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Foreword

The African region is highly vulnerable to climate change due to its low level of development, structural rigidity, rain-fed agriculture, rampant natural resources degradation and depletion, land mismanagement, among others. Ethiopia is one of the countries that have experienced the effects of climate change. In response, the country is taking far-reaching ventures to redress the negative consequences of climate change and build a green economy.

The Ethiopian Development Research Institute (EDRI), School of Economics of Addis Ababa University, and the Environmental Economics Policy Forum for Ethiopia (EEPFE) Project have been engaged in desk review studies on three dimensions of climate change, viz. “Climate Finance, Climate Conventions, Carbon Markets and Implication for Africa/Ethiopia”. The reports are produced in three separate volumes pertaining to each sub-theme. This volume focuses on “***Climate Conventions and Africa/Ethiopia***”. That climate change is a real threat to our planet is widely recognized both in the developed and developing countries from social, economic, and environmental perspectives. Ever since the wide recognition of the adverse impacts of climate change, there have been a number of related international treaties and conventions in place. Although such agreements have been ratified and implemented to some degree, there is still need to review and interpret these conventions from the point of view of their short to long-term implications on Africa. The views and analyses provided herein shed light on the critical issues that need to be considered in climate negotiations in the context of Africa and Ethiopia.

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Acronyms

AA	Assigned Amount
AAUs	Assigned Amount Units
AfDB (ADB)	African Development Bank
AG13	Ad hoc Group on Article 13
AGBM	Ad hoc Group on the Berlin Mandate
AOSIS	Alliance of Small Island States
AUC	African Union Commission
AWG-KP	Ad hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol
AWG-LCA	Ad hoc Working Group on Long-term Cooperative Action
CAHOSCC	Committee of African Heads of State and Government on Climate Change
CBDR	Common but differentiated responsibility
CCS	Climate Change Secretariat/carbon capture and storage
CDM	Clean Development Mechanism
CERs	Certified emission reductions
CO ₂ e	Carbon dioxide equivalent
COP	Conference of the parties to the UNFCCC
CTCN	Climate Technology Centre and Network
ECA	[United Nations] Economic Commission for Africa
EIT	Economies in transition (such as East European Countries)
ERUs	Emission Reduction Units
GEF	Global Environment Facility
GHGs	Greenhouse gases
GLOBE	Global Legislators Organization for a Balanced Environment
HFCs	Hydro fluorocarbon
ICA	International consultation and analysis
ICSU	International Council of Scientific Unions
IET	International emissions trading
INC	Intergovernmental Negotiating Committee
IPCC	Intergovernmental Panel on Climate Change
IPCC-1AR	First Assessment Report of the IPCC (IPCC 1990)
IPCC-4AR	Fourth Assessment Report of the IPCC (IPCC 2007)
IPCC-SAR	Second Assessment Report of the IPCC (IPCC 1995)
IPCC-TAR	Third Assessment Report of the IPCC (IPCC 2001)
JI	Joint implementation
LDCs	Least developed countries
LUCF	Land use change and forestry
LULUCF	Land use, land use change and forestry
MDGs	Millennium development goals
MOP/CMP	Meeting of the parties/Conference for meeting of the parties to the Kyoto Protocol
MRV	Mechanism for monitoring and verification
OCHA	[United Nations] Office for the Coordination of Humanitarian Affairs
OECD	Organization for Cooperation and Development
OPEC	Organization of Petroleum Exporting Countries
PFCs	Perfluorocarbons
REDD-Plus	Reduced deforestation and forest degradation
RMUs	Removal Units
SBI	Subsidiary Body for Implementation

SBSTA	Subsidiary Body for Scientific and Technical Advice
TEC	Technical Executive Committee
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UN-OHRLLS	[UN] Office of the High Representative for the Least Developed Countries, Land Locked Developing Countries and Small Island Developing States
WCP	World Climate Programme
WG II	Working Group II of the IPCC
WMO	World Meteorological Organization

Abstract

Climate change is one of the main problems affecting the global environment which is critical to human welfare. Although the least developed countries (LDCs) in general and Africa in particular contribute the least to the problem, they are the most affected, with reasons varying from lacking resources to cope, immense poverty, and that many LDCs are located in regions where severe weather will hit the most. This fact makes it difficult to deal with the problem of climate change because unilateral efforts or even efforts of a certain group of countries cannot solve it unless the world acts globally. Almost two decades ago, most countries joined an international treaty—the United Nations Framework Convention on Climate Change (UNFCCC)—to begin considering what can be done to reduce global warming and to cope with arising problems (e.g. effects of temperature increases). This convention is based on the principles of *equity* and “*common but differentiated responsibility*” which require industrialized countries to take the lead in modifying longer-term trends in emissions. Since the UNFCCC entered into force on 21 March 1994, there have been many subsequent negotiations and agreements on climate change. In general, the Convention and other agreements have made provisions that industrialized countries reduce their emission and make finance available to LDCs for mitigation and adaptation to the impacts of climate change. However, little has been achieved both in terms of mitigation and making finance available to LDCs. On the other hand, the impacts of climate change are no longer “things of the future” in Africa in general and Ethiopia in particular. While the international community is mired in negotiations that seem to be endless, Africa is already counting the costs of climate change. This paper briefly presents the major climate conventions, negotiations, provisions, achievements, and implications for Africa/Ethiopia. Finally, we present positions that developing countries in general and Africa in particular could take in future climate negotiations in line with the principles of equity and “common but differentiated responsibilities” and in order to reflect the specific circumstances Africa faces with respect to climate change.

Key Words: climate change; climate conventions; Africa; Ethiopia; implications for Africa

1. Introduction

Climate change is one of the main problems affecting the global environment that is critical to human welfare. Climate change refers to a long-run increase in average surface temperature which goes under the name “global warming” or sometimes the “greenhouse¹ effect”. It is caused by increases in greenhouse gases such as carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), plus three fluorinated industrial gases: hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF₆). Water vapor is also considered a greenhouse gas.

Under normal (i.e., pre-industrial) conditions, greenhouse gases in the earth’s atmosphere serve to raise the temperature of the earth’s surface making it habitable. With no greenhouse gases at all, the surface of the earth would be about 30°C cooler than it is today, making human life impossible. However, an increase in the greenhouse gas content of the earth’s atmosphere beyond the global balance leads to an increase in average global temperature.

Evidences indicate that the CO₂ content of the atmosphere could double by the middle of the current century and that climate change has already begun. Measurement records indicate an increase of 0.6±0.2°C in global average temperature since the late 19th century. If nothing is done to reduce emissions, current climate models predict a global warming of about 1.4–5.8°C between 1990 and 2100 (IPCC 2007; IPCC 2001).

Carbon dioxide, while not the most potent of greenhouse gases, is the most significant one, accounting for 49% of global warming. The principal reason for global warming is one and a half century of industrialization. These anthropogenic activities include the burning of ever-greater quantities of oil, gasoline, and coal, the cutting of forests, and the practice of certain farming methods. These activities have increased the amount of greenhouse gases in the atmosphere, especially carbon dioxide, methane, and nitrous oxide (Shah 2010; IPCC 2007).

Climate change or global warming can affect human welfare negatively. Human beings are likely to face severe storms, floods, droughts, and desertification. Agricultural yields are expected to drop in most tropical and sub-tropical regions, and in temperate regions too if the temperature increase is more than a few degrees (UNFCCC 2007). In addition, the range of pests and diseases (such as malaria) may expand. Climate change will most probably endanger ecosystems, leading to a loss of biodiversity—through the extinction of numerous plant and animal species.

The problem of global warming is complicated because it involves the entire world. Industrialized countries contributed to 80 percent of the total atmospheric carbon dioxide buildup to date and their share of annual carbon dioxide emissions is 60 percent (Shah 2010). The problem is also tangled up with difficult issues such as poverty, economic development, and population growth. This implies that although the least developed countries (LDCs) contribute the least to the problem, they are the most affected, with reasons varying from lacking resources to cope, immense poverty, and that many LDCs are located in regions where severe weather will hit the most. This is especially true for Africa; African inhabitants are very vulnerable to the impacts of climate change. For example, it is expected that the agricultural impacts of atmospheric warming will hit African nations the hardest (Field 1997). It is not difficult to expect that Ethiopia will be

¹ The principle of a greenhouse is that enclosing glass (or nowadays plastic) allows the passage of incoming sunlight, but traps a portion of the reflected infrared radiation, which warms the interior of the greenhouse above the outside temperature (Field 1997).

one of the first victims, given the history of droughts, the fact that about 85% of its population depends on rain-fed agriculture, and that the country is landlocked.

Fundamentally, there are two choices to deal with the problem of climate change: mitigation and/or adaptation. Mitigation refers to taking steps today to reduce greenhouse gas emissions so as to delay further global temperature increases and other related effects. Adaptation refers to the efforts of (future) generations to adjust in ways that will substantially reduce the negative impacts of climate change.

Taking measures to reduce the problem of climate change is as much complicated as the problem itself because the problem is global in nature, meaning that bilateral efforts or efforts of a group of nations alone cannot solve the problem. This calls for global solutions to the problem.

Almost two decades ago, most countries joined an international treaty—the **United Nations Framework Convention on Climate Change** (UNFCCC)—to begin considering what can be done to reduce global warming and to cope with the inevitable temperature increases. More recently, a number of nations approved an addition to the treaty called the **Kyoto Protocol**, which has more powerful (and legally binding) measures. This protocol was adopted on 11 December 1997 and entered into force on 16 February 2005.

Under the **Kyoto Protocol**, developed countries are committed to an overall reduction of emission of greenhouse gases by 5.2% from 1990 levels for the period 2008–2012 (CCS 2002; Shah 2010). It also makes provisions that developing countries get financial and technological assistance from developed countries for the costs of mitigation and adaptation.

The UNFCCC entered into force on March 21, 1994. Today, it has near-universal membership. The 195 countries that have ratified the Convention are called Parties to the Convention. Since 1995 the parties to the convention have met annually through the **Conference of the Parties** (COP) to assess progress in dealing with climate change. From 2005 onward, the Conference of the Parties has been held in conjunction with **Meeting of the Parties to the Kyoto Protocol** (MOP). Other subsidiary bodies have also been established since 1995 to augment the UNFCCC and many environmental negotiations have been held.

However, both the way these different negotiations have been conducted and the achievements of the agreements have not been satisfactory particularly from the point of view of the LDCs who bear the highest burden of the impacts of climate change. This is especially true for Africa. Studies indicate that despite the commitments of developed countries to reduce emissions, global greenhouse gas emissions have increased between 2000 and 2006 (Shah 2010). Moreover, LDCs in Africa have benefited little from the financial pledges made in the convention and the Kyoto Protocol. In particular, Africa's share of the projects under the Clean Development Mechanism has been disappointing.

The objective of this paper is to critically review, organize, and document the main climate conventions and the results achieved (mainly from African perspective) so far in a way that it provides a comprehensive understanding of the current climate conventions. The ultimate goal is that African countries would be better informed for future climate negotiations.

The paper is organized as follows. In section 2 we provide a review of the actual and potential impacts of climate change in general and on Africa/Ethiopia in particular. Section 3 reviews the

responses of the international community to deal with climate change—focusing on the UNFCCC, the Kyoto Protocol, and the ongoing post-Kyoto issues—in terms of their negotiations leading to the agreements, their provisions, implementations, and implications for Africa/Ethiopia. Section 4 provides the way forward to future climate negotiations to ensure the achievement of the UNFCCC’s ultimate objective. The paper concludes in section 5.

2. Impacts of climate change and implications for Africa/Ethiopia

There are growing scientific evidences that rising concentrations of greenhouse gases (GHGs) in the earth’s atmosphere beyond the natural balance are causing the potentially irreversible climate change that overrides the world’s climate variation, which occurs naturally. Economic and demographic growth over the last two centuries—since the industrial revolution—led to the increased burning of fossil fuels, land clearing, and agricultural practices, all augmenting the amount of GHGs released to the atmosphere. There are also scientific evidences that climate change poses negative social and economic consequences to humans.

The growing evidence of anthropogenic interference with the climate system and the increasing concern with its negative environmental impact alerted the international community to put climate change on political agenda in the mid-1980s. The Intergovernmental Panel on Climate Change (IPCC) was established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) in 1988 as a response by the United Nations to assess technical and socioeconomic information relevant for the understanding of human-induced climate change, its potential impacts, and options for mitigation and adaptation (CCS 2002; IPCC 2007).

To this end one of the three Working Groups of IPCC (Working Group II-WGII) was mandated with the task of assessing the scientific, technical, environmental, economic, and social aspects of the vulnerability (sensitivity and adaptability) to climate change and the negative and positive consequences for ecological systems, socioeconomic sectors, and human health—with emphasis on regional, sectoral and cross-sectoral issues. The First Assessment Report of IPCC (IPCC FAR) in 1990 confirmed that human-induced actions are influencing the climate and called for a global treaty to address the problem. In response to this call, the UNFCCC was established on May 9, 1992 (CCS 2002).

