Estonia*
- Finland
- France
- Germany
- Greece
- Hungary*
- Iceland
- Ireland
- Italy
- Japan
- Latvia*
- Lithuania*
- Luxembourg
- Netherlands
- New Zealand
- Norway
- Poland*
- Portugal
- Romania*
- Russian Federation*
- Spain
- Sweden
- Switzerland
- Turkey
- Ukraine*
- United Kingdom of Great Britain and Northern Ireland
- United States of America

*Countries that are undergoing the process of transition to a market economy.

Annex II

- Australia
- Austria
- Belgium
- Canada
- Denmark
- European Economic Community
- Finland
- France
- Germany
- Greece
- Iceland
- Ireland
- Italy
- Japan
- Luxembourg
- Netherlands
- New Zealand
- Norway
- Portugal
- Spain
- Sweden
- Switzerland
- Turkey

- United Kingdom of Great Britain and Northern Ireland
- United States of America

APPENDIX 5 The Koyoto Protocol Full Document

Source: United Nations Framework Convention on Climate Change 2007. (online) www.unfccc.int (accessed in May 2007)

Kyoto Protocol to the

United Nations Framework Convention on Climate Change

THE PARTIES TO THIS PROTOCOL,

BEING Parties to the United Nations Framework Convention on Climate Change, hereinafter referred to as "the Convention",

IN PURSUIT of the ultimate objective of the Convention as stated in its Article 2,

RECALLING the provisions of the Convention,

BEING GUIDED by Article 3 of the Convention,

PURSUANT TO the Berlin Mandate adopted by decision 1/CP.1 of the

Conference of the Parties to the Convention at its first session,

Have agreed as follows:

Article 1

For the purposes of this Protocol, the definitions contained in Article 1 of the Convention shall apply. In addition:

1. "Conference of the Parties" means the Conference of the Parties to the Convention.

2. "Convention" means the United Nations Framework Convention on Climate Change, adopted in New York on 9 May 1992.

3. "Intergovernmental Panel on Climate Change" means the Intergovernmental Panel on Climate Change established in 1988 jointly by the World Meteorological Organization and the United Nations Environment Programme.

4. "Montreal Protocol" means the Montreal Protocol on Substances that Deplete the Ozone Layer, adopted in Montreal on 16 September 1987 and as subsequently adjusted and amended.

5. "Parties present and voting" means Parties present and casting an affirmative or negative

vote.

6. "Party" means, unless the context otherwise indicates, a Party to this Protocol.

7. "Party included in Annex I" means a Party included in Annex I to the Convention, as may be amended, or a Party which has made a notification under Article 4, paragraph 2(g), of the Convention.

Article 2

1. Each Party included in Annex I, in achieving its quantified emission limitation and reduction commitments under Article 3, in order to promote sustainable development, shall:

(a) Implement and/or further elaborate policies and measures in accordance with its national circumstances, such as:

(i) Enhancement of energy efficiency in relevant sectors of the national economy;

(ii) Protection and enhancement of sinks and reservoirs of greenhouse gases not controlled by the Montreal Protocol, taking into account its commitments under relevant international environmental agreements; promotion of sustainable forest management practices, afforestation and reforestation;

(iii) Promotion of sustainable forms of agriculture in light of climate change considerations;

(iv) Research on, and promotion, development and increased use of, new and renewable forms of energy, of carbon dioxide sequestration technologies and of advanced and innovative environmentally sound technologies;

(v) Progressive reduction or phasing out of market imperfections, fiscal incentives, tax and duty exemptions and subsidies in all greenhouse gas emitting sectors that run counter to the objective of the Convention and application of market instruments;

(vi) Encouragement of appropriate reforms in relevant sectors aimed at promoting policies and measures which limit or reduce emissions of greenhouse gases not controlled by the Montreal Protocol;

(vii) Measures to limit and/or reduce emissions of greenhouse gases not controlled by the Montreal Protocol in the transport sector;

(viii) Limitation and/or reduction of methane emissions through recovery and use in waste management, as well as in the production, transport and distribution of energy;

(b) Cooperate with other such Parties to enhance the individual and combined effectiveness of their policies and measures adopted under this Article, pursuant to Article 4, paragraph 2(e)(i), of the Convention. To this end, these Parties shall take steps to share their experience and

exchange information on such policies and measures, including developing ways of improving their comparability, transparency and effectiveness. The Conference of the Parties serving as the meeting of the Parties to this Protocol shall, at its first session or as soon as practicable thereafter, consider ways to facilitate such cooperation, taking into account all relevant information.

2. The Parties included in Annex I shall pursue limitation or reduction of emissions of greenhouse gases not controlled by the Montreal Protocol from aviation and marine bunker fuels, working through the International Civil Aviation Organization and the International Maritime Organization, respectively.

3. The Parties included in Annex I shall strive to implement policies and measures under this Article in such a way as to minimize adverse effects, including the adverse effects of climate change, effects on international trade, and social, environmental and economic impacts on other Parties, especially developing country Parties and in particular those identified in Article 4, paragraphs 8 and 9, of the Convention, taking into account Article 3 of the Convention. The Conference of the Parties serving as the meeting of the Parties to this Protocol may take further action, as appropriate, to promote the implementation of the provisions of this paragraph.

