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SCHOOL OF LAW

**THE KYOTO PROTOCOL AND ADAPTION TO CLIMATE
CHANGE IN UGANDA: THE LEGAL AND POLICY FRAMEWORK**

BY

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DECLARATION

I, Emily Ninsiima declare that this is my original work. It has not been produced or presented anywhere for any degree certificate or other award to the best of my knowledge.

Signed

Emily Ninsiima

Date

APPROVAL

This is to certify that this research was carried out under our supervision and approved as the student's original work.

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DEDICATION

To my dear father Mr. Eliabu Muhozi.

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LIST OF ABBREVIATIONS

CBDR	Common but Differentiated Responsibility
CDF	Clean Development Fund
CDM	Clean Development Mechanism
CFC	Chlorofluoro Carbons
COP	Conference of the Parties
EB	Executive Board
EIA	Environmental Impact Assessment
ERA	Electricity Regulatory Authority
ERT	Energy for Rural Transformation
GDP	Gross Domestic Product
GHG	greenhouse gases
IET	International Emissions Trading
IPCC	Intergovernmental Panel on Climate Change
JI	Joint Implementation
KSW	Kakira Sugar Works Ltd
MACs	Marginal Abatement Costs
MDCs	More Developed Countries
NEAP	National Environment Action Plan
NEMA	National Environment Authority
NEMP	National Environment Management Policy
NFA	National Forestry Authority
NGOs	Non-Governmental Organisations
PCF	Prototype Carbon Fund
PRE	Permanent Forest Estate
RETs	Renewable Energy Technologies
UNFCCC	United Nations Framework Convention

ABSTRACT

Climate change is one of the greatest environmental and economic threats facing the world today. There is a growing need to develop strategies that will reduce current levels of greenhouse gases in the atmosphere and curtail future emissions. The United Nations Framework Convention for Climate Change (UNFCCC) and the Kyoto Protocol represent an international strategy to combat these effects. Admittedly, these instruments have not, and cannot retard climate change to zero. Adaptation efforts should therefore equally be directed towards helping countries cope with the changing weather patterns. The Kyoto protocol has, to some extent tried to address this, especially in respect of developing countries. These instruments also require state parties to take action at the national level to realise their objects. Uganda, as a party to the Kyoto protocol, has developed a number of policies and laws for the implementation of the protocol at the national level. These laws however have some weaknesses in respect of climate change mitigation and adaptation, yet climate change adaptation is very essential for developing countries because they are often less able to cope with adverse climate impacts.

The purpose of this study is to examine the efficacy of the Kyoto protocol in helping developing countries, particularly Uganda, adapt to climate change. Uganda is used as a case-study because of its tremendous steps towards climate change adaptation and mitigation, and secondly, because of availability of the relevant information to the researcher. This made the research more efficient on the part of the researcher. The study explores the strengths and weaknesses of both the Kyoto protocol and post-Kyoto arrangements as well as the national policy and legal frameworks. The study establishes that the Kyoto Protocol is a good foundation for future climate action but it has limitations in terms of enforcing compliance and the efficiency of the flexible mechanisms thereunder. The study also establishes that the post-Kyoto negotiations present an uncertain future for climate change adaptation and mitigation owing to diverse interests pursued by the developed and developing countries. The study recommends further financial assistance to developing countries to enable them adapt to climate change as well as their active participation in climate mitigation and adaptation strategies

because their emission levels are steadily increasing. It also recommends changes in the enforcement and compliance mechanisms under the Protocol.

CHAPTER ONE

SITUATING THE STUDY

1.1 Background to the Study

1.1.1 Introduction

A growing proportion of international scientific community is now convinced that human activity has caused, and will continue to cause global climate change. These scientists also predict that climate change will have detrimental impacts on, amongst other things, people's lives and their property.¹ Climate change means a change of climate, which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.² Climate change is a problem with unique characteristics. It is a global long-term challenge (up to several centuries) and involves complex interactions with environmental, economic, political, institutional, social and technological processes.³

Climate change is occurring as a result of human activity having caused higher concentrations of greenhouse gases in the earth's atmosphere leading to increased trapping of infrared radiation. As a result, the lower atmosphere has warmed and continues to warm, changing weather and climate.⁴ The main greenhouse gases increasing in concentration due to human activities are carbon dioxide, methane, nitrous, hydrochlorofluorocarbons (HCFCs) and chlorofluorocarbons (CFC). Of these gases, carbon dioxide is said to be the major contributing factor to climate change. Most of the increase in carbon dioxide comes from burning of fossil fuels such as oil, coal and gas.⁵

¹ M Kerr, "Tort Based Climate Change Litigation in Australia." A Discussion Paper Prepared for the Climate Change Litigation Forum London, March 2002 hosted by Friends of the Earth International. http://www.acfonline.org.au/uploads/res_climate_change_litigation.pdf (Accessed on 16 December 2010). See also Intergovernmental Panel on Climate Change (2007), *Assessing Key Vulnerabilities and the Risk from Climate Change*, Schneider S. H, Semenov S. & Patwardhan A. (Eds), Fourth Assessment Report.

² See article 1 of the United Nations Framework Convention on Climate Change, Rio de Janeiro, 9 May 1992, 31 *Int'l Leg. Mat.* 822 (1992).

³ Metz B, Ogunlade S and Jiahua P (Eds) (2001), *Climate Change 2001 Mitigation – Contribution of Working Group III to the Third Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press, p.65.

⁴ Kerr, supra note 1, p.2.

⁵ *Ibid.*

The Intergovernmental Panel on Climate Change (the IPCC) has found that the global average surface temperature has increased over the 20th century by about 0.6°C; tide gauge data shows that global average sea level rose between 0.1 and 0.2 metres during the 20th century and snow cover and ice extent have decreased during the 20th century.⁶ The IPCC predicts that human influence will continue to cause climate change throughout the 21st century at a rate that is without precedent in the last 10,000 years.⁷ Some of the current predictions for the period (1990 to 2100) are as follows: the global averaged surface temperature is projected to increase by 1.4°C to 5.8°C; global mean sea levels are predicted to rise by 0.09 to 0.88 metres; precipitation will fluctuate and be subject to larger year by year variations. In some areas, overall precipitation will increase and in other areas it will decrease. In other areas there will be an increase in the intensity and frequency of extreme weather events such as droughts, floods and tropical cyclones.⁸ The climate change predictions and resulting impacts for periods beyond 2100 are even more extreme. For example the IPCC predicts that sea levels will continue to rise for thousands of years even after climate change has stabilized.

The fourth IPCC report raises serious concerns of species extinction as well as arguing strongly in favor of stepping up support and action on adaptation to the effects of global warming. The guide, officially known as the Summary for Policy Makers, underlines the urgency to act to reduce greenhouse gas emissions alongside the economic costs of a transition to a low carbon society. The report affirms that neither adaptation nor mitigation alone can avoid all climate change impacts. However, they can complement each other and together can significantly reduce the risks of climate change.

The report says that around 20 per cent to 30 per cent of the plant and animal species assessed are likely to be at increased risk of extinction if global average temperatures exceed 1.5°C to 2.5°C over late 20th century levels. It also points to the likelihood of irreversible impacts. For example if temperature increases exceed about 3.5°C, between

⁶ IPCC Working Group 1. “*Climate Change 2001, The Scientific Basis, Summary for Policy Makers*” (2001) p.16.

⁷ *Ibid*

⁸ *Ibid*.

40 per cent and 70 per cent of the species assessed might be at increased risk of extinction. Increases in sea surface temperatures of about 0.3°C are projected to result in more frequent coral bleaching events and widespread mortality. There is also concern over the oceans and seas becoming more acidic as they absorb rising levels of carbon dioxide and the impacts on marine shell-forming organisms like coral reefs. Other reasons for concern focus on the risks of extreme weather events with higher confidence in the projected increases in droughts, heat waves and floods as well as their adverse impacts.

1.1.2 Climate Change in Uganda

Uganda is among the developing countries of the world. It is used as a case-study in this thesis because of its remarkable steps towards climate change adaptation and mitigation, and secondly, because of availability of the relevant information to the researcher. This made the research more efficient on the part of the researcher. By virtue of its location across the equator, two rainy seasons are experienced annually although the two seasons merge as you move away from the equator.⁹ Mean annual rainfall varies from 750 to 2000 mm between different parts of the country, shaping the geographic distribution of social and economic activities that are carried out.¹⁰

The country is pleasantly cool with a long-term mean temperature of 21° C. Over a year, mean temperatures range from a minimum of 15° C in July to a maximum of 30° C in February. In the highlands and around mountains, the elevated landmass exerts a local influence in climate producing rainfall and temperatures that are unique from the lowlands.¹¹

Climate in Uganda, particularly rainfall, has been erratic since early 1990s. The incidence, duration and amount of rainfall have all exhibited abnormal departures from

⁹ Waiswa, M.M, (2003), Strategic Choices for Enhancing Capacity of Rural Communities to Adapt to Climate Variability: A case of Uganda. Contribution to the NOAA Office of Global Programs Workshop-Insights and Tools for Adaptation: Learning from Climate Variability, (Washington DC, 18-19 November, 2003).

¹⁰ Orindi V A. and Siri E. (2005), Mainstreaming Adaptation to Climate Change in the Development Process in Uganda, (Nairobi, Ecopolicy Series no. 15, ACTS Press).

¹¹ The Republic of Uganda, The Uganda National Water Development Report, 2005.

long-term means. While rainfall in some years was far short of long-term means thereby causing droughts, in other years it was excessive and produced catastrophic floods. The heaviest rains in recent years were recorded in 1994 and were associated with the El Niño phenomenon. The rains led to sharp rises in lake levels, widespread flooding, washing away of roads and bridges, extensive soil erosion and landslides.¹² It was estimated that 1,000 people died, 11,000 people were hospitalized and treated for cholera, and about 150,000 people were displaced from their homes. Damage to the infrastructure was estimated to be about US\$400 million.

Between July and September 2007 floods swept across the east and northern part of Uganda owing to excessive rainfall. The floods were caused by the La Nina weather pattern in the Pacific Ocean. The resultant effects have seen people having to deal with floods that are more extreme than usual. The floods led to the destruction of several infrastructures and farmlands. Soroti, Amuria, Katakwi, Bukedea, Kumi, Lira and Sironko Districts in the two regions were severely affected.¹³ The magnitude of the destruction was enormous with 80 percent of crops submerged under the flood waters, roads and bridges washed away. It was estimated that more than 20,000 households were severely affected and 58,000 people displaced. With about 80 percent of crops destroyed by floods, food insecurity was imminent.¹⁴ This led the Uganda Government to declare a state of emergency in the affected areas.¹⁵

In November 2008, the floods devastated the same region again. The road connecting Katakwi and Amuria districts in north-eastern Teso were cut-off. The submerged Ajeleik Bridge left people with no option but to use alternative routes, many of them risky. In Katakwi, over 6,000 households were affected.¹⁶

Additional to the variability in rainfall amounts has been the confusing shifts in season since the early 1990s, with heavy rains falling in the months expected to be dry and

¹² *Ibid.*

¹³ International Federation of the Red Cross (2009), UGANDA: Floods, Final Report, available at [http://www.reliefweb.int/rw/RWFiles2009.nsf/FilesByRWDocUnidFilename/EDIS-7QJKJY-full_report.pdf/\\$File/full_report.pdf](http://www.reliefweb.int/rw/RWFiles2009.nsf/FilesByRWDocUnidFilename/EDIS-7QJKJY-full_report.pdf/$File/full_report.pdf)

¹⁴ *Ibid.*

¹⁵ *Ibid.*

¹⁶ Among S., Uganda: Floods Devastate Teso Region, The New Vision, 19, November 2008.

persistent desiccating sunshine experienced in the months that are normally wet and cold.¹⁷ Since Uganda's agriculture is heavily dependent on rainfall, the erratic swings in season have caused an increase in frequency of food and water shortages in the country, with the worst hit area being the dry cattle corridor that stretches from the Uganda-Tanzania border to Karamoja region. In Karamoja and Teso regions, several deaths from starvation have been recorded in recent years.¹⁸

In mid October 2009, heavy rains destroyed several farms in Gulu District. The areas most affected were Awach, Paicho, Palaro and Bungatira, all in Aswa County. Up to 116 households with 589 people are severely affected by the disaster. In Awach Sub-county, three villages were affected where 39 huts, goats, chicken and several hectares of crops were lost.¹⁹

Drought is also on increase in Uganda with the worst hit area being the dry cattle corridor that stretches from the Uganda-Tanzania border to Karamoja region. In Karamoja and Teso regions, several deaths from starvation have been recorded in recent years. The prolonged dry conditions after flooding in the region has led to a 90% crop failure.²⁰ Plants had failed to germinate under very hot conditions. Cassava has been destroyed in Teso and up to 1 million people are in danger of starvation in Karamoja, Teso and some parts of Lango Districts.²¹ Approximately 2 million people in the areas of Teso, Acholi, Lango, Karamoja and West Nile were affected by acute shortage of food as a result of crop failure due to prolonged drought.²² In the northern Amuru District, some residents have resorted to eating poisonous wild cassava as a coping mechanism and, consequently, two people died of food poisoning while four others were admitted to a health centre.²³

¹⁷ *Ibid.*

¹⁸ The Republic of Uganda (2006), The Uganda National Water Development Report 2005, Prepared for the 2nd UN World Water Development Report, "*Water, a shared responsibility*", p.10.

¹⁹ James Eriku, Rain destroys Gulu farms Daily Monitor Online 19 October 2009, http://www.monitor.co.ug/artman/publish/regional-special/Rain_destroys_Gulu_farms_93177.shtml

²⁰ Teso Development Trust, The 2007 floods in Teso continue to have a serious impact, http://www.teso.org.uk/page_1220442093875.html.

²¹ *Ibid.*

²² Uganda Red Cross, Uganda Red Cross appeal for US\$5.6b for famine-stricken communities, <http://www.reliefweb.int/rw/rwb.nsf/db900SID/MUMA-7U95B6?OpenDocument&rc=1&emid=FL-2007-000138-UGA>

²³ *Ibid.*

1.1.3 Attempts to Address the Problem of Climate Change

There are two basic approaches for responding to climate change: mitigation and adaptation. Mitigation refers to limiting global climate change through human interventions to reduce sources, or enhance the sinks, of greenhouse gases.²⁴ Hence it aims at improving long-term climate patterns by reducing the hazard of climate change impacts. Adaptation is defined as adjustments in ecological, social or economic systems in response to actual or expected climatic stimuli and their effects or impacts.²⁵ Therefore it aims at moderating the adverse effects of climate change by reducing vulnerability to climate effects through a wide range of interventions. Enhanced efforts for towards climate change adaptation are essential for developing countries because livelihoods are highly dependent on climate-sensitive resources and they currently possess low adaptive capacity.

The international community has taken a number of legal steps to address the issue of climate change. The United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol,²⁶ the Vienna Convention for the Protection of the Ozone Layer²⁷ and the Montreal Protocol on Substances that Deplete the Ozone Layer²⁸ are some of the major legal instruments which seek to combat climate change.

The main objective of the UNFCCC is to achieve stabilization of greenhouse gas concentrations in the atmosphere at a low enough level to prevent dangerous anthropogenic interference with the climate system. Under the Convention, the developed nations undertake to reduce the greenhouse emissions to 1990 levels by the year 2000. This pledge was voluntary and non-binding. Once the futility of this pledge was realized in light of the continuing increase in emissions and their measurable impact, parties to the treaty decided in 1995 to convene to establish a protocol that would be binding for the

²⁴ Parliamentary Office of Science and Technology (UK) (2006), *Adapting to Climate Change in Developing Countries*, Postnote October 2006 Number 269.

²⁵ *Ibid*

²⁶ Kyoto Protocol to the United Nations Framework Convention on Climate Change, 10 December 1997, reprinted in 37 I.L.M. 22 (1998).

²⁷ Vienna Convention for the Protection of the Ozone Layer U.N.T.S. 293, 324, reprinted in 26 I.L.M. 1529.

²⁸ Montreal Protocol on Substances that Deplete the Ozone Layer, 16 September 1987, reprinted in 26 I.L.M. 1550 (1987).

developed nations. This led to the meeting in Kyoto, Japan, December 1st to 11th, 1997 which produced the Kyoto Protocol.

The Kyoto Protocol is an agreement made under the UNFCCC. Countries that ratify this protocol commit to reducing their emissions of carbon dioxide and five other greenhouse gases (GHG),²⁹ or engaging in emissions trading if they maintain or increase emissions of these greenhouse gases. The Kyoto Protocol now covers 181 countries globally but only 60% of countries in terms of global greenhouse gas emissions. The United States of America is the only developed country that signed but never ratified the Kyoto Protocol. United States insists that developing countries should make “meaningful” contributions to future GHG reduction efforts. It accepts that the developed countries remain the largest sources of greenhouse gases, but that the developing countries will overtake them in coming decades.³⁰ The United States currently produces more GHGs than any other country, but China is currently in second place and will rival the United States for output within a generation.³¹

Although international talks on a subsequent commitment period began in May 2007, the first commitment period of the Kyoto Protocol ends on 31 December 2012.³² The Kyoto Protocol has established not only GHG reduction targets for industrialized countries but also an international framework for adaptation to climate change in the developing countries. Such adaptation framework should be seen in the post-Kyoto arrangements, or even in a better form.

This research assesses the efficacy of the Kyoto Protocol in helping developing countries, like Uganda, to adapt to climate change. It analyses the efficacy of the international legal framework for climate change adaptation, including the UNFCCC, the Kyoto protocol and the post-Kyoto arrangements, and its relevance to Uganda as a developing country. The study also assesses the efficacy of the national policy and legal frameworks for

²⁹ Green House Gases are specified in Annex A to the Kyoto Protocol.

³⁰ International Energy Agency, World Energy Outlook 2-3 (1995).

³¹ See World Resources Inst. et al. (1996), World Resources 315-25; see Also International Energy Agency, *ibid* at 2-3.

³² The Kyoto Protocol, article 3, paras. 1 and 8.

climate change adaptation. It identifies the challenges in this regard and makes recommendations to promote climate change adaptation in developing countries.

1.2 Statement of the Research Problem

The Kyoto Protocol has not been able to achieve total elimination of GHGs emissions and indeed this was not its objective. Climate change thus remains a concern of the world and development of an efficient regulatory framework is not a simple task. Developing countries like Uganda continue to experience the harsh effects of climate change. Floods, drought, food and water scarcity, precipitated by changes in climate patterns, continue to affect Uganda's social and economic stability. In 2007, for example, the eastern part of the country experienced the heaviest rainfall in 35 years with 82,000 homes damaged by floods.

The specific concern for this study is the increasing vulnerability, low adaptive capacity to impacts of climate change in Uganda, as well as delays in actualizing urgent inevitable actions that would support evolution of practical risk reduction mechanisms. If the Kyoto Protocol and any other instrument that may succeed it cannot compel states to reduce their GHG emissions to zero and arrest climate change, efforts then should also focus on helping those most affected, especially in developing countries, to adapt to climate change.

Adaptation to climate change in developing countries has been included in the discussions over the post-Kyoto arrangements. However, as will be seen in the subsequent chapters, the language used is very weak and the legal status of the resultant instruments can be questioned. Inclusion of adaptation and obliging developed countries to advance more funds to developing countries has met stiff resistance from these countries yet they are the primary contributors to climate change.

The argument in this study is that more emphasis has been placed on mitigation than adaptation. More effort is required to ensure climate change adaptation in developing countries, both under the Kyoto and post-Kyoto arrangements. This study, therefore, assesses efficacy of the Kyoto Protocol in helping Uganda, as a least developed country to adapt to climate change. The study also discusses the post-Kyoto climate change

adaptation arrangements, the challenges encountered and makes recommendations to address these challenges.