The 1995 Second Assessment Report of the IPCC (IPCC SAR) concluded that there was a balance of evidence suggesting a discernible human influence on global climate, leading many governments to the negotiation and the adoption of the Kyoto Protocol in 1997. The Third Assessment Report of the IPCC (IPCC TAR), released in 2001, provided new and stronger evidence of a warming world (UNFCCC 2010; IPCC 2001)

The Fourth Assessment Report of the IPCC (IPCC FAR) released in 2007 is the largest and most detailed summary of climate change ever undertaken, involving thousands of authors from dozens of countries. It states that “evidence from all continents and most oceans shows that many natural resources are being affected by regional climate change” (IPCC 2007). It also concludes that warming in Africa is very likely to be larger than the global annual mean (Christensen et al. 2007)

2.1. Impacts of climate change

Climate change is likely to have a number of economic and environmental impacts. It can affect our health, our economy, and the natural world in many ways (IPCC 2007; UNFCCC 2010a). The following are the main negative impacts of climate change summarized by IPCC (2007) and others.

Rapid changes in global temperature

It is believed that changes in global average temperature reveal global warming which in turn results in many negative impacts to humans and the environment, such as impacts on biodiversity, agriculture, and oceans (IPCC 2007; Reid 2006; Climate Change 2010). Warming of the climate will lead to (i) more extreme weather patterns, such as hurricanes, droughts, longer spells of dry heat or intense rain (depending on location); (ii) increased evaporation which results in heavier rainfall and more erosion, and in more vulnerable tropical areas (especially Africa) desertification induced by deforestation; and (iii) destabilization of local climate may also disrupt some natural ecosystems, perhaps creating additional sources of GHGs.

Ocean acidification

Rising concentration of CO₂ in the atmosphere means more CO₂ in the ocean making it more acidic—finally affecting the oceans' biological diversity and ecosystems (Climate Change 2010; Shah 2010; Reid 2006)

Impact of climate change on ecosystems

Lessened snow covers, rising sea levels, and weather changes have impacts on ecosystems. Increasing temperature means that ecosystems may change, some species may be forced out of their habitats, some may become extinct, while others may flourish. Forests in some regions may be at an increased risk of forest fires, which affects many plant species (Reid 2006; Kapelle et al. 1999; Walther et al. 2002). Changes in natural ecosystems, in turn, affect climate (Reid 2006), creating vicious circles.

Sea level rises and global warming.

Global warming is at least part of the problem of sea level rising from melting ice caps and expanding water. This sea level rise affects low-lying islands and coastal areas. This can make densely settled coastal plains uninhabitable, and create a significant refugee problem. In addition to rising sea levels, melting of ice caps can lead to landslides, flash floods, variations in rivers and water shortages as glaciers are depleted (Climate Change 2010; Shah 2010).

Spread of diseases and pests

Global warming is expected to extend the favorable zones for vectors conveying infectious diseases such as malaria since a warmer environment boosts the reproduction rate of mosquitoes and the number of blood meals they take, prolongs their breeding season, and shortens the maturation period for the microbes they disperse.

Failing agricultural output

Drought and desertification are starting to spread and intensify in some parts of the world already. Projections of global warming show that an increased average temperature during the growing season will have a significant impact on crop yields, most notably in the tropics and sub-tropics, affecting at least half of the world's population that either live in the region or rely on food coming from that region (Shah 2010).

Feedback loops in climate change

Some effects of global warming themselves contribute directly to further global warming, producing devastating consequences for humans. An example of this feedback is the possibility that global warming will lead to a release of methane clathrate, a form of water ice found under sediments on the ocean floor, containing a large amount of methane, which will lead to further global warming.

Forest fires, caused by global warming, may also cause a release of stored carbon into the atmosphere, again exacerbating global warming, as well as reducing the overall forest area on the planet, creating a **positive feedback loop** (or worsening global warming) (e.g., Brown et al. 1996).

2.2. Impacts of climate change on Africa in general and Ethiopia in particular

While climate change can potentially affect every nation, the regional variation of the impacts means that some regions and countries are affected sooner and harder than others. Unfortunately, this is true for Africa in general and Ethiopia in particular. Yet industrialized countries account for the largest part of historical concentrations and annual emissions of GHGs. According to the IPCC report, the average annual per capita emission for sub-Saharan Africa is 2.4 tons of CO₂ equivalent (2.4 CO₂e) (5.9 tons for North Africa and the Middle East), excluding land-use change and forestry (LUCF), and, compared to an average of 3.8 tons of CO₂ equivalent (3.8 CO₂e), excluding LUCF, for 143 non-Annex I parties (IPCC 2001). Table 2.1 below presents the total aggregate and per capita emissions (and removals) of GHGs without and with LUCF of selected countries/regions in 2005.

Table 2.1. Total aggregate and per capita emissions (and removals) of GHGs in CO₂ equivalent without and with LUCF of selected countries/regions (in 2005)

Country/region	Total emissions (without LUCF) (Mt CO₂e)	Total emissions (with LUCF) (Mt CO₂e)	Per capita emissions (without LUCF) (tons CO₂e)
Asia	14146	16008	5.9
Europe	7805	7863	10.7
central America and the Caribbean	858	1008	4.8
North America	7643	7590	23.3
Middle East and North Africa	2598	2632	5.9
South America	2126	4469	5.7
Sub-Saharan Africa	1784	2385	2.4
Oceania	654	698	20.1
China	7242	7198	5.6
India	1865	1865	1.7
Brazil	1011	2841	5.4
South Africa	423	4226	9.0
Ethiopia	74	74	1
Annex I	17,714.	17754	14.1
Non-Annex I	19482	24483	3.8
World	37797	48172	5.9

Source: World Resources Institute (2012)

Note: Mt CO₂e = Million metric tons of carbon dioxide equivalent

Research evidences show that Africa is already warming faster than the global average although there are variations across sub-regions and countries within Africa (Conway 2009). It is

expected that the drier sub-tropical regions will be warmer than the moister subtropics. It is also expected that some parts of Africa will be drier, although there is uncertainty about what happens to other parts. Increased rainfall variability is another result of climate change (Hulme et al. 2005, cited in Conway 2009). This includes large inter-annual rainfall variability over most of Africa and multi-decadal variability for some regions. It is likely that many African regions are going to suffer from droughts and floods (Conway 2009).

The actual and potential impacts of climate change are large and wide-ranging, having humanitarian, economic, and environmental implications (IPCC 2007; Conway 2009). The major impacts on Africa could encompass the following.

- a) **Sea level rise** likely to affect people in the Nile Delta, West African coastal regions, including Gambia and Ghana, and also likely to affect ecosystems.
- b) **Floods and droughts.** It is likely that floods will be more common through increased rainfall in some areas and with likely increased frequency of more intense rainfall in drier regions which happened in 2007 in both eastern and western Africa (Conway 2009). Floods may lead to deaths from drowning; infectious diseases such as malaria; exposure to toxic substances spread with water; damage to infrastructure, crops and livestock; and increased demands on health systems and social security which could be translated into financial costs. More important in the context of Africa is the possibility of increased incidence of droughts, as Africa is already affected by a cyclical wave of droughts (ECA 2000, cited in Conway 2009). The IPCC estimates that by the 2080s the proportion of arid and semiarid lands in Africa is likely to increase by 5–8% (ECA 2000). The most significant impact of drought is likely to be on agricultural production.
- c) **Increased water stress.** In areas with reduced rainfall, it is likely that the volume of many river waters will decrease leading to increased water shortage. This is especially true for most of southern Africa, which lies in either unstable (varying drainage) or the dry regions. In the final analysis, water scarcity resulting from climate change will affect nations with high water requirements—for agriculture, industry, and energy—on top of the needs of the environment.
- d) **Reduced agricultural yield and production.** Agricultural production and food security in Africa are mostly affected by natural climate variability and are likely to be severely affected by climate change resulting in high temperature and drought. This could result in reduced agricultural land, reduced agricultural yield, particularly in semiarid and arid areas, which is likely to increase food insecurity and malnutrition. While it is generally projected that in other regions of the world crop productivity for some crops will increase slightly at mid-to-high altitude with local mean temperature increases of up to 1–3°C and decreases beyond that, crop productivity is projected to decrease in Africa even with small temperature increases of 1–2°C since many crops in Africa are already close to their thermal tolerance (IPCC 2007; Conway 2009). This implies that loss of crop productivity is real in Africa even if emission reduction pledges are implemented as agreed in Kyoto Protocol. Moreover, prolonged periods of high temperature and droughts will force large regions of marginal agriculture out of production, further reducing production.

Maize and wheat yields are especially prone to drought and are likely to decrease in most parts of Africa. In most of southern Africa maize production already experiences drought

on an annual basis and is likely to move southward. Drought will also severely affect livestock production particularly in pastoral regions of Africa such as Ethiopia.

The report of the UN Human Development Index (UNDP 2006) indicated that Climate change is affecting Sub-Saharan Africa. Responding to BBC the UNDP 2006 Human Development Index lead author, Kevin Watkins, said, “there is a lot of evidence that droughts in the Horn of Africa in 2006 are connected to climate change” (BBC 2006). The report also indicated that the most affected regions were those with very limited water infrastructure such as sub-Saharan Africa. The authors reported that people living in vulnerable conditions already had to adapt. The report further warned that crop yields could fall by a third or more in some regions of Africa.

- e) **Health.** Climate change has wide ranging actual and potential impacts on human health. High temperatures can have a direct effect on human health, even resulting in loss of life when average temperatures rise above 30°C in urban areas. Indirect effects include diseases carried by insects and other vectors. For example, increased temperature and prolonged rainy seasons are favorable for the transmission of malaria carried by *Anopheles arabiensis* mosquito species. It is expected that climate change will affect the spatial and temporal distribution of some vectors and diseases (IPCC 2007b), affecting areas previously free from some diseases, which is happening in east Africa in recent years (Conway 2009). The increased temperature in the east African highlands by 0.5°C (higher than global average) since the 1980s resulted in the spread of malaria in this region.
- f) **Biodiversity and ecosystem impacts.** Africa hosts about one-fifth of all known species of plants, mammals, and birds and one-sixth of amphibians and reptiles (Conway 2009).

The ecosystems of dry and semiarid lands in Africa are particularly at risk because even small changes in temperature and rainfall can have damaging impacts on the viability of plants and animals. This is likely to affect the diverse and indigenous plant and animal species. In total between 25–40% of animals in sub-Saharan Africa national parks are endangered by potential climate change impacts (Conway 2009).

Increased CO₂ concentration is also likely to affect marine ecosystems through acidification. Forest losses—expected to be the biggest effect of acidification—will have widespread consequences such as decreased biodiversity, decreased rainfall, increased soil erosion, more floods, emergence of zoonotic diseases, and more GHGs further worsening climate change.

- g) **Climate change and security.** Besides its impacts on food security and vulnerability to disasters, climate change will lead to increased risk of internal and cross-boundary conflicts (Carius 2009). Climate change puts stress on natural resources through increased drought and heat, affecting agricultural land and water availability and productivity of grazing lands in pastoral areas. This stress could result in more violent conflicts. Recent estimates suggest an increase in climate-induced violent conflicts of 54% in Africa until 2030 compared to 1980–2000 (Burke et al. 2009, cited in Conway 2009). This is true for the continent as a whole, and especially for central Africa and the horn of Africa. An example is the recent deadly conflicts among different pastoral tribes in Ethiopia and cross-country conflicts between Kenyan and Ethiopian pastoralists owing to severe

droughts that left the usually borderless grazing lands barren. In addition, decreasing availability of fertile soils due to climate change will make the remaining resources more precious, providing incentives to control productive lands (Carius 2009).

Although these threats are not confined to Africa, there are many reasons why the African position is particularly worrisome. First, model predictions of the impacts of climate change show that the severity, likelihood, and speed of negative impacts vary from region to region and Africa is likely to be most affected because of its geographical location. For example, even at a 2°C increase in average temperature, Africa is likely to suffer negative consequences (IPCC 2007) in terms of reduced agricultural productivity, spread of diseases, and ecosystem damage, which is particularly true in sub-Saharan Africa. Moreover, some of the impacts are no longer a matter of prediction for Africa. The problems are already affecting Africa as discussed above. For example, the Center for Research on the Epidemiology of Diseases (CRED 2010) indicates that Africa accounted for 20% of total disasters globally over the past three decades. About half of these natural disasters are due to extreme weather conditions. Between 1993 and 2003 alone, 16000 people died, while a further 137 million were affected by losing shelters, land, and livelihoods.

Second, African countries depend on natural resources and rain-fed agriculture for their livelihoods, implying that changes in climate that affect agriculture and natural resources, affect them. Moreover, one-third of Africa's productive areas are already classified as dry land and susceptible to climate change. Many parts of Africa are already water stressed. Lack of government capacity to cope with adverse climate changes and lack of enough income and forward insurance leave the poor households helpless in the event of natural disasters.

In general climate change is likely to worsen Africa's existing problems, leading to a further deterioration of the lives of many Africans. For example, a study by the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) on the vulnerability of different regions to disasters concludes that Africa is a hotspot for drought, flooding, and cyclone-related disasters resulting from climate change (OCHA 2008).

2.3. Impacts of climate change on Ethiopia: the showcase of climate change impacts

The UN Human Development Index report (UNDP 2006) indicates that the impacts of climate change are not evenly distributed across Africa. Given its particular situation, **Ethiopia** is hit the hardest, while Ethiopia contributes the least to climate change even compared to other African countries (only one nation contributes a smaller amount). While sub-Saharan countries are generally expected to be more vulnerable to the impacts of climate change, Ethiopia is one of the most vulnerable, if not the most vulnerable.

More than 80% of the Ethiopian population depends on rain-fed agriculture for its livelihoods, compared to an average of 70% for sub-Saharan Africa. Also the pastoralists who live mainly in the drier south and southeastern parts of the country depend on rain. This implies that Ethiopia could be hit very hard even by a small change in rainfall patterns. With climate change, productivity of permanent pastures and water points are bound to decline.