4. The Conference of the Parties serving as the meeting of the Parties to this Protocol, if it decides that it would be beneficial to coordinate any of the policies and measures in paragraph 1(a) above, taking into account different national circumstances and potential effects, shall consider ways and means to elaborate the coordination of such policies and measures.

Article 3

1. The Parties included in Annex I shall, individually or jointly, ensure that their aggregate anthropogenic carbon dioxide equivalent emissions of the greenhouse gases listed in Annex A do not exceed their assigned amounts, calculated pursuant to their quantified emission limitation and reduction commitments inscribed in Annex B and in accordance with the provisions of this Article, with a view to reducing their overall emissions of such gases by at least 5 per cent below 1990 levels in the commitment period 2008 to 2012.

2. Each Party included in Annex I shall, by 2005, have made demonstrable progress in achieving its commitments under this Protocol.

3. The net changes in greenhouse gas emissions by sources and removals by sinks resulting from direct human-induced land-use change and forestry activities, limited to afforestation, reforestation and deforestation since 1990, measured as verifiable changes in carbon stocks in each commitment period, shall be used to meet the commitments under this Article of each Party included in Annex I. The greenhouse gas emissions by sources and removals by sinks associated with those activities shall be reported in a transparent and verifiable manner and reviewed in accordance with Articles 7 and 8.

4. Prior to the first session of the Conference of the Parties serving as the meeting of the Parties to this Protocol, each Party included in Annex I shall provide, for consideration by the

Subsidiary Body for Scientific and Technological Advice, data to establish its level of carbon stocks in 1990 and to enable an estimate to be made of its changes in carbon stocks in subsequent years. The Conference of the Parties serving as the meeting of the Parties to this Protocol shall, at its first session or as soon as practicable thereafter, decide upon modalities, rules and guidelines as to how, and which, additional human-induced activities related to changes in greenhouse gas emissions by sources and removals by sinks in the agricultural soils and the land-use change and forestry categories shall be added to, or subtracted from, the assigned amounts for Parties included in Annex I, taking into account uncertainties, transparency in reporting, verifiability, the methodological work of the Intergovernmental Panel on Climate Change, the advice provided by the Subsidiary Body for Scientific and Technological Advice in accordance with Article 5 and the decisions of the Conference of the Parties. Such a decision shall apply in the second and subsequent commitment periods. A Party may choose to apply such a decision on these additional human-induced activities for its first commitment period, provided that these activities have taken place since 1990.

5. The Parties included in Annex I undergoing the process of transition to a market economy whose base year or period was established pursuant to decision 9/CP.2 of the Conference of the Parties at its second session shall use that base year or period for the implementation of their commitments under this Article. Any other Party included in Annex I undergoing the process of transition to a market economy which has not yet submitted its first national communication under Article 12 of the Convention may also notify the Conference of the Parties serving as the meeting of the Parties to this Protocol that it intends to use an historical base year or period other than 1990 for the implementation of its commitments under this Article. The Conference of the Parties serving as the meeting of the Parties to this Protocol shall decide on the acceptance of such notification.

6. Taking into account Article 4, paragraph 6, of the Convention, in the implementation of their commitments under this Protocol other than those under this Article, a certain degree of flexibility shall be allowed by the Conference of the Parties serving as the meeting of the Parties to this Protocol to the Parties included in Annex I undergoing the process of transition to a market economy.

7. In the first quantified emission limitation and reduction commitment period, from 2008 to 2012, the assigned amount for each Party included in Annex I shall be equal to the percentage inscribed for it in Annex B of its aggregate anthropogenic carbon dioxide equivalent emissions of the greenhouse gases listed in Annex A in 1990, or the base year or period determined in accordance with paragraph 5 above, multiplied by five. Those Parties included in Annex I for whom land-use change and forestry constituted a net source of greenhouse gas emissions in 1990 shall include in their 1990 emissions base year or period the aggregate anthropogenic carbon dioxide equivalent emissions by sources minus removals by sinks in 1990 from land-use change for the purposes of calculating their assigned amount.

8. Any Party included in Annex I may use 1995 as its base year for hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride, for the purposes of the calculation referred to in paragraph 7 above.

9. Commitments for subsequent periods for Parties included in Annex I shall be established in

amendments to Annex B to this Protocol, which shall be adopted in accordance with the provisions of Article 21, paragraph 7. The Conference of the Parties serving as the meeting of the Parties to this Protocol shall initiate the consideration of such commitments at least seven years before the end of the first commitment period referred to in paragraph 1 above.

10. Any emission reduction units, or any part of an assigned amount, which a Party acquires from another Party in accordance with the provisions of Article 6 or of Article 17 shall be added to the assigned amount for the acquiring Party.

11. Any emission reduction units, or any part of an assigned amount, which a Party transfers to another Party in accordance with the provisions of Article 6 or of Article 17 shall be subtracted from the assigned amount for the transferring Party.

12. Any certified emission reductions which a Party acquires from another Party in accordance with the provisions of Article 12 shall be added to the assigned amount for the acquiring Party.

13. If the emissions of a Party included in Annex I in a commitment period are less than its assigned amount under this Article, this difference shall, on request of that Party, be added to the assigned amount for that Party for subsequent commitment periods.