1.3 Objectives of the Study

The major objective of the study is to examine the efficacy of the Kyoto Protocol in helping developing countries adapt to the challenges of climate change. The specific objectives of the study are as follows:

- a) To analyse climate change trends and their impact in Uganda as a developing country;
- b) To critically review the Kyoto Protocol and the post-Kyoto arrangements in helping Uganda as a developing country deal with climate change;
- c) To scrutinize the role of the existing national policy and legal frameworks for climate change adaptation in Uganda;
- d) To identify the limitations Uganda faces in implementing the Kyoto Protocol;
- e) To make recommendations on how the Kyoto protocol and post-Kyoto regulatory legal framework can better help Uganda adapt to climate change

1.4 Research Questions

The major research question for the study is: How effective is the Kyoto Protocol in helping Uganda as a developing country adapt to climate change?

The specific research questions for the study have been identified and they are as follows:

- a) What is the climate change trend and its impact in Uganda as a developing country;
- b) How effective is the Kyoto Protocol and post-Kyoto arrangements in helping Uganda as a developing country adapt to climate change?
- c) How effective are the policy and legal frameworks in facilitating Uganda adapt to climate change?

- d) What limitations does Uganda face in adapting to climate change under the Kyoto Protocol?
- e) What improvements should be made to help Uganda adapt to climate change?

1.4 Significance of the Study

The study points out how developing countries can implement the Kyoto Protocol and adapt to climate change, analyses the post-Kyoto debates and makes recommendations on the way forward for climate change adaptation in the post-Kyoto era. The study therefore points out whether the Kyoto Protocol has helped Uganda as a developing country adapt to the effects of climate change. It further gives suggestions as to how the various commitments on climate change adaptation can be implemented in developing countries.

This study will therefore assist policy makers in the designing of the realistic climate change adaptation policies putting the particular challenges faced by developing countries into consideration. The study will greatly influence the post-Kyoto policy design for climate change adaptation in developing countries. The recommendation made in the study will inform the key issues to be addressed in the post-Kyoto legal regime for climate change adaptation in developing countries.

1.5 Scope of the Study

The study will examine the prospects and pitfalls of the Kyoto Protocol to the UNFCCC in helping Uganda adapt to climate change. It therefore covers the period from the start of the debate on climate change (1979) up to date. Emphasis is put on the analysis of the efficacy of the Kyoto Protocol in relation to helping developing countries adapt to the challenges of climate change.

The study will not cover all the developing countries of the world. More emphasis is placed on climate change adaptation in Uganda as a case study. It further suggests recommendations as to how developing countries in general and Uganda in particular can utilize the Protocol to easily adapt to climate change.

1.6 Methodology

In this study, qualitative research methods were used. Qualitative research methods are associated with evaluation of the social dimensions of development programmes, particularly programmes which have explicit social development aims.³³ Qualitative methods are used in investigating more complex and sensitive impacts which are not so easy to quantify or where quantification would be extremely time-consuming and costly.³⁴ Since the study is explanatory and seeks to gain a complete picture of reality as to the relevance of the Kyoto Protocol to developing countries generally and Uganda in particular, qualitative research methods were the most appropriate.

The study involved review of literature, including various study publications on the Kyoto Protocol and climate change adaptation in developing countries. The researcher visited a number of libraries collecting information on the effectiveness of the Kyoto Protocol in promoting climate change adaptation in developing countries. The libraries visited included: the National Environmental Management Authority library, Makerere University main library, Makerere University Institute of Social Research library. The researcher also surfed the Internet for materials. This provided access to most current publications and decisions of the Conference of Parties (COP) which were not available in the libraries.

Interviews which were mainly unstructured were also conducted with the various stake holders. Interviewing was used because of its capacity to generate data relevant to the research questions. The researcher interviewed 30 respondents in total. These were selected from the relevant government department like National Environment Management Authority (NEMA); National Forestry Authority (NFA); Ministry of Water, Lands and Environment; The Uganda Investment Authority; Ministry of Energy and Mineral Development; Ministry of Finance, Planning & Economic Development; the Metrological Department; Private Sector Foundation; Action Coalition for Development and Environment; and Climate Concern, Uganda.

³³ L. Mayoux, Qualitative Methods, <http://www.enterprise-impact.org.uk/word-files/QualMethods.doc> (accessed on 6th June 2011), p. 3.

³⁴ *Ibid.*

The researcher selected not more than four respondents from each institution. In selecting the 30 respondents from the selected institutions, the researcher used purposive sampling. The technique was applied to draw up the sample size for the purpose of gathering only relevant data. The researcher ensured that the respondents selected had sufficient knowledge and experience in the field of climate change adaptation and the implementation of the Kyoto Protocol in Uganda.

The interviews were unstructured conducted with the aid of an interview guide (Attached hereto as Appendix A) of open-ended questions related to the objectives and research questions of the study. These interviews elicited opinions related information as what the reality on the ground is, that is to say, when it comes to the roles and short comings of the treaties of climate change.

The data collected from these interviews was analysed and incorporated into the different chapters of the dissertation.

1.7 Theoretical Framework

The changing climate and the resultant impacts on the environment and human life have instigated international initiatives/theories under the Protocol to have the problem halted within the shortest time possible (mitigation) or devise strategies for people to adapt to the changing climate (adaptation). This section analyses the international mitigation and adaptation approaches to climate change and the reasons why adaptation is more important to developing countries than mitigation. Because adaptation is the main the main subject of this thesis, its theoretical foundations will be provided in this section.

Mitigation refers to limiting global climate change through human interventions to reduce sources, or enhance the sinks, of greenhouse gases.³⁵ It thus focuses on reducing emissions from industries and other sources through, for example, cleaner production methods. It also focuses on carbon sequestration from the atmosphere through programmes such as afforestation. The UNFCCC and the Kyoto Protocol have largely

³⁵ Parliamentary Office of Science and Technology (UK) (2006), Adapting to Climate Change in Developing Countries, Postnote October 2006 Number 269.

focused on mitigation. However, in the context of developing countries like Uganda, their emission levels are significantly low compared to developed countries, yet they are the ones most affected by climate change. This is because livelihoods are highly dependent on climate-sensitive resources and they currently possess low adaptive capacity. This makes the alternative approach of adaptation more relevant to developing countries than mitigation.

In this thesis, adaptation is used to refer to actual adjustments in decision making, which might ultimately enhance resilience³⁶ or reduce vulnerability³⁷ to observed or expected changes in climate. Thus, investment in infrastructure to reduce vulnerability to flood and drought is an example of actual adjustments. Meanwhile, the development of climate risk screening guidelines, which might make downstream development projects more resilient to climate risks is an example of changes in the policy environment.³⁸

From a temporal perspective, adaptation to climate risks can be viewed at three levels, including responses to: current variability (which also reflect learning from past adaptations to historical climates); observed medium and long-term trends in climate; and anticipatory planning in response to model-based scenarios of long-term climate change. The responses across the three levels are often intertwined, and indeed might form a continuum.³⁹ Adapting to current climate variability is already sensible in an economic development context. This is because of the direct and certain evidence of the adverse impacts of climate change to development. In addition, such adaptation measures can be synergistic with development priorities but there could also be conflicts. For example,

³⁶ Resilience is the ability to manage and learn from difficulties and to bounce back after adversity. When challenged or distressed, resilient people expect to find a way to make things work well. They feel capable and self-reliant and have a learning/coping reaction rather than the victim blaming reaction.

³⁷ Vulnerability in this context means the diminished capacity of an individual or group to anticipate, cope with, resist and recover from the effects of climate change.

³⁸ Burton, I. & Van Aalst M.K., (2004) *Look Before You Leap? A Risk Management Approach for Incorporating Climate Change Adaptation in World Bank Operations*, Final Draft, Prepared for the Climate Change Team. World Bank, Washington, District of Columbia, p. 57.

³⁹ Goklany, I.M., (1995) Strategies to enhance adaptability: technological change, sustainable growth and free trade. *Climatic Change*, 427-449.

activities such as shrimp farming, while profitable in an economic sense, can exacerbate vulnerability to sea-level rise.⁴⁰

Adaptation to current climate variability can also increase resilience to long-term climate change. In a number of cases, however, anthropogenic climate change is likely to also require forward-looking investment and planning responses that go beyond short-term responses to current climate variability. This is true, for example, in the case of observed impacts such as glacier retreat and permafrost melt.⁴¹ Even when impacts of climate change are not yet discernible, scenarios of future impacts may already be of sufficient concern to justify building some adaptation responses into planning. In some cases it could be more cost-effective to implement adaptation measures early on, particularly for infrastructure with long economic life, or if current activities may irreversibly constrain future adaptation to the impacts of climate change.⁴²

Adaptation to climate change is already taking place, but on a limited scale in both developed and developing countries. Societies have a long record of adapting to the impacts of weather and climate through a range of practices that include crop diversification, irrigation, water management, disaster risk management, and insurance. These measures are undertaken by a range of public and private actors through policies, investments in infrastructure and technologies, and behavioural change.

The success of an adaptation strategy will largely depend on the adaptive capacity of a particular society. Adaptive capacity is the ability or potential of a system to respond successfully to climate variability and change, and includes adjustments in both behaviour and in resources and technologies.⁴³ The presence of adaptive capacity has been shown to be a necessary condition for the design and implementation of effective

⁴⁰ Agrawala, S. & Van Aalst M., (2005) Bridging the gap between climate change and development. *Bridge Over Troubled Waters: Linking Climate Change and Development*, Agrawala S., Ed., OECD, Paris, 133-146.

⁴¹ Schaedler, B., (2004) Climate Change Issues and Adaptation Strategies in a Mountainous Region: Case Study Switzerland. ENV/EPOC/GS/FD/RD(2004)3/FINAL, OECD, Paris, p. 16.

⁴² Shukla, P.R., Kapshe M. & Garg A., (2004), Development and Climate: Impacts and Adaptation for Infrastructure Assets in India. ENV/EPOC/GS/FD/RD(2004)3/FINAL, OECD, Paris, p. 38.

⁴³ Brooks, N. & Adger W.N., (2005) Assessing and enhancing adaptive capacity. *Adaptation Policy Frameworks for Climate Change*, B. Lim, E. Spanger-Siegfried, I. Burton, E.L. Malone and S. Huq, Eds., Cambridge University Press, New York, 165-182.

adaptation strategies so as to reduce the likelihood and the magnitude of harmful outcomes resulting from climate change.⁴⁴ Adaptive capacity also enables sectors and institutions to take advantage of opportunities or benefits from climate change, such as a longer growing season or increased potential for tourism.

Technology can potentially play an important role in adapting to climate change. Efficient cooling systems, improved seeds, desalination technologies, and other engineering solutions represent some of the options that can lead to improved outcomes and increased coping under conditions of climate change.⁴⁵ Technological adaptations and innovations are developed through research programmes undertaken by governments and by the private sector. Innovation is an important aspect of adaptation, particularly under uncertain future climate conditions. Although technological capacity can be considered a key aspect of adaptive capacity, many technological responses to climate change are closely associated with a specific type of impact, such as higher temperatures or decreased rainfall.⁴⁶

Adaptive capacity is influenced not only by economic development and technology, but also by social factors such as human capital and governance structures. Adaptive capacity is not a concern unique to regions with low levels of economic activity. Although economic development may provide greater access to technology and resources to invest in adaptation, high income per capita is considered neither a necessary nor a sufficient indicator of the capacity to adapt to climate change.⁴⁷

It is important to note that the capacity of societies to adapt to climate change is uneven across and within societies. There are individuals and groups within all societies that have insufficient capacity to adapt to climate change. For example, women in subsistence farming communities are disproportionately burdened with the costs of recovery and

⁴⁴ *Ibid.*

⁴⁵ Ebi, K.L., Lim B. & Aguilar Y, (2005) Scoping and designing an adaptation process. *Adaptation Policy Frameworks for Climate Change*, B. Lim, E. Spanger-Siegfried, I. Burton, E.L. Malone and S. Huq, Eds., Cambridge University Press, New York, 33-46.

⁴⁶ Smit, B. & Skinner M.W., (2002) Adaptation options in agriculture to climate change: a typology. *Mitigation and Adaptation Strategies for Global Change*, 7, 85-114.

⁴⁷ Moss, R.H., Brenkert A.L. & Malone E.L., (2001) *Vulnerability to Climate Change: A Quantitative Approach*. Pacific Northwest National Laboratory, Richland Washington, p. 70.

coping with drought. The capacity to adapt is dynamic and influenced by economic and natural resources, social networks, entitlements, institutions and governance, human resources, and technology. Multiple stresses related to land degradation, trends in economic globalisation, and violent conflict affect exposure to climate risks and the capacity to adapt.

There are substantial limits and barriers to adaptation. High adaptive capacity does not necessarily translate into actions that reduce vulnerability. For example, despite a high capacity to adapt to heat stress through relatively inexpensive adaptations, residents in urban areas in some parts of the world, including in European cities, continue to experience high levels of mortality.⁴⁸ Other barriers to implementing adaptation include both the inability of natural systems to adapt to the rate and magnitude of climate change, as well as technological, financial, cognitive and behavioural, and social and cultural constraints. There are also significant knowledge gaps for adaptation as well as impediments to flows of knowledge and information relevant for adaptation decisions

Under the UNFCCC and the Kyoto Protocol, the obligation to help developing countries to adapt to climate change is largely placed on developed country parties. The theoretical basis for this approach is the principle of common but differentiated responsibility (CBDR). This principle has two matrices. The first one is the common responsibility which describes the shared obligations of two or more states towards the protection of a particular environmental resource. Common responsibility is likely to apply where the resource is shared, under the control of no state, or under the sovereign control of a state, but subject to a common legal interest, such as biodiversity and climate.⁴⁹

The second matrix is differentiated responsibility, which describes the obligation of States to protect the environment on differentiated environmental standards and limitations, set on the basis of a range of factors, including special needs and circumstances; future economic development of countries; and historic contributions to

⁴⁸ Bass, B., (2005) Measuring the adaptation deficit. Discussion on keynote paper: climate change and the adaptation deficit. *Climate Change: Building the Adaptive Capacity* Fenech A., MacIver D., Auld H., Rong B. and Yin Y.Y., Eds., Environment Canada, Toronto, 34-36.

⁴⁹ The Principle of Common But Differentiated Responsibilities: Origins and Scope, http://www.cisd.org/pdf/brief_common.pdf (accessed on 11-08-2011)

the creation of an environmental problem.⁵⁰ Most global environmental problems of the world were, and are being, created with less participation of developing countries. Differentiated responsibility aims at promoting substantive equity, by placing weightier environmental obligations and standards on the developed countries, who are the the biggest contributors of the environmental problems, to limit their contribution to environmental degradation.

A particularly important aspect of differentiated responsibility is international assistance, including financial aid and technology transfer. As developed countries have played the greatest role in creating most global environmental problems, and have superior ability to address them, differentiated responsibility requires them to take the lead on environmental problems through international assistance in form of technological, financial and other assistance to help developing countries fulfill their common responsibility and other environmental obligations.⁵¹

In practical terms therefore, the principle of CBDR has two consequences. First, it entitles, or may require, all concerned states to participate in international response measures aimed at addressing environmental problems. Second, it leads to environmental standards that impose differing obligations on states.⁵² States have common responsibilities to protect the environment and promote sustainable development, but due to different historic, social, economic, and ecological situations, countries must shoulder different responsibilities. The principle, therefore, provides for asymmetrical rights and obligations regarding environmental standards, and aims to induce broad State acceptance of treaty obligations, while avoiding the type of problems typically associated with a lowest common denominator approach.⁵³ The principle also reflects the core elements of equity, placing more responsibility on wealthier countries and those more responsible for causing specific global problems. Perhaps more importantly, the principle

⁵⁰ *Ibid.*

⁵¹ For Financial and Technological transfer requirements, see for instance the Stockholm Convention on Persistent Organic Pollutants, 22 May 2001, reprinted in 40 I.L.M. 532 (2001), Article 13(2); instance the Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, 17 June 1994, reprinted in 33 I.L.M. 1328 (1994), Article 20(2); and UNFCCC, *supra* note 2, Article 4(3).

⁵² *Ibid.*

⁵³ *Ibid.*

presents a conceptual framework for compromise and co-operation in effectively meeting environmental challenges.

The CBDR principle is described succinctly in Principle 7 of the Rio Declaration on Environment and Development⁵⁴ which states that:

States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem. In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.

The continuing relevance of Rio principle 7 is evidenced by the fact that the Johannesburg Plan of Implementation privileges it by quoting it in its entirety in a section entitled 'Means of Implementation.'⁵⁵ This principle was also implicit in the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer,⁵⁶ and it has been recognized in other important international undertakings including climate-related meetings.⁵⁷

1.8 Literature Review

There is a lot of literature on global climate change generally though the same has not been directed to the specific regions/countries. In Uganda, literature has focused more on climate change mitigation and not adaptation.

⁵⁴ United Nations Conference on Environment and Development: The Rio Declaration on Environment and Development, June 13, 1992, 31 *I.L.M.* 874.

⁵⁵ See the Johannesburg Plan of Implementation, in *Report of the World Summit on Sustainable Development*, Johannesburg, South Africa, 26 August- 4 September 2002, UN Doc. A/CONF.199/20 (2002).

⁵⁶ Montreal Protocol on Substances that Deplete the Ozone Layer, 16 September 1987, reprinted in 26 *I.L.M.* 1550 (1987).

⁵⁷ The principle of common but differentiated responsibility has been acknowledged by, inter alia, the U.N. General Assembly in G.A. Res. 228, U.N. GAOR, 44th Sess., Supp. No. 49, at 152, U.N. Doc. A/44/49 (1989), and several climate-related meetings, including the Second World Climate Conference, meetings of the Preparatory Committee of the United Nations Conference on Environment and Development, the Toronto Conference Statement, the Hague Declaration, and the Noordwijk Declaration.

One of the most current climate change publications in Uganda is the Uganda National Adaptation Programmes for Action,⁵⁸ which contains a detailed review of the phenomenon of climate change. The report points out how the Uganda Government is preparing to adapt to climate change. It gives an insight into the measures and policies the Ugandan Government is taking to tackle the climate change problem. However, the report does not highlight the weaknesses of the legal and policy frameworks.

Mannion⁵⁹ observes that fluctuations in climate change occur both spatially and temporarily, the causes of which are a source of considerable speculation and controversy. He says that external factors such as solar radiation and internal factors such as adjustments within the earth's atmospheric circulation may either singly or in combination be responsible for climate change. He also notes that human activity may contribute to climate change by inadvertently affecting the global carbon cycle. This study does not, however, consider the policy and legal issues involved in climate change adaptation.

Michael Kerr⁶⁰ observes that climate change is occurring as the result of human activity having caused higher concentrations of greenhouse gases in the earth's atmosphere leading to increased trapping of infrared radiation. As a result, the lower atmosphere has warmed and continues to warm, changing weather and climate. He argues that the main greenhouse gases increasing in concentration due to human activities are carbon dioxide, methane, nitrous oxide, chlorofluorocarbons (CFCs), and ozone. Of these gases, carbon dioxide is said to be the biggest contributing factor to climate change. Most of the increase in carbon dioxide comes from the burning of fossil fuels such as oil, coal and natural gas, and from deforestation. This study is important in understanding the driving forces for climate change. However, the study largely takes a scientific approach and not a legal approach. Secondly, the study does not focus on Uganda as the present study does.

⁵⁸ Climate change: Uganda National Adaptation Programmes of Action: July 13th 2006

⁵⁹ Mannion A.M, *Global Environment Change: A Natural and Cultural Environmental History* (United Kingdom, Longman, 1994) p. 22.

⁶⁰ Kerr, *supra*, note 1, p.3.

Ottichilo, *et al*⁶¹ observe that Africa is expected to be particularly vulnerable to climate change stresses. It is a poor continent and most of its people depend on agriculture whose production is dictated to a greater extent by climate patterns. They further observe that the current economic crisis caused by the high rate of population growth, inefficient resource use, weak institutional capacity and the low levels of investment and saving are expected to impair its capacity to effectively respond to disruptions emanating from climate change.