The history of past disasters reduces the capacity of households to cope with the impacts of climate change. Historically the country has been prone to extreme weather variability. Rainfall is erratic and since the early 1980s the country has suffered seven major droughts, of which five

have led to famines. Ethiopia's geographic location and topography make it highly vulnerable to the impacts of climate change (UNDP 2006).

The above accounts make Ethiopia the only country in Africa that was hit by the worst natural disasters (Scaruffi 2008). A century ago the country suffered drought every 10–15 years (Jeffrey 2000). The worst of these droughts occurred in 1984–1985, killing almost one million people, followed by the drought of 1958, which killed 100,000 people (Jeffrey 2000; Scaruffi 2008). Today droughts come with alarming regularity every five years or less. Although the drought of 1984–1985 was the worst, significant droughts and associated losses were suffered in 1987, 1988, 1991–1992, 1993–1994, 1999, 2004–2005, and 2009. Eastern and northern Ethiopia have been areas that suffered most from drought in the last two decades. Since the early 1980s four major droughts occurred and killed almost two million people.

While it is not clear whether climate change is responsible for the long history of drought in Ethiopia, the evidence suggests that climate change is responsible for the increased frequency and intensity of droughts in recent years. It also suggests that the long history of droughts increased the vulnerability of Ethiopia to recent droughts and will do so in the future. Between 1981 and 1999 Ethiopia suffered most in terms of livestock loss, losing 22–90% of livestock population each drought affected year. Among those affected in Africa, no other country suffered such a large-scale loss (IPCC 2007). This is because of its past drought history and agricultural system, which increased its vulnerability. It is estimated that drought costs Ethiopia USD 1.1 billion a year (Oxfam International 2009).

Impacts of climate change vary regionally and this is another factor influencing the extent of the damage. As far as east Africa is concerned, projections suggest that increasing temperatures due to climate change will increase rainfall by 5–20% from December to February and decreases rainfall by 5–10% from June to August. This situation is already affecting Ethiopia as it resulted in reduced and erratic pattern of rainfall in the main rainy season (June–August). The increase in rainfall in December to February does not benefit Ethiopia since this is usually a dry and harvest time for the main season crops. Rather, this will damage crops and increase the incidence of floods, as it is likely to be sporadic and sometimes delivered in large rainstorms. It is also likely that this will alter the spatial and temporal distribution of malaria as observed in recent years.

Studies indicate that minimum temperatures have increased slightly faster than maximum or mean temperatures in Ethiopia (Conway et al. 2004, cited in UN-OHRLLS 2009). This change in the range of temperatures is likely to affect agricultural systems that have been in place and make adaptation more necessary than anywhere else.

Another manifestation of the impacts of climate change in Ethiopia is the occurrence of devastating floods in recent years. The Irish Red Cross Society (2007) reported that flood disasters increased eight fold in Africa in the last three years preceding 2007 and that the increase was consistent with climate change predictions. On August 6, 2006, flash floods in the eastern Ethiopian city, Dir Dawa, claimed the lives of 256 people and displaced more than 5500 people (IRIN 2007). The city was submerged by floods in 1981, 1990, 2000, and 2005 (Ibid). In November and October 2008, two flash floods in southeastern Ethiopia forced 52000 people to leave their homes along the Wabe Shebelle and other rivers, destroyed crops, cut off transport, and killed 3 people (Earth Observatory 2008). Heavy floods in May, June, August, and

September 2010 also displaced tens of thousands of people and destroyed properties throughout the country. In total 13750 people have been affected by 2010 floods (OCHA 2010).

As noted above, the frequencies and severities of droughts and floods have surged in recent years, with shockingly high human and economic costs. The Center for Research on Epidemiology of diseases (CRED) indicates that between 1980 and 2008 the average number of droughts per year was 0.25 while that of floods was 1.45 (CRED 2010). Ethiopia's vulnerability to climate change increased from time to time. Increased poverty, severity of water scarcity, and food insecurity are just some of the negative impacts set to hit small-scale farmers and pastoralists in Ethiopia (Oxfam International 2010). Coupled with poor socioeconomic conditions, fragile ecosystems, and low capacity to adapt, Ethiopia in particular and Africa in general are facing a huge problem which they cannot solve alone.

Ethiopia's remoteness from world markets (owing to its land-lockedness), small merchandise export concentration, and population size also add to its vulnerability among the least developed countries (LDCs). Ethiopia's per capita GHG emissions remain one of the lowest, not only in Africa but also in the world, at 0.7 CO₂e (UNFCCC 2005). In addition, although not bound by binding emission reduction requirements, Ethiopia is taking steps to reduce emissions through shifting to renewable energy, improvement of energy efficiency, planting millions of trees every year on degraded lands, reforestation of degraded forests, and blending of ethanol as fuel for vehicles. However, this good gesture on the part of Ethiopia has not met with any reward from the international community as provided in different climate conventions.

3. International response to climate change

Increasing awareness by international organizations and nation-states of changes in the ecosystems and the destruction of natural resources initiated the attempts to address environmental concerns on a global scale. The 1972 United Nations Conference on Human Environment resulted in the establishment of the **United Nations Environment Programme** (UNEP). While the purpose of establishing UNEP was environmental assessment and research and monitoring, it also played a role in placing the link between environment and development on the international agenda. Although organized scientific observation of climate change began as far back as 1957 (Panos 2000), the **First World Climate Conference** was held on 12–23 February 1979 in Geneva as one of the first major international meetings on climate change. It focused on climate change in addition to climate research and forecasting (Panos 2000; UNFCCC 2010a).

The **First World Climate Conference** recognized climate change as a serious problem. This scientific conference explored how climate change might affect human activities and issued a declaration calling on the world's governments "to foresee and prevent potential man-made changes in climate that might be adverse to the well-being of humanity". It also endorsed the establishment of the **World Climate Programme** (WCP) under the joint responsibility of the World Meteorological Organization (WMO), the UNEP, and the **International Council of Scientific Unions** (ICSU).

A number of international conferences, including the **Second World Climate Conference** (November 1990), were held in the late 1980s and early 1990s. Together with increasing evidences, these conferences helped to raise international concern about the issue of **climate change**. The **Intergovernmental Panel on Climate Change** (IPCC) was established in 1988 by the UNEP and the WMO with the mandate to assess the state of existing knowledge about the climate system and climate change; the environmental, economic, and social impacts of climate change; and the possible response strategies. In 1990 the IPCC issued its **First Assessment Report**, confirming that human-induced climate change was indeed a threat and calling for a global treaty to address the problem. This call was echoed by the **Ministerial Declaration of the Second World Climate Conference** held in Geneva in October/November 1990. The **UN General Assembly** responded to these calls in December 1990, formally launching negotiations on a framework convention on climate change by its resolution 45/212. These negotiations were conducted by an **Intergovernmental Negotiating Committee** (INC), chaired by Jean Ripert (France).

The INC met for five sessions between February 1991 and May 1992. Negotiators from 150 countries finalized the convention in 15 months and adopted by consensus the **United Nations Framework Convention on Climate Change** (UNFCCC) in New York on May 9, 1992. The UNFCCC was signed by 154 states (plus the European Commission, EC) at the **UN Conference on Environment and Development** (UNCED), otherwise known as the “**Earth Summit**”, held 3–14 June 1992 in Rio de Janeiro. The **Earth Summit** became the largest ever gathering of Heads of States. Other agreements adopted at Rio were the **Rio Declaration, Agenda 21**, the **Convention on Biological Diversity and Forest Principles**.

3.1. The United Nations Framework Convention on Climate Change (UNFCCC)²

The UNFCCC entered into force on March 21, 1994. More than two decades after its adoption, 192 countries (including the EU) are now parties to the Convention and it is approaching universal membership (UNFCCC 2010a).

After the INC was dissolved in 1995, the **Conference of the Parties** (COP) became the convention’s ultimate authority. Since the Convention’s entry into force, parties have met annually in the Conference of the Parties to monitor its implementation and continue discussing how to tackle best climate change. COP’s decisions also make up the rulebook for the effective implementation of the convention.

The COP held its first session (COP 1) in Berlin from March 28 until – April 7, 1995. It was agreed that the commitments contained in the Convention for developed countries were inadequate and the conference launched the “**Berlin Mandate**” talks on additional commitments.

COP 2 was held at the Palais des Nations in Geneva June 8–9, 1996.

The **IPCC’s Second Assessment Report (1995)** and the **IPCC’s Third Assessment Report (2001)** also confirmed that there is a discernible human influence on global climate and the evidence is getting stronger.

² Some texts in parts (3.1)-(3.2.2) are taken from CCS (2002) and edited to meet the review.

The **Kyoto Protocol** was adopted at the **Third Conference of the Parties (COP 3)** in December 1997, as a result of the decision of COP 1 to strengthen the convention.

The Fourth Conference of the Parties (COP 4), held in Buenos Aires, Argentina, November 2–13 1998, agreed a two-year Plan of Action, for completing the **Kyoto rulebook**. The agenda of **The Fifth Conference of the Parties (COP 5)**, which took place in Bonn from October 15 until November 5, 1999 was based on this plan.

3.2. Provision of the UNFCCC and its rulebook

The UNFCCC is an international environmental treaty and sets an ultimate objective of stabilizing atmospheric concentrations of GHGs at levels that would prevent “**dangerous**” human interference with the climate system. Such levels, which the convention does not quantify, 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 ensure economic development to proceed in a sustainable manner. To achieve this objective, all parties to the convention, i.e. “developing and developed countries that signed and verified the convention”, are subject to an important set of general commitments, which place a fundamental obligation on them to respond to climate change.

The convention divides countries into two main groups: those that are listed in **Annex I**, known as **Annex I parties** and those that are not, known as **non-Annex I parties**. Some Annex I parties are also listed in the Convention’s Annex II, and are known as **Annex II parties**.

The Convention currently lists 41 **Annex I Parties** (Table 3.1). These are the industrialized countries that have historically contributed the most to climate change. They include both the relatively wealthy industrialized countries that were members of the Organization for Economic Co-operation and Development (OECD) in 1992, plus countries with economies in transition (the EITs), including the Russian Federation, the Baltic States, and several Central and Eastern European States. The per capita emissions of **Annex I Parties** are higher than those of most developing countries and they have greater financial and institutional capacity to address climate change. The principles of equity and “common but differentiated responsibilities” enshrined in the Convention therefore require these Parties to take the lead in modifying longer-term trends in emissions. To this end, **Annex I Parties** are committed to adopting national policies and measures with the non-legally binding aim that they should return their greenhouse gas emissions to 1990 levels by the year 2000 (Article 4.2 of UNFCCC) (Emission targets for the post-2000 periods are addressed by the Kyoto Protocol)

Annex I parties must submit regular reports, known as **National Communications**, detailing their climate change policies and measures. In addition, **Annex I parties** must submit an **Annual Inventory** of their GHG emissions, including data for their base year (1990) (except for some EITs who were given some flexibility to select their own base year other than 1990) and up to the penultimate year. National Communications are subject to an individual **in-depth review** by teams of experts, including in-country visits. Since 2000, annual inventories have also been subject to a **technical review**.

Table 3.1. Countries included in Annex I to the Convention

Australia	Austria	Belarus*
Belgium	Bulgaria*	Canada
<u>Croatia*</u>	<u>Czech Republic*</u>	Denmark
Estonia*	European Community	Finland
France	Germany	Greece
Hungary*	Iceland	Ireland
Italy	Japan	Latvia*
Liechtenstein	Lithuania*	Luxembourg
<u>Monaco</u>	Netherlands	New Zealand
Norway	Poland*	Portugal
Romania*	Russian Federation*	<u>Slovakia*</u>
<u>Slovenia*</u>	Spain	Sweden
Switzerland	Turkey	Ukraine*
United Kingdom	United States of America	

Source: Adapted from Climate Change Secretariat (CCS) (2002) and UNFCCC (2012)

Notes: * Countries with economies in transition; **Bold** denotes countries also included in Annex II; Underline denotes countries added to Annex I at COP 3 in 1997

Kazakhstan has announced its intention to be bound by the commitments of Annex I Parties, but is not formally classified as an Annex I Party under the Convention. Although it was said it would be considered an Annex I Party under the Kyoto Protocol, once it enters into force, it has not been included in the list even after it has ratified the Protocol in 2009.

Annex II of the Convention also lists the **OECD** members of **Annex I** parties. These **Annex II Parties**, of which there are currently 24, have a special obligation to provide “new and additional financial resources” to developing countries to help them tackle climate change, as well as to facilitate the transfer of climate friendly technologies to both developing countries and EITs.

Although **Annex I parties** were required to return their emissions to 1990 levels by 2000, key industrialized countries failed to meet this goal. Rather, emissions in most Annex II parties rose by 6.6% between 1990 and 1999, with some countries experiencing percentage increases in double digits (CCS 2002). This is a principal reason why Kyoto moved to binding commitments. Developing countries make up the group of **non-Annex I Parties**, which number 145. These Parties must report in more general terms on their actions to address climate change and adapt to its effects. The time frame for the submission of their initial **national communications**, including their emission inventories, is less tight than for **Annex I Parties** and is contingent on the receipt of funding. But non-Annex I Parties are not obliged to submit an annual emissions inventory, nor are their national communications subject to in-depth review.

In order to help developing countries to improve the preparation of their National Communications, a **Consultative Group of Experts on National Communications** from non-Annex I Parties was established by COP 3 in 1997.