14. Each Party included in Annex I shall strive to implement the commitments mentioned in paragraph 1 above in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention. In line with relevant decisions of the Conference of the Parties on the implementation of those paragraphs, the Conference of the Parties serving as the meeting of the Parties to this Protocol shall, at its first session, consider what actions are necessary to minimize the adverse effects of climate change and/or the impacts of response measures on Parties referred to in those paragraphs. Among the issues to be considered shall be the establishment of funding, insurance and transfer of technology.

Article 4

1. Any Parties included in Annex I that have reached an agreement to fulfil their commitments under Article 3 jointly, shall be deemed to have met those commitments provided that their total combined aggregate anthropogenic carbon dioxide equivalent emissions of the greenhouse gases listed in Annex A do not exceed their assigned amounts calculated pursuant to their quantified emission limitation and reduction commitments inscribed in Annex B and in accordance with the provisions of Article 3. The respective emission level allocated to each of the Parties to the agreement shall be set out in that agreement.

2. The Parties to any such agreement shall notify the secretariat of the terms of the agreement on the date of deposit of their instruments of ratification, acceptance or approval of this Protocol, or accession thereto. The secretariat shall in turn inform the Parties and signatories to the Convention of the terms of the agreement.

3. Any such agreement shall remain in operation for the duration of the commitment period

specified in Article 3, paragraph 7.

4. If Parties acting jointly do so in the framework of, and together with, a regional economic integration organization, any alteration in the composition of the organization after adoption of this Protocol shall not affect existing commitments under this Protocol. Any alteration in the composition of the organization shall only apply for the purposes of those commitments under Article 3 that are adopted subsequent to that alteration.

5. In the event of failure by the Parties to such an agreement to achieve their total combined level of emission reductions, each Party to that agreement shall be responsible for its own level of emissions set out in the agreement.

6. If Parties acting jointly do so in the framework of, and together with, a regional economic integration organization which is itself a Party to this Protocol, each member State of that regional economic integration organization individually, and together with the regional economic integration organization acting in accordance with Article 24, shall, in the event of failure to achieve the total combined level of emission reductions, be responsible for its level of emissions as notified in accordance with this Article.

Article 5

1. Each Party included in Annex I shall have in place, no later than one year prior to the start of the first commitment period, a national system for the estimation of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol. Guidelines for such national systems, which shall incorporate the methodologies specified in paragraph 2 below, shall be decided upon by the Conference of the Parties serving as the meeting of the Parties to this Protocol at its first session.

2. Methodologies for estimating anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol shall be those accepted by the Intergovernmental Panel on Climate Change and agreed upon by the Conference of the Parties at its third session. Where such methodologies are not used, appropriate adjustments shall be applied according to methodologies agreed upon by the Conference of the Parties serving as the meeting of the Parties to this Protocol at its first session. Based on the work of, *INTER ALIA*, the Intergovernmental Panel on Climate Change and advice provided by the Subsidiary Body for Scientific and Technological Advice, the Conference of the Parties serving as the meeting of the Parties to this Protocol shall regularly review and, as appropriate, revise such methodologies and adjustments, taking fully into account any relevant decisions by the Conference of the Parties. Any revision to methodologies or adjustments shall be used only for the purposes of ascertaining compliance with commitments under Article 3 in respect of any commitment period adopted subsequent to that revision.

3. The global warming potentials used to calculate the carbon dioxide equivalence of anthropogenic emissions by sources and removals by sinks of greenhouse gases listed in Annex A shall be those accepted by the Intergovernmental Panel on Climate Change and agreed upon by the Conference of the Parties at its third session. Based on the work of, *INTER ALIA*, the Intergovernmental Panel on Climate Change and advice provided by the Subsidiary

Body for Scientific and Technological Advice, the Conference of the Parties serving as the meeting of the Parties to this Protocol shall regularly review and, as appropriate, revise the global warming potential of each such greenhouse gas, taking fully into account any relevant decisions by the Conference of the Parties. Any revision to a global warming potential shall apply only to commitments under Article 3 in respect of any commitment period adopted subsequent to that revision.

Article 6

1. For the purpose of meeting its commitments under Article 3, any Party included in Annex I may transfer to, or acquire from, any other such Party emission reduction units resulting from projects aimed at reducing anthropogenic emissions by sources or enhancing anthropogenic removals by sinks of greenhouse gases in any sector of the economy, provided that:

(a) Any such project has the approval of the Parties involved;

(b) Any such project provides a reduction in emissions by sources, or an enhancement of removals by sinks, that is additional to any that would otherwise occur;

(c) It does not acquire any emission reduction units if it is not in compliance with its obligations under Articles 5 and 7; and

(d) The acquisition of emission reduction units shall be supplemental to domestic actions for the purposes of meeting commitments under Article 3.

2. The Conference of the Parties serving as the meeting of the Parties to this Protocol may, at its first session or as soon as practicable thereafter, further elaborate guidelines for the implementation of this Article, including for verification and reporting.

3. A Party included in Annex I may authorize legal entities to participate, under its responsibility, in actions leading to the generation, transfer or acquisition under this Article of emission reduction units.

4. If a question of implementation by a Party included in Annex I of the requirements referred to in this Article is identified in accordance with the relevant provisions of Article 8, transfers and acquisitions of emission reduction units may continue to be made after the question has been identified, provided that any such units may not be used by a Party to meet its commitments under Article 3 until any issue of compliance is resolved.

Article 7

1. Each Party included in Annex I shall incorporate in its annual inventory of anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol, submitted in accordance with the relevant decisions of the Conference of the Parties, the necessary supplementary information for the purposes of ensuring compliance with Article 3, to be determined in accordance with paragraph 4 below.