A regional report; *Climate Change and Development in East Africa*,⁶² notes that the economies of East African countries (Uganda inclusive) are largely dependent on exploitation of natural resources-which are sensitive to climate variability and climate change. These countries are likely to suffer disproportionately from climate change considering their limited contribution to global warming in terms of fossil fuel consumption. The report notes a number of impacts of climate change including those on agriculture and food security, health, water resources; a number of related disasters like hydro-meteorological disasters including landslides, droughts, famines, floods among others that have more than doubled since 1996. This report is important in understanding the effects of climate change. The report, however, does not extensively discuss the international and national policy and legal responses to climate change adaptation.

Sombroek and Gommès,⁶³ analyze the impact of climate change on agriculture. They observe that in quantitative terms, many indirect impacts of climate change on agriculture can be conjectured. That most of these impacts are estimated to be negative and they include sea level rise (40 cm in the coming 100 years) that would submerge some valuable coastal agricultural land, and the current imbalance of food production between cool and temperate regions and tropical and subtropical regions would increase.

⁶¹ Ottichilo W.K, et al., *Weathering the Storm- Climate Change and Investment in Kenya*, (Nairobi, Kenya, ACTS Press 1991), p.2.

⁶² ACTS, *supra*, note 4.

⁶³ Sombroek W. & Gommès R. (1996), "The Climate Change –Agriculture Conundrum," in Fakhri Bizzaz and W. Sombroek (eds), *Global climate Change and Agricultural Production- Direct and Indirect Effects of Changing Hydrological, Pedological and plant Physiological Processes*, (FAO and John Willy & Sons), p.6.

Orindil and Murray⁶⁴ discuss the impacts of climate change in the East African countries including: frequent drought spells leading to severe water shortage; change in planting dates of annual crops; increased fungal outbreaks and insect infestations due to changes in temperature and humidity; decrease in forest area and area under cultivation; decline in crop and gum yield, increased risk of food shortage and famine; reduction in ecosystem integrity and resilience, and decline in biodiversity. They observe that households and communities have developed a number of coping strategies in response to extreme climate events.

They observe that households and communities have developed a number of coping strategies in response to extreme climate events. However, some of these coping measures can only assist families in the short-term and cannot deal with increased and more severe shocks. They note that there is need to strengthen these coping strategies to enable households to live with current climate variability as well as help them to adapt to long-term climate change. They suggest adaptation strategies to cope with the effects of climate change including the introduction of drought resistant and fast maturing crop varieties in areas of reduced rainfall and planting cover crops and green manure to help restore soil fertility where leaching occurs from increased rainfall in respect of the agricultural sector; building a barrier wall around vulnerable coastal areas; and strengthening of the meteorological stations to collect and disseminate timely information as part of early warning and disaster preparedness schemes.

Whereas the strategies suggested are important for the adaptation of the households to the effects of climate change, the approach does not explore the use of law as one of the instruments to be used in climate change adaptation. This study analyses the relevancy of the Kyoto Protocol helping developing countries adapt to climate change.

The State of the Environment Report for Uganda 2007/2008⁶⁵ gives progress on the action taken by Uganda in relation to adapting to climate change. It points out that Uganda has signed and ratified the UNFCCC, the Kyoto Protocol and Commencement

⁶⁴ Orindil V.A. & Murray L.A. (2005), *Adapting to Climate Change in East Africa: A Strategic Approach*, Gatekeeper Series 117, p.4.

⁶⁵ See the State of Environment Report for Uganda 2004/2005 NEMA World Bank

Activities Implemented Jointly (AIJ). Further, the report notes that carbon dioxide is the major green house gas in Uganda which mainly comes from bio-mass burned energy, agricultural waste burning and grassland conversation. Uganda's contribution to the world would be to increase the efficiency with which bio-mass is burned. However though the report points out that Uganda has complied with the UNFCCC, the report does not outline the importance/role of the Kyoto Protocol.

Olsen's study⁶⁶ is about the history of developing countries with particular reference to Uganda and how external interventions to implement global policies on the climate change conventions and CDM have been integrated into the national policy. This publication is about how a developing country can implement global policies on the climate convention. This publication helps this study in highlighting the existing national policies and their efficacy in helping Uganda adapt to climate change challenges.

The UNEP⁶⁷ report analyses the situation before 1992, and it points out that international law did not provide a constant approach to climate change yet a number of treaties were in force by 1992 such as the General Convention on Long Range Trans-boundary Air Pollution and the Montreal protocol on substances that deplete the ozone layer though they did not directly address climate change. This report is relevant to this study by giving an understanding of the background to the Kyoto Protocol. However, the report makes brief and general observations but does not exhaustively deal with the efficacy of the Protocol in helping Uganda adapt to climate change.

Asbjorn Aaheim⁶⁸ argues that at the international level, climate policy is basically a question of negotiations therefore a national policy design depends on whether the studies are made before or after an international treaty is signed. This is crucial to the present study in that it helps to identify the basis for some of the policies on climate change. The

⁶⁶ National ownership in the implementation of global climate policy in Uganda Climate policy (2006)599-612.

⁶⁷ United Nations Environment Programme, Information Unit on Climate Change (IUCC) International Law and Climate Change; Fact Sheet 202.

⁶⁸ Joint implementation of GHG abatement commitments in H.W.O Okoth – Ogendo, J.B.Ojwang (eds) (1995), A climate for development, climate policy options for Africa, ACTS Press.

success of the climate policies in Uganda largely depends on the success of international arrangements for climate change mitigation and adaptation.

Kasimbazi⁶⁹ identifies the challenges facing Uganda in implementation of CDM under the Kyoto Protocol. He discusses the institutional framework for the implementation of CDM and reviews the legal and policy framework for the implementation of CDM in Uganda. He further identifies the different CDM projects that are implemented in Uganda under the energy sector, forest sector, transport sector and methane reduction in livestock. Kasimbazi's work is relevant in so far as it gives an understanding of the application of one of the Kyoto mechanisms at the national level. This publication is important in understanding the challenges Uganda faces in implementing the existing policies on climate change. However, his work is limited only to the CDM in climate change mitigation. The writer concentrates on the CDM but not on the protocol and the climate change conventions as a whole.

Mitchell Tom & Tanner Thomas⁷⁰ observe that most international efforts on climate change have centered on limiting greenhouse gas emissions associated with human activity, particularly the burning of fossil fuels such as coal, oil and gas. They however observe that there is growing momentum on efforts to better understand the vulnerability of human societies to the impacts of both current climate and future climate change. That current climate shocks and stresses already tested, and sometimes exceed, the ability of human beings to cope. They observe that crucial to reducing vulnerability to climate change is understanding how individuals, groups and natural systems can prepare for and respond to changes in climate and this is known as adaptation. They argue that effective adaptation will manage and reduce the risks associated with changes in climate in a similar way to disaster risk reduction measures for present day climate extremes. To reduce the vulnerability of livelihoods to climate change risks efforts should begin with a thorough understanding of local livelihoods, so protecting assets vulnerable to current and future climate risks can be a core project

⁶⁹ Kasimbazi E (2005), "In the Defence of Prosperity: Challenges of Implementing Clean Development Mechanisms in Uganda," in Ole Kristian Fauchald & Jacob Werksman (Eds.), *Year Book of International Environmental Law*, (Oxford University Press. vol. 16,).

⁷⁰ Mitchell T & Tanner T. (2006), *Adapting to Climate Change: Challenges and Opportunities for the Development Community*, Institute of Development Studies.

activity. It is also essential to help communities develop an understanding of the main climate risks and how they impact on livelihoods (through a learning-by-doing approach); and build on existing social institutions to carry out activities.

A review of the available literature indicates that a lot has been done on climate change mitigation. The available literature on climate change adaptation has not focused much on the legal approach to climate change adaptation. The present study takes a legal approach and assesses the effectiveness of the Kyoto Protocol in helping developing countries adapt to climate change.

1.9 Summary of the Dissertation

This dissertation is divided into six chapters. Chapter one, which is this one, gives an introduction to the dissertation. It contains the background to the study; statement of the problem; objectives of the study; research questions; significance of the study; literature review; methodology and scope of the study. The second chapter gives an understanding of climate change issues in developing countries. The chapter analyses the key impacts of climate change in developing countries and the adaptation constraints and opportunities in these countries.

The third chapter assesses the efficacy of the Kyoto protocol, Kyoto related instruments and post-Kyoto arrangements in helping developing countries, particularly Uganda, adapt to climate change. It also identifies the limitations to these instruments in this regard.

The fourth chapter scrutinizes the role of existing policy framework in Uganda (as an example of a developing country) in helping Uganda adapt to climate change. The fifth chapter examines the role of Uganda's legal framework in climate change adaptation.

The last chapter gives general conclusions, summary of findings and recommendations as to how the Kyoto protocol can better help developing countries such as Uganda adapt to climate change.

CHAPTER TWO

CLIMATE CHANGE IN THE CONTEXT OF UGANDA

2.1 Introduction

The majority of developing countries are in tropical and sub-tropical regions, areas predicted to be seriously affected by the impacts of climate change. Africa, Asia, Latin America and the Small Island States (for example Mauritius) have all been identified as regions of concern. This is compounded by the fact that developing countries are often less able to cope with adverse climate impacts. The most vulnerable sectors in these countries include those dependent on natural resources; and shanty town dwellers living on unsuitable land, often unstable and/or flood prone and lacking infrastructure. This chapter gives an understanding of the problem of climate change and the adaptation practices. The chapter is divided into four sections. The first section which is this one provides an introduction. The second section gives an understanding of the effects of climate change in developing countries. The third section analyses the constraints and opportunities to climate change adaptation in developing countries while the fourth makes a conclusion to the chapter.

2.2 Understanding Climate Change Effects in Developing Countries

The projection of a globally warming world, with increased risks from climate, weather and other natural hazards has combined with demographic changes to produce a variety of regional-scale impacts on natural resources and human life at large. These resources and the ecosystem affected have services they provide such as fuel, water supply, good air quality, biodiversity and leisure which are critical to the quality of human life. This section makes a review of the impacts of climate change in developing countries.

2.2.1 Climate Change, Agriculture and Food Security

The agricultural sector is a critical mainstay of local livelihoods and national Gross Domestic Product (GDP) in most developing countries. The contribution of agriculture to GDP varies across countries but assessments suggest an average contribution of 21%

(ranging from 10 to 70%) of GDP.¹ This sector is particularly sensitive to climate, including periods of climate variability. In many parts of Africa, for example, farmers and pastoralists also have to contend with other extreme natural resource challenges and constraints such as poor soil fertility, pests, crop diseases, and a lack of access to inputs and improved seeds. These challenges are usually aggravated by periods of prolonged droughts and/or floods and are often particularly severe during El Niño events.²

In Uganda, agriculture is the backbone of the economy, contributing about 42 per cent of GDP, over 90 per cent of export earnings and employing 81 per cent of the labour force.³ The anticipated increase in average temperature could seriously affect both subsistence and commercial agriculture as farmers find it difficult controlling effects of higher temperature and too expensive to irrigate. Yields of coffee and tea which are important cash crop for Uganda could also reduce by 20 per cent on average due to increase in temperature and change in precipitation.⁴

Climate variability in terms of onset and cessation of rainfall is and will continue being a serious source of vulnerability to farmers in marginal areas of Uganda where agriculture is mostly rain-fed. Under conditions of uncertainty about future climate, farmers are often reluctant to invest in agriculture or to adopt some of the improved farming technologies which could improve their returns on investment and facilitate recovery from bad seasons.⁵

Change in temperature and precipitation could also lead to occurrence of new pests and diseases. In the semi-arid areas, tick-borne diseases have become rampant because of higher temperatures.⁶ The tsetse fly belt has expanded which affect the livestock output.⁷ A number of strategies have been suggested to promote adaptation in the livestock sector

¹ Mendelsohn, R., Morrison W., Schlesinger M.E & Andronova N.G., (2000), Country-specific market impacts of climate change. *Climatic Change*, 45, 553- 569.).

² *Ibid.*

³ Ministry of Lands, Water and Environment (MLWE), Initial National Communication on Climate Change Uganda. 2002.

⁴ ACTS (2005), *Climate Change and Development in East Africa: A Regional Report*, (Nairobi, Kenya, ACTS Press) p.7.

⁵ *Ibid.*

⁶ The New Vision April 7th 2007 p.2.

⁷ *Ibid.*

including reduction of animal population, improving pastures/ rangeland management and rainwater harvesting. But some of the options for example reduction of animal population seem not to factor in the socio-cultural and political environment in which these livelihood groups operate. Reducing animal population for example may be difficult to implement as it goes against cultural practices.

2.2.2 Climate Change and Health

Assessments of health in developing countries show that many communities are already impacted by health stresses that are coupled to several causes, including poor nutrition. These assessments repeatedly pinpoint the implications of the poor health status of many Africans for future development.⁸ An estimated 700,000 to 2.7 million people die of malaria each year and 75% of those are African. Incidences of malaria, including the recent resurgence in the highlands of East Africa, however, involve a range of multiple causal factors, including poor drug-treatment implementation, drug resistance, land-use change, and various socio-demographic factors including poverty. The economic burden of malaria is estimated as an average annual reduction in economic growth of 1.3% for those African countries with the highest burden.⁹

The resurgence of malaria and links to climate and/or other causal ‘drivers’ of change in the highlands of East Africa has recently attracted much attention and debate. There are indications, for example, that in areas that have two rainy seasons – March to June (MAMJ) and September to November (SON) – more rain is falling in SON than previously experienced in the northern sector of East Africa.¹⁰ The SON period is relatively warm, and higher rainfall is likely to increase malaria transmission because of a reduction in larval development duration.

New evidence regarding micro-climate change due to landuse changes, such as swamp reclamation for agricultural use and deforestation in the highlands of western Kenya, suggests that suitable conditions for the survival of *Anopheles gambiae* larvae are being

⁸ Sachs, J. & Malaney P., (2002) The economic and social burden of malaria. *Nature*, 680-685.

⁹ Gallup, J.L. & Sachs J.D., (2001) The economic burden of malaria. *Am. J. Trop. Med. Hyg.*, 85-96.

¹⁰ Schreck, C.J. & Semazzi F.H.M., (2004) Variability of the recent climate of eastern Africa. *Int. J. Climatol.*, 681-701.

created and therefore the risk of malaria is increasing. Floods can also trigger malaria epidemics in arid and semi-arid areas. Other diseases are also important to consider with respect to climate variability and change, as links between variations in climate and other diseases, such as cholera and meningitis, have also been observed. About 162 million people in Africa live in areas with a risk of meningitis.¹¹

Vector organisms transmit many infectious diseases. Climate variability or change will influence the epidemiology of vector-borne diseases because the vector organisms have adapted to different ecosystems.¹² Climate change may alter the distribution of vector species depending on whether conditions are favourable or unfavourable for their breeding places or reproductive cycle. Changes in climate that can affect the potential transmission of vector-borne infectious diseases include temperature, humidity, altered rainfall, soil moisture and rising sea level.¹³ Increasing precipitation would likely increase the number and quality of breeding sites for vectors such as mosquitoes, ticks, and snails while increase in vegetation density could increase the availability of resting sites.

2.2.3 Climate Change and Water Resources

The water sector is strongly influenced by, and sensitive to, changes in climate (including periods of prolonged climate variability). Interannual lake-level fluctuations and lake-level volatility, for example, have been observed since the 1960s, probably owing to periods of intense droughts followed by increases in rainfall and extreme rainfall events in late 1997.

Fewer assessments of impacts and vulnerabilities with regard to groundwater and climate interactions are available, and yet these are clearly of great concern for those dependent on groundwater for their water supply. About 25% of the contemporary African population experience high water stress. About 69% of the population live under conditions of relative water abundance. However, this relative abundance does not take into account other equally important factors such as access to clean drinking water and

¹¹ Molesworth A.M., Cuevas L.E., Connor S.J., Morse A.P. & Thomson M.C., (2003) Environmental risk and meningitis epidemics in Africa. *Emerg. Infect. Dis.* 1287-1293.

¹² ACTS, *supra* note 4, p.11.

¹³ *Ibid.*

sanitation, which effectively reduces the quantity of freshwater available for human use. Despite the considerable improvements in access to freshwater in the 1990s, only about 62% of the African population had access to improved water supplies in 2000.¹⁴

Precipitation is one of the climatic variables that will be most affected by climate change and/or climate variability. Some parts of Uganda are arid and semi arid commonly experiencing rainfall of below 500 mm.¹⁵ Such areas already face problems of water scarcity for domestic, agricultural and hydropower generation. Some areas may get wetter while the dry areas already facing water scarcity may get drier. Climate change will affect both the quantity and quality of water.¹⁶ Over extraction of ground water resources, increased competition and conflicts over water may become common in parts of Uganda where per capita water storage is already low. In pastoral areas, severe water shortages resulting from drying up of rivers and reservoirs have contributed to death of livestock from hunger, thirst and disease and increased conflicts over grazing belts.¹⁷

2.2.4 Climate Related Disasters

The number of hydro-meteorological disasters including landslides, droughts, famines, floods among others has more than doubled since 1996. In Uganda, for example, the last few decades have seen an increase in the frequency and intensity of extreme weather events with serious socio-economic consequences. The El-Nino rains of 1997 for example resulted in destruction of nearly 10,000 km of rural roads in Uganda.¹⁸ Further, the risk of fire may increase with global warming and may affect grassland areas and important wildlife area of Uganda.¹⁹

2.2.5 Climate Change and Energy Resources

Access to energy is severely constrained in developing countries of sub-Saharan Africa, with an estimated 51% of urban populations and only about 8% of rural populations having access to electricity. This is compared with about 99% of urban populations and

¹⁴ WHO/UNICEF, (2000) Global water supply and sanitation assessment: 2000 report. World Health Organization, Geneva, 87 pp. http://www.who.int/entity/water_sanitation_health/monitoring/jmp2000.pdf.

¹⁵ *Ibid*, p.13.

¹⁶ *Ibid*.

¹⁷ *Ibid*.

¹⁸ *Ibid*, p.15.

¹⁹ *Ibid*.

about 80% of rural populations who have access in northern Africa. Other exceptions also include South Africa, Ghana and Mauritius. Extreme poverty and the lack of access to other fuels mean that 80% of the overall African population relies primarily on biomass to meet its residential needs, with this fuel source supplying more than 80% of the energy consumed in sub-Saharan Africa.²⁰ Dependence on biomass can promote the removal of vegetation. The absence of efficient and affordable energy services can also result in a number of other impacts including health impacts associated with the carrying of fuelwood, indoor pollution and other hazards (for example, informal settlement fires).

The energy sector in Uganda is heavily dependent on biomass energy. Fuel wood is the main source of energy for cooking in many rural and poor urban households. Climate change may increase or decrease availability of biomass sources of energy depending on the suitability of new conditions for plant growth.²¹ Apart from biomass, hydroelectric power generation may also be significantly affected by changes in precipitation. The low power generation in Uganda is partly attributed to the low water levels resulting from low levels of rainfall received. This decreased power generation has translated into huge economic losses to the national economy.

2.2.6 Climate Change and Biodiversity

Ecosystems are critical in Africa and many other developing countries, contributing significantly to biodiversity and human well-being. The rich biodiversity in Africa, which occurs principally outside formally conserved areas, is under threat from climate variability and change and other stresses. Africa's social and economic development is constrained by climate change, habitat loss, over-harvesting of selected species, the spread of alien species, and activities such as hunting and deforestation, which threaten to undermine the integrity of the continent's rich but fragile ecosystems.

In West Africa, the long-term decline in rainfall from the 1970s to the 1990s caused a 25-35 km southward shift of the Sahelian, Sudanese and Guinean ecological zones in the

²⁰ Hall, D.O. and Scrase J.I., (2005) Biomass energy in sub-Saharan Africa. *Climate Change and Africa*, P.S Low, Ed., Cambridge University Press, Cambridge, 107- 112.).

²¹ *Ibid.*

second half of the 20th century.²² This has resulted in a loss of grassland and acacia, the loss of flora/fauna, and shifting sanddunes in the Sahel.