Financial assistance and technology transfer, along with support for capacity building, are critical to enable **non-Annex I Parties** to address climate change and adapt to its effects, in the context of their sustainable development. Funding provided by Annex II Parties, is mostly channeled through the **Convention’s financial mechanism**, operated by the Global Environment Facility (GEF). These funds are provided on a grant or concessional basis.

In particular, the Convention underlines that vulnerable developing countries have specific needs and concerns in this regard. This refers to low-lying island nations, which according to the

Convention, face high risks from the adverse effects of climate change itself, and oil-exporting countries feel more threatened by the potential economic repercussions of response measures. In addition, the Convention recognizes the special circumstances of the 48 countries defined as LDCs by the United Nations, obviously including countries of sub-Saharan Africa.

The 2001 **Marrakesh Accord**, (COP 7), took some important steps forward on these key issues. It extended the scope of activities eligible for funding under the GEF, notably in the area of adaptation and capacity building. **Two New Convention Funds**, to be managed by the GEF, were also established (plus one operating under the Kyoto Protocol called **Adaptation fund**). These funds are **new and additional** in the sense that they will not be redirected from existing development aid funds.

- A **Special Climate Change Fund** will finance projects related to capacity building; adaptation; technology transfer; climate change mitigation; and economic diversification for countries highly dependent on income from fossil fuels.
- A **Least Developed Countries Fund** to support a special programme to assist LDCs, including the preparation of national adaptation programmes of action to respond to their urgent adaptation needs. A **New LDC Expert Group** will advise on the preparation and implementation of these programmes.

The **Marrakesh Accord** also launched a **New Expert Group in Technology Transfer** as part of a broader “**framework for meaningful and effective actions**” aimed at boosting the development and transfer of climate-friendly technologies. Similar frameworks were adopted to enhance capacity building in both developing countries and EITs.

As a supreme body of the Convention, the COP can establish subsidiary bodies for the implementation of its objectives. Accordingly, it established two subsidiary bodies:

- The **Subsidiary Body for Scientific and Technological Advice** (SBSTA) provides the COP with timely information and advice on scientific and technological matters related to the Convention.
- The **Subsidiary Body for Implementation** (SBI) helps with the assessment and review of the Convention’s implementation.

Two additional bodies were established by COP 1: the **Ad hoc Group on the Berlin Mandate** (AGBM), which concluded its work of drafting the **Kyoto Protocol** in **Kyoto** in December 1997, and the **Ad hoc Group on Article 13** (AG13), which concluded its work of exploring how to implement Article 13 of the Convention in 1998. The COP and its subsidiary bodies are serviced by a secretariat.

3.3. The Kyoto protocol

3.3.1. Negotiation of the Kyoto protocol

The UNFCCC did not commit states to a specific and binding limitation on GHG emissions because of the sharp disagreements among the big emitters of carbon dioxide, especially the **Organization for Economic Cooperation and Development** (OECD) countries. Countries with large reserves and a dependence on oil, such as the United States, resisted the inclusion in the Convention of a timetable and a target for the reduction of CO₂ emission, which western European countries, with small relative dependence on coal, favored. The Convention, however, established a mechanism for future action to be taken as warranted by scientific evidence.

One year after the Convention went into force on March 21 1994, the COP 1, held in **Berlin** from March 28–April 7 1995, reviewed whether the commitments by developed countries to return their emission to 1990 levels by the year 2000 was adequate to meet the Convention’s objective. The Parties agreed that new commitments were needed for the post-2000 period. This led to the adoption of the **Berlin Mandate** by the Parties. The **Ad hoc Group on Berlin Mandate** (AGBM) was established to draft the Kyoto Protocol.

The **COP 3**, held in **Kyoto, Japan, on December 1–11 1997**, adopted the Kyoto Protocol. The Kyoto Protocol is a legally binding agreement under which industrialized countries are committed to reduce their collective emissions of six GHGs by 5.2% below 1990 levels by 2008–2012, calculated as average over these five years (Article 3 (1)). It was also agreed that developing country parties would not be required to take on new commitments under these new processes.

Agreements on the 5.2% targets and other issues, including the base year, were reached after tense negotiations, each country proposing different indicators as the basis for emission cuts. The only common theme of these indicators was that each proposal suited the interests of the country making the proposal.

The complexity of the negotiations, however, meant that considerable “unfinished business” remained even after the **Protocol** was adopted. At the time of its adoption, the Kyoto Protocol sketched out the basic features of its “mechanisms” and compliance system, but did not develop all-important rules of how they would operate. Although 84 countries signed the Protocol indicating that they intended to ratify it, many were reluctant to actually do so and to bring the Protocol into force with a clear picture of the treaty’s rulebook.

A **new round of negotiations** was therefore launched to elaborate Kyoto Protocol’s rulebook, conducted in parallel with negotiations on ongoing issues under the Convention. This round finally culminated at COP 7 with the adoption of the **Marrakesh Accord**, setting out detailed rules for implementation of the Kyoto Protocol.

Table 3.2. Countries included in Annex B to the Kyoto Protocol and their emissions targets

Country	Target (1990** -2008/2012)
EU-15*, Bulgaria, Czech Republic, Estonia, Latvia, Liechtenstein, Lithuania, Monaco, Romania, Slovakia, Slovenia, Switzerland	-8%
US***	-7%
Canada, Hungary, Japan, Poland	-6%
Croatia	-5%
New Zealand, Russian Federation, Ukraine	0
Norway	+1%
Australia	+8%
Iceland	+10%

Source: Adapted from CCS (2002)

Notes: * The EU's 15 member States will redistribute their targets among themselves, taking advantage of a scheme under the Protocol known as a "bubble". The EU has already reached agreement on how its targets will be redistributed.

** Some EITs have a baseline other than 1990.

*** The US has indicated its intention not to ratify the Kyoto Protocol.

Although they are listed in the Convention's Annex I, *Belarus* and *Turkey* are not included in the Protocol's Annex B as they were not Parties to the Convention when the Protocol was adopted. Upon entry into force, *Kazakhstan*, which has declared that it wishes to be bound by the commitments of Annex I Parties under the Convention, will become an Annex I Party under the Protocol. As it had not made this declaration when the Protocol was adopted, Kazakhstan does not have an emissions target listed for it in Annex B.

3.3.2. Provisions of the Kyoto protocol

The 1997 Kyoto Protocol shares the Convention's objective, principles, and institutions, but it has the means of taking the Convention forward by committing Annex I Parties to individual, legally-binding targets to limit or reduce their greenhouse gas emissions. In order to be bound by the Protocol's commitments, once it comes into force, parties must have also ratified the Convention before ratifying the Protocol.

Individual country's emission targets in the Protocol are listed in the Kyoto Protocol's **Annex B** (the six GHGs and their sources included in the emission reduction targets are listed in **Annex A** of the Protocol). These add up to a total cut of at least 5% from 1990 levels in the commitment period 2008–2012.

The targets cover emissions of the six main greenhouse gases, namely:

- Carbon dioxide (CO₂);
- Methane (CH₄);
- Nitrous oxide (N₂O);
- Hydrofluorocarbons (HFCs);
- Perfluorocarbons (PFCs); and
- Sulphur hexafluoride (SF₆)

The maximum amount of emissions (measured as the equivalent in carbon dioxide) that a Party may emit over the commitment period in order to comply with its emissions target is known as a Party's **assigned amount** (AA). The protocol includes provisions for the review of its commitments, so that these can be strengthened over time (post-Kyoto).

Initially it was planned that negotiations on targets for the second commitment period (post-Kyoto) would start in 2005, by when Annex I Parties would make “demonstrable progress” in meeting their commitments under the Protocol. The protocol is reviewed at the second session of the COP, which will serve as “the meeting of the parties” to the Protocol (the so-called COP/MOP), after the Protocol has entered into force.

To achieve their targets, Annex I Parties must put in place **domestic policies and measures**. The Protocol provides an indicative list of policies and measures that might help mitigate climate change and promote sustainable development.

Annex I parties may offset their emissions by increasing the amount of GHGs removed from the atmosphere by so-called carbon “sinks” in the land use, land-use change, and forestry (LULUCF) sector. However, only certain activities in this sector are eligible. These are **afforestation, reforestation, and deforestation** (defined as eligible by the Kyoto Protocol) and **forest management, cropland management, grazing land management, and revegetation** (added to the list of eligible activities by the **Marrakesh Accords**). Greenhouse gases removed from the atmosphere through eligible sink activities generate credits known as **removal units** (RMUs). Any greenhouse gas *emissions* from eligible activities, in turn, must be offset by greater emission cuts or removals elsewhere.

The extent to which emissions and removals from the LULUCF sector can be counted under the Protocol is governed by additional detailed rules. The amount of credit that can be claimed through forest management, for example, is subject to an individual cap for each Party, which is listed in the **Marrakesh Accords**.

Three innovative “mechanisms” are also established by the Protocol: **joint implementation (JI)**; the **clean development mechanism (CDM)**; and **international emissions trading (IET)**. These are designed to help Annex I Parties cut the cost of meeting their emissions targets by taking advantage of opportunities to reduce emissions, or increase GHG removals, that cost less in other countries than at home.

To use these mechanisms, parties must provide evidence that their use of the mechanisms is “supplemental to domestic action,” which must constitute “a significant element” of their efforts in meeting their commitments. Business, environmental NGOs, and other “legal entities” may participate in the mechanism, albeit under the responsibility of their governments.

- Under **Joint Implementation**, an Annex I Party may implement a project that reduces emissions (e.g., an energy efficient scheme) or increase removals by sinks (e.g., a reforestation project) in the territory of another Annex I party, and count the resulting **emission reduction units** (ERUs) against its own target.
- Under the **clean development mechanism** (CDM) (Article 12), Annex I parties may implement projects in non-Annex I parties that reduce emissions and use the resulting **certified emission reductions** (CERs) to help meet their own targets. The CDM is designed to encourage emission reductions in non-Annex I countries while JI encourages emission reductions in Annex I countries.

The **rulebook for the CDM** set forth in the **Marrakesh Accords** focuses on projects that reduce emissions. Accredited independent organizations—known as **operational entities**—will play an important role in the CDM project cycle, including in the validation of proposed projects and certification of emission reductions and removals. A levy from each CDM project—known as a

“share of the proceeds”—will help finance adaptation activities in particularly vulnerable developing countries and cover administrative expenses.

The Protocol envisages a prompt start to the CDM, allowing CERs to accrue from projects from the year 2000 onward. This prompt start was put into effect at COP 7, with the establishment of the CDM’s **executive board**.

- Under **international emission trading** (IET), Annex I countries “trade” or transfer some of their emissions under assigned amount, known as the assigned amount units (AAUs) or “allowance” to another Annex I party. The buying party is the one that finds it relatively more difficult to meet its emission targets. An Annex I party may also transfer CERs, ERUs, or RMUs that it has acquired through the CDM, JI, or sink activities in the same way.

In order to address the concern that some countries could “over-sell” and then be unable to meet their own targets, the Protocol rulebook requires Annex I parties to hold a minimum level of AAUs, CERs, ERUs, and/or RMUs in a **commitment period reserve** that cannot be traded.

Like the Convention, the Protocol recognizes the specific needs and concerns of developing countries, especially the most vulnerable among them and the principle of “common but differentiated responsibility.” Annex I Parties must thus provide information on how they are striving to meet their emissions targets while minimizing adverse impacts on developing countries. The **Marrakesh Accords** list a series of measures that industrialized countries should prioritize in order to reduce such impacts, such as removing subsidies associated with environmentally-unfriendly technologies, and technological development of non-energy uses of fossil fuels.

A new **adaptation fund** was also established by the Marrakesh Accords to manage the funds raised by the adaptation levy on the CDM, as well as contributions from other sources. The fund will be administered by the GEF, as the operating entity of the Convention and Kyoto Protocol’s financial mechanism.

Annual emission inventories and regular **national communications** must be submitted by Annex I parties under the Protocol; both are subject to **in-depth review** by expert review teams. Expert review teams have the mandate to highlight potential compliance problems—known as **questions of implementation**—that they find and to refer these to the Compliance Committee if Parties fail to address them.

It is also required of parties to establish and maintain a **national registry** to track and record transactions under the mechanisms. As an added monitoring tool, the secretariat will keep an independent **transaction log** to ensure that accurate records are maintained. It will also publish an annual **compilation and accounting report** of each Party’s emissions and its transactions over the year. All information, except that designated as confidential, will be made available to the public. (There are safeguards in place to limit what type of information may be designated as confidential.)

The Protocol’s compliance system, agreed as part of the **Marrakesh Accords**, gives “teeth” to its commitments. It consists of a **Compliance Committee**, composed of a **plenary**, a **bureau**, and two branches: a **facilitative branch** and an **enforcement branch**. As their names suggest, the facilitative branch aims to provide advice and assistance to Parties, including “early-warning”

that a Party may be in danger of not complying, whereas the enforcement branch has the power to apply certain consequences on Parties not meeting their commitments.

Parties failing to meet their emissions targets must make up the difference in the second commitment period, plus a penalty of 30%. It must also develop a **compliance action plan**, and its eligibility to “sell” under emissions trading will be suspended. The Protocol rulebook sets out detailed procedures for considering cases of potential non-compliance, along with an expedited procedure for reviewing cases concerning eligibility to participate in the mechanisms.