2. Each Party included in Annex I shall incorporate in its national communication, submitted under Article 12 of the Convention, the supplementary information necessary to demonstrate compliance with its commitments under this Protocol, to be determined in accordance with paragraph 4 below.

3. Each Party included in Annex I shall submit the information required under paragraph 1 above annually, beginning with the first inventory due under the Convention for the first year of the commitment period after this Protocol has entered into force for that Party. Each such Party shall submit the information required under paragraph 2 above as part of the first national communication due under the Convention after this Protocol has entered into force for it and after the adoption of guidelines as provided for in paragraph 4 below. The frequency of subsequent submission of information required under this Article shall be determined by the Conference of the Parties serving as the meeting of the Parties to this Protocol, taking into account any timetable for the submission of national communications decided upon by the Conference of the Parties.

4. The Conference of the Parties serving as the meeting of the Parties to this Protocol shall adopt at its first session, and review periodically thereafter, guidelines for the preparation of the information required under this Article, taking into account guidelines for the preparation of national communications by Parties included in Annex I adopted by the Conference of the Parties. The Conference of the Parties serving as the meeting of the Parties to this Protocol shall also, prior to the first commitment period, decide upon modalities for the accounting of assigned amounts.

Article 8

1. The information submitted under Article 7 by each Party included in Annex I shall be reviewed by expert review teams pursuant to the relevant decisions of the Conference of the Parties and in accordance with guidelines adopted for this purpose by the Conference of the Parties serving as the meeting of the Parties to this Protocol under paragraph 4 below. The information submitted under Article 7, paragraph 1, by each Party included in Annex I shall be reviewed as part of the annual compilation and accounting of emissions inventories and assigned amounts. Additionally, the information submitted under Article 7, paragraph 2, by each Party included in Annex I shall be reviewed as part of the review of communications.

2. Expert review teams shall be coordinated by the secretariat and shall be composed of experts selected from those nominated by Parties to the Convention and, as appropriate, by intergovernmental organizations, in accordance with guidance provided for this purpose by the Conference of the Parties.

3. The review process shall provide a thorough and comprehensive technical assessment of all aspects of the implementation by a Party of this Protocol. The expert review teams shall prepare a report to the Conference of the Parties serving as the meeting of the Parties to this Protocol**,** assessing the implementation of the commitments of the Party and identifying any potential problems in, and factors influencing, the fulfilment of commitments. Such reports shall be circulated by the secretariat to all Parties to the Convention. The secretariat shall list those questions of implementation indicated in such reports for further consideration

by the Conference of the Parties serving as the meeting of the Parties to this Protocol.

4. The Conference of the Parties serving as the meeting of the Parties to this Protocol shall adopt at its first session, and review periodically thereafter, guidelines for the review of implementation of this Protocol by expert review teams taking into account the relevant decisions of the Conference of the Parties.

5. The Conference of the Parties serving as the meeting of the Parties to this Protocol shall, with the assistance of the Subsidiary Body for Implementation and, as appropriate, the Subsidiary Body for Scientific and Technological Advice, consider:

(a) The information submitted by Parties under Article 7 and the reports of the expert reviews thereon conducted under this Article; and

(b) Those questions of implementation listed by the secretariat under paragraph 3 above, as well as any questions raised by Parties.

6. Pursuant to its consideration of the information referred to in paragraph 5 above, the Conference of the Parties serving as the meeting of the Parties to this Protocol shall take decisions on any matter required for the implementation of this Protocol.

Article 9

1. The Conference of the Parties serving as the meeting of the Parties to this Protocol shall periodically review this Protocol in the light of the best available scientific information and assessments on climate change and its impacts, as well as relevant technical, social and economic information. Such reviews shall be coordinated with pertinent reviews under the Convention, in particular those required by Article 4, paragraph 2(d), and Article 7, paragraph 2(a), of the Convention. Based on these reviews, the Conference of the Parties serving as the meeting of the Parties to this Protocol shall take appropriate action.

2. The first review shall take place at the second session of the Conference of the Parties serving as the meeting of the Parties to this Protocol. Further reviews shall take place at regular intervals and in a timely manner.

Article 10

All Parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances, without introducing any new commitments for Parties not included in Annex I, but reaffirming existing commitments under Article 4, paragraph 1, of the Convention, and continuing to advance the implementation of these commitments in order to achieve sustainable development, taking into account Article 4, paragraphs 3, 5 and 7, of the Convention, shall:

(a) Formulate, where relevant and to the extent possible, cost-effective national and, where appropriate, regional programmes to improve the quality of local emission factors, activity data and/or models which reflect the socio-economic conditions of each Party for the

preparation and periodic updating of national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, using comparable methodologies to be agreed upon by the Conference of the Parties, and consistent with the guidelines for the preparation of national communications adopted by the Conference of the Parties;

(b) Formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change and measures to facilitate adequate adaptation to climate change:

(i) Such programmes would, *INTER ALIA*, concern the energy, transport and industry sectors as well as agriculture, forestry and waste management. Furthermore, adaptation technologies and methods for improving spatial planning would improve adaptation to climate change; and

