African Forest Forum

A platform for stakeholders in African forestry

International Dialogues, Processes and Mechanisms on Climate Change

A COMPENDIUM FOR PROFESSIONAL AND TECHNICAL TRAINING IN AFRICAN FORESTRY

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Front cover photos: Milicia excelsa in a sacred forest at Toffo in Southern Benin (left), Zio riverbed at Alokoegbé-kpota in Southern Togo (middle), private plantation of Moringa oleifera in southern Benin (right). Credit: Dèdéou A. Tchokponhoué.

Back cover photo. Dense foliage of Milicia excelsa in a sacred forest at Toffo in Southern Benin. Credit: Dèdéou A. Tchokponhoué..

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Abbreviations and Acronyms

AAUs	Assigned Amount Units
ABTs	Aichi Biodiversity Targets
AFF	African Forest Forum
AFOLU	Agriculture, Forestry and other Land Uses
AILAC	Independent Alliance of Latin America and the Caribbean
AMCEN	African Ministerial Conference on Environment
APDD	Avoiding Planned Deforestation and/or Degradation
AUDD	Avoiding Unplanned Deforestation and/or Degradation
BAU	Business-As-Usual
C	Carbon
CACAM	Central Asia, Caucasus, Albania and Moldova
CAFE	Corporate Average Fuel Economy
CBCF	Congo Basin Carbon Fund
CBD	Convention on Biological Diversity
CBDR	Common But Differentiated Responsibility
CC	Climate Change
CCAC	Climate and Clean Air Coalition
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CF	Carbon Fund
CH4	Methane
CIF	Climate Investment Funds
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMP	Meeting of Parties to the Kyoto Protocol
CO	Carbon monoxide
CO2	Carbon dioxide
COMESA	Common Market for Eastern and Southern Africa
COMIFAC	Central African Forestry Commission
COP	Conference of the Parties
CPF	Carbon Partnership Facility
CSOs	Civil Society Organisations
CTCN	Climate Technology Centre and Network
DNA	Designated National Authority
DOE	Designated Operational Entity
EAC	East African Community
EB	Executive Board
ECCAS	Economic Community of Central African States
ECOSOC	Economic and Social Council
ECOWAS	Economic Community of West African States
EIT	Economies in Transition

ERU	Emission Reduction Unit
ET	Emissions Trading
ETS	Emissions Trading Scheme
EU	European Union
EUMETSAT	European Organisation for the Exploitation of Meteorological Satellites
FAO	Food and Agriculture Organization of the United Nations
FCCC	Framework Convention on Climate Change
FCPF	Forest Carbon Partnership Facility
FWCC	First World Climate Conference
FIP	Forest Investment Programme
FLEGT	Forest Law Enforcement, Governance and Trade
FRL	Forest Reference Level
GARP	Global Atmospheric Research Programme
GCF	Green Climate Fund
GCOS	Global Climate Observation System
GEF	Global Environment Facility
GFCS	Global Framework for Climate Services
GGWSSI	Great Green Wall Initiative of the Sahara and the Sahel
GHG	Greenhouse Gas
HFC	Hydrofluorocarbons
HIV/AIDS	Human Immune Deficiency Virus/Acquired Immune Deficiency Syndrome
IAF	International Arrangement on Forests
ICSU	International Council of Science Unions
IET	International Emissions Trading
IFF	Intergovernmental Forum on Forests
IGAD	Inter Governmental Agency for Development
IGOs	Inter Governmental Organisations
IMC	International Meteorological Committee
IMO	International Meteorological Organisation
INC	Intergovernmental Negotiating Committee
INDC	Intended Nationally Determined Contribution
IPCC	Intergovernmental Panel on Climate Change
IPF	Intergovernmental Panel on Forests
ISDR	International Strategy for Disaster Reduction
ITTO	International Timber Trade Organisation
JI	Joint Implementation
JNR	Jurisdictional and Nested REDD+
JPOI	Johannesburg Plan of Implementation
JSC	Joint Scientific Committee
KP	Kyoto Protocol
LDCs	Least Developed Countries
LDCF	Least Development Country Fund
LULUCF	Land Use, Land-Use Change and Forestry
MDGs	Millennium Development Goals

MEA	Multilateral Environmental Agreement
MOP	Meeting of Parties
MRV	Measurable, Reportable and Verifiable N20
NAMAs	Nationally Appropriate Mitigation Actions
NAPs	National Adaptation Plans
NAPAs	National Adaptation Programmes of Actions
NBSAPs	National Biodiversity Strategies and Action Plans
NEPAD	New Partnership for Africa's Development
NF3	Nitrogen trifluoride
NFMS	National Forest Monitoring System
NGOs	Non-Governmental Organisations
NLBI	Non-Legally Binding Instrument
NMVOC	Non-Methane Volatile Organic Compounds
NOx	Oxides of Nitrogen
O3	Ozone
OECD	Organization for Economic Cooperation and Development
PDD	Project Design Document
PFC	Perfluorocarbon
PIN	Project Idea Note
RaCSA	Rapid Forest Carbon Assessment
RED	Reducing Emissions from Deforestation
REDD	Reducing Emissions from Deforestation and Forest Degradation
REDD+	REDD with Conservation and Enhancement of forest Carbon stocks; sustainable management of forests
REL	Reference Emission Level
RMU	Removal Unit
SADC	Southern African Development Community
SB	Subsidiary Bodies
SBI	Subsidiary Body for Implementation
SBSTA	Subsidiary Body for Scientific and Technological Advice
SDC	Swiss Agency for Development and Cooperation
SDGs	Sustainable Development Goals
SF6	Sulphur hexafluoride
SFM	Sustainable Forest Management
Sida	Swedish International Development Cooperation Agency
SMEs	Small and Medium Enterprises
SO2	Sulphur dioxide
UN	United Nations
SWCC	Second World Climate Conference
UNCCD	United Nations Convention to Combat Desertification
UNCED	United Nations Conference on Environment and Development
UNCHE	UN Conference on the Human Environment
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme

UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
UNFF	United Nations Forum on Forests
UNFI	United Nations Forest Instrument
UNSPF	United Nations Strategic Plan on Forests
VCS	Verified Carbon Standards
VCUs	Verified Carbon Units
VERs	Voluntary Emission Reductions
VPA	Voluntary Partnership Agreements
WCC-1	First World Climate Conference
WCC-2	Second World Climate Conference
WCP	World Climate Programme
WMC	World Meteorological Convention
WMO	World Meteorological Organisation
WSSD	World Summit on Sustainable Development
WWR	World Weather Records
WWW	World Weather Watch

Acknowledgements

This compendium has been developed through an organic process that initially led to the This compendium has been developed through an organic process that initially led to the development of “Training modules on forest-based climate change adaptation, mitigation, Carbon trading, and payment for other environmental services”. These were developed for professional and technical training, and for short courses in sub-Saharan African countries. The compendium provides the text required for effective delivery of the training envisaged in the training modules; in other words, it is structured based on the training modules. In this context, many people and institutions, including those from government, civil society, academia, research, business, private sector, and other communities, have contributed in various ways in the process that culminated in the development of the compendium. We wish to collectively thank all individuals and institutions for their invaluable contributions, given that it is difficult in such a short text to mention them individually.

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We hope that the compendium will contribute to a more organized and systematic way of delivering training in this area, and eventually towards better management of African forests and trees outside forests.

Preface

African forests and trees support the key sectors of the economies of many African countries, including crop and livestock agriculture, energy, wildlife and tourism, water resources and livelihoods. They are central to maintaining the quality of the environment throughout the continent, while providing international public goods and services. Forests and trees provide the bulk of the energy used in Africa. Forests and trees are therefore at the centre of socio-economic development and environmental protection of the continent.

Forests and trees outside forests in Africa are in many ways impacted by climate change, and they in turn influence climate. Hence, African forests and trees are increasingly becoming very strategic in addressing climate change. The great diversity of forest types and conditions in Africa is at the same time the strength and the weakness of the continent in devising optimal forest-based responses to climate change. In this regard, given the role of forests and trees to socio-economic development and environmental protection, actions employed to address climate change in Africa must simultaneously enhance livelihoods of forest dependent populations and improve the quality of the environment. It is therefore necessary for Africa to understand how climate change affect the inter-relationships between food, agriculture, energy use and sources, natural resources (including forests and woodlands) and people in Africa, and in the context of the macro-economic policies and political systems that define the environment in which they all operate. Much as this is extremely complex, the understanding of how climate change affect these inter-relationships is paramount in influencing the process, pace, magnitude and direction of development necessary for enhancing people's welfare and the environment in which they live.

At the forestry sector level, climate affects forests but forests also affect climate. For example, carbon sequestration increases in growing forests, a process that positively influences the level of greenhouse gases in the atmosphere, which, in turn, may reduce global warming. In other words, the forests, by regulating the carbon cycle, play vital roles in climatic change and variability. For example, the Intergovernmental Panel on Climate Change (IPCC) special report of 2018 on the impacts of global warming of 1.5 ^{o}C above pre-industrial levels underscores the significance of afforestation and reforestation, land restoration and soil carbon sequestration in carbon dioxide removal. Specifically, in pathways limiting global warming to 1.5 ^{o}C, agriculture, forestry and land-use (AFOLU) are projected with medium confidence to remove 0-5, 1-11 and 1-5 $GtCO_2$ yr^{-1} in 2030, 2050 and 2100, respectively. There are also co-benefits associated with AFOLU-related carbon dioxide removal measures such as improved biodiversity, soil quality and local food security. Climate, on the other hand, affects the function and structure of forests. It is important to understand adequately the dynamics of this interaction to be able to design and implement appropriate mitigation and adaptation strategies for the forest sector.

In the period between 2009 and 2011, the African Forest Forum sought to understand these relationships by putting together the scientific information it could gather in the form of a book that addressed climate change in the context of African forests, trees, and wildlife resources. This work, which was financed by the Swedish International Development Cooperation Agency (Sida), unearthed considerable gaps on Africa's understanding of climate change in forestry, how to handle the challenges and

opportunities presented by it and the capacity to do so.

The most glaring constraint for Africa to respond to climate change was identified as the lack of capacity to do so. AFF recognizes that establishment and operationalization of human capacities are essential for an effective approach to various issues related to climate change, as well as to improve the quality of knowledge transfer. For example, civil society organisations, extension agents and local communities are stakeholders in implementing adaptation and mitigation activities implicit in many climate change strategies. In addition, civil society organisations and extension agents are more likely to widely disseminate relevant research results to local communities, who are and will be affected by the adverse effects of climate change. It is therefore crucial that all levels of society are aware of mechanisms to reduce poverty through their contribution to solving environmental problems. Training and updating knowledge of civil society organisations, extension service agents and local communities is one of the logical approaches to this. Also professional and technical staff in forestry and related areas would require knowledge and skills in these relatively new areas of work.

It was on this basis that AFF organized a workshop on capacity building and skills development in forest-based climate change adaptation and mitigation in Nairobi, Kenya, in November 2012 that drew participants from selected academic, research and civil society