The Protocol was opened for signature for one year starting 16 March 1998. Article 25 of the Kyoto Protocol specifies that it would enter into force 90 days after it has been ratified by at least 55 parties to the Convention, including developed countries, representing at least 55% of the total 1990 carbon dioxide emissions from this group. Political disagreements in late 2000 and 2001 over how to implement the Protocol slowed down the rate of ratification.

The European Union (EU) and its member states ratified the Protocol in May 2002 (EU 2002). Of the two conditions, the “55 parties” clause was satisfied when Iceland ratified the Protocol on 23 May 2002. When Russia ratified the Protocol on 18 November 2004, the “55%” clause was satisfied and the Protocol was brought into force effective 16 February 2005 after the required lapse of 90 days.

One regional economic organization (the European Union) and 187 countries have ratified the Protocol as of November 2009, representing over 63.9% of the 1990 emissions from Annex I Parties. Under the Protocol 39 industrialized countries and the EU (Annex I Parties) commit themselves to a reduction of four GHGs and two groups of gases produced by them, and all member countries give general commitments. The United States has so far not ratified the Protocol on the ground that some developing countries with large GHG emissions, such as China and India should be required to reduce their GHG emissions. Australia originally held the same position but latter ratified it in 2007 although it has not yet started implementing the commitment.

3.4. Africa and climate negotiations

3.4.1. The UNFCCC and Kyoto protocol negotiations

The failure of the UNFCCC to impose any legally-binding emission reduction commitments appears to be mainly due to the lack of strong negotiating capacity of developing countries, particularly Africa, on one hand, and the strength of industrialized countries such as the US and Australia, who opposed such measures, on the other. The weak convention was the price that had to be paid to bring in the US (Albert 2001). To some extent, this also shows the complexity of international negotiations aimed at addressing climate change. It is claimed that Africa’s position in the UNFCCC negotiations was very weak.

While every other group held strong position to reflect their specific interests in the outcome of the negotiations of both UNFCCC and the Kyoto protocol, the so-called developing countries group (G77), comprising about 130 countries (including China, India, Brazil, South Africa) at the times of UNFCCC and the Kyoto Protocol negotiations, did not have a united position, and were only concerned to maintain their right to use their own natural resources, and insist that any commitments they make will be dependent on prior emission cuts by the industrialized countries

and financial resources from them. There was no group representing Africa that took up its specific circumstances making it clear that Africa should be treated differently.

The 42-member Alliance of Small Island States (AOSIS) argued that they would be affected directly by climate change and pushed for tough action. On the other hand, the oil-producing countries (OPEC), afraid of seeing their oil revenues dwindle, argued for more research, and for emphasis on increasing absorption of carbon dioxide through forestry activities rather than reducing emissions of GHGs (Panos 2000). Thus Africa had failed demonstrably to articulate any position unique to it, and had therefore been largely marginal in the UNFCCC negotiations (Albert 2001). Because of this Africa failed to win any provision to its advantage for the specific circumstances it faces in the UNFCCC negotiations

The Kyoto protocol is praised by some as the first to impose legally binding commitments and emission reduction targets, strongly sought by those who argue that the international community must take immediate steps to stem the rise in global warming (e.g., Albert 2001). However, the negotiations leading to the adoption of the Protocol reflected different interests of those parties with most to gain from their inclusion (Grubb 2003; Albert 2001, Panos 2000). Developed countries such as the United States and Australia pushed for the inclusion of carbon sinks (e.g., by including forests that absorb CO₂ from the atmosphere) in the protocol to minimize domestic political difficulties. For example, those Annex I countries referred to as economies in transition were allowed the flexibility in terms of selecting their base year against which their emission reduction targets should be measured. Generally, vigorous advocacy of self-interest at international negotiations were rewarded to varying degrees by having reflected those interests in the protocol. On the other hand, Africa again failed, at least as far as the Kyoto Protocol negotiations are concerned, to articulate any position unique to it. This is not because Africa lacks any unique problem worth mentioning.

The EU pressed for stronger action on climate change partly because they are aware of the environmental consequences and partly because most European countries import fossil fuels, meaning that there is economic incentive to reduce consumption. On the other hand, the United States is afraid of the resulting high costs associated with reducing GHGs as its economy largely depends on domestic supply of oil and large reserves of coal.

Australia, with its high GHG emissions, fears the costs of switching to lower emissions. On the other hand, Norway, New Zealand, and Switzerland have economies that depend largely on energy from hydropower with low emission of GHGs and fear the costs of further reductions (Panos 2000).

In general, while the stronger negotiating position of industrialized countries and the weaker position of developing countries (especially Africa) undermined the potential contributions of both the Convention and Kyoto Protocol to curb problems associated with climate change, Africa's weakness resulted in the lack of any special provisions. For example, the commitment of Annex I Parties to an overall reduction of six GHGs by 5.2% below 1990 levels for 2008–2012 was far less than the 60% reduction in the world's annual emission of GHGs needed to stabilize the concentration of atmospheric GHGs at a level a little bit higher than the present (IPCC 1990).

So far, the Protocol only had little effect on curbing the global emission growth (World Bank 2010). The World Bank (2010) also concluded that the treaty had provided only limited financial

support to developing countries to support them in reducing their emissions and adapting to climate change.

Some of the weaknesses of the Protocol are that it lacks climate justice (Liverman 2008), i.e., the lack of balance between low emissions and high vulnerability of the developing countries to climate change compared to high emissions and low vulnerability in developed nations. Some environmentalists have criticized the existing agreement for being too weak (Grubb 2000). Although the protocol provides the CDM mechanism that helps developed countries to meet their emission reductions while assisting developing countries to attain the objective of sustainable development under Article 12, African countries have not benefited much compared to developing countries in other regions (Asia and the Pacific, Latin America and the Caribbean). Africa has the least number of CDM projects. For example, of 1796 CDM projects across the world in August 2009, Africa had only about 33. Of these, more than 16 projects are in South Africa (Meena 2009)

The “**Nairobi Framework**” was launched in November 2006 as a plan by the United Nations Development Programme (UNDP), UNEP, the World Bank Group, African Development Bank, and the Secretariat of the UNFCCC, with the specific target of helping developing countries, especially those in sub-Saharan Africa to improve their level of participation in the CDM so that Africa gets a bigger slice of investment in clean energy technologies like wind and hydropower. However, it did not bring much optimism (Nolin 2007). While some attribute this low participation to the initial lack of interest (Panos 2000), others mention the lack of clarity about the eligibility of projects and that those projects eligible for CDM do not address the development objectives of Africa to ensure more pressing development priorities such as food security (Nolin 2007; Panos 2000).

Article 3, paragraph 4 of the UNFCCC states that

“Policies and measures to protect the climate system against human-induced change should be appropriate for the specific conditions of each party and be integrated with national development programmes, taking into account that economic development is essential for adopting measures to address climate change.”

However, this principle is not given attention in the implementation of the CDM mechanism (Panos 2000; UNDP 2006). African developing countries have important national development priorities such as ensuring food and energy security. For African countries to be able to benefit from investments available through the CDM, the CDM criteria have to include activities that are relevant to Africa and match the countries’ development priorities. For example, a study by ENDA (Environment and Development Action in the Third World) suggests that African development priorities include food and energy security, and the CDM could contribute both to these and to emission reductions if the criteria also allowed such activities as intensification of agriculture (which would reduce deforestation or increase sustainable management of forests) (Sokona, Humphreys, and Thomas 1999, cited in Panos 2000). This study implies that the projects eligible for Africa could include activities such as irrigation schemes, non-farm projects aimed at creating non-farm jobs, development of agricultural technologies, soil conservation, and other similar projects that could reduce pressure on forested areas and marginal ecosystems. For example Eriksen (2001) shows that climate change leads to desertification, since forests are used as a coping mechanism during droughts, which increases climate change and vulnerability in the future (Hulme and Kelly 1993).

Basically the UNFCCC recognizes in its article 8 all the particular threats that countries with fragile and mountainous ecosystems, semi-arid areas, frequent droughts and desertification, potential vulnerability to natural disasters, and no access to the sea are facing, although, it does not particularly refer to Africa regarding these threats. But it would not be difficult to inform the negotiating body of this obvious fact and earn special provisions for Africa given a strong negotiating group.

While most African countries face many of these problems, Ethiopia faces all of them with its fragile ecosystems resulting from a long history of drought, floods, and mountainous topography. These problems are compounded with the fact that Ethiopia is a landlocked country with small merchandise export.

By now, no one doubts that the commitment of the Convention is not even close to being fully implemented. There are also indications that GHG emissions are increasing in many of the Annex I countries. The progress of implementation is being reviewed in annual conferences. The first such conference was held in 2006 in Nairobi, Kenya. Reports indicate that no optimism was brought, revealing substantial disagreements between developing and developed countries as well as "frightening lack of leadership" at the conference (Nolin 2007). Studies also indicate that the rate of global GHG emissions has been accelerating. Between 2000 and 2004, it was three times higher than in the 1990s (Naik 2007, cited in Nolin 2007).

Thus, the natural trend outpaces the most pessimistic predictions of the IPCC Fourth Assessment Report.

3.4.2. Post-Kyoto negotiations

The UNFCCC provides for the periodic review of the emission reduction commitments. It was initially suggested in the Kyoto Protocol that negotiations for the post-2012 period would start in 2005. However, the long time it took to have the Protocol ratified meant that this negotiation had to start much later.

Post-Kyoto negotiations refer to high level talks attempting to address global warming by limiting greenhouse gas emissions. Generally part of the United Nations Framework Convention on Climate Change (UNFCCC), these talks concern the period after the first "commitment period" of the Kyoto Protocol, which is due to expire at the end of 2012.

Negotiations have been mandated by the adoption of the **Bali Road Map** and Decision 1/CP.13 ("**The Bali Action Plan**"). UNFCCC negotiations are conducted within two subsidiary bodies, the **Ad Hoc Working Group on Long-term Cooperative Action under the Convention** (AWG-LCA) and the **Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol** (AWG-KP) and were expected to culminate in the United Nations Climate Change Conference taking place in December 2009 in Copenhagen (COP-15). Negotiations are supported by a number of external processes, including the G8 process, a number of regional meetings, and the **Major Economies Forum on Energy and Climate** that was launched by US President Barack Obama in March 2009. High level talks were held at the meeting of the G8+5 Climate Change Dialogue in February 2007 and at a number of subsequent G8 meetings, most recently leading to the adoption of the **G8 leaders declaration "Responsible Leadership for a Sustainable Future"** during the G8 summit in L'Aquila, Italy, in July 2009.

Some of the post-Kyoto negotiations leading to the Copenhagen Climate Conference are the following:

- **In February 2007**, the interparliamentary organization, **Global Legislators Organization for a Balanced Environment** (GLOBE) managed to bring together legislators from the G8 nations (Canada, France, Germany, Italy, Japan, Russia, United Kingdom, the United States) +5 (Brazil, China, India, Mexico, South Africa) to GLOBE's Summit in **Washington**. The Summit adopted a non-binding **Washington Declaration**. The Summit has sent a strong message to the international community calling for global negotiations on a post-Kyoto framework, which would include emission reduction targets for both the developed and developing worlds. Although the statement of the GLOBE is not legally binding, it is an extremely significant and encouraging breakthrough, as representations from very different countries, such as China and the United States, could speak with one voice (Nolin 2007). The legislators urged governments to agree on further and mandatory emission cuts and to create a global carbon market.
- **On 7 June 2007**, leaders at the **33rd G8 summit**, which took place in Heiligendamm in the Northern **German** state of Mecklenburg-Vorpommern, from 6 June to 8 June 2007, agreed that the G8 nations would "aim to at least halve global CO₂ emissions by 2050". The details enabling this to be achieved would be negotiated by environment ministers within the United Nations Framework Convention on Climate Change in a process that would also include the major emerging economies (G8 Summit 2007).
- **2007 UN General Assembly plenary debate**. As part of the schedule leading up to the September UN High-Level-Event, on July 31 the United Nations General Assembly opened its first-ever plenary session devoted exclusively to climate change, which also included prominent scientists and business leaders.

In his opening speech, Secretary-General **Ban Ki-moon** urged Member States to work together, stating that the time had come for "decisive action on a global scale", and called for a "comprehensive agreement under the United Nations Framework Convention on Climate Change process that tackles climate change on all fronts, including adaptation, mitigation, clean technologies, deforestation, and resource mobilization". In closing the conference General Assembly President **Haya Rashed Al-Khalifa** called for an "equitable, fair, and ambitious global deal to match the scale of the challenges ahead". She had earlier stressed the urgency of the situation, stating that "the longer we wait, the more expensive this will be."

- **Vienna Climate Change Talks 2007**. A round of climate change talks under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC) (**Vienna Climate Change Talks 2007**) concluded in 31 August 2007 with agreement on key elements for an effective international response to climate change (UNFCCC 2007). A key feature of the talks was a United Nations report that showed how **efficient energy use** could yield significant cuts in emissions at low cost. The talks were meant to set the stage for a major international meeting to be held in Nusa Dua, **Bali**, Indonesia, which started on 3 December 2007.

- **September 2007 United Nations High-Level-Event.** As well as on the meeting of the United Nations General Assembly, Secretary-General Ban Ki-moon was to hold informal high-level discussions on the post-Kyoto treaty on September 24. It was expected that these would pave the way for the United Nations Climate Change Conference, held in Bali in December 2007. Three Special Envoys on Climate Change, appointed on May 1, 2007, held discussions with various governments to define and plan the event.