Uganda by virtue of its location across the equator together with a range of altitude and climatic conditions makes it rich in biodiversity. Uganda benefits from biodiversity in terms of tourism, variety of foods and crops, forestry and medicinal plants among others. Anticipated impacts of climate change on biodiversity include shifting of ecosystem boundaries, change in natural habitats and sharp increases in extinction rates for some species.²³ Rapid changes are expected in mountainous regions where species have no alternative habitats to which they can migrate in order to survive. Change in biodiversity would likely affect the tourism industry which is a major foreign exchange earner for Uganda.²⁴

2.3 Climate Change Adaptation Constraints and Opportunities within Uganda

The covariant mix of climate stresses and other factors in developing countries means that for many of these countries, adaptation is not an option but a necessity. A range of factors including wealth, technology, education, information, skills, infrastructure, access to resources, and various psychological factors and management capabilities can modify adaptive capacity. Most of these constraints to adaptation are inherent in the very nature of many developing countries. This section makes an analysis of these constraints and the available opportunities for adaptation to climate change in developing countries.

2.3.1 Lack of adaptive capacity

The main determinants of a country's adaptive capacity to climate change are: economic wealth, technology, information and skills, infrastructure, institutions and equity.²⁵ A common constraint confronting most developing countries is the lack of in-country adaptive capacity, or the ease with which they are able to cope with climate change. In many developing countries, the cost of adopting and implementing adaptation options is

²² Gonzalez, P., (2001) Desertification and a shift of forest species in the West African Sahel. *Climate Res.*, 217-228.

²³ *Ibid*, p.16.

²⁴ *Ibid*.

²⁵ WHO (World Health Organization) (2003), *Climate Change and Human Health- Risks and Responses*. Summary. World Health Organization, Geneva, p. 37.

likely to be prohibitive, and a significant proportion of a country's economic wealth. Financial resources that are generally not available to developing countries' governments and would need to come from outside.²⁶ Similarly, there are often inadequate human resources available to accommodate, cope with, or benefit from the effects of climate change; a situation that may be compounded by the out-migration of skilled workers. To overcome this deficiency, the adaptive capacity of developing countries will need to be built up in several important areas including human resource development, institutional strengthening, technology and infrastructure, and public awareness and education. An extreme example of these deficiencies is the recently independent state of Timor Leste (East Timor). Timor Leste is vulnerable to climate change, as evidenced by existing sensitivities to climate events, for example drought and food shortages in the western highlands, and floods in Suai.²⁷ Barnett et al. note that relevant planning would address the present problems as well as future climate risks, and activities that promote sustainable development, human health, food security, and renewable energy can reduce the risk of future damages caused by climate change as well as improving living standards.²⁸

2.3.2 Adaptation and Global Integration

This theme is also developed by Pelling and Uitto,²⁹ who suggest that change at the global level is a source of new opportunities, as well as constraints, for building local resilience. The key parameters of this resilience include: opportunities for migration and subsequent remittances; traditional knowledge, institutions and technologies; land and shore tenure regimes; the subsistence economy; and linkages between formal state and customary decision-making processes. These global economic processes, together with global warming, sea-level rise, and possibly increased frequency and intensity of extreme

²⁶ Stern N. (2007) *The Economics of Climate Change: The Stern Review*, Cambridge University Press, Cambridge, p. 692.

²⁷ Barnett, J., Dessai S. and Jones R., (2003) *Climate Change in Timor Leste: Science, Impacts, Policy and Planning*. University of Melbourne-CSIRO, Melbourne, 40 pp.

²⁸ *Ibid.*

²⁹ Pelling, M. and Uitto J.I., (2001) Small island developing states: natural disaster vulnerability and global change, *Environmental Hazards*, 3, pp. 49-62.

weather events, make it difficult for developing countries to achieve an appropriate degree of sustainability, which is one of the goals of adaptation to climate change.³⁰

2.3.3 Risk-Sharing and Insurance

Insurance is another way of reducing vulnerability and is increasingly becoming relevant in the context of developing countries and climate change. However, there are several constraints to transferring or sharing risk in developing countries. These include the limited size of the risk pool, and the lack of availability of financial instruments and services for risk management. For instance, in 2004, Cyclone Heta devastated the tiny island of Niue in the South- West Pacific, where no insurance is available against weather extremes, leaving the island almost entirely reliant on overseas aid for reconstruction efforts.³¹ Moreover, the relative costs of natural disasters tend to be far higher in developing countries than in advanced economies.

Thus, in many developing countries, the implementation of specific instruments and services for risk-sharing may be required. As Epstein and Mills point out,³² the economic costs of adapting to climate-related risks are spread among a range of stakeholders including governments, insurers, business, non-profit entities and individuals. They also note that sustainable development can contribute to managing and maintaining the insurability of climate change risk, though development projects can be stranded where financing is contingent on insurance, particularly with respect to coastlines and shorelines vulnerable to sea-level rise.³³

2.5 Conclusion

The understanding of the economic, social and environmental linkages between climate change and sustainable development, and their implications for the lives of people in

³⁰ Barnett, J. and W.N. Adger, (2003) Climate Dangers and Atoll Countries *Climatic Change*, 61, pp. 321-337.

³¹ Hamilton, K., (2004) Insurance and financial sector support for adaptation, *IDS Bull.-I. Dev. Stud.*, 35, 55-61.

³² Epstein, P.R. and Mills E., (2005) *Climate Change Futures: Health, Ecological and Economic Dimensions*, Center for Health and the Global Environment, Harvard Medical School, Boston, Massachusetts, p. 138.

³³ *Ibid.*

developing countries are essential in designing an appropriate climate change adaptation strategy. The link between adaptation to climate change and sustainable development, which leads to the lessening of pressure on natural resources, improving environmental risk management, and increasing the social wellbeing of the poor, may not only reduce the vulnerability of developing countries to climate change, but also may put them on the path towards sustainable development. By the very nature of these countries, they are more affected by the effects of climate change. They are not in most cases able to cope with these effects on their own. International support financially and in terms of technological transfer is very essential for these countries. The next chapter analyses these international approaches for assisting developing countries adapt to climate change.

CHAPTER THREE

THE IMPLEMENTATION OF ADAPTATION MEASURES UNDER THE INTERNATIONAL LEGAL AND POLICY REGIME FOR CLIMATE CHANGE

3.1 Introduction

This chapter analyses how the Kyoto protocol deals with climate change adaptation in developing countries. The chapter is divided into five sections. The first section gives an introduction. The second section discusses the UNFCCC (which is the basis for the Kyoto protocol) provisions for climate change adaptation. The third section analyses the Kyoto protocol provisions and their relevance to climate change adaptation in developing countries. The fourth section discusses the post-Kyoto arrangements for climate change that focus on climate change adaptation in developing countries while the last section gives a conclusion to the chapter.

3.2 The United Nations Framework Convention on Climate Change

The United Nations Framework Convention on Climate Change (UNFCCC)¹ is an international environmental treaty produced at the United Nations Conference on Environment and Development (UNCED), informally known as the Earth Summit, held in Rio de Janeiro from June 3 to 14, 1992. The Convention was signed by 154 countries. Uganda signed the UNFCCC on 13 June 1992 and ratified it on 8 September 1993.

This Convention was designed to regulate the issue of climate change at the international level. The ultimate objective of this Convention is to achieve, in accordance with the relevant provisions of the Convention, the stabilization of greenhouse gas concentrations in the atmosphere at a level that will prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.²

¹ United Nations Framework Convention on Climate Change, Rio de Janeiro, 9 May 1992, 31 *Int'l Leg. Mat.* 822 (1992). Uganda signed on 13 June 1992 and ratified it on 8 September 1993.

² *Ibid.*, Article 2.

The state parties to the convention acknowledge that change in the earth's climate and its adverse effects³ are a "common concern of humankind."⁴ Representing an effort to provide a basis for international action to protect the global climate, this concept ("common concern of humankind") was first introduced in a 1988 resolution of the United Nations General Assembly⁵ and it has since been supported by numerous international climate meetings.⁶ The legal problem is that climate change is not (physically) imposed by one state upon another state. As a result, the traditional legal principles governing transboundary pollution (which *is* imposed by one state upon another) do not apply.⁷ But if the atmosphere is a "common concern of humankind", all states have an interest and duty to protect it from serious harm. A state on one side of the globe is thus "affected" by a state on the other side of globe that is emitting greenhouse gases into the atmosphere.⁸

The parties are also concerned that human activities have been substantially increasing the atmospheric concentrations of greenhouse gases, that this increases enhance the natural greenhouse effect, and that this will result on average in an additional warming of the earth's surface and atmosphere and may adversely affect natural ecosystems and humankind.⁹

The Convention restates the precautionary principle that states are under an obligation to take measures to prevent and minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty is not to be used as a reason for postponing such measures.¹⁰

³ Adverse effects of climate change is defined in Article 1 (1) of the Convention to mean changes in the physical environment or biota resulting from climate change which have significant deleterious effects on the composition, resilience or productivity of natural and managed ecosystems or on the operation of socio-economic systems or on human health and welfare.

⁴ See the Preamble of the Convention.

⁵ UN General Assembly Resolution 43/53 on the protection of global climate for present and future generations of mankind, 6 December 1988.

⁶ For example, Decision 15/36 of the UNEP Governing Council; the Second World Climate Conference; and Working Group I of the Intergovernmental Negotiating Committee on Climate Change (INC).

⁷ UNEP, Fact Sheet 202.

⁸ *Ibid.*

⁹ See the preamble of the Convention.

¹⁰ Article 3.

Traditionally, activities were often not restricted or prohibited by legal rules until they had been proven to cause environmental damage. In other words, states were free in their activities unless and until a causal link between an activity and a particular damage had been established. This approach may not work, however, in the case of activities contributing to climate change.¹¹ Scientists are still unsure about the exact timing and nature of climate change impacts, but if efforts to limit net greenhouse gas emissions are not initiated before scientific certainty is achieved, it may be too late to undo the damage.¹² Therefore, the precautionary principle provides that activities threatening serious or irreversible damage should be restricted or even prohibited *before* there is absolute scientific certainty about their impact. The climate convention embodies a precautionary approach, since states agreed to take action despite the existing scientific uncertainties about climate change.

The parties taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances undertake to develop periodical update, publish and make available to the conference of parties, in accordance with article 12, national inventories of anthropogenic by sources and removals by sinks of all greenhouse gases not controlled by the Montreal protocol, using comparable methodologies to be agreed upon by the conference of parties.¹³

The Convention binds developed countries party to it to adopt national policies and take corresponding measures on the mitigation of climate change, by limiting their anthropogenic emission of greenhouse gases and protecting and enhancing their greenhouse gas sinks and reservoirs.¹⁴ The Convention also makes provisions for the developed countries to provide financial assistance to developing countries to meet their obligations under the Convention.¹⁵ Therefore, the UNFCCC is based on the leadership

¹¹ UNEP, Facts Sheet 202.

¹² *Ibid.*

¹³ UNFCCC, Article 4 (1) (a).

¹⁴ *Ibid.*, Article 4 (2) (a).

¹⁵ *Ibid.*, Article 4 (3). These obligations are contained in article 12 (1). For instance states are required to communicate to the Conference of Parties through the secretariat, a national inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal protocol, to the extent their capabilities permit; a general description of the steps taken by the party in the implementation of the Convention; or any other information that the party considers relevant in the implementation of the convention.

paradigm — the North will lead in reducing emissions and in providing developing countries with financial assistance and technology transfers to meet the agreed incremental costs of implementation.¹⁶ It is this leadership paradigm that became conditional in 1997 when the United States refused to ratify the Kyoto Protocol for failing to secure the meaningful participation of key developing countries in emissions caps.

Critiques have also argued¹⁷ that the ultimate objective in article 2 of UNFCCC is possibly too vague to protect the planet from the potential serious impacts of climate change. Article 2's indeterminate formulation may suit some developed countries but it is possibly not in the interest of African countries, Uganda inclusive, because it allows for the postponement of measures and does not provide a framework for testing whether the current targets are consistent with preventing dangerous anthropogenic interference with the climate system.¹⁸

Academics have also debated the legal relevance of the five principles in Article 3 of the UNFCCC. While Article 3 is entitled “Principles,” a footnote to the title of Article 1 states: “Titles of articles are included solely to assist the reader.” The issue is whether this footnote affects the general applicability and legal character of these provisions.¹⁹ Furthermore, the polluter pays and the no-harm principles²⁰ were also conspicuously absent in the convention.

Furthermore, several obligations of developed countries, which have focused on providing assistance to developing countries financially and technologically, were articulated in a qualitative language, and the effectiveness of their implementation is thus

¹⁶ Gupta J (2005), *International Law and Climate Change: Joyeeta Gupta, “International Law and Climate Change: The Challenges Facing Developing Countries”* in Ole Kristian Fauchald & Jacob Werksman (Eds.), *Year Book of International Environmental Law*, (Oxford University Press. vol. 16), p. 126.

¹⁷ *Ibid.*

¹⁸ *Ibid.*

¹⁹ Bodansky D. (1993), ‘The United Nations Framework Convention on Climate Change: A Commentary’ 18 *Yale J. Int’l L.* 451.

²⁰ See, for example, Principle 21 of the Stockholm Declaration on the Human Environment, UN Conference on the Human Environment, 11 I.L.M. 1416 at 1420 (1972); Principle 2 of the Rio Declaration on Environment and Development, UN Conference on Environment and Development, 31 I.L.M. 876 (1992); and UNFCCC, *supra* note 1 at preamble, para. 8.

difficult to monitor.²¹ The use of phrases such as taking all ‘practicable steps’ makes it difficult in assessing the level of compliance with the Convention.

It is also to be observed that the UNFCCC is not specific as far as reduction targets are concerned. In the Convention, the industrialised nations commit themselves to reduce their greenhouse gas emissions to 1990 levels,²² but there is no specified time period for fulfilling this commitment. The provision may not compel the industrialised countries to take swift actions for the immediate realisation of the Convention objectives. Secondly, there are no such commitments for the developing countries, even though the cost of reducing emissions there may be considerably lower than in the industrialised countries. Nevertheless, it is to be said that the formulation UNFCCC is to a significant degree a positive step towards climate change mitigation as it provides the general regulatory framework.

3.3 The Kyoto Protocol to the UNFCCC

The UNFCCC was intended to be a framework for future agreement on specific commitments, and the creation of future agreements was explicitly envisioned.²³ This led to the Third Session of the Conference of the Parties to the UN Framework Convention on Climate Change (COP 3), in Kyoto, Japan, December 1st to 11th, 1997 which produced the Kyoto Protocol.²⁴

The Kyoto Protocol sets binding numerical targets for the limitation and reduction of greenhouse gas emissions during the period 2008-2012.²⁵ It is legally binding, with compliance measures determined at later negotiations.²⁶ The Protocol was adopted to impose more specific mitigation commitments on UNFCCC parties, because UNFCCC lacked these commitments to address the climate change problem. The aim of the Kyoto

²¹ Gupta, *supra* note 16, p. 127.

²² *Ibid*, Article 4(2) (b).

²³ Article 17 provides for the adoption of protocols.

²⁴ The Protocol was opened for signature on December 11 1997 at Kyoto. It entered into force on February 16, 2005.

²⁵ The Kyoto Protocol, Article 3 read together with Annex A to the Protocol.

²⁶ See the Procedures and Mechanisms Relating to Compliance under the Kyoto Protocol, Doc. UNFCCC/CP/2001/13/Add.3 (2002).

Protocol is to advance the objective of the UNFCCC.²⁷ To this end, the Protocol elaborates on the general commitments agreed upon in the UNFCCC. Like the UNFCCC, the Protocol recognizes that developed and developing country parties should have differentiated commitments and incentives.²⁸

The developed country parties and economies in transition listed in Annex B to the Protocol agreed to reduce their GHG emissions to a specified percentage of their 1990 emissions by 2012.²⁹ Those parties commit themselves to make demonstrable progress in achieving their targets by 2005.³⁰ No numerical targets for the reduction of emissions were set for the developing countries, but they are required to report on their emissions. This was because their priorities are economic growth and poverty reduction; and secondly, industrialized countries consume far more energy, and thus produce far more greenhouse gases.³¹

Article 10 of the Protocol reaffirms and elaborates on the commitments agreed to under Article 4(1) of the UNFCCC, and reiterates that these must be read taking into account the principle of common but differentiated responsibility and development priorities. Annex I parties are mandated to implement policies and measures toward meeting their commitments in such a way as to minimize the adverse effects on other parties, especially developing country parties.³²

Parties included in Annex I, in achieving their quantified emission limitation and reduction commitments under Article 3, in order to promote sustainable development, are required to implement elaborate policies and measures in accordance with their national circumstances, such as enhancement of energy efficiency in relevant sectors of the national economy; protection and enhancement of sinks and reservoirs of greenhouse gases not controlled by the Montreal Protocol, taking into account its commitments under relevant international environmental agreements; promotion of sustainable forest

²⁷ *Ibid*, the preamble.

²⁸ *Ibid*, Article 10.

²⁹ *Ibid*, Article 3.

³⁰ *Ibid*, Article 3(2).

³¹ Darragh I (1998), *A Guide to Kyoto: Climate Change and What it Means to Canadians*, The International Institute for Sustainable Development (IISD) Winnipeg, Manitoba, Canada

³² The Kyoto Protocol, Articles 2(3) and 3(14).

management practices, afforestation and reforestation; research on, and promotion, development and increased use of, new and renewable forms of energy, of carbon dioxide sequestration technologies and of advanced and innovative environmentally sound technologies.³³

Under article 7, each party included in Annex I shall incorporate in its annual inventory of anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol, submitted in accordance with the relevant decisions of the Conference of the Parties annually.

The Kyoto protocol defines three international policy instruments; the so called Kyoto mechanisms: Clean Development Mechanism (CDM); International Emissions Trading (IET); and Joint Implementation (JI). Each of these international policy instruments provides opportunities for annex 1 parties to fulfil their commitments cost effectively.

International Emissions Trading essentially allows annex 1 parties to exchange part of their assigned national emissions allowances.³⁴ International Emissions Trading implies that countries with high Marginal Abatement Costs (MACs) must acquire emissions reductions from countries with low MACs.³⁵ Countries that have emissions units but not “used” can sell this excess capacity to countries that are over their targets. Countries not meeting their commitments will be able to “buy” compliance.

The joint implementation programme under the Kyoto Protocol allows industrialized countries to meet part of their required cuts in greenhouse-gas emissions by paying for projects that reduce emissions in other industrialized countries.³⁶ The sponsoring governments will receive credits that may be applied to their emissions targets; the recipient nations will gain foreign investment and advanced technology (but not credit toward meeting their own emissions caps; they have to do that themselves). This system

³³ *Ibid*, Article 2 (1).

³⁴ Ogunlade B. M, and Jiahua P (Eds): *Climate Change 2001 Mitigation – Contribution of Working Group III to the Third Assessment Report of the Intergovernmental Panel on Climate Change*, (Cambridge University Press, 2001), p.50.

³⁵ *Ibid*.

³⁶ See, Joint Implementation, http://unfccc.int/kyoto_protocol/background/items/2882.php also see, <http://www.ctrade.org/FAQs.html> (accessed on December 06, 2010).

has advantages of flexibility and efficiency.³⁷ Not only the state, but also companies, non-governmental organisations (NGOs) or households can participate.

Joint implementation and emissions trading are designed for developed or industrialized countries with emission units. Accordingly, they have limited application in Uganda. Uganda has concentrated much on the Clean Development Mechanism that is designed for developing countries.