(ii) Parties included in Annex I shall submit information on action under this Protocol, including national programmes, in accordance with Article 7; and other Parties shall seek to include in their national communications, as appropriate, information on programmes which contain measures that the Party believes contribute to addressing climate change and its adverse impacts, including the abatement of increases in greenhouse gas emissions, and enhancement of and removals by sinks, capacity building and adaptation measures;

(c) Cooperate in the promotion of effective modalities for the development, application and diffusion of, and take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies, know-how, practices and processes pertinent to climate change, in particular to developing countries, including the formulation of policies and programmes for the effective transfer of environmentally sound technologies that are publicly owned or in the public domain and the creation of an enabling environment for the private sector, to promote and enhance the transfer of, and access to, environmentally sound technologies;

(d) Cooperate in scientific and technical research and promote the maintenance and the development of systematic observation systems and development of data archives to reduce uncertainties related to the climate system, the adverse impacts of climate change and the economic and social consequences of various response strategies, and promote the development and strengthening of endogenous capacities and capabilities to participate in international and intergovernmental efforts, programmes and networks on research and systematic observation, taking into account Article 5 of the Convention;

(e) Cooperate in and promote at the international level, and, where appropriate, using existing bodies, the development and implementation of education and training programmes, including the strengthening of national capacity building, in particular human and institutional capacities and the exchange or secondment of personnel to train experts in this field, in particular for developing countries, and facilitate at the national level public awareness of, and public access to information on, climate change. Suitable modalities should be developed to implement these activities through the relevant bodies of the Convention, taking into account Article 6 of the Convention;

(f) Include in their national communications information on programmes and activities undertaken pursuant to this Article in accordance with relevant decisions of the Conference of the Parties; and

(g) Give full consideration, in implementing the commitments under this Article, to Article 4, paragraph 8, of the Convention.

Article 11

1. In the implementation of Article 10, Parties shall take into account the provisions of Article 4, paragraphs 4, 5, 7, 8 and 9, of the Convention.

2. In the context of the implementation of Article 4, paragraph 1, of the Convention, in accordance with the provisions of Article 4, paragraph 3, and Article 11 of the Convention, and through the entity or entities entrusted with the operation of the financial mechanism of the Convention, the developed country Parties and other developed Parties included in Annex II to the Convention shall:

(a) Provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in advancing the implementation of existing commitments under Article 4, paragraph 1(a), of the Convention that are covered in Article 10, subparagraph (a); and

(b) Also provide such financial resources, including for the transfer of technology, needed by the developing country Parties to meet the agreed full incremental costs of advancing the implementation of existing commitments under Article 4, paragraph 1, of the Convention that are covered by Article 10 and that are agreed between a developing country Party and the international entity or entities referred to in Article 11 of the Convention, in accordance with that Article.

The implementation of these existing commitments shall take into account the need for adequacy and predictability in the flow of funds and the importance of appropriate burden sharing among developed country Parties. The guidance to the entity or entities entrusted with the operation of the financial mechanism of the Convention in relevant decisions of the Conference of the Parties, including those agreed before the adoption of this Protocol, shall apply *MUTATIS MUTANDIS* to the provisions of this paragraph.

3. The developed country Parties and other developed Parties in Annex II to the Convention may also provide, and developing country Parties avail themselves of, financial resources for the implementation of Article 10, through bilateral, regional and other multilateral channels.

Article 12

1. A clean development mechanism is hereby defined.

2. The purpose of the clean development mechanism shall be to assist Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of

the Convention, and to assist Parties included in Annex I in achieving compliance with their quantified emission limitation and reduction commitments under Article 3.

3. Under the clean development mechanism:

(a) Parties not included in Annex I will benefit from project activities resulting in certified emission reductions; and

(b) Parties included in Annex I may use the certified emission reductions accruing from such project activities to contribute to compliance with part of their quantified emission limitation and reduction commitments under Article 3, as determined by the Conference of the Parties serving as the meeting of the Parties to this Protocol.

4. The clean development mechanism shall be subject to the authority and guidance of the Conference of the Parties serving as the meeting of the Parties to this Protocol and be supervised by an executive board of the clean development mechanism.

5. Emission reductions resulting from each project activity shall be certified by operational entities to be designated by the Conference of the Parties serving as the meeting of the Parties to this Protocol, on the basis of:

(a) Voluntary participation approved by each Party involved;

(b) Real, measurable, and long-term benefits related to the mitigation of climate change; and

(c) Reductions in emissions that are additional to any that would occur in the absence of the certified project activity.

6. The clean development mechanism shall assist in arranging funding of certified project activities as necessary.

7. The Conference of the Parties serving as the meeting of the Parties to this Protocol shall, at its first session, elaborate modalities and procedures with the objective of ensuring transparency, efficiency and accountability through independent auditing and verification of project activities.

8. The Conference of the Parties serving as the meeting of the Parties to this Protocol shall ensure that a share of the proceeds from certified project activities is used to cover administrative expenses as well as to assist developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation.

9. Participation under the clean development mechanism, including in activities mentioned in paragraph 3(a) above and in the acquisition of certified emission reductions, may involve private and/or public entities, and is to be subject to whatever guidance may be provided by the executive board of the clean development mechanism.

10. Certified emission reductions obtained during the period from the year 2000 up to the

beginning of the first commitment period can be used to assist in achieving compliance in the first commitment period.

Article 13

1. The Conference of the Parties, the supreme body of the Convention, shall serve as the meeting of the Parties to this Protocol.