In advance of the "High-Level-Event", the Secretary-General hoped that world leaders would "send a powerful political signal to the negotiations in Bali that "business as usual" will not do and that they are ready to work jointly with others towards a comprehensive multilateral framework for action".

- **September 2007 Washington conference.** The conference, called a **special conference on climate change** by some and attended by more than 20 countries, including China, India, Britain, France, and Germany, ended without any progress. The US, which hosted and chaired the conference, proposed a voluntary emission cuts while Britain and almost all other European countries, including Germany and France, wanted mandatory targets for reducing greenhouse emissions. It was reported that even China and India, two of the biggest polluters, favored binding measures, although they disagreed with the Europeans about how this would be achieved. However, the US, shunned mandatory caps in favor of clean coal, nuclear power, and developing clean energy technology (MacAskill 2007)
- The **first major international negotiation within the post-Kyoto regime took place at COP /MOP 3** from 3–15 December 2007 at Nusa Dua, in **Bali**, Indonesia. The conference culminated in the adoption of the "**Bali Road Map**", which includes the Bali Action Plan, which charts the course for a new negotiating process designed to tackle climate change, with the aim of completing this by 2009. Agreements on a timetable and structured negotiation on the post-2012 framework (the end of the first commitment period of Kyoto Protocol) was achieved with the adoption of **Bali Action Plan** (decision 1/CP.13). The conference established the Ad hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA) as a new subsidiary body to conduct the negotiations aimed at urgently enhancing the implementation of the Convention up to and beyond 2012. The Bali Road Map also includes the AWG-KP negotiations and their 2009 deadline, the launch of the Adaptation Fund, the scope and content of the Article 9 review of the Kyoto Protocol, as well as decisions on technology transfer and on reducing emissions from deforestation. These negotiations took place during 2008 (leading to COP 15/MOP 5) in Copenhagen. While some call The Bali Road Map "successful" (e.g. Müller 2008) others criticized it for not achieving much. One of the criticisms is that it contains no targets and no dates (e.g. Monbiot 2007)
- At **COP 14 /MOP 4**, which took place on 1–12 December 2008, in Poznan, Poland, delegates agreed on principles for the financing of a fund to help the poorest nations cope with the effects of climate change and they approved a mechanism to incorporate **forest protection** into the efforts of international community to combat climate change (Goering 2008).
- **September 2009 United Nations Secretary General's Summit on Climate Change.** United Nations Secretary General Ban Ki-Moon convened a high-level event on Climate Change on 22 September 2009 to which Heads of State and Government have been

invited. This event was intended to build further political momentum for an ambitious Copenhagen-agreed outcome to be adopted at COP 15. There were also other preparatory talks in Bonn (in Germany), Bangkok, and Barcelona before the Copenhagen Conference

- **The Copenhagen Conference. The next conference (COP 15/MOP 5)**, which took place in Copenhagen, Denmark, on 7–18 December 2009, was much anticipated to make a breakthrough in terms of reaching a new and ambitious global climate agreement for post-2012, which was its objective. However, it turned out that world leaders decided to put off the difficult task of reaching a climate change agreement. Instead, they agreed to make it the mission of the Copenhagen Conference to reach a less specific “politically binding” agreement that would punt the most difficult issues into the future. A large part of the diplomatic work that lays the foundation for a post-Kyoto agreement was undertaken up to the Copenhagen Conference.

The conference did not achieve a binding agreement for long-term action. A short “political accord” known as **Copenhagen Accord** was negotiated by approximately 25 parties including the United States and China, but it was only noted by the COP as it is considered an external document, not negotiated within the UNFCCC process. The Accord was noted as it referred to a collective commitment by developed countries for new and additional measures, including **forestry** and investments through international institutions that will approach USD 30 billion for the period 2010–2012. It was also noted that developed countries commit to a goal of mobilizing jointly USD 100 billion a year by 2020 to address the needs of developing countries. The Accord also established the **Copenhagen Green Climate Fund** through which new multilateral funding for adaptation will flow. These longer-term options on climate financing were discussed within the **UN Secretary General’s High Level Advisory Group on Climate Financing**, which reported in November 2010. In addition to **High Level Panel** under COP to study implementation of financing provisions and **Copenhagen Green Climate Fund**, the Accord established two other bodies: a mechanism on **REDD-Plus** (enhanced reduction of emissions from deforestation and forest degradation) and a **technology mechanism** (IISD 2009).

The negotiations on extending the Kyoto Protocol had unresolved issues, as did the negotiation on a framework for long-term cooperative action. These have now been under negotiation over the last two to three years since the 2007 UN climate conference in Bali (COP13).

The working groups on these tracks to the negotiations were supposed to report to COP 16 and MOP 6 in Cancun, Mexico in November–December 2010.

In the negotiations leading to Copenhagen, Africa shared the demands of other developing countries. These demands are based on the principle of the Convention, especially the

- **Common but differentiated responsibilities;**
- **Specific needs and special circumstances of developing countries; and**
- **Right to development.**

African countries’ position about the existing financial mechanisms is that they are inadequate, complex, and fragmented and have constrained African countries from gaining access to these resources; therefore they demanded from the Annex I countries a climate change adaptation fund worth USD 67 billion per year by 2020.

In the negotiation process in **Bali**, developing countries demanded from developed countries to reduce their GHG emissions by at least 40% below 1990 levels by 2020 and at least 80% to 95% below 1990 by 2050 (Meena 2009)

Although the **Copenhagen Accord** is not what many expected and has many problems as it stands, it is the first time that **Africa** was recognized as having *special circumstances*. In all the previous documents, Africa had always been implicitly included in the LDCs, while special problems of other regions, such as the **Small Island States**, have been explicitly acknowledged. Credit is due to the stronger negotiating team, which represented Africa in Copenhagen and conferences preceding Copenhagen. The team had unreserved support from **African Union Commission (AUC)**, **Economic Commission for Africa (ECA)**, the **African Development Bank (AfDB)**, the **United Nations Environment Programme (UNEP)**, and other regional actors and development partners.

The Copenhagen Accord was also the first in negotiations to have come up with a quantified amount of financial pledge to assist developing countries with adaptation and mitigation. The **African Union** is one of those that accepted the Accord, calling it “a compromise in the face of so many diverging interests”. However, there are concerns by developing countries, including those in Africa, that (i) it lacks scientific basis; (ii) there is lack of reference to binding commitments in the second commitment period; (iii) it lacks guarantees on the continued existence of the Kyoto Protocol; and (iv) parties failed to agree to limit temperature increase to below 1.5°C (AUC and ECA 2010). Additionally, the procedure leading to the Copenhagen Accord was regarded as not being transparent and democratic enough. Furthermore, there are others who criticize the absence of historical responsibility from the Accord, arguing it is “so important to Africa and other developing nations.”

COP 16/CMP 6: The Cancun Agreements. The United Nations Climate Change Conference took place in Cancun, Mexico, from 29 November to 10 December 2010, encompassing the sixteenth Conference of the Parties (COP 16) and the sixth Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (CMP 6), as well as the thirty-third sessions of both the Subsidiary Body for Implementation (SBI) and the Subsidiary Body for Scientific and Technological Advice (SBSTA), and the fifteenth session of the AWG-KP, and the thirteenth session of the AWG-LCA.

The Cancun Agreements consist of the two formal conference decisions (“Outcome of the AWG-LCA” and “Outcome of the AWG-KP”) (UNFCCC 2010b; the Climate Group 2011; Stavins 2011).

The Cancun Convention ‘Agreement’ is the more substantive of the two decisions, and can be considered as the formal successor to the Copenhagen Accord—the politically divisive and legally ambiguous document, which was ‘noted’ rather than ‘adopted’ at COP15 in 2009 (**Climate group 2011**). Delegates from more than 190 countries took part in the 2011 conference. Many, including the different negotiating groups representing different interests, believe (with a major exception of Bolivia) that the Agreements represent steps taken by climate negotiators in the right direction.

Key elements of the Cancun Agreements

- The Cancun Agreement anchors emission reduction pledges made at and after the Copenhagen Conference into a formal COP decision for the first time.
- Countries agreed, under the official agreement, to keep temperature increase below 2°C, which is estimated to be a global average increase.
- Mechanisms for monitoring, reporting, and verification (MRV) were elaborated. In addition, modalities and processes for international consultation and analysis (ICA), which were not included in the previous COP decisions, for developing country mitigation actions were included in the agreements. This means that all countries will report their GHG inventories to an independent panel of experts, which will verify reports of emission cuts and actions.
- The Agreement establishes an Adaptation Framework and Adaptation Committee to allow better planning and implementation of adaptation projects in developing countries through increased financial and technical support, which includes a clear process to continue work on loss and damages.
- Establishment of Climate Finance bodies:
 - Green Climate Fund to deliver financing for mitigation and adaptation, with the World Bank named as the interim (transitional) trustee of the fund to design fund despite objections from many developing countries (Stavins 2010)
 - Standing Committee, half of which consists of donor nation representatives, to oversee/coordinate finance flows.
- Formal incorporation, into a COP decision, of the Copenhagen Accord fast-start (USD 30 billion per year up to 2012) and long-term (USD 100 billion per year by 2020) finance pledges.
- Advancement of initiatives on tropical forest protection, otherwise known as Reduced emissions from Deforestation and Forest Degradation (REDD-plus), by taking the next step toward establishing a program in which the developed countries can help prevent deforestation in poor countries, possibly through market mechanism.
- Establishment of a structure to assess the needs and policies for the transfer to developing countries of technologies for clean energy and adaptation to climate change (Technology Executive Committee-TEC) and Climate Technology Center and Network (CTCN) to construct a global network to match technology supplies with technology needs.
- Agreed to consider the establishment of new market and non-market based mechanisms and endorse the ongoing role of Clean Development Mechanism (CDM). Accordingly, the agreements indicate that Carbon Capture and Storage (CCS) projects should be eligible for carbon credits in the CDM.
- Agreement was reached to initiate a review process to track adequacy of global mitigation efforts.

The agreements contain most of core convention-related elements and include all the core elements of the Accord. It also re-incorporated all the negotiating issues that were left out of the Accord but which have been the basis of the Convention track negotiation (the Climate Group 2011).

However, although it has been applauded by many as a success (e.g., Stavins 2010; Walsh 2010; Steele 2010; the Climate Group 2011; Africa-Eu Partnership 2010; Levi 2010), the fact that it left out many important issues of climate negotiations made the Cancun Agreements a weak document. As noted by Levi (2010), the Cancun Agreement “should be applauded not because it solves everything, but because it chooses not to”. Many came to this conclusion of applauding the Agreements from contrasting Cancun with Copenhagen, where it was not

possible to adopt the Accord because of objections from many parties. Actually, the Copenhagen Conference made many skeptical during the months running up to the Cancun Conference as to whether the outcomes would be productive and they question the viability of the UNFCCC itself.

Some of the notable elements that were not included in the Cancun Agreements are the negotiations on the long-term global emission reduction goal (that is, for 2050) (Walsh 2010; the Climate Group 2011) and a peaking year for global emissions (somewhere between 2015 and 2020) (the Climate Group 2011). The importance of these negotiations was recognized in the Agreements but actual debates were punted to the COP 17 to take place in Durban, South Africa in 2011. This is despite the insistence from developing countries that developed nations should take up new carbon cuts under Kyoto after 2012, which was opposed by Japan, Russia, Canada, and Australia (Walsh 2010). The reason for failure to agree on these points is partly the continued concerns of developing countries about the impact of global emission reduction targets on their economic development and partly due to the ongoing negotiations over post-2012 emission targets for developed countries (the Climate Group 2011). Although developing country groups pressed for post-2012 reduction commitments for developed countries, others such as the United States pushed for the complete abandonment of post-2012 negotiations. While the Kyoto Protocol does not commit major developing countries to emission cuts, the emission cut pledges in the latter path (voluntary emission cut pledges made after Copenhagen) are far from being enough to tackle climate change, leaving the climate process with an uphill road ahead to achieve its objectives.

Omission of any reference to sectoral agreements is another missing element in the Cancun Agreements. This includes the treatment of international aviation and maritime transport sectors, owing to divergent views on the voluntary nature of sectoral approaches and the application of “common but differentiated responsibility” (CBDR) principle, which remains unresolved (the Climate Group 2011).

Nevertheless, there was an agreement to continue negotiation on the future of Kyoto During COP 17. While everyone agreed that the Cancun Conference saved the UN climate process, at least for then, now many warned that it had to go a long way (e.g., Walsh 2010; the Climate Group 2011; Stavins 2010; Levi 2010). As pointed out by Walsh (2010), the Cancun Agreements could be viewed as “half-empty,” because it left the hardest choices for future negotiations.

One of the major setbacks of the agreements is that the pledges made at and after the Copenhagen Summit were not enough to keep global temperature rise under 2°C (excuse Bolivia, which, according to Walsh (2010), objected to the draft Agreements on the ground that the pledges were far from being enough and calling the draft “too weak to adopt”). The UNEP (2010) pointed out, in its report released at Cancun, that even if all the Copenhagen pledges were fully realized, the world would achieve only 60% of the reductions needed to have a good chance of keeping warming below 2°C. The UNEP, therefore, called on the nations to increase the level of ambitions to tackle climate change.