3.3.1 The Clean Development Mechanism under the Kyoto Protocol

One of the flexible mechanisms of the Kyoto Protocol is Clean Development Mechanism (CDM). The CDM evolved from the Brazilian proposal for a Clean Development Fund (CDF) in a meeting of the ad hoc group on the Berlin mandate in 1997 just prior to the third Conference of Parties.³⁸ The CDF idea was to finance adaptation measures through penalties levied on industrialized countries not reaching their targets; to ensure much more flexibility in achieving emission reductions and for the possibility of international emissions trading to achieve the emission reductions where it could be done at the least cost.³⁹ At the third Conference of Parties in Kyoto, the idea became a subject of so much disagreements and skepticism. An apparent contradiction emerged between the goals of emission reduction in the North and sustainable development in the South due to the differing priorities of different countries and regions of the world.⁴⁰ The developed countries insisted on the participation of developing countries while the developed countries insisted on application of common but differentiated responsibilities. Developed countries also demanded for strict compliance and verification by the developing countries while the developing countries pleaded special circumstances. After so much opposition most especially from developing countries, CDM was eventually accepted under Article 12 of the Kyoto Protocol to serve as a balance point to meet the yearnings of both the developed world and the developing nations.⁴¹

³⁷ *Ibid.*

³⁸ Olawuyi D.S (2006), Enlisting Carbondioxide Capture and Storage as a Clean Development Mechanism Project: Legal And Regulatory Issues Considered, available at <http://ssrn.com/abstract=999508> (accessed on December 4, 2010).

³⁹ *Ibid.*

⁴⁰ *Ibid.*

⁴¹ *Ibid.*

The CDM, as defined by Article 12 of the Kyoto Protocol, allows for countries with legally binding GHG emission reduction commitments to receive credit towards their obligations by investing in projects that enhance carbon sequestration or reduce emissions for instance in the forestry or energy sectors of developing countries. More specifically, Article 12 (2) of the Kyoto Protocol defines the purpose of the CDM as to assist the developing countries in achieving sustainable development and in contributing to the ultimate objective of the UNFCCC, and to assist the industrialised countries in achieving compliance with their quantified emission limitation and reduction commitments. The economic rationale is that clean investment might be less costly in developing countries than domestic action in industrialized countries.⁴²

Although participation by non-Annex I countries in CDM projects is voluntary, there are three benefits that may accrue to host non-Annex I countries under the CDM. These include: increased financial and technological transfer to support the revitalization of industry, equipment and economic development; increased social and environmental health (projects that promote a transition to cleaner sources of energy and a reduction in GHG emissions will contribute to increased health of local populations; likewise, those that support the revitalization of forests will contribute to the maintenance of soil productivity, water quality and biodiversity); and since emission credits under the CDM can be generated starting in 2000, an incentive is created for Annex I countries to begin emission abatement activities before the initial budget period of 2008-2012, thus effectively producing economic and environmental benefits in developing countries that are additional.⁴³

The CDM under Article 12 (2) of the Kyoto Protocol strives to promote sustainable development in developing countries, while allowing developed countries to contribute to the goal of reducing atmospheric concentrations of greenhouse gases. In addition to catalysing green investment priorities in developing countries, the CDM offers an

⁴² *Ibid.*

⁴³ Polzot, C.L. (2004) Carbon Storage in Coffee Agroecosystems of Southern Costa Rica: Potential Applications for the Clean Development Mechanism (A Major Paper submitted to the Faculty of Environmental Studies in partial fulfillment of the requirements for the degree of Master in Environmental Studies, York University, Toronto, Ontario, Canada July 30, 2004). http://www.yorku.ca/lasnubes/reseach_paper/paper/papers/ChristinaPolzot_MajorPaper.pdf (Accessed on December 17, 2010).

opportunity to make progress simultaneously on climate, development, and local environmental issues. The CDM benefits developing countries by giving them access to technology and investment that they would be unlikely to get otherwise, which helps them to develop sustainably, and thereby contribute to the ultimate objective of the UNFCCC.⁴⁴

For the Annex I countries, their benefits are also evident; CDM assists Parties included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention by fulfilling their obligations at the lowest possible cost.⁴⁵

Activities that can be implemented under the CDM include afforestation and reforestation, or projects that directly remove carbon from the atmosphere and store it on land including those that promote and implement the expansion of agroforestry land use systems. Therefore, through the creation of a market for carbon, developing countries might be able to increase tree cover and improve their natural environments by rendering those environments economically productive⁴⁶

In 2001, the seventh Conference of the Parties (COP) developed the modalities and procedures for the Clean Development Mechanism (CDM).⁴⁷ A prompt start of the CDM was agreed and the CDM Executive Board (EB) was established to supervise the CDM under guidance of the COP and facilitate such a prompt start.⁴⁸ The COP is responsible for the overall implementation of the Kyoto Protocol as well as the CDM. It also supervises the Executive Board of the CDM.⁴⁹

Under the modalities and procedures for the CDM, a participating party must do a number of things. First, it must affirm that it is the host party's prerogative to confirm whether a CDM project activity assists it in achieving sustainable development, recognize

⁴⁴ Kyoto Protocol, Article 12(2).

⁴⁵ *Ibid.*

⁴⁶ *Ibid.*

⁴⁷ Report of the Conference of Parties on its Seventh session held at Marrakech from 29 October to November 2002, FCCC/CP/2001/13, 21 January 2002.

⁴⁸ *Ibid.*

⁴⁹ *Ibid.*

that parties included in Annex I are to refrain from using certified emission reduction generated from nuclear facilities to meet their commitment and bear in mind the need to promote equitable geographic distribution of CDM project activities at regional and sub-regional levels.⁵⁰ In addition, it must be emphasized that public funding for CDM projects from parties in Annex I is not to result in the diversion of official development assistance and is separate from and is not counted towards the financial obligations of those Parties. The CDM project activities should also lead to transfer of environmentally safe and sound technologies and know-how.

The Kyoto Protocol provides for the eligibility criteria to be followed by countries that intend to participate in the implementation of CDM. These are: voluntary participation in the CDM; the establishment of a national CDM authority; and, ratification of the Kyoto Protocol.⁵¹ For a project to be eligible the following conditions must also be satisfied: The designed project must assist Non-Annex I parties (developing countries) “in achieving sustainable development and contributing towards ultimate objectives of the Convention;”⁵² it must result in “real, measurable and long-term benefits related to the mitigation of climate change;”⁵³ and projects must result in “reductions in emission that are additional to any that could occur in the absence of the certified project activity.”⁵⁴

3.3.2 The Effectiveness of the Kyoto Protocol: A Bird’s Eye View

The first controversy over the Kyoto Protocol surrounds the use of 1990 as a base year, instead of using per capita emissions as a basis. Obviously, countries had different achievements in energy efficiency in 1990. If a country’s 1990 emissions level were better and was still taking steps to improve them, such efforts were set aside because all that a state party has to do is to achieve the position as of 1990. The use of per capita emissions as a basis can reduce the sense of inequality among developed and developing countries alike, as it can reveal inactivities and responsibilities among countries.

⁵⁰ See summary of the Seventh conference of the parties (CoP7) decisions on mechanisms; www.dfaits-maeci.gc.ca/cdm-ji/cop7-en.asp - 54k - (viewed on 3/24/2006).

⁵¹ The Kyoto, Article 5.

⁵² Report of the Conference of Parties on its Seventh session held at Marrakech from 29 October to November 2002, FCCC/CP/2001/13, 21 January 2002.

⁵³ *Ibid.*

⁵⁴ *Ibid.*

On ‘trading pollution’ under the Kyoto Protocol, there is a challenge of failures in accounting, dubious science. It is really hard to prove with scientific certainty that a country has invested in CDM projects which can sequester a specific amount of Carbon dioxide produced by that country. With this uncertainty, regulatory agencies run the risk of issuing too many emission credits, diluting the effectiveness of regulation. In this case, instead of a net reduction in carbon dioxide emissions, beneficiaries of emissions trading simply pollute more. Instead, making reductions at the source of pollution and energy policies that seek to mitigate the emission levels may be better.

Further, the Kyoto Protocol does not deter non-compliance.⁵⁵ In the event of noncompliance with the Kyoto Protocol, the violator will be deducted 1.3 times the amount of the violation from its emission allowance for the next commitment period. The violator may also be barred from using the flexibility mechanism. When assessed more rigorously, the current Kyoto sanction mechanisms appear rather weak and ineffective: Application of the penalty needs consent of the violator to be in place. Furthermore, the sanction mechanism - applying to future control periods – provides free-rider incentives, as the violator may insist on generous emission allocations. Finally, the exclusion from the emissions trading regime is not very efficient, as emissions trading typically implies a win-win-situation; hence, the punishers will be also hurt. In essence, the current Kyoto sanctions hardly seem renegotiation-proof.⁵⁶ No individual Government has an incentive to police the agreement. The Kyoto Protocol can only work if it includes an elaborate and expensive international mechanism for monitoring and enforcement.⁵⁷

3.4 Beyond Kyoto: Prospects and Challenges for Climate Change Adaptation

The first commitment period of the Kyoto Protocol ends on 31st December 2012 and a new international legally binding framework needs to be negotiated and ratified that can deliver the stringent emission reductions and promote climate change adaptation. States

⁵⁵ Barrett S. (1998), ‘Political Economy of the Kyoto Protocol’, *Oxford Review of Economic Policy*, 14 (4), 20-39, p.38.

⁵⁶ Finus, M. (2003), ‘International Cooperation to Resolve International Pollution Problems’, in Cogoy, M. and Steining K. (eds.), *Economics of Sustainable Development: International Perspectives*, EOLSS, The Encyclopedia of Life Support Systems.

⁵⁷ McKibbin WJ & Wilcoxon PJ (2002), ‘The Role of Economics in Climate Change Policy’, *Journal of Economic Perspectives* 16(2), 107-129, p.126.

have not yet agreed on such framework to govern the post-Kyoto emissions and some policy options for adaptation to climate change must be taken into account. Below I consider key developments on the future of the Kyoto Protocol and the challenges and prospects posed for climate change adaptation in developing countries.

3.4.1 The Bali Roadmap

One of the post-Kyoto developments at the international scene regarding climate change mitigation and adaptation strategies was the meeting of the 13th Conference of Parties held in Bali in December 2007.⁵⁸ One of the major tasks of the Bali Conference was to launch a formal negotiation process for new targets, which needed to be agreed on by 2009, if countries were to have time to prepare for their emission reductions beyond 2012.⁵⁹ The Bali meeting agenda included developing a roadmap to guide this negotiating process towards a possible new regime, which will engage all countries, developed and developing.⁶⁰

One of the major outcomes of the Bali Conference was the adoption of the Bali Action Plan⁶¹ or “roadmap” which sets out a negotiating process for a new global deal to be concluded by 2009, at the 15th Conference of the Parties in Copenhagen.⁶² The Action Plan focuses on four key areas or building blocks. The first one is mitigation which set out a process in which countries collectively accept the need for “deep cuts” in greenhouse gas emissions and agree to long-term cooperative action, up to and beyond 2012.⁶³ Under this strategy, developed countries already with commitments under the Kyoto Protocol, with the exception of the United States, were expected to continue to undertake mitigation commitments or actions. The strategy has two important implications for mitigations. For the first time, the strategy specifically calls for

⁵⁸ This was the third Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, held in Bali, Indonesia, from 3 to 14 December 2007. It was pivotal meeting that following two years of informal discussions to pave the way for setting new targets for a second commitment period of the Kyoto Protocol.

⁵⁹ IISD, Earth Negotiation Bulletin, Vol. 12 No 354, 2007.

⁶⁰ See COP agenda (FCCC/CP/2007/1).

⁶¹ The Bali Action Plan was adopted as Decision -/CP.13.

⁶² IISD *supra* note 73.

⁶³ The Bali Action Plan *supra* note 5, para 1.

developing countries to undertake nationally appropriate (depending on their economic conditions) “mitigation actions, supported and enabled by technology, financing and capacity-building, in a measurable, reportable and verifiable manner.” This strategy has far-reaching implications and links developing country actions to directly measurable technical and financial support. Secondly, for the first time, there was reduced strict separation of actions between developed and developing countries by not using language referring to “Annex I” and “non-Annex I” countries, categories previously used to distinguish between these two groups of countries. This offered the prospect of moving beyond the constraints of the Kyoto Protocol for defining a future agreement and differentiating between developing countries.

The second one is adaptation under which countries accepted that many developing countries face significant challenges in adapting to the impacts of climate change. Thus, the Bali Action Plan supports “enhanced action on adaptation,” which includes: financial and capacity development support for integration of adaptation actions into sectoral and national planning for enabling climate-resilient development; risk management and risk reduction strategies, including risk sharing and transfer mechanisms such as insurance; linking disaster risk reduction and adaptation measures; and encouraging public-private-civil-society-multilateral organization partnerships for effective action on adaptation.⁶⁴

The third one was the technology development and transfer.⁶⁵ This strategy was a result of the developing countries expression of the need for what is often termed “tech-transfer,” which, in the past, has been associated more with mitigation actions. Developing countries highlighted that efforts to date are insufficient because when technologies, especially those that are environmentally friendly, are transferred to developing countries, they are not necessarily promoted and made affordable and accessible to support actions for both mitigation and adaptation.

The final one is resource provision that include funding and investment.⁶⁶ This includes “enhanced action on the provision of financial resources and investment to support action

⁶⁴ *Ibid*, para c.

⁶⁵ *Ibid*, para d.

⁶⁶ *Ibid*, para e.

on mitigation and adaptation and technology cooperation.”⁶⁷ It covers consideration of improved access to adequate, predictable and sustainable financial resources, and the provision of new and additional resources, including official and concessional funding.

There were other decisions in addition to Bali Action Plan that have implications for climate change adaptation in developing countries. There are: Reducing emissions from deforestation and degradation (REDD) which is being seen as a possible mechanism for a post-2012 regime. REDD could be a market and/or a payment mechanism for the carbon conserved and launching of the Adaptation Fund.

3.4.2 The Copenhagen Negotiations/ Accord

On 19 December 2009, the Parties to the UNFCCC and the Kyoto Protocol passed, amongst other things, decisions to extend the work and mandates of the AWG-LCA and AWG-KP until COP16 in Mexico⁶⁸ and to take note of the Copenhagen Accord.⁶⁹

Adaptation to climate change is only mentioned briefly in the Accord where it recognises that adaptation to the adverse effects of climate change is a challenge faced by all countries.⁷⁰ It recognises that enhanced action and international cooperation on adaptation is urgently required to ensure the implementation of the Convention by enabling and supporting the implementation of adaptation actions aimed at reducing vulnerability and building resilience in developing countries.⁷¹ The state parties agreed that developed countries shall provide adequate, predictable and sustainable financial resources, technology and capacity-building to support the implementation of adaptation action in developing countries.⁷²

The areas of strength in paragraph 3 lay in the recognition of adaptation needs developing countries and support from developed countries which are helpful in that they may be

⁶⁷ *Ibid.*

⁶⁸ Decision 1/CP.15 Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention, available at http://unfccc.int/files/meetings/cop_15/application/pdf/cop15_lca_auv.pdf and Decision 1/CMP.5, Outcome of the work of the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol, http://unfccc.int/files/meetings/cop_15/application/pdf/cmp5_awg_auv.pdf.

⁶⁹ Decision 2/CP.15 Copenhagen Accord, FCCC/CP/2009/11/Add.1.

⁷⁰ The Copenhagen Accord, *ibid.*, para. 3.

⁷¹ *Ibid.*

⁷² *Ibid.*

used to help prioritise steps for the future. However, the Accord language does not progress significantly from the Bali Action Plan that was agreed two years ago, and in many respects the legal strength of the Accord has regressed relative to the Bali Action Plan because of the omission of certain adaptation provisions. There is no discussion of an adaptation framework and no language in respect of loss and damage, which appears in the Bali Action Plan and the draft COP decision on adaptation. Even the relatively strong commitment that “we agree that developed countries shall provide” support is problematic as the apportionment of responsibility between developed countries will inevitably remain a contentious issue.⁷³ Therefore, as with much else in the Accord, without elaboration from the COP or the parties themselves, the paragraph on adaptation may be little more than a recognition that enhanced action on adaptation is required.⁷⁴

The most concrete commitment to come out of the international climate negotiations in Copenhagen was US\$30 billion dollars in ‘fast-start climate finance’ to developing countries, with balanced support for both mitigation and adaptation.⁷⁵ Fast-start adaptation finance, in particular, is crucial for poor countries facing rapid climate change. This is to be delivered through a fund with governance arrangements that provide equal representation to developed and developing countries. The Accord’s commitment to adaptation funding is particularly important, as the nations most vulnerable to climate change are also among those with the fewest resources to prepare for, cope with and recover from the impacts. But as adaptation pledges slowly roll in from individual countries, they reveal divergent perspectives on what these promises mean and how they should be carried out in practice. Some wealthy countries have offered no explanation at all for their funding decisions — or a startling dismissal of what was agreed upon.⁷⁶

To establish trust in global climate negotiations and enable developing countries to adapt to climate change, the international community needs to address several key questions

⁷³ Raj Bavishi (2010), The Copenhagen Accord: A legal analysis, available at <http://legalresponseinitiative.org/download/The%20Copenhagen%20Accord%20-%20A%20Legal%20Analysis%20%2828%20January%202010%29.pdf>

⁷⁴ *Ibid.*

⁷⁵ The Copenhagen Accord, para. 8.

⁷⁶ The International Institute for Environment and Development (IIED) (2010), First-start Adaptation Funding: Keeping Promises from Copenhagen, IIED Briefing, available at <http://envstudies.brown.edu/reports/FastStartFundsNov2010.pdf> (accessed on 2 February 2011).

about the amount and nature of adaptation finance. Adaptation funding represents just 10.3 to 16.1 per cent of fast-start finance pledges to date; this is not a ‘balanced’ approach. In the climate negotiations, poorer countries have repeatedly stressed that high levels of adaptation finance are a top priority. Yet the total amount pledged to meet their adaptation needs — approximately US\$2.9 billion — represents a meager 10.3 per cent of all promised fast-start climate funds.⁷⁷ This amount for adaptation is a very rough and perhaps low estimate, in part because many developed countries have not offered detailed climate finance pledges. For example, Belgium, Finland, France, Ireland, Slovenia and Sweden have provided no figure for adaptation funds. If we assume, however, that these six countries will allocate half their fast-start climate funds to adaptation (a higher proportion than almost all other countries), the sum of pledges for adaptation would still be only US\$4.6 billion, or 16.1 per cent, of all fast-start climate funds pledged.⁷⁸

In specifying funds for adaptation, countries face three related questions. First, how much of the US\$30 billion promised at Copenhagen should go to adaptation efforts? Does ‘balanced allocation’ mean equal amounts for mitigation and adaptation? Second, should all the adaptation funding take the form of grants, or are loans acceptable? And third, what share, if any, should come from the public funds as opposed to private capital?⁷⁹

The other problem relates to the definition of adaptation. Nearly two dozen different definitions of adaptation can be found in the UNFCCC and national documents. Which efforts should ‘adaptation’ funds support? To handle climate-related stresses such as drought and flooding, many societies do need basic improvements: safe water, functioning legal systems and an educated public. However, defining adaptation this way renders the term nearly meaningless. It does not clarify what new efforts are being undertaken because of climate change.⁸⁰

The proposed approach is to narrowly define adaptation projects, programmes and policies as those directly responding to climate risks. Certain adaptation activities provide

⁷⁷ *Ibid.*

⁷⁸ *Ibid.*

⁷⁹ *Ibid.*

⁸⁰ *Ibid.*

development benefits only in the context of climate change — for example, building floodwalls, switching to drought-resistant crops or moving groundwater supplies to escape saltwater intrusion in coastal areas. Only a few per cent of development projects to date have fallen into this category but much aid is now being relabelled to fit there, some of it appropriately and some not. Another approach is needed to capture a broad array of useful adaptation without abusing the term.

Further, there is no common oversight, accounting or enforcement framework for adaptation finance. Without a global framework that provides accountability for adaptation finance, developing countries cannot know what assistance to expect as a result of the Accord. With no accounting framework and no common baseline to measure how much finance is being introduced, the fast-start funds pledged at Copenhagen are on shaky ground.

Developed countries use also competing definitions of ‘new and additional’ adaptation funding, and sometimes fail to define it at all. How will the international community verify whether a given country has met its adaptation finance commitments? The Copenhagen Accord, the Kyoto Protocol and earlier agreements stipulate that promised climate funds should be ‘new and additional’ to existing aid, but there is no agreed-upon baseline.⁸¹ Adaptation funds must be measured against a clear baseline, with both contributions and spending by recipients tracked scrupulously — otherwise, the system stands to be perceived as a failure, to lose trust on all sides and to fall short of addressing needs.