2. Parties to the Convention that are not Parties to this Protocol may participate as observers in the proceedings of any session of the Conference of the Parties serving as the meeting of the Parties to this Protocol. When the Conference of the Parties serves as the meeting of the Parties to this Protocol, decisions under this Protocol shall be taken only by those that are Parties to this Protocol.

3. When the Conference of the Parties serves as the meeting of the Parties to this Protocol, any member of the Bureau of the Conference of the Parties representing a Party to the Convention but, at that time, not a Party to this Protocol, shall be replaced by an additional member to be elected by and from amongst the Parties to this Protocol.

4. The Conference of the Parties serving as the meeting of the Parties to this Protocol shall keep under regular review the implementation of this Protocol and shall make, within its mandate, the decisions necessary to promote its effective implementation. It shall perform the functions assigned to it by this Protocol and shall:

(a) Assess, on the basis of all information made available to it in accordance with the provisions of this Protocol, the implementation of this Protocol by the Parties, the overall effects of the measures taken pursuant to this Protocol, in particular environmental, economic and social effects as well as their cumulative impacts and the extent to which progress towards the objective of the Convention is being achieved;

(b) Periodically examine the obligations of the Parties under this Protocol, giving due consideration to any reviews required by Article 4, paragraph 2(d), and Article 7, paragraph 2, of the Convention, in the light of the objective of the Convention, the experience gained in its implementation and the evolution of scientific and technological knowledge, and in this respect consider and adopt regular reports on the implementation of this Protocol;

(c) Promote and facilitate the exchange of information on measures adopted by the Parties to address climate change and its effects, taking into account the differing circumstances, responsibilities and capabilities of the Parties and their respective commitments under this Protocol;

(d) Facilitate, at the request of two or more Parties, the coordination of measures adopted by them to address climate change and its effects, taking into account the differing circumstances, responsibilities and capabilities of the Parties and their respective commitments under this Protocol;

(e) Promote and guide, in accordance with the objective of the Convention and the provisions

of this Protocol, and taking fully into account the relevant decisions by the Conference of the Parties, the development and periodic refinement of comparable methodologies for the effective implementation of this Protocol, to be agreed on by the Conference of the Parties serving as the meeting of the Parties to this Protocol;

(f) Make recommendations on any matters necessary for the implementation of this Protocol;

(g) Seek to mobilize additional financial resources in accordance with

Article 11, paragraph 2;

(h) Establish such subsidiary bodies as are deemed necessary for the implementation of this Protocol;

(i) Seek and utilize, where appropriate, the services and cooperation of, and information provided by, competent international organizations and intergovernmental and non-governmental bodies; and

(j) Exercise such other functions as may be required for the implementation of this Protocol, and consider any assignment resulting from a decision by the Conference of the Parties.

5. The rules of procedure of the Conference of the Parties and financial procedures applied under the Convention shall be applied *MUTATIS MUTANDIS* under this Protocol, except as may be otherwise decided by consensus by the Conference of the Parties serving as the meeting of the Parties to this Protocol.

6. The first session of the Conference of the Parties serving as the meeting of the Parties to this Protocol shall be convened by the secretariat in conjunction with the first session of the Conference of the Parties that is scheduled after the date of the entry into force of this Protocol. Subsequent ordinary sessions of the Conference of the Parties serving as the meeting of the Parties to this Protocol shall be held every year and in conjunction with ordinary sessions of the Conference of the Parties, unless otherwise decided by the Conference of the Parties serving as the meeting of the Parties to this Protocol.

7. Extraordinary sessions of the Conference of the Parties serving as the meeting of the Parties to this Protocol shall be held at such other times as may be deemed necessary by the Conference of the Parties serving as the meeting of the Parties to this Protocol, or at the written request of any Party, provided that, within six months of the request being communicated to the Parties by the secretariat, it is supported by at least one third of the Parties.

8. The United Nations, its specialized agencies and the International Atomic Energy

Agency, as well as any State member thereof or observers thereto not party to the Convention, may be represented at sessions of the Conference of the Parties serving as the meeting of the Parties to this Protocol as observers. Any body or agency, whether national or international, governmental or non-governmental, which is qualified in matters covered by this Protocol and which has informed the secretariat of its wish to be represented at a session of the

Conference of the Parties serving as the meeting of the Parties to this Protocol as an observer, may be so admitted unless at least one third of the Parties present object. The admission and participation of observers shall be subject to the rules of procedure, as referred to in paragraph 5 above.

Article 14

1. The secretariat established by Article 8 of the Convention shall serve as the secretariat of this Protocol.

2. Article 8, paragraph 2, of the Convention on the functions of the secretariat, and

Article 8, paragraph 3, of the Convention on arrangements made for the functioning of the secretariat, shall apply *MUTATIS MUTANDIS* to this Protocol. The secretariat shall, in addition, exercise the functions assigned to it under this Protocol.

Article 15

1. The Subsidiary Body for Scientific and Technological Advice and the Subsidiary Body for Implementation established by Articles 9 and 10 of the Convention shall serve as, respectively, the Subsidiary Body for Scientific and Technological Advice and the Subsidiary Body for Implementation of this Protocol. The provisions relating to the functioning of these two bodies under the Convention shall apply *MUTATIS MUTANDIS* to this Protocol. Sessions of the meetings of the Subsidiary Body for Scientific and Technological Advice and the Subsidiary Body for Implementation of this Protocol shall be held in conjunction with the meetings of, respectively, the Subsidiary Body for Scientific and Technological Advice and the Subsidiary Body for Implementation of the Convention.