Another setback is that there was not much in the way of hard figures in the Agreements (Walsh 2010), even though the deal established a Green Climate Fund designed to help developing countries for adaptation and mitigation, including USD 30 billion a year until 2012 in fast-track climate financing, plus longer-term public and private financing of USD 100 billion a year by

2020. The Agreement set developing country governments toward reduced emission and greater action on climate change in the developing world, but it did not guarantee Africa a direct access to climate funding. The Committee of African Heads of State and Government on Climate Change (CAHOSCC) demanded for the establishment of Africa Green Fund, which grants African nations enhanced, direct access to funding and to be managed by the African Development Bank (Africa-EU Partnership 2010). CAHOSCC made it clear that Africa has special needs requiring dedicated attention and this needs a mechanism to receive and manage resources allocated to Africa by its partners. However, Cancun only agreed a Green Climate Fund, with no reference to any Africa Green Fund, leaving the voices of Africa unheard.

Looking at the Cancun agreements this way, one finds that the main take home from them was that the climate process was not dead yet.

COP 17/CMP 7: The Durban Outcomes for Enhanced Actions. Held 28 November–9 December 2011, the Durban Conference reached some agreements. It is reported that the negotiations advanced the implementation of the Convention and the Kyoto Protocol, the Bali Action Plan, and the Cancun Agreements (UNFCCC 2011).

The three major elements of the Durban outcome are:

- **Agreements to advance the Cancun Agreements:**

The delegates at Durban agreed to a set of potentially important details on various components of the Cancun Agreements, including the format of Green Climate Fund to help mobilize funding from public and private sources to assist developing countries in mitigation and adaptation; details on technology transfer mechanisms; mechanisms to enhance the transparency of national commitments under the Cancun Agreements; and an international scheme to reduce deforestation, which includes market mechanisms (Stavins 2011; UNFCCC 2011).

One such important achievement was the finalization of the governing instrument of the new **Green Climate Fund**, which was achieved by accepting the draft instrument submitted by the **Transition Committee** to design the fund. However, important elaborations on equitable access to sustainable development space, long-term finance, and technology transfer have yet to be made by the AWG-LCA in its remaining one-year life (Stavins 2011).

- **Commitments for the Second Commitment Period under the Kyoto Protocol**

Agreement was reached on the second five-year commitment period for the Kyoto Protocol. However, this agreement does not include the United States, which is not a party to the Kyoto Protocol, and Canada, Japan, and Russia have also indicated that they will not take up targets in a second commitment period. This agreement persuaded the major emerging economies to agree to the third key element, the Durban Platform for Enhanced Action (Stavins 2011; Werksman 2011).

- **The Durban Platform for Enhanced Action**

The delegates reached a non-binding agreement to reach an agreement by 2015 that will bring all countries (including the major emerging economies such as China, India, Brazil, and South Africa) under the same legal regime by 2020 (Stavins 2011; Werksman 2011). To this end, Parties agreed to establish an Ad Hoc Working Group on a Durban Platform

for Enhanced Action (AWG-DP), which has the mandate to develop “**an agreed outcome with legal force under the Convention applicable to all Parties**” (Werksman 2011).

It is agreed that the AWG-DP will start its work in the first part of 2012 and complete it no later than 2015. The outcome will be adopted at COP 21 and come into effect and be implemented from 2020. The particular focus of the content of AGDP’s work plan will be “enhancing mitigation ambition to identify and to explore options for a range of actions that can close the ambition gap with a view to ensuring the highest possible mitigation efforts by all Parties” (Werksman 2011).

Despite being the first international treaty to bring together so many parties to deal with the common good, the Convention (UNFCCC) and the Protocol (KP) did little when it comes to their impacts on climate change. First, many believe that the commitments—both in the Kyoto Protocol and Cancun Agreements—themselves were not adequate to achieve the goal of preventing the potential human and environmental catastrophe resulting from climate change. The Convention did not have any binding commitment and even what was pledged was not fulfilled. In addition, whether the 5.2% (about 2% without the USA) emission cut between 2008 and 2012 from the 1990 base year agreed in the Kyoto Protocol, will be achieved is questionable, although it is believed it will not be enough even if it is achieved. After the Cancun Conference, these figures are now blurred and replaced with the pledges made at and after the Copenhagen Conference, which are even smaller than those made in the Protocol. What all these means is that even if all the cuts are fulfilled, they are only the beginning of what looks likely to be a difficult process. The IPCC First Assessment Report released in 1990 suggested that a total reduction of 60% in the world’s annual emission of greenhouse gases is needed to stabilize the quantity in the atmosphere at a level a little higher than the present one (IPCC 1990).

While all the past negotiations are now history and have not been able to do much in terms of saving the earth, what the world will do in the future to reduce emissions and assist those most affected to adapt to the impacts of climate change are more important. And all the prospects for saving the earth depend on the outcomes of the Durban Platform and what will happen in the Second Commitment Period (2012–2020) of the Kyoto Protocol. However, critics say that although the Durban Agreements avoided disasters, they generally fall short of what is needed to reduce the potentially devastating risks of climate change (e.g., Zeller 2011; Crossland 2011; Pearce 2011). Although parties (including major developing nations like China, India, Brazil and South Africa) have agreed to accept the principle of future binding targets on their greenhouse gas emissions, which will come into force in 2020, little has been achieved to save the earth in the short run, which refers to the second commitment period of the Kyoto Protocol. This decade is said to be critical for arresting global warming (Pearce 2011).

While the European Union agreed to accept a second phase of the Kyoto Protocol to limit its own emissions until 2020, only few other industrialized nations are likely to do the same. Canada joined Russia, Japan and the US, by pulling out of the second Phase of the Kyoto Protocol. This means that after next year, the protocol will cover only around 15 percent of global emissions (Pearce 2011). This leaves the fate of fighting climate change for the next decade in the hands of those nations who pledged voluntary targets to reduce emissions, in Copenhagen and Cancun. These pledges were made by 80 nations, including major emitters not bound by the Kyoto Protocol like Brazil, China, Indonesia, and the US and are mostly not to cut emissions but carbon intensity.

Many, however, question whether voluntary pledges will be implemented to the level required to stop warming at or below 2°C (Pearce 2011; Climate Analytics 2011). The main problem with voluntary pledges is lack of ground rules and the near-impossibility to police whether governments are meeting their pledges (Climate Analytics 2011). What is even worse news is that although they have agreed to the amendments of the Kyoto Protocol's second commitment period, the European Union and its member states will be reluctant to ratify this amendment until they see significant progress in the implementation of the Cancun pledges, and progress being made under the Durban Mandate (Werksman 2011). These fears led environmental scientists to conclude that global carbon dioxide emissions in 2020 could soar above the widely quoted 55 billion tons, which is far in excess of the 44 billion tons that the UN Environment Programme (UNEP 2010) says is needed for a cost-effective route to stay below 2°C of global warming. It is estimated that it is likely that the global warming will reach about 3.5°C by 2100 with the current reduction proposals on the table, unless action is taken to close the so called "Ambition gap" before 2020 (Climate Analytics 2011; Pearce 2011). Analysts indicated that the costs of adaptation and residual damages from climate change increase rapidly with increased warming. Thus, estimates show that with a 3°C temperature rise, adaptation costs would be twice those associated with a 2°C warming (Höhne et al. 2011).

Many also are not happy with the nature of the Durban Platform for Enhanced Actions itself. This is a binding climate agreement covering all states—poor and rich, big and small—and is to be negotiated by 2015. Parties agreed that it would "develop a new protocol, another legal instrument or agreed outcome with legal force". For one thing, it is argued that it is far from clear what the promised binding targets will be, a question that went undiscussed in Durban. Another problem with the Durban Platform is that the phrasing was vague enough for all parties to claim victory. The agreement makes no mention of a legally binding agreement which the European Union would have liked to see and for which it had argued (Spiegel International 2011). In fact, some countries, including China, argued against mentioning any legal provisions in the Durban text, and against the interests of many least developed countries, including African countries. In general many see the outcomes of the Durban conference as inadequate in the face of the urgency of an impending climate disaster. In fact optimists say all is not lost if there is enough political will to implement the pledges between 2013 and 2020 and fast progress is made to put the Durban Platform for Enhanced Action into force in any meaningful way. However, this has to be seen in the coming years (Crossland 2011; Pearce 2011).

Countries also agreed on the format of a "Green Climate Fund" to help poor nations tackling climate change. This finance is provided in two phases: Fast Start Finance, which approaches USD 30 billion for the 2010–2012 period, for enhanced action on mitigation (including Reducing Emissions from Deforestation and Forest Degradation, REDD), adaptation, technology development and transfer, and capacity building; and the Long-term Finance, amounting to USD 100 billion per year by 2020 to address the needs of developing countries, in the context of meaningful mitigation actions and transparency on implementation. The later is intended to enable developing countries to take climate actions beyond 2012 (Fast Start Finance 2011).

The Copenhagen Accord notes that scaled up, new and additional, predictable and adequate funding as well as improved access shall be provided to developing countries, for enhanced implementation of the Convention (Fast Start Finance 2011; Zeller 2011). However, although the Durban Conference identified sources for the Fast Start Finance and pledges were made, only little of this was made available (Harvey 2012). These funds are badly needed by the African

and other least developed countries to adapt to the brutal impacts of climate change but they are not getting them. Moreover, identifying sources for long-term financing of the fund, as well as its management, oversight, and location were delayed (Zeller 2011).

Additionality and balance of the Green Climate Fund (GCF) between adaptation and mitigation are other issues of concern for least developing countries. The Copenhagen conference states that the funds should be new and additional to the existing development assistances to developing countries. However, critics say that the Fast Start was definitely neither new nor additional, as estimates have indicated that only a small fraction of what was provided was actually new (Badr 2011; Raman 2011). Lack of transparency and predictability of the funds were other concerns of African countries in Durban (Raman 2011).

Lack of balance between adaptation and mitigation funds from GCF is one of the problems with the GCF for least developed countries in general and Africa in particular. Although the Cancun decisions mandate to have a balance between the funding for adaptation and mitigation projects, including carbon emissions offsets, the World Bank's Global Environmental Facility has invested just 50 million USD in adaptation. This should be compared to their 2.1 billion USD into the Bio-Carbon Funds, largely for the financing of offset projects for the carbon market (Suppan 2011). On the contrary, the World Bank study shows that for Sub-Saharan Africa alone, the annual cost of adapting to a 2°C warmer world are USD 14–17 billion out of the total global costs of USD 75–100 billion per year for developing countries for the period 2010 to 2050 (WB 2009). For Ethiopia, these costs range from USD 1.2 billion to USD 5.84 billion per year over 40 years (Ibid).

It must be noted that CDM is currently the only main source of funding for adaption. Moreover, these CDM projects are being implemented in emerging economies like China because they are able to design projects that are attractive to private investors who are only after profits (Harvey 2012). Yet, these CDM projects are mitigation projects. Adaptation is critical for least developed countries to cope with the impacts of climate change even if mitigation efforts are assumed to be successful since these countries are already counting the costs of climate change. Given that African countries are the ones most affected by climate change, it is important that these countries get enough funding for adaptation projects that are suitable for their development goals.

The World Bank, which is the trustee of the GCF, sees carbon trading as essential for reducing GHGs and for adapting to climate change. However, the World Bank's own carbon market forecasts show a very weak demand for carbon credits in the voluntary markets, and hence very weak environmental performance for reducing GHGs (Suppan 2011). Critics say that carbon markets almost certainly benefit carbon market investors far more than it would enable agricultural producers and rural communities to take urgently needed actions to adapt to climate change. It was stressed in Durban that agricultural adaptation is the priority for discussion, followed by objections to carbon markets and mitigation offsets in developing countries, due to non-performance, additionality, and leakage, among others (Ibid).

Generally, since 2007—when a "road map" to halt warming at 2°C was agreed in Bali, Indonesia—climate negotiations have not resulted in anything that can actually save the earth.

It is expected that a working group made up of a small number of nations will investigate ways to persuade countries to boost their voluntary pledges. It is also the task of this group to investigate

ways of curbing emissions not currently covered by any targets, legal or otherwise—everything from international air travel and shipping, to the soot from a billion African cooking stoves before 2020. In addition to the outcomes of the investigations of this group, the outcome of the Ad Hoc Working Group on Durban Platform (AWG-DP) will be crucial to know whether the climate negotiations could save the earth. However, it is possible to draw the implications for Africa of past and possible future outcomes of climate negotiations even before these outcomes

3.5. Implications for Africa in general and Ethiopia in particular

As discussed, the impacts of climate change on Africa are not the thing of tomorrow; they are issues for today. Climate change is affecting Africa already and the impacts are predicted to be more severe in the future (UNDP 2006). This is consistent with the predictions of the impacts of GHGs on climate, which generally predicts that dry regions will be drier and wet regions become wetter (UNDP 2006) As Sub-Saharan Africa and Ethiopia in particular are generally dry³, this region has been more vulnerable to the impacts of climate change than any other region.

But given what is achieved today, the ambiguity of the second commitment period of the Kyoto Protocol, and the uncertainty of the future outcomes of the Durban Platform, on one hand, and the impacts of climate change which are already a reality in the region, on the other hand, Africa in general and Ethiopia in particular feel pressed between two hard rocks. The question of mitigation is no remedy for what is happening already. Africa needs financing to cope with the current climate-related problems. At the same time reducing GHG emissions is needed to stop the worsening of climate change while adaptation is needed to cope with any future climate change impacts. But Africa lacks all that these needed measures. The IPCC (2007) concludes that global warming would still continue for decades even if GHG emissions were stabilized, implying that financing adaptation activities for coping is necessary at least for the decades to come.