Apart from the provision-specific weaknesses in the Copenhagen Accord in relation to climate change adaptation, there are other significant weaknesses that flaw the Accord. Firstly, the Accord is not legally binding on the parties that choose to associate themselves with it. When one looks at the text it is clear that the Accord consists by and large of political commitments and declarations, which lack the required certainty to amount to legally binding rights and obligations. Therefore the Accord could be described as ‘politically binding’ on those countries that choose to associate with it.

⁸¹ *Ibid.*

‘Politically binding’ is not the same as ‘legally binding’. Politically binding, if anything, means that political consequences will flow from its breach – diplomatic responses, efforts at public shaming, withholding of discretionary funding, and others.⁸²

3.4.3 From Copenhagen to Cancun

Meeting the Copenhagen Accord’s commitment to adaptation finance is just a first step. To successfully adapt to climate change, developing countries need far more than US\$15 billion.⁸³ But the practices established during this fast-start period set an important precedent, and the five issues outlined above are critical for building a fair and effective adaptation finance programme. So are a host of other issues on the horizon — for example, setting benchmarks for adaptation finance during the ‘scale-up’ period between 2012 and 2020.⁸⁴

At the Cancun Climate Change Conference, parties adopted the Cancun Adaptation Framework (CAF) as part of the Cancun Agreements⁸⁵ with the objective of enhancing action on adaptation, including through international cooperation and coherent consideration of matters relating to adaptation under the Convention.⁸⁶ Parties affirmed that adaptation must be addressed with the same level of priority as mitigation.⁸⁷ The CAF is the result of three years of negotiations on adaptation under the AWG-LCA that had followed the adoption of the Bali Action Plan at the 2007 Climate Change Conference in Bali, Indonesia (COP 13).

The Cancun Adaptation Framework includes: The establishment of a process to enable LDC Parties to formulate and implement national adaptation plans, building upon their experience in preparing and implementing NAPAs, as a means of identifying medium and long-term adaptation needs and developing and implementing strategies and

⁸² Raj Bavishi, *supra* note 77.

⁸³ Ackerman F. (2009), Financing the Climate Mitigation and Adaptation Measures in Developing Countries, Stockholm Environment Institute Working Paper WP-US-0910. available at http://sei.us.org/Publications_PDF/SEI-WorkingPaperUS-0910.pdf (accessed on 10th December 2010).

⁸⁴ *Ibid.*

⁸⁵ The agreements were reached on 11th December in Cancun, Mexico, at the 2010 United Nations Climate Change Conference.

⁸⁶ The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention, Decision 1/CP.16, paras 11-35.

⁸⁷ *Ibid.*, para. 2(b).

programmes to address those needs; an invitation to other developing country Parties to employ the modalities formulated to support the above-mentioned national adaptation plans.⁸⁸

It also includes the establishment of an Adaptation Committee to promote the implementation of enhanced action on adaptation in a coherent manner under the Convention through: providing technical support and guidance to the Parties; strengthening the sharing of relevant information and good practices; and promoting synergy and strengthening engagement with national, regional and international organizations.⁸⁹ The Committee also considers information communicated by Parties on their monitoring and review of adaptation actions, support provided and received, possible needs and gaps and other relevant information.⁹⁰

The Cancun Adaptation Framework also establishes the work programme to consider approaches to address loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change.⁹¹ It invites state parties to strengthen and, where necessary, establish regional centres and networks and national-level institutional arrangements.⁹² It also calls upon relevant multilateral, international, regional and national organizations, the public and private sectors, civil society and other relevant stakeholders to undertake and support enhanced action on adaptation at all levels, including under the Cancun Adaptation Framework.⁹³

The Cancun Agreements are of great significance to climate change adaptation in developing countries. They form the basis for the largest collective effort the world has ever seen to reduce emissions, in a mutually accountable way, with national plans captured formally at international level. They include the most comprehensive package ever agreed by Governments to help developing nations deal with climate change. This

⁸⁸ *Ibid*, paras 14-16.

⁸⁹ *Ibid*, para. 20.

⁹⁰ *Ibid*.

⁹¹ *Ibid*, para. 26.

⁹² *Ibid*, para 30.

⁹³ *Ibid*, para. 34.

encompasses finance, technology and capacity-building support to help them meet urgent needs to adapt to climate change and to speed up their plans to adopt sustainable paths to low emission economies which can also resist the negative impacts of climate change.⁹⁴

3.4 Conclusion

The earlier focus of the UNFCCC and the Kyoto protocol was on climate change mitigation. Less emphasis was placed on climate change adaptation. Adaptation under the Protocol could, however, be realized by implementing mitigation options such as the CDM. In the post-Kyoto arrangements, there is a great focus on adaptation strategies although this is attracting little support, probably because it poses direct financial burden to the developed countries. Adaptation, as included in the post-Kyoto arrangements, has not yet found its way into a binding treaty. However, even if it is included in an internationally binding treaty, its may not be something easy to enforce by developing countries. It is more likely to be voluntary and its success will largely dependant on the good will of the developed countries.

⁹⁴ The Cancun Agreements: An assessment by the Executive Secretary of the United Nations Framework Convention on Climate Change, available at <http://cancun.unfccc.int/cancun-agreements/main-objectives-of-the-agreements/#c33> (accessed on 10th April 2011).

CHAPTER FOUR

EFFECTIVENESS OF UGANDA'S NATIONAL POLICY FRAMEWORK FOR CLIMATE CHANGE ADAPTATION

4.1 Introduction

This chapter scrutinizes the role of existing national policy framework in Uganda (as an example of a developing country) in climate change adaptation. A number of policies have been developed at the national level to address a number of environmental challenges. However, the implementation of these policies to achieve the desired environmental goals has implications for climate change adaptation and mitigation as analysed below.

4.2 The National Environment Management Policy (NEMP), 1994

The National Environment Management Policy¹ is an output of the National Environment Action Plan (NEAP) process. The overall goal of the policy is to establish sustainable social and economic development, which maintains or enhances environmental quality and resource productivity on a long-term basis that meets the needs of the present generation without compromising the ability of the future generation to meet their own needs.²

In order to achieve the overall objective, the policy recommended for the following: the creation and the establishment of an appropriate institutional and legal framework; transformation of existing environment management systems; evolution of a new sustainable conservation culture; and revising and modernizing sectoral laws and regulations and establishing an effective monitoring and evaluation system to assess the impact of policies and actions on the environment.

The policy directly addresses the issue of climate change. It recognizes the fact that climate is a vital natural resource necessary for socio-economic development. The objective of the policy in this regard is to monitor the climate and atmosphere of the

¹ The Republic of Uganda, Ministry of Water, Lands and Environment, The National Environment Management Policy for Uganda, 1994.

² *Ibid*, p.3.

country in order to better guide land-use and economic development decisions, and better manage air pollution and greenhouse gas emissions.³

To realize this objective, the policy lays down the following guiding principles: that climate is a vital natural resource which should be properly harnessed (or effects mitigated) for socio-economic development; the utilization of the climatic and atmospheric information is critical in agriculture and the efficient management of the environment; resource users (particularly farmers) should be involved in the monitoring and dissemination of climatic information; the promotion of international cooperation for smooth exchange of climatic information and control of trans-boundary atmospheric air pollution is important in the management of the resource; and access to climatic data/information should be guaranteed on terms determined by the relevant authority.⁴

The policy also lays down certain strategies in respect of climate change. For instance, it advocates for the improvement of coordination and exchange of meteorological information among producers, managers and users; decentralization of the monitoring and dissemination of functions of the Department of Meteorology through the creation of regional or district meteorological communication networks, and involve resource users in the collection of climatic data; strengthening the existing national meteorological monitoring networks and data processing capabilities; where feasible, improve the flow of climatic information to the users by involving extension workers, local official communication channels, as well as traditional methods of communication; improving awareness among potential users and decision makers of climatic and atmospheric information including establishing demonstration projects in selected areas; and the enactment of an appropriate legislation for the management of the country's atmospheric environment, particularly with respect to climate and air pollution monitoring.

In relation to energy, the objective of the policy is to meet the national energy needs through increased use of hydropower, improved efficiency of energy use, increased use of alternative energy sources, increased production of (plantation and on-farm) trees and

³ *Ibid*, p.22.

⁴ *Ibid*.

promotion of exploration and production of fossil fuels.⁵ In this respect, the policy lays down a number of strategies. These are: develop a comprehensive energy policy which adequately addresses issues related to shortages and inefficient use of fuelwood; link energy policy more closely to forestry policy; focus extension programs on rural tree planting and reforestation; encourage the private sector to generate and distribute hydro-electricity by removing the monopoly in generating, transmitting and distributing electricity by the Uganda Electricity Board; and to encourage industries/institutions using furnace oil to switch to hydro energy.

These strategies are relevant to climate change mitigation and adaptation for instance, the strategy to encourage industries using furnace oil to switch to hydro energy reduces the emission of carbons which cause climate change. Further, with regard to CDM implementation, it is worth noting that the overall policy goal of the Policy recognizes the significance of the concept of sustainable development, which is a key component/feature of CDM.

4.3 Uganda Forestry Policy 2002

It is necessary to review the Forestry Policy because land use, land-use change and forestry (LULUCF) activities (also known as carbon sinks) can provide a relatively cost-effective way of combating climate change either by increasing the removal of GHGs from the atmosphere, or by reducing emissions.⁶ The eligibility of LULUCF activities under the CDM is limited to afforestation and reforestation.⁷ Consequently, the review of the Forestry Policy determines whether there exists an adequate framework for the implementation of CDM projects, related to afforestation and reforestation activities in Uganda.

The objective of the Uganda Forest Policy⁸ is to establish an integrated forest sector that achieves sustainable increase in the economic, social and environmental benefits from forests and trees by the people of Uganda, especially the poor and vulnerable. The policy

⁵ *Ibid*, p.38.

⁶ Article 3 of the Kyoto Protocol.

⁷ Decision 17/CP. 7 on Modalities and Procedures for a Clean Development Mechanism as defined in Article 12 of the Kyoto Protocol.

⁸ The Republic of Uganda, Ministry of Water, Land and Environment, The Uganda Forestry Policy, 2001.

provides for the protection of Permanent Forest Estate (PRE) under government trusteeship and the development and sustainable management of natural forest on private land.⁹ This is aimed at promoting profitable and productive forests.¹⁰ The policy provides a wider cross section of stakeholders' participation in the management of the forests. These include local government, the private sector, local communities and farmers in the conservation and sustainable use of the forest resources. The Policy also encourages partnerships with the rural community to develop sustainable management of forests.¹¹

Sustainable management of forests as advocated for by the policy is relevant to climate change mitigation and adaptation because, as observed earlier, forests act as sinks; by removing the emitted carbon dioxide from the atmosphere that would otherwise cause climate change. Therefore sustainable forest management is a way of enhancing sinks. The policy therefore provides an adequate framework for the pursuit of massive human-induced afforestation and reforestation programmes relevant to CDM implementation. This Policy is a fundamental departure from the old Forestry Policy which placed emphasis on forests in protected areas exclusively in the control of the central government. Under the old policy, farm forestry, commercial forest plantations and forests outside protected areas received little attention beyond the rhetoric in government pronouncements. The new Forestry Policy sufficiently takes care of the previous shortcomings in the forestry sector particularly in the context of CDM.¹²

4.4 The National Energy Policy, 2002

The Constitution under the National Objectives and Directive Principles of State Policy requires the State to promote and implement energy policies that will ensure that people's basic needs and those of environmental preservation are met.¹³ The National Energy Policy has therefore been developed in line with this Directive Principle.

⁹ *Ibid.*

¹⁰ *Ibid* at 17.

¹¹ *Ibid* at 84.

¹² Namanya B. (2004), *The Climate Change Convention and its Kyoto Protocol: A Legal Analysis of its Relevance to Uganda with Specific Emphasis on the Clean Development Mechanism*, LLM Thesis, Makerere University.

¹³ Principle XVII (iii).

This policy provides the Government's vision for increased and improved modern energy supply for sustainable economic development as well as improving the quality of life of the Ugandan population. The goal of this Policy is to meet the energy needs of Uganda's population for social and economic development in an environmentally sustainable manner.¹⁴ In relation to renewable energy sub-sector, its objective is to develop the use of renewable energy resources for both small and large-scale applications.¹⁵

The policy identifies key sub-sector issues for the new and renewable sources of energy as inefficient production and use of biomass energy resulting in adverse effects on the environment and the health of biomass energy users, especially in rural households; underdeveloped markets in Renewable Energy Technologies (RETs) equipment and services because of high initial investment costs and lack of financial capacity to cover the initial investment; lack of mechanisms to monitor standards and ensure quality control of RETs; and inadequate available data on the potential of indigenous renewable energy sources.¹⁶

The Policy, therefore, suggests a number of strategies to rectify these problems. These include: supporting the dissemination of biomass and other RETs to increase their positive impact on the energy balance and the environment; ensuring that RET producers and importers ascribe to certified performance and technical standards; supporting efforts to develop biomass resources in agreement with the Uganda Forestry Policy and the National Forest Plan; facilitating adequate financing schemes for RETs by establishing sustainable financing mechanisms to make them more accessible; and promoting geothermal energy development and exploration.¹⁷

These strategies, if implemented, facilitate the implementation of CDM projects in Uganda. One limitation with this Policy is that whereas it seeks to promote investment in renewable energy resources sub-sector, that are more environmentally friendly, it as well seeks to promote petroleum exploration. Although this is in favour of the economic

¹⁴ The Energy Policy for Uganda, pp. 1 & 35.

¹⁵ *Ibid*, p. 51.

¹⁶ *Ibid*, p. 31.

¹⁷ *Ibid*, p. 52.

development of Uganda, there are serious environmental consequences and the positive role played by CDM projects may be neutralised by these developments.

4.5 The Renewable Energy Policy for Uganda

The overall goal of this Policy is to increase the use of modern renewable energy, from the current 4% to 61% of the total energy consumption by the year 2017.¹⁸ In order to achieve the Policy goal, Government undertakes to develop, implement, maintain and continuously improve the legal and institutional framework that responds to the prevailing conditions, in order to maintain interest in renewable energy investments; establish an appropriate financing and fiscal policy framework that will attract more investments in Renewable Energy Technologies; and promote research and development, technology transfer, international cooperation and adoption of standards in RETs.¹⁹

The Policy lays a number of strategies to achieve its objectives. Under the strategy of legal and institutional framework, Government undertakes to maintain and improve the responsiveness of the legal and institutional framework to facilitate renewable energy investments. This is to be done through publishing a Standardized Power Purchase Agreement with Feed-in Tariffs for renewable energy generation projects of up to 20 MW installed capacity; putting in place legislation and regulations to promote the use of renewable energy and Renewable Energy Technologies all sectors especially incorporation of solar water heating in building plans and energy farming to produce bio-fuels; developing appropriate regulations for grid connections and wheeling of electricity generated from renewable energy; create both Renewable Energy and Energy Efficiency and Conservation Departments at the Ministry of Energy and Mineral Development; and attracting qualified personnel into the sector so as to support renewable energy investments.²⁰

The Government also undertakes to raise public awareness on the benefits and opportunities of renewable energy technologies. This is to be done by continuously

¹⁸ The Renewable Energy Policy for Uganda, pp. 1 & 54.

¹⁹ *Ibid*, p. 57.

²⁰ *Ibid*, p. 58.

acquiring data on the renewable energy resource availability; developing capacity to process and retrieve this data by establishing an Energy Data Bank; developing and promoting knowledge and exchange of information on renewable energy to all stakeholders; and incorporating renewable energy technology into the primary, secondary and tertiary curriculum. These steps are fundamental for the success of CDM projects in Uganda. However despite the targeted time for implementation being 2007,²¹ most of them have not been implemented. The primary curriculum has not been reviewed to incorporate renewable energy technology. The energy data bank has also not been established yet established except for the scattered information found on various websites.

4.6 The National Water Policy (1999)

This Policy promotes a new integrated approach to manage the water resources in ways that are sustainable and most beneficial to the people of Uganda.²² This new approach is based on the continuing recognition of the social value of water, while at the same time giving much more attention to its economic value.²³ The basis on which this Policy was developed is the Water Action Plan (1995) which was a review of the water resources management issues and which provided a basis for subsequent water policy and legislation.

This Policy requires the Government to promote hydropower generation by supporting efforts to attain self-reliance in energy production and promote cooperation for optimal development of hydropower and for the benefit of the region.²⁴ Government is also required to promote the use water resources for small decentralised power generating systems in remote areas for rural electrification; and promote agreements between the various water users for the protection of the catchment areas.²⁵

²¹ *Ibid*, p. 60.

²² The Republic of Uganda, Ministry of Water, Lands and Environment, A National Water Policy (1999), p. 1.

²³ *Ibid*.

²⁴ *Ibid*, p. 29.

²⁵ *Ibid*, p.30.

The policy identifies a number of strategies to achieve the above. These include: first, ensuring the rights of other users by regulation of water discharge.²⁶ This principle is often expressed as *sic utere tuo ut alienum non laedas*²⁷ and has received wide recognition today as a general principle of water use. Hydropower generating companies, therefore, have an obligation to ensure that their activities do not adversely affect other water users.

Second, social and environmental impacts should be minimized through Environmental Impact Assessment (EIA).²⁸ EIA is a process of examining, analyzing and assessing proposed activities in order to minimize the potential for environmental damage. It is a procedure for evaluating the likely impact of a proposed activity on the environment.²⁹ EIA is intended to ensure that the potential environmental impacts of a planned activity are evaluated prior to approving the activity. In relation to CDM projects, EIA plays three main roles. Firstly, authorities fully identify and consider the environmental effects of proposed project. Secondly, alternatives can be identified that avoid or mitigate the environmental effects; and thirdly, the citizens affected by the proposed activity get an opportunity to understand the proposed project or policy and to express their views to decision makers in advance.

Other strategies under the Policy include creation of storage capacity and regulation of reservoirs to mitigate fluctuations from seasonal and annual variations; and ensuring availability of reliable hydrological data for hydropower development.

4.7 Implementation of CDM Projects in Uganda and their Implications for Climate Change Adaptation

²⁶ *Ibid*, p. 30.

²⁷ This Latin phrase means that whereas a person has a right to use his/her resources, such exploitation should not harm another person. It represents the concept of good neighbourliness.

²⁸ A National Water Policy, p. 30.

²⁹ See Article 1 of the Convention on Environmental Impact Assessment in a Transboundary Context signed in Espoo in 1991 reprinted in 30 (1991) I.L.M. 800.

Uganda, as a party to the UNFCCC and the Kyoto Protocol has undertaken the following projects which have the effect of mitigating the problem of climate change and at the same time promote climate change adaptation.

One of the projects is the West Nile Electrification Project. This project has financial support from the Prototype Carbon Fund (PCF). Since the signing of the Kyoto Protocol, a number of international funds have been created to support climate change mitigation projects worldwide. In 1999, the World Bank created the PCF, with the objective of combating climate change, promoting sustainable development and demonstrating possibilities for public private partnerships.³⁰

The project in Uganda is the first-ever CDM deal in Africa. The project is part of the Government of Uganda's Energy for Rural Transformation (ERT) Scheme, which is supported by the World Bank and various bilateral partners.³¹ This project supports the CDM's sustainable development objective. It helps put the West Nile region on a more sustainable energy path, which is replicable in other regions of the country and throughout many countries in Africa.³²

The US\$20 million project involves the construction of two small hydropower stations, efficient diesel backup facilities, and the rehabilitation of the mini-grid in the region. The initiative will replace emissions from highly inefficient diesel and petrol-fuelled generators and engines in the district of Arua and Nebbi in north-western Uganda.³³

The project aims to take advantage of the dual benefits of the CDM by promoting sustainable development in rural Uganda through investing in socio-economic development and poverty alleviation; and to reduce CO₂ emissions through renewable energy.