2. Parties to the Convention that are not Parties to this Protocol may participate as observers in the proceedings of any session of the subsidiary bodies. When the subsidiary bodies serve as the subsidiary bodies of this Protocol, decisions under this Protocol shall be taken only by those that are Parties to this Protocol.

3. When the subsidiary bodies established by Articles 9 and 10 of the Convention exercise their functions with regard to matters concerning this Protocol, any member of the Bureaux of those subsidiary bodies representing a Party to the Convention but, at that time, not a party to this Protocol, shall be replaced by an additional member to be elected by and from amongst the Parties to this Protocol.

Article 16

The Conference of the Parties serving as the meeting of the Parties to this Protocol shall, as soon as practicable, consider the application to this Protocol of, and modify as appropriate, the multilateral consultative process referred to in Article 13 of the Convention, in the light of any relevant decisions that may be taken by the Conference of the Parties. Any multilateral consultative process that may be applied to this Protocol shall operate without prejudice to the

procedures and mechanisms established in accordance with Article 18.

Article 17

The Conference of the Parties shall define the relevant principles, modalities, rules and guidelines, in particular for verification, reporting and accountability for emissions trading. The Parties included in Annex B may participate in emissions trading for the purposes of fulfilling their commitments under Article 3. Any such trading shall be supplemental to domestic actions for the purpose of meeting quantified emission limitation and reduction commitments under that Article.

Article 18

The Conference of the Parties serving as the meeting of the Parties to this Protocol shall, at its first session, approve appropriate and effective procedures and mechanisms to determine and to address cases of non-compliance with the provisions of this Protocol, including through the development of an indicative list of consequences, taking into account the cause, type, degree and frequency of non-compliance. Any procedures and mechanisms under this Article entailing binding consequences shall be adopted by means of an amendment to this Protocol.

Article 19

The provisions of Article 14 of the Convention on settlement of disputes shall apply *MUTATIS MUTANDIS* to this Protocol.

Article 20

1. Any Party may propose amendments to this Protocol.

2. Amendments to this Protocol shall be adopted at an ordinary session of the Conference of the Parties serving as the meeting of the Parties to this Protocol. The text of any proposed amendment to this Protocol shall be communicated to the Parties by the secretariat at least six months before the meeting at which it is proposed for adoption. The secretariat shall also communicate the text of any proposed amendments to the Parties and signatories to the Convention and, for information, to the Depositary.

3. The Parties shall make every effort to reach agreement on any proposed amendment to this Protocol by consensus. If all efforts at consensus have been exhausted, and no agreement reached, the amendment shall as a last resort be adopted by a three-fourths majority vote of the Parties present and voting at the meeting. The adopted amendment shall be communicated by the secretariat to the Depositary, who shall circulate it to all Parties for their acceptance.

4. Instruments of acceptance in respect of an amendment shall be deposited with the Depositary. An amendment adopted in accordance with paragraph 3 above shall enter into

force for those Parties having accepted it on the ninetieth day after the date of receipt by the Depositary of an instrument of acceptance by at least three fourths of the Parties to this Protocol.

5. The amendment shall enter into force for any other Party on the ninetieth day after the date on which that Party deposits with the Depositary its instrument of acceptance of the said amendment.

Article 21

1. Annexes to this Protocol shall form an integral part thereof and, unless otherwise expressly provided, a reference to this Protocol constitutes at the same time a reference to any annexes thereto. Any annexes adopted after the entry into force of this Protocol shall be restricted to lists, forms and any other material of a descriptive nature that is of a scientific, technical, procedural or administrative character.

2. Any Party may make proposals for an annex to this Protocol and may propose amendments to annexes to this Protocol.

3. Annexes to this Protocol and amendments to annexes to this Protocol shall be adopted at an ordinary session of the Conference of the Parties serving as the meeting of the Parties to this Protocol. The text of any proposed annex or amendment to an annex shall be communicated to the Parties by the secretariat at least six months before the meeting at which it is proposed for adoption. The secretariat shall also communicate the text of any proposed annex or amendment to an annex to the Parties and signatories to the Convention and, for information, to the Depositary.

4. The Parties shall make every effort to reach agreement on any proposed annex or amendment to an annex by consensus. If all efforts at consensus have been exhausted, and no agreement reached, the annex or amendment to an annex shall as a last resort be adopted by a three-fourths majority vote of the Parties present and voting at the meeting. The adopted annex or amendment to an annex shall be communicated by the secretariat to the Depositary, who shall circulate it to all Parties for their acceptance.

5. An annex, or amendment to an annex other than Annex A or B, that has been adopted in accordance with paragraphs 3 and 4 above shall enter into force for all Parties to this Protocol six months after the date of the communication by the Depositary to such Parties of the adoption of the annex or adoption of the amendment to the annex, except for those Parties that have notified the Depositary, in writing, within that period of their non-acceptance of the annex or amendment to the annex. The annex or amendment to an annex shall enter into force for Parties which withdraw their notification of non-acceptance on the ninetieth day after the date on which withdrawal of such notification has been received by the Depositary.

6. If the adoption of an annex or an amendment to an annex involves an amendment to this Protocol, that annex or amendment to an annex shall not enter into force until such time as the amendment to this Protocol enters into force.