While the Convention recognizes historical responsibility, those that are historically and currently responsible for climate change are reluctant to implement the commitments as agreed and atmospheric concentration of GHGs continue to rise rather than fall. The UNDP report calls the international response to climate change “woefully” inadequate because of the lack of investment by nations in adaptation projects (BBC 2006).

The financial pledges made in the Copenhagen Accord for the period 2008–2012 and repeated in Cancun—with the establishment of Green Climate Fund to support developing countries—are not adequate to cover costs being incurred and those needed to mitigate future climate change. In addition, although the USD 30 billion pledge by 2012 in Fast-Start climate financing was made in 2009, there is not much contribution as of now. Even more problematic is the USD 100 billion financing per year by 2020, which will assist developing nations in mitigation and, even more importantly, climate adaptation. There is no plan both in the Cancun and the Durban Agreement how and where the fund will be obtained. With every year the world fails to curb carbon emissions, adaptation will become even more vital (Walsh 2010) and Africa needs more financial resources than is promised.

Another problem of climate funding is that it leaves the demands of Africa, to have direct access to climate funding through an establishment of the **Africa Green Fund** to be managed by the

³ Of course, there are some areas in Sub-Saharan Africa that are humid (i.e., areas around the equator). Therefore, the word ‘general’ here refers to the fact that vast areas of this region are dry as compared to other regions constituting developing countries.

African Development Bank, unanswered. But if not enough is done to finance vital projects for climate change adaptation and mitigation in Africa, it will face more severe climate risks in the years to come than is expected.

Therefore, it is suggested that unless the international community comes to the rescue of Africa, broad consequences could be predicted (UNDP 2006). These consequences include:

- Agricultural and rural development will suffer the effect of climate risk;
- Extreme poverty and malnutrition will increase as water insecurity increases;
- More extreme weather patterns will increase the risk of floods and droughts.

It should be clear that these consequences are current. These current problems, if not tackled early, will further erode the capacity of Africa to adapt to the potentially more severe future climate change impacts, making it increasingly vulnerable. The current problems can also exacerbate future climate change. For example, increased desertification—as an effect of climate change—will in its turn augment the ongoing climate change.

4. The way forward

As matters stand now, the prospect of stabilizing the concentration of atmospheric GHGs below the “dangerous” level is not promising. The main problem is that climate change represents the worst form of negative externality where it is not possible to use legal frameworks to hold the polluters accountable for the external costs. Yet the largest emitters of GHGs are either reluctant to act according to their commitments or do not want to commit themselves to any legally binding quantified GHG reduction targets. It appears the reason is that although climate change will potentially impact both the largest emitters and those least responsible, it seems that the biggest emitters fear more their losses in the short term than the losses in the long term. Unfortunately, the regional variation of climate change and its impact provides more incentives to this inaction, prolonging the suffering of those least responsible, such as Africa. On the other hand, even if the largest emitters act according to their highest ambition—reduction commitments and financial pledges put forward in their proposals until December 15, 2009—it is far from enough to limit warming to 2°C or 1.5°C above its pre-industrial level by 2020 (Höhne et al. 2011; UNEP 2010). This calls for further commitments to limit warming to below 1.5–2°C. Furthermore, there should be financial provisions to assist developing countries to take part in mitigation and to adapt to the impacts of climate change. However, none of these are sufficiently provided at least for the time being. This does not mean that developing countries should do nothing.

Experience shows that concerted actions can be very successful even in the case of climate. For example, the Montreal Protocol, signed in 1987, was crucial to saving the earth's ozone layer. The protocol curbed the use of ozone-destroying chemicals, thereby, as scientists calculated, offsetting 10 years of CO₂ emissions.

Future negotiations might consider the following concepts and principles:

General

- Including all countries listed in Annex I into negotiation and commitments is very important. There is little hope in future climate treaties if big emitters like the United States, Canada, and Australia are left out. While these countries are included in the Cancun Agreements with their own pledges, it is not yet possible to know whether future negotiations will be along these agreements or along the Kyoto track, which does not include these parties;
- Inclusion of developing countries with big emissions such as China, India, Brazil, and South Africa in any emission reduction commitments is important. Again while the Cancun Agreements include emission reduction pledges from some of these countries, it is not clear which ways the future climate process heads;
- Deeper emission cuts in the next phase: the more ambitious targets in the short run, the easier the burden on the economies in the longer run. Developing countries should go for more pledges and deeper emission cuts by developed countries in the second Commitment period of the KP;
- Focus on adaptation. This becomes even more important the later the decision on emission cuts;
- The GCF should be designed in a way that it ensures the balanced allocations of funds between adaptation and mitigation, additionality, predictability, and transparency;
- Inclusion of emissions from maritime and aviation in the inventory, as these are responsible for almost 10% of climate change problem;
- Encouraging further investment in green technologies such as renewable energy;
- Strengthening efforts to stop deforestation especially in the areas of tropical rainforest since deforestation accounts for 18% of all CO₂ emissions;
- Any future agreements including emission cut commitments should be legally binding;
- Improving mechanisms to monitor and review compliance.

Africa

- Rather than funding the so-called CDM and carbon offset projects, the Green Climate Fund should finance programmes that help achieve national development goals and adaptation to climate change (Co-benefits). These programmes can include food security, energy security, development of infrastructure, and research into Africa's unique agricultural challenges;
- Strong negotiating team for Africa, probably including a team of experts that can advise the main negotiating team on matters that might seem technical;
- Improved financing mechanisms with minimal complexity and easier and direct access: one way this could be achieved is through continued demand for the establishment of the Africa Green Fund, to be managed by the African Development Bank, as the African group demanded in Cancun;
- Making a case for the special circumstances Africa faces, so that Africa in general and Ethiopia in particular get the fair share of all the pledges for mitigation and adaptation;
- Africa should demand for more adaptation funds, as the problem of climate change is already a reality in Africa and adaptation appears to be given less attention than it deserves in general. The issue of adaptation finance should be presented as a demand for compensation for climate-related losses and damages Africa has incurred and is incurring;
- The GCF should also be designed in a way that it ensures additionality, predictability, and transparency and Africa in general and Ethiopia in particular should demand their fair shares of adaptation funds as determined by the World Bank's study (World Bank 2009);

- Africa should take a more active role in international negotiations and join hands with developing countries from other regions for common objectives and should present cases that are particular to Africa. It should be clear that Africa can no longer be expected simply to follow the lead of China, India, and other rapidly emerging big economies in the climate change negotiations because the interests of major developing economies have been diverging rapidly from those of the least developed countries like African nations;
- Africa should strive for the continued distinction between Climate Convention (Long-Run Cooperation on climate change) and the Kyoto Protocol, i.e., Annex I Parties should fulfill their commitments under the two agreements separately since this increases the chance of compliance;
- Africa should press for the implementation of the **Bali Action Plan**, which is centered on four main building blocks: **adaptation, mitigation, technology, and finance**.

In general, this enhanced action against climate change (or “the new regime”, as others call it) is costly and is likely to face considerable resistance. Nevertheless, responsible politicians should be united on this outstanding issue. Bold political leadership is needed to overcome this resistance and address the challenges of this century properly.

5. Summary and conclusions

Climate change is one of the challenges that humanity is facing. Regional variation of the impacts of climate change makes Africa especially vulnerable to climate change. This is because of its special physical and socioeconomic characteristics, including fragile ecosystems, location, and low adaptive capacity.

As the economies of most African countries are rooted in rain-fed agriculture and the bulk of the people of Africa are engaged in the agricultural sector, there are serious implications on food security. Climate change affects all economic sectors of Africa and will therefore present unprecedented challenges jeopardizing sustainable development goals and the achievement of the MDGs. It will expose the continent to increased water stress and shortage; reduce potential energy availability; cause increasing damage to forest health; and lead to an increase in water-borne diseases. It will lead to more frequent and severe drought and flood disasters and climate shocks than experienced to date and will constitute a major security threat to Africa.

With the growing scientific evidence that climate change is human-induced, the international community came to the conclusion that climate change should be tackled by international efforts. The first of these efforts is the UNFCCC, which was adopted in 1992 and entered into force in 1994. The objective of the UNFCCC is to stabilize atmospheric concentrations of GHGs at the level that would prevent “dangerous” human interference with the climate system. According to this Convention, industrialized countries (Annex I Parties) are committed to return their GHG emissions to 1990 levels by 2000. However, this commitment was not legally binding.

At their 1995 Conference of the Parties (COP 1), the parties to the Convention questioned the adequacy of these non-binding commitments and decided to negotiate for a new treaty to strengthen the commitments. This negotiation led to the adoption of the Kyoto Protocol at the COP 3 in 1997 in Kyoto, Japan. However the Protocol entered into force only in 2005 due to disagreements among the negotiating parties. Even after this long period of negotiating time, the

United States, the biggest per capita emitter of GHGs, continues to refuse to ratify the Protocol, while Australia, also one of the biggest emitters, has so far failed to start implementing its commitments.

The Convention and the Protocol share the objective of stabilizing atmospheric concentration of GHGs and the principle of “common but differentiated responsibility” but the Kyoto Protocol, unlike the Convention, commits Annex I Parties to individual, legally binding targets to limit or reduce their GHG emissions. These individual targets add up to a total cut of at least 5.2% from 1990 levels in the commitment period 2008–2012. The Kyoto Protocol also makes financial provisions to help developing countries in their mitigation efforts and adaptation to climate change, and provides “mechanisms” through which Annex I Parties fulfill their emission reduction commitments.

Despite these agreements, studies indicate that it may be difficult for Annex I Parties to meet their collective emission reduction commitments and financial pledges for developing countries. Major negotiations for further commitments after the end of the current commitment period started in 2007. After two years of negotiations, running up to the Copenhagen Conference held in 2009, it was expected that the parties would agree on emission cuts after 2012. However, it was not possible to strike a deal on a legally binding long-term emission reduction agreement at the Copenhagen Conference. Instead, the Copenhagen Conference resulted only in a political agreement, the **Copenhagen Accord**, which was negotiated by a group of roughly 25 countries, including all of the world’s major economies.

Key elements of the Copenhagen Accord include: **a long-term goal of limiting climate change to no more than 2°C; a system of “pledge and review” for both developed and developing country mitigation commitments or actions; and significant new financial resources.** However, the conference only “took note of it” rather than adopt it because of objections from a group of countries. Although many exerted several criticisms against the Accord, it is the first agreement to make quantified financial pledges and explicitly acknowledge the special circumstances of Africa in the face of climate change.

While the Copenhagen Accord was fractured, disappointing many parties, it is believed that it paved the way for the relatively productive negotiations in Cancun (Levi 2010). Although the Cancun Agreement contains many of the convention track negotiations and matters that were not core to Copenhagen (such as deforestation and technology), it leaves many elements of the Kyoto track negotiations (such as further commitments for developed countries after 2012 and GHG peaking year). In addition, inadequacy of the emission cut pledges and lack of hard figures for financial pledges weaken the Agreements.

The outcome of the Durban Conference (COP 17) includes three major elements: some potentially important elaborations on components of the Cancun Agreements; a second five-year commitment period for the Kyoto Protocol; and a non-binding agreement to reach an agreement by 2015 that will bring all countries under the same legal regime by 2020 (Stavins 2011). However, operational details on all the components have been punted down the line and are expected to be detailed out in the coming years, leaving the “ambition gap” between the first commitment period of the KP and the long-term commitment period that is agreed to come to force only in 2020. Whatever the outcome of the next conference to take place at the end of 2012 might be, Africa in general and Ethiopia in particular are counting the costs of climate change. There are studies showing that climate change in Africa is no longer a thing of

tomorrow; it is the question of today. But the later the action on emission cuts, the higher will be these burdens and the higher the financial needs for adaptation.

Studies indicate that adaptation is the utmost priority for Africa. However, adaptation has so far received little attention and financing. The carbon markets are doing little in terms of adaptation to climate change by African nations as much of the funds are spent on financing CDM projects in emerging economies like China and India. Moreover, the carbon-offset projects being financed in some African countries are not helping African farmers to adapt to climate change. Rather, these are mitigation projects that help developed countries buy credits in Africa to meet their reduction targets back home. Given these realities, the only option available to Africa is to strengthen its negotiating position in future climate negotiations in order to persuade developed countries to commit themselves to deeper emission cuts and provide finance for adaptation and mitigation to developing countries in general and Africa in particular. On the other hand, developed countries have the moral obligation to compensate Africa for the costs being incurred and provide finance for adaptation and mitigation.

Surprisingly, African countries are already taking many steps to adapt to climate change and cut greenhouse gas emissions. For instance, Ethiopia has launched what it calls the Green Development Strategy (GDS), involving investing in infrastructures such as hydroelectric dams, wind power, biofuels, and roads, which help achieve the twin objectives of reducing GHG emissions and adaptation to climate change. Other efforts include reducing GHG emissions through reforestation and forest conservation. But these efforts would be greatly boosted if the promised funds were released. These achievements could be reversed if developed countries are not doing enough on their part.

Future negotiations should include the balancing of funding from the GCF between adaptation and mitigation, and ensure predictability, transparency, and additionality. In addition, in order to keep climate change at or below 2°C, developed countries should enhance their emission reduction pledges for the second commitment period of the KP including all sources of GHGs; decide the peaking year for total GHGs; and take on ambitious and binding emission reduction targets after the second commitment period of the KP.

In addition to the GCF, Africa should negotiate for the provision of a new **Special Climate Impact Fund for Africa** in future negotiations to compensate for the losses being incurred as a result of the early onset of climate change in Africa.

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