³⁰ *Ibid.*

³¹ Kasimbazi E. (2005), "In the Defence of Prosperity: Challenges of Implementing Clean Development Mechanisms in Uganda," in Ole Kristian Fauchald & Jacob Werksman (Eds.), *Year Book of International Environmental Law*, (Oxford University Press. vol. 16), p. 304.

³² The World Bank, "Prototype Carbon Fund (PCF) Shows that Kyoto Protocol Works Selling emissions make marginal projects financially attractive" Press Release No:2002/118/S. See <http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:20016060~pagePK:64257043~piPK:437376~theSitePK:4607,00.html> (accessed on December 02, 2010).

³³ Kasimbazi, *supra* note 31, p. 304.

Another project is the Kilembe Grid Extension Project. The objective of this project is to extend the transmission and LV distribution lines from a current hydro facility (originally built to provide power to a now-closed copper mine) to nearby villages and trading centres that are not connected to the grid.³⁴ The result would be a more reliable supply of electricity that will help spur local economic development and displacing polluting and expensive diesel fuel, as well as kerosene and fuel wood use.

The project would extend a 33 kV transmission line from the hydro plant to the towns of Kasese, Kikorongo, Bwera and other surrounding areas. The project will extend LV power lines and install transformers at the Bwera-Mpondwe, Ibanda, Bugoye, Mwaro and Kicwamba trading centres (with various shops and merchants that currently do not have electricity).³⁵ The project will also extend power lines to up to 10,000 homes in the towns, civic centre, a hospital, several schools and a health centre. Each of the LV network would come from a T-off from the 33 kV extension of the UEDCL transmission line from Kabale.³⁶

There is the Mt. Elgon Hydropower Project. The objective of this project is to build a small hydro facility that will provide power to villages, business and industries that are not currently connected to the grid, supplying reliable electricity to help spur local economic development and displacing polluting and expensive diesel fuel, as well as kerosene and fuel wood use.³⁷ The Mount Elgon Hydro Power Company Ltd has permits to develop 5 sites totalling about 14 MW near a mountain on the border with Kenya. This PIN covers two of these sites that can be developed independently in the near term. One site will have a predicted capacity of 3.2 MW and the other 3.3 MW.³⁸ The project will install small turbines to provide electricity. The project will also connect to the grid via a 110 kV transmission line. Low voltage lines will be connected to villages and businesses. The facility itself will include a diversion weir and canal, an intake weir outdoor powerhouse, as well as an access road of about 1 km from the powerhouse to the

³⁴ *Ibid.*

³⁵ *Ibid.*

³⁶ Kasimbazi, *supra* note 31, p.306.

³⁷ *Ibid.*

³⁸ *Ibid.*

main road.³⁹ The project developers plan to reforest several areas along the river that have been deforested, in order to reduce the high levels of erosion that will cause silting of the dam.

The development of these projects is of great significance to climate change adaptation and mitigation because the increased energy supply will reduce pressure on the forest resources and burning fossils in industries. However, these technological developments are likely to be constrained by the low levels of literacy, education awareness and exposure to western technologies; limited resources and capacities to monitor and enforce the laws; as well as limited ability to create effective environment governance for the successful operation of these projects.

Under the forestry sector, the CDM tree-planting projects can provide a win-win situation because such activities provide both environmental and socio-economic benefits to communities. Examples of CDM can be illustrated by the following forest projects: emissions from 27,000h regenerated forest in Kibale and Mount Elgon National Parks amounting 1500000 tones of carbon dioxide worth US\$ 45 million and emissions from 7100h in Bukabaleba forests and the adjoining Norwegian managed forest amounting to 4 million tons of carbon dioxide worth about US\$ 12million.⁴⁰ Another project is Mityana Fruit Forest Initiative located in Ssekanyonyi parish, Mityana, Mubende District. The total investment in this project is US\$3,000,000 and the total expected volume of credits is 44,000 in 25 years and 58,000 in 50 years.

A reforestation project is also being implemented by UWA – Face Project in the Mt. Elgon National Park and Kibaale National Park. The UWA – Face Project is a joint venture between Uganda National Parks and Face Foundation of Holland. Under the above project, Face Foundation is funding a substantial part of the financing of the forest, and in return it gets carbondioxide sequestration and offset in the contract areas of Mt. Elgon and Kibaale National Parks during the term of 99 years (1994 to 2093).⁴¹ The emissions from 27,000h regenerated forest in Kibale and Mount Elgon National Parks

³⁹ *Ibid.*

⁴⁰ *Ibid* at 62.

⁴¹ Magezi S.A.K (1998), Potential for Clean Development Mechanism Projects in Uganda, Kampala, p. 62.

amount 1500000 tones of carbon dioxide worth US\$ 45 million. Further, the emissions from 7100h in Bukabaleba forests and the adjoining Norwegian managed forest amount to 4million tons of carbon dioxide worth about US\$ 12million.⁴²

4.7.1 Challenges for Implementing CDM Projects in Uganda

There are a number of challenges in the implementation of CDM in Uganda. Most of these were pointed out by the key informants that were interviewed. This section discusses some of these challenges. The first challenges relates to the impact of tree planting. While CDM projects improve local incomes and natural resources management, concern was expressed that conversion of land into tree plantations can also harm local ecosystems.

Secondly the sequestered carbon is relatively a new ‘commodity’, introduced by the Kyoto Protocol and has unique characteristics with complex legal issues which arise from defining the property rights it engenders and drafting carbon sequestration sales contracts. It is not easy to approve, monitor and verify that carbon credits earned under clear and transparent rules for, permanence and sustainability given the limited technical knowledge available in Uganda. Further, contractual concerns arise because participating in CDM projects requires signing international contracts. These contracts require expert negotiation by people exposed to international contracts, commercial law and CDM legal issues which most Ugandans are not familiar with.

Thirdly, the implementation of CDM projects at the present stage is yet to deliver on poverty reduction and forest conservation because of a number of issues relating to rights, privileges, roles and responsibilities. There are many implementation issues, conceptual as well as policy framework issues are not clear. Communities around protected forests do not see themselves as forest owners because of the management gap between NFA and the communities.

⁴² *Ibid.*

Third, Uganda lacks a strong national institutional framework to implement the Kyoto mechanisms. There are failures at different institutional and policy levels for environmental management in implementing the Kyoto Mechanisms. Policies such as the National Environmental Policy lack financial facilitation and skilled manpower. Whereas it is now largely accepted that climate is an important resource and worth protecting, and whereas implementation of the Kyoto Protocol is expected to be done through a hierarchy of enforcement from the Ministry of Water and Environment, through NEMA and local government, down to community level, the enforcement capacity available at all these levels does not appear to be commensurate with the widespread nature of the problem. In particular administration at district and local environment committee levels lack adequate manpower and resources to implement and monitor all the CDM projects.⁴³

Lastly, the private sector does not have capacity to fully participate in CDM activities due to lack of awareness of stake holders about its economic benefits.

4.7 Conclusion

Uganda has developed a number of policies on a range of environmental issues but none has been developed specifically addressing climate change. However, the implementation of these sectoral policies has implications for climate mitigation and adaptation programmes/initiatives conducted under those sectors. However, it is thought that it would have been more efficient if there is a policy addressing climate change issues across all sectors. This would be fundamental in streamlining the functions of the institutions created under those policies and the climate specific institutions. Uganda has also participated in international policy frameworks for climate change mitigation and adaptation, particularly the CDM. However, this being a new concept, its implementation is challenging.

⁴³ The National Environment Management Authority (NEMA), State of Environment Report 2000/2001, 5.

CHAPTER FIVE

EFFECTIVENESS OF UGANDA'S NATIONAL LEGAL FRAMEWORK FOR CLIMATE CHANGE ADAPTATION

5.1 Introduction

Uganda has a number of laws that protect the environment in general from abuse and degradation. These laws also regulate aspects that have implications for climate change mitigation. However, less emphasis has been placed on climate change adaptation. This chapter analyse the effectiveness of these laws by identifying provisions which are of relevance to climate change adaptation.

5.2 The Constitution of the Republic of Uganda, 1995

The 1995 Constitution of Uganda is the supreme law in Uganda and has provisions regulating natural resources that are relevant for the implementation of the Kyoto Protocol in Uganda. Under the Constitution, it is the duty of Parliament to enact laws to protect and preserve the environment from abuse, pollution and degradation and also to promote measures intended to manage the environment for sustainable development and to promote environmental awareness.¹

The Constitution further provides that the state has the duty to protect important resources, including land, water, wetlands, oil, minerals, fauna and flora on behalf of the people of Uganda.² Under article 237 (2) (b), the Government or (where appropriate local government) is required to hold in trust for the people and protect natural forest reserves and any land to be reserved for ecological and tourism purposes for the common good of all citizens. The trust obligation imposed on the state eases the implementation of the CDM in two ways. First, CDM projects can be more easily implemented by the Government than would have been the case if the natural resources were subject to private ownership, which would involve a lengthy process of land acquisition for the implementation of the projects. Second, the trust obligation bars the Government from

¹ The Constitution of the Republic of Uganda, 1995, Article 245.

² *Ibid*, Principle XIII.

leasing out or otherwise alienating the natural resources referred to.³ This ensures subsistence of CDM projects in natural resources.

The enforcement of the public trust doctrine is faced with a lot of challenges in Uganda as the Government is degazetting some resources reserves in the name of promoting private investment and industrialization. There are examples that illustrate this situation. The major ones include the following:

In 2000, Government sought to degazette 3,500 hectares of the approximately 6,500 hectares of protected forest estate of Bugala Island in Kalangala district for the development of an oil palm estate by BIDCO Uganda Ltd. This was protested by the civil society organizations and the NFA protested the proposed degazettment. Eventually, an environment impact assessment on the proposed degazettment was conducted and⁴ approved by the National Environment Management Authority with conditions; one of which was that the forest reserves (particularly the Strict Nature Reserve) be excluded from the proposed development plans. Subsequently, local authorities have donated land and the project has acquired land from the absentee landlords around the forest reserve⁵ and BIDCO is asking for more land.

In June 2001, the Government of Uganda attempted to degazette Butamira Forest Reserve for the benefit of commercial sugarcane growing by Kakira Sugar Works Ltd (KSW).⁶ Several ecological, social-economic, legal and procedural concerns were raised. The then area Member of Parliament⁷ petitioned Parliament on behalf of the peasants to uphold a decision made in 2000 to evict KSW. However, Government disregarded the above and gave a permit to KSW. This prompted Advocates Coalition for Development and Environment (ACODE) to institute a case of *Advocates Coalition for Development and Environment V Attorney General*.⁸ ACODE contended that the Government's

³ This position is fortified by section 44 (4) of the Land Act, Cap 227 Laws of Uganda, 2000.

⁴ For example NFA boss Olav Bjella resigned as a result of the degazettment of the forest, see http://64.233.169.104/search?q=cache:Hy9uDF1s78J:earthhopenetwork.net/Uganda_Forest_Faces_Bulldozers.htm+NFA+officials+resign+over+mabira&hl=en&ct=clnk&cd=3 .

⁵ *Ibid*

⁶ Tenywa G, Who will have the last laugh at Butamiira? The Newvision, Tuesday, march 5, 2002 p. 6

⁷ Dr Frank Nabwiso ,MP Kagoma county ,Jinja district

⁸ Miscellaneous Cause No. 0100 of 2004.

issuance to Kakira Sugar Works Ltd with a 50 year sugar cane growing permit in respect of Butamira Forest Reserve was in contravention of the law. The Court considered the provisions of Article 237 (2) (b) of the constitution and section 44 of the Land Act and held that they should be read together and that the same should apply to Article 237 (2) (a) and Section 42 of the Land Act. It was thus held that:

'Butamira Forest Reserve is land which Government of Uganda holds in trust for the people of Uganda to be protected for the common good of the citizens. Government has no authority to lease out or otherwise alienate it. However, Government or a local government may grant concessions or licenses or permits in respect of land held under trust with authority from Parliament and with consent from the local community in the area or district where the reserved land is situated. In the instant case there was evidence that the permit was granted to Kakira Sugar Works Amidst protests from local communities which raised up a pressure group of over 1500 members who depended on the reserve for their livelihood through agro-forestry, and source of water, fuel and other forms of sustenance. There was therefore breach of the public trust doctrine.'

When it became apparent after the insistence of civil society groups that the degazettment was illegal, Parliament went ahead to approve the permit. As a result, a forest reserve land that is supposed to be held in trust by the Government for the people of Uganda was converted into sugarcane plantation owned by a private entity (Tumushabe, 2004).

In 2006, the Government proposed to allocate 7100 hectares out of the 32000 hectares of Mabira Central Forest Reserve to Sugar Corporation of Uganda Limited (SCOUL) owned by the Mehta group for investment. This attracted criticism from many civil society organizations including institution of a petition challenging the government's move. One of the researchers of Action Coalition for Development and Environment (ACODE) said;

*"The current plan to degazette part of Mabira is the epitome of abuse of public trust property vested in the Government to sustainably manage the natural resources for present and future generations"*⁹

⁹ Mugenyi O (2007), while addressing journalists at Grand Imperial Hotel, Kampala, and reported by Gerald Tenywa, The New vision, 29th March, 2007.

Environmental agencies such as National Forestry Authority (NFA) and NEMA protested the Government move to degazette Mabira. NEMA strongly opposed the Mabira give away on economical, environmental, social and ecological grounds. It further said that grant would have adverse effects on the environment.¹⁰ This was followed by demonstrations on the 17th April 2007 which were held by the public against the give away of the forest. The organizers of the demonstration had obtained permission from the Police to lead a procession to Parliament to deliver the petition and thereafter to hold a protest rally. However, the demonstration turned nasty when the police prematurely stopped it, sprayed teargas and water canons on the crowd that then turned rowdy resulting into the killing of three people and injuring dozens. The Government then decided to withdraw the decision to degazette Mabira (Monitor 18th April, 2007).

The above examples indicate that there are still challenges of implementing CDM projects in natural forests because the will to protect them is lacking due to the wish by Government to give away forests for investment.¹¹

A particularly important provision in the Constitution as to the property rights of the CDM projects is Article 26 which guarantees the right of every person to own property. Where the person is compulsorily deprived of his property, he is entitled to prompt payment of fair and adequate compensation, prior to the taking of possession or acquisition of the property. This provision is important for the CDM projects because the investors in, and implementers of CDM projects are assured that they have ownership of materials and they have a remedy if they are compulsorily deprived of the same.

5.3 The National Environment Act, Cap. 153

This is the principal legislation governing the environment in Uganda whose purpose is to provide for sustainable management of the environment and establish the NEMA as a coordinating, monitoring and supervisory body. NEMA is the main institution

¹⁰ Muyita S, 'NEMA Opposes Mabira deal,' Daily Monitor, March 29 2007 p.2.

¹¹ For instance President Yoweri Museveni commented that critics who opposed the forest give away were "*people who don't see where the future of Africa lies*". Further while responding to a question asked him about the Mabira give away he said "*We know what we are doing and what we are doing is in the interest of the people.*"

responsible for the operation of the Environmental Impact Assessment (EIA) regime.¹² Projects which must undergo the EIA process include forestry related activities such as reforestation and afforestation.¹³

A review of the National Environment Act reveals that while it generally provides, for a comprehensive framework in relation to environment management, climate change related issues are not given any special consideration. Nevertheless, some of the sectors that are critical to climate change and in particular, the CDM are covered.

Thus, in relation to forests, section 45 of the National Environment Act provides that NEMA shall, in consultation with the lead agency which is the NFA issue guidelines and prescribe measures for the management of all forests which shall be managed in accordance with the principle of sustainable development. These guidelines have to take into account forests in protected areas, including forest reserves, national parks and game reserves; and forests on lands subject to interests held by private persons.¹⁴

NEMA, in consultation with the National Forestry Authority, is given powers to expressly exclude human activities in any forest area by declaring it a specially protected forest.¹⁵ Section 39 of the National Environment Act mandates the District Environment Committees to identify areas to be targeted for afforestation and reforestation. This is however, restricted to hilly and mountainous areas and does not, therefore, adequately address deliberate massive human induced afforestation and reforestation initiatives as envisaged by Article 3(3) of the Kyoto Protocol.

The above notwithstanding, the establishment of NEMA with other institutions under the Act and the obligations imposed on it in relation to forest management ensures that the implementation of CDM projects is integrated into the overall environmental legal framework of Uganda. This is advantageous to the extent that such integration guarantees facilitation of the implementation process by the Government. Sustainable management

¹² The National Environment Act, Section 6 (1) (f).

¹³ *Ibid*, Third Schedule. The detailed EIA process is regulated by the Environmental Impact Assessment Regulations, 1998.

¹⁴ *Ibid*, section 45 (2).

¹⁵ *Ibid*, section 45.

of the environment which is the underlying objective of the National Environment Act has far reaching implications for climate change mitigation. For instance a key component of sustainable environment management is the promotion of forest management. Forests in turn play an important role in climate change mitigation through absorption of some greenhouse gasses.

Environmental bodies created to monitor and protect the natural resources have not been able executed their mandate. NEMA the principal agency responsible for the management of the environment and is required coordinate, monitor and supervise all activities in the field of the environment. Specifically NEMA is required to ensure observance of proper safeguards in the planning and execution of all development projects, including those already in existence that have or are likely to have significant impact on the environment. The execution of this mandate requires NEMA to halt projects like those in relation to forest resources. NEMA has powers even to issue restoration orders.¹⁶ NEMA has not exercised any of these powers in respect of forestry resources protection. Further, NFA is required to liaise with NEMA in the protection of Uganda's forest resources and the evaluation of the Environmental Impact Assessments (EIA). However in some cases like Butamiira, EIA was not carried out and the degazettement was effected. It can therefore be submitted that these authorities have not executed their mandate in relation to forestry management. EIA is designed as a tool for environmental protection and its fulfillment influences the progress in the application of the public trust doctrine. Arguably, if a full EIA was carried out, the impacts of the degazettement would have been realized and the process halted.

5.4 The National Forestry and Tree Planting Act, 2003

This is the main Act dealing with forestry resources management in Uganda. The objective of this Act is to promote the conservation, sustainable management and development of forests for the benefit of the people of Uganda. This Act is a fundamental departure from the outdated Forest Act (which was repealed) in as far as it provides for a modern regulatory framework for the sustainable management of forests and also addresses some key issues relevant to CDM.

¹⁶ *Ibid*, section 67.

The following key features of the Act are worth pointing out: it provides for the establishment of private forest plantations and declares that all forest produce on such a private plantation forest belongs to the owner of the plantation and that the owner is free to use the forest produce in any manner he/she may determine.¹⁷ It also provides that any person may enter into a contractual or other arrangement with the owner of an interest in a private forest for the right to harvest, purchase, or sale of all or any part of the forest produce in the private forest.¹⁸

The Act provides for the intervention of the Government to extend technical services to persons involved in the development of private forests and forestry activities in general. Such assistance to be extended includes, the provision of information, training and advice on the management of forests, the establishment and maintenance of nurseries and other facilities necessary for seeds and plants; materials, financial assistance; and cooperation and liaising with other lead agencies in the management of forests and forest produce.¹⁹

It also provides for the preparation of a National Forest Plan by the Government of Uganda which shall be the framework for the implementation of the forestry policy, other programmes by the Government and stakeholders in the forest sector.²⁰

In view of the fact that CDM is market based and encourages the participation of private entities and organizations, the provisions in the National Forestry and Tree Planting Act for the commercial private exploitation and development of forests are important. This private element in the forestry industry fosters the development of CDM because; with reduced Government involvement comes along reduced bureaucratic tendencies thus leading to quick conclusion of CDM deals; with profit being the main motivation.

¹⁷ *Ibid*, section 22.

¹⁸ *Ibid*, section 23.

¹⁹ *Ibid*, section 26.

²⁰ *Ibid*, section 49.