7. Amendments to Annexes A and B to this Protocol shall be adopted and enter into force in accordance with the procedure set out in Article 20, provided that any amendment to Annex B shall be adopted only with the written consent of the Party concerned**.**

Article 22

1. Each Party shall have one vote, except as provided for in paragraph 2 below.

2. Regional economic integration organizations, in matters within their competence, shall exercise their right to vote with a number of votes equal to the number of their member States that are Parties to this Protocol. Such an organization shall not exercise its right to vote if any of its member States exercises its right, and vice versa.

Article 23

The Secretary-General of the United Nations shall be the Depositary of this Protocol.

Article 24

1. This Protocol shall be open for signature and subject to ratification, acceptance or approval by States and regional economic integration organizations which are Parties to the Convention. It shall be open for signature at United Nations Headquarters in New York from

16 March 1998 to 15 March 1999. This Protocol shall be open for accession from the day after the date on which it is closed for signature. Instruments of ratification, acceptance, approval or accession shall be deposited with the Depositary.

2. Any regional economic integration organization which becomes a Party to this Protocol without any of its member States being a Party shall be bound by all the obligations under this Protocol. In the case of such organizations, one or more of whose member States is a Party to this Protocol, the organization and its member States shall decide on their respective responsibilities for the performance of their obligations under this Protocol. In such cases, the organization and the member States shall not be entitled to exercise rights under this Protocol concurrently.

3. In their instruments of ratification, acceptance, approval or accession, regional economic integration organizations shall declare the extent of their competence with respect to the matters governed by this Protocol. These organizations shall also inform the Depositary, who shall in turn inform the Parties, of any substantial modification in the extent of their competence.

Article 25

1. This Protocol shall enter into force on the ninetieth day after the date on which not less than 55 Parties to the Convention, incorporating Parties included in Annex I which accounted in total for at least 55 per cent of the total carbon dioxide emissions for 1990 of the Parties included in Annex I, have deposited their instruments of ratification, acceptance, approval or

accession.

2. For the purposes of this Article, "the total carbon dioxide emissions for 1990 of the Parties included in Annex I" means the amount communicated on or before the date of adoption of this Protocol by the Parties included in Annex I in their first national communications submitted in accordance with Article 12 of the Convention.

3. For each State or regional economic integration organization that ratifies, accepts or

approves this Protocol or accedes thereto after the conditions set out in paragraph 1 above for entry into force have been fulfilled, this Protocol shall enter into force on the ninetieth day following the date of deposit of its instrument of ratification, acceptance, approval or accession.

4. For the purposes of this Article, any instrument deposited by a regional economic integration organization shall not be counted as additional to those deposited by States members of the organization.

Article 26

No reservations may be made to this Protocol.

Article 27

1. At any time after three years from the date on which this Protocol has entered into force for a Party, that Party may withdraw from this Protocol by giving written notification to the Depositary.

2. Any such withdrawal shall take effect upon expiry of one year from the date of receipt by the Depositary of the notification of withdrawal, or on such later date as may be specified in the notification of withdrawal.

3. Any Party that withdraws from the Convention shall be considered as also having withdrawn from this Protocol.

Article 28

The original of this Protocol, of which the Arabic, Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Secretary-General of the United Nations.

DONE at Kyoto this eleventh day of December one thousand nine hundred and ninety-seven.

IN WITNESS WHEREOF the undersigned, being duly authorized to that effect, have affixed their signatures to this Protocol on the dates indicated.

Annex A

Greenhouse gases

Carbon dioxide (CO_2)

Methane (CH_4)

Nitrous oxide (N_2O)

Hydrofluorocarbons (HFCs)

Perfluorocarbons (PFCs)

Sulphur hexafluoride (SF_6)

Sectors/source categories

Energy

Fuel combustion

Energy industries

Manufacturing industries and construction

Transport

Other sectors

Other

Fugitive emissions from fuels

Solid fuels

Oil and natural gas

Other

Industrial processes

Mineral products

Chemical industry

Metal production

Other production

Production of halocarbons and sulphur hexafluoride

Consumption of halocarbons and sulphur hexafluoride

Other

Solvent and other product use

Agriculture

Enteric fermentation

Manure management

Rice cultivation

Agricultural soils

Prescribed burning of savannas

Field burning of agricultural residues

Other

Waste

Solid waste disposal on land

Wastewater handling

Waste incineration

Other

Annex B

Party Quantified emission limitation or

reduction commitment
(percentage of base year or period)
Australia 108
Austria 92
Belgium 92
Bulgaria* 92
Canada 94
Croatia* 95
Czech Republic* 92
Denmark 92
Estonia* 92
European Community 92
Finland 92
France 92
Germany 92
Greece 92
Hungary* 94
Iceland 110
Ireland 92
Italy 92
Japan 94
Latvia* 92

Liechtenstein 92

Lithuania* 92

Luxembourg 92

Monaco 92

Netherlands 92

New Zealand 100

Norway 101

Poland* 94

Portugal 92

Romania* 92

Russian Federation* 100

Slovakia* 92

Slovenia* 92

Spain 92

Sweden 92

Switzerland 92

Ukraine* 100

United Kingdom of Great Britain and Northern Ireland 92

United States of America 93

* Countries that are undergoing the process of transition to a market economy.

RESUME

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