5.5 Land Act, Cap. 227

The Act provides for the tenure, ownership and management of land.²¹ Under the Act, land is to be utilized in accordance with the various laws listed in section 43 including the Uganda Wildlife Act, the Water Act and the National Environment Act. Section 44 reiterates the constitutional provision creating a trust over environmentally sensitive areas as stipulated in Article 237(2) of the Constitution. Section 44 (4) prohibits Government or a local government from leasing out or otherwise alienating any natural resource referred to in this section. Government may in terms of section 44(5), grant concessions or licenses or permits in respect of such land subject to any law. The permit would authorize use of the land in a manner stipulated by the relevant laws but would not confer ownership of the land. Management of the land in Uganda is important for the implementation of CDM projects under the forestry sector because they result in the altering land use in Uganda.

5.6 Local Governments Act, Cap. 243

This Act consolidates and streamlines the existing law on local governments in line with the Constitution to give effect to the decentralization and devolution of functions, powers and services.²² The Local Government Act provides that it is the responsibility of the Local Government to protect and preserve the resources from abuse, pollution and degradation and to manage the resources for sustainable development within the district.²³ The District Council is the highest political authority in the District and the Second Schedule to the Act prescribes its functions. These include land surveying, land administration, physical planning, forests and wetlands, environment and sanitation, protection of streams, lakeshores, wetlands and forests.²⁴ The districts have an important role to play and should be actively involved in the design and implementation of CDM projects which are to be located in their areas of jurisdiction.

²¹ The Preamble, Land Act, Cap 227.

²² The Local Government Act, Chapter 243 of the Laws of Uganda, Preamble.

²³ *Ibid*, second schedule part 2.

²⁴ *Ibid*.

5.7 The Electricity Act

The Electricity Act²⁵ provides for the establishment of the Electricity Regulatory Authority (ERA)²⁶ whose functions include: issuing licenses for the generation, transmission, distribution or sale of electricity; controlling activities in the electricity sector; and liberalizing and bringing competition in the electricity sector.²⁷ The Act makes provision for rural electrification. Section 62 provides that the Government shall undertake to promote, support and provide rural electrification programmes through public and private sector participation in order to achieve equitable regional distribution and access to electricity; maximise the economic, social and environmental benefits of rural electrification subsidies; promote expansion of the grid and development of off-grid electrification; and stimulate innovations within suppliers.

The provisions of this Act have far reaching implications for the implementation of CDM projects in the energy sector because it provides for rural electrification, under which most of the CDM projects in Uganda are being implemented.

5.8 The Environmental Impact Assessment Regulations

The National Environment Act requires that projects specified in the third schedule to the Act be subjected to environmental impact assessment before they are undertaken. NEMA is given powers, under section 19(8), in consultation with the lead agency, to adopt guidelines with respect to environmental impact studies, on their format and contents; the procedure for conducting assessments; the participation of the public especially those most affected by the project; and any other matter the authority considers relevant. On this basis, The Environmental Impact Assessment Regulations²⁸ were enacted. These regulations apply to projects specified in the third schedule and a developer is not permitted to implement a project for which environmental impact assessment is required, unless it has been concluded in accordance with these regulations.

²⁵ The Electricity Act, 1999, Cap 145 of the Laws of Uganda

²⁶ *Ibid* section 4.

²⁷ *Ibid*, section 10.

²⁸ Statutory Instrument No.13 of 1998 made pursuant to the powers given to NEMA under section 107 of the National Environment Act.

A developer is required to prepare a project brief stating in concise manner; the nature of the project; the projected area of land, air or water that may be affected, the possible products and by-products including waste generation of the project; the environmental effects of the materials, methods, products and by-products of the project and how they will be eliminated or mitigated.²⁹ Then the lead agency is required to make comments and transmit them to the executive Director within 14 working days of receiving the project brief, but where the lead agency fails to make the comments in the specified time, the executive director may proceed to consider the project brief.³⁰

If the executive director finds that the project will have significant impacts on the environment and that the project brief discloses no sufficient mitigation measures to cope with the anticipated impacts on the environment, he shall require that the developer takes an environmental impact study. If the executive director is satisfied that the project has no significant impact on the environment or that the project brief discloses sufficient measure to cope with the anticipated impacts, he may approve the project, whereupon he will issue a certificate of approval on behalf of the Authority.³¹

Through this process, projects which will for instance emit a lot of carbon dioxide to the atmosphere without installing mechanisms to mitigate such emissions can be checked at this point. Consequently, these provisions are very relevant in eradicating those projects that will have adverse effects to climate.

5.9 National Environment (Waste Management) Regulations³²

These Regulations apply to all categories of hazardous and non-hazardous wastes, to the disposal and storage of hazardous waste and their movement into and out of Uganda; and to all waste disposal facilities, landfills, sanitary fills and incinerators.³³

²⁹ Regulation 5(1).

³⁰ Regulation 7.

³¹ Regulation 9.

³² Statutory Instrument No. 52 of 1999.

³³ Regulation 3.

Under Regulation 5, a person who owns and controls a facility or premises which generate waste must minimize the waste generated by adopting cleaner production methods like; improvement of production process through- conserving raw materials and energy, eliminating the use of toxic raw materials , reducing toxic emissions of waste; monitoring the product cycle from the beginning to the end by- identifying and eliminating potential negative impacts of the product, enabling the recovery and reuse of the product where possible , reclamation and recycling, incorporating environmental concerns in the design and disposal of a product.

Industries are under a duty to treat their wastes. An industry shall not discharge or dispose of waste in any state into the environment unless the waste has been treated in a treatment facility and in a manner approved by the lead agency in consultation with NEMA.³⁴ Where a person operating a factory that discharges or dispose of waste whether treated or not into the disposal site or plant which is not approved or licensed in accordance with these Regulations commits an offence.³⁵

In relation to transboundary movement of hazardous waste, NEMA is designated as the national authority for the operation of the prior informed consent procedure for the import, export, transit or other transboundary movement of hazardous waste. NEMA is required to closely liaise with the designated national authorities of other states under any international conventions or arrangements to which Uganda is a party and international organisations with competence in the field of the management of transboundary movements of hazardous wastes under any convention or arrangement to which Uganda is a party for the purpose of monitoring and controlling the movements of hazardous wastes in Ugandan territory.³⁶

The relevance of these Regulations lies in the fact that the unregulated emission and disposal of wastes is one of the causes of climate change. Therefore, the controlled disposal of wastes is a significant step towards climate change mitigation and adaptation.

³⁴ Regulation 12 (1).

³⁵ Regulation 12 (2).

³⁶ Regulation 19.

5.10 National Environment (Management of Ozone Depleting Substances and Products) Regulations³⁷

These Regulations can be said to be the national level initiative to control substances and products that deplete ozone layer as is the case with the Vienna Convention on Substances that Deplete the Ozone layer at the international level. The object of these regulations is to regulate the production, trade and use of the controlled substances and products; provide a system of data collection that will facilitate compliance with the relevant reporting requirements under the protocol;³⁸ promote the use of ozone friendly substances, products, equipment and technology; and the elimination of substances and products that deplete the ozone layer.³⁹

Under regulation 4, no person shall import or export a controlled substance or product listed in the First and Second Schedules⁴⁰, without a license issued by the Executive Director and no person shall import or export a controlled substance or product from or to a country that is not a party to the Protocol. A person who imports or exports a controlled substance or product in contravention of this regulation commits an offence.⁴¹

The Executive Director⁴² is empowered to issue a license to import or export a controlled substance or product where he or she is satisfied that the applicant has adequate and appropriate facilities and equipment to handle the controlled substance or product without causing damage to the environment.⁴³ This license is transferable and it only entitles the license holder to import or export a controlled substance or product through the customs ports of entry and exit designated in the Fourth Schedule.⁴⁴

³⁷ Statutory Instrument No.63 of 2001

³⁸ According to Regulation 2, Protocol for purposes of these Regulations means the Montreal Protocol on Substance that Deplete the Ozone Layer adopted in 1987, as amended from time to time.

³⁹ Regulation 3.

⁴⁰ The controlled substances under the second schedule for instance include, hydrobromofluorocarbons (HBFCs), chlorofluorocarbons (CFCs) halons, carbon tetrachloride, trichloroethane (methyl chloroform), hydrochlorofluorocarbons (HCFCs) and methyl bromide.

⁴¹ Regulation 4 (4).

⁴² According to Regulation 2, Executive Director means the Executive Director of NEMA appointed under section 12 of the National Environment Act.

⁴³ Regulation 6 (1).

⁴⁴ Regulation 6 (2).

The Authority⁴⁵ is required under regulation 12 carry out public awareness activities and programs relating to the elimination of ozone depleting substances and products.⁴⁶ The Authority is required to ensure training of technicians engaged in maintaining, servicing or disposing of equipment containing ozone-depleting substances and the Executive Director shall, once in each year, publish in the mass media and at the offices of the Authority, a list of controlled substances and products.⁴⁷

The regulations establish offences and penalties. Under Regulation 14, any person who imports or exports any controlled substance or product without a valid license issued under these Regulations; engages in the production or manufacture of goods containing, or made with, dependent on, or designed for a controlled substance; fails or neglects to report data to the Executive Director as required under these Regulations; provided false or misleading information or neglects to keep records in accordance with these Regulations, commits an offence and is liable, on conviction, to a fine of not less than thirty thousand shillings and not more than three million shillings or to imprisonment for a term not less than three months, or both.

An Environmental Inspector appointed under the Statute may, in the course of his or her duties, seize any plant equipment or other thing which he or she believes is a controlled product or contains a controlled substance.⁴⁸

The relevance of these Regulations to climate change mitigation and adaptation lies in the fact, as observed earlier, that the depletion of the ozone layer is one of the causes of increased global warming and climate change. Therefore, the legislative approach taken by Uganda in regulating the ozone depleting substances is to be seen as a positive step at the national level to mitigate climate change.

⁴⁵ Under Regulation 2, "Authority" means the National Environment Management Authority established under section 4 of the Act.

⁴⁶ Regulation 12 (1).

⁴⁷ Regulation 12 (2).

⁴⁸ Regulation 15.

5.11 Conclusion

Like it is the case with policies, although Uganda has comprehensive environmental laws, these were not designed to address climate change issues. CDM does not directly feature in the legal framework as an independent area. This can hinder direct foreign investment in CDM in Uganda. As a result, enforcement of the Kyoto implementation mechanisms under the national legal framework is weak.

CHAPTER SIX

GENERAL CONCLUSIONS, SUMMARY OF FINDINGS AND RECOMMENDATIONS

6.1 General Conclusions

Given the large uncertainties in the science of climate change and the fundamental incentive problems of sovereign states, it is clear that a perfect climate policy is hard to achieve in practice. The Kyoto Protocol is thus necessarily only one out of many possible imperfect architectures to address the risks posed by global climate change. The Protocol is based on a control mechanism that allows progressive adjustment and movement towards evolving goals. A system of periodically negotiating five-year periods supports a flexible approach that allows policy-makers to adjust their decisions according to better information obtained on the climate change problem.

The Protocol constitutes the first international environmental agreement that builds on market based instruments to determine cost-efficient responses to the undisputed need for GHG abatement. After tough bargaining, Kyoto came up with a burden-sharing scheme for the first commitment period that all major Parties (with exception of the US) have accepted as a “fair” compromise, hereby reflecting historic responsibilities for the GHG externality as well as ability to pay.

On the other hand, it must be clearly stated that the Kyoto Protocol - as it stands now – has not achieved a decisive breakthrough in international climate policy. In particular, U.S. repudiation has made the Kyoto ineffective in environmental terms during the first commitment period.

Nevertheless, even without any effective emission reductions in the first commitment period, the ratification of Kyoto is crucial for the further policy process of climate protection and adaptation. It has established a broad-based international mechanism that provides a valuable starting point for efficient climate policies in the future. Given the shared belief that substantial global emission reduction is required in the long run, the major challenge remains as to how we can push institutional and legal settings that

promote comprehensive international cooperation. In the first place, this requires incentives for developing countries to participate. This has been the center of controversy in the post-Kyoto climate negotiations, and actually explains the failure to reach an agreement at Copenhagen. The two sides – developed and developing countries have taken entirely opposite directions, with developed countries demanding for more participation of the developing countries and developing countries demanding for more support from developed countries. In the second place, a credible system of direct or indirect sanctions must be developed that can deter free-riding. Applied research should be dedicated to the question of which sanction mechanisms are likely to provide concrete improvements in practice.

Uganda as a developing country has implemented few projects that specifically address climate change adaptation. The reason for this is largely limited funding for such projects. It has largely implemented CDM projects and these have attracted substantial funding. The reason for this divergence in funding could be explained by the fact that CDM projects attract carbon credits to the developing countries that fund these projects, which is not the case with adaptation projects. Nevertheless, Uganda's participation in CDM has significant impacts on climate change adaptation. The CDM projects, such as power generation projects and forestation projects, although primarily targeting mitigation, increase resilience and reduce vulnerability of the communities to the extreme impacts of climate change. The sustainability of these projects, however, requires comprehensive policy and legal frameworks at the national level. Uganda has developed a number of laws but these laws do not directly address climate change issues. Further, there is limited knowledge among the people which hinders their effective participation in the implementation of these projects.

6.2 Summary of Key Findings

Climate change is a problem with long-effects and affects the world at large, regardless of whether a particular community has contributed or not. Climate change has moved from predictions to present day reality. The predictions for the coming years indicate that severe climate conditions are to hit the world and the IPCC has clearly indicated that those to be most affected are those in developing countries, and Africa in particular. Mitigation options have been devised but it is appreciated that climate change cannot be

retarded to a zero rate. Moreover, mitigation options will take very many years to reverse climate change. The focus has therefore moved to climate change adaptation as well. Countries have realized that the developing countries are likely to suffer more and they have focused on helping these countries adapt to climate change.

The Kyoto Protocol represents one of the approaches for climate change adaptation in developing countries. This protocol has moved along the lines of common but differentiated responsibilities and obliges developed countries to meet their targets and adapt to climate change through financial assistance and technological transfer. The post-Kyoto arrangements present an uncertain pattern for climate change adaptation owing to a big controversy of who should shoulder the burden for climate change mitigation and adaptation. The developed and developing countries have consistently maintained and followed different approaches. This in effect limits the amount of funds available to developing countries available for climate change adaptation.

Uganda has participated in the implementation of CDM projects that primarily focus on climate change mitigation. An examination of these projects, however, indicates that they are equally important in climate change adaptation. Uganda has also formulated comprehensive policy and legal frameworks. However, these policies and laws do not adequately address climate change adaptation. The laws also do not directly address CDM which is one of the ways for promoting climate change mitigation and adaptation.

6.3 Recommendations

On the basis of the challenges identified in the international legal framework for climate change adaptation in developing countries and in the implementation of adaptation at the national level, the following recommendations are made to address the challenges.

6.3.1 Recommendations for strengthening the Implementation of UNFCCC and Kyoto Protocol to achieve adaptation to climate change in developing countries

a) Creating Climate Adaptation Enforcement Mechanisms

There is no common oversight, accounting or enforcement framework for adaptation finance. Without a global framework that provides accountability for adaptation finance, developing countries cannot know what assistance to expect. Such a framework is needed to ensure a balance between adaptation and mitigation finance, ‘additionality’ of funds, reliable and transparent oversight, acceptable channelling of funds and proper enforcement. It will also delineate public funds from carbon market funds, adaptation funding from other types of funding, and grants from loans.

The Adaptation Fund Board, a body with majority representation from developing countries, should create and manage a global accounting framework for adaptation finance. It should assess whether donor nations are taking a balanced approach in fast-start and other pledges, as required by the Copenhagen Accord. The UNFCCC should prepare parties to agree on a global accounting framework in Cancun, and set a deadline for contributors to define a unified baseline for Copenhagen adaptation pledges. Existing fast-start pledges should be recalculated from this baseline, and new commitments should have to use it.

b) Defining Adaptation Activities

The international community should agree on a comprehensive list of adaptation activities. The Adaptation Fund Board, already tasked with handling international deliberations on adaptation, could propose and edit project categories.

6.3.2 Recommendations on Funding

a) Definition of ‘new and additional’ Pledges

For the longer term, only new sources of climate finance — not raised in the same ways as existing foreign assistance — should be counted as ‘new and additional.’ For fast-start finance, pledges can be seen as ‘additional’ if they are above a projection of business as usual development and climate funding through bilateral and multilateral channels.

b) Financial Monitoring

Contributors should financially support a UNFCCC approved independent registry and provide detailed data on climate-related projects in a timely fashion. This registry should

track funds all the way from contributors to expenditures, and should allow recipient governments and civil society to add information about the progress and effectiveness of all adaptation projects.

It is inevitable that the developing world is gradually becoming involved. The developing countries account for a large and growing share of emissions. Thus, in the long run, climate protection cannot be successful without substantial participation of the developing countries. Assignment of emission entitlements to lock developing countries into the abatement coalition will inevitably involve controversial equity debates. To relax these debates, the short-term objective of broadening participation should not be so much to redistribute costs from the industrialized to the developing world as to lower the overall abatement bill.

The actual provisions for sanctioning violators must be improved. One proposal is that violating sellers transfer revenues to some fund, while violating buyers pay a mark-up to the fund. The fund then can be used to compensate other signatories.

c) More Help in Dealing with Climate Impacts

The developed countries must invest further in the capacity of developing countries to participate in the climate process. This goes beyond the provision of training and other human resource assistance to enable countries to engage with confidence in the negotiations themselves. It will also include help in linking the international process with domestic policy; and the application of technologies, processes, and development alternatives that can deliver benefits both for local sustainable development and for the climate. A key area will be the development of affordable clean energy and transport options. Some of this support might be geared particularly towards the capacity to take on, and derive maximum benefit from, emissions targets.

There is need for financial facilitation in the areas of enforcing the policy and legal framework, capacity building at the national and local levels, preparing and updating a national communication. To achieve this, climate change has to be given priority by government and donor funding in the area of climate change should be increased.

Developed countries should provide similar amounts of finance for adaptation and mitigation, making good on their promise of balanced funding. Individual adaptation pledges for the fast-start period should be about US\$15 billion — a five-fold increase on current pledges. Developing countries will need much more than this to meet the cost of adaptation.

Adaptation finance should be disbursed as grants rather than loans, as developing countries should not bear the costs of adapting to climate change. Grants are essential for developing countries to build internal capacity to adapt to climate change — rather than taking on increasing foreign debt.

The term ‘adaptation finance’ should be used only for public grants. This will help the international community distinguish grants from loans, and public funds from private capital. Further, private capital should also be tapped to support developing-country adaptation — but should be seen as separate from ‘adaptation finance’.

6.3.3 Recommendations on Legal Reform

a) Enactment of CDM Regulations

There is an urgent need to enact CDM regulations and formulate policies which specifically address CDM. This will facilitate successful implementation of CDM projects. For instance the enactment of CDM regulations in China in 2004 attracted direct foreign investment and this explains why China is one of the countries with the highest concentration of CDM projects in the world.

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APPENDIX A

Interview Guide for a Study Entitled ‘Efficacy of the Kyoto Protocol in Helping Developing Countries Adapt to Climate Change’

Introduction:

Introduction of the interviewer to the interviewee, highlighting the purpose of the study, giving assurance of confidentiality and humble request for accurate information.

Questions:

1. Have you heard of climate change?
2. Does your institution deal with climate change issues?
3. Do you have climate change adaptation programmes that you implement in your institution/department?
4. How are these projects managed?
5. How are these projects funded?
6. Have you heard of the Kyoto Protocol? Do you think it is implemented effectively in Uganda?
7. If implemented, what are the challenges/limitations in its implementation?
8. If not implemented, what are the reasons for such? How do you think it can be implemented?
9. Do you think the Kyoto protocol adequately addresses the issue of climate change adaptation?
10. Do you think Uganda’s policy and legal framework adequately addresses climate change adaptation?
11. What are the strengths and weaknesses of this policy and legal framework?
12. What suggestions do you have to strengthen this policy and legal framework?
13. What other problems do you see in helping people adapt to climate change in Uganda?
14. What suggestions do you have to effectively help people adapt to climate change?

Conclusion:

Thank you very much for your time and accurate responses, I undertake not to disclose you names in the presentation of my research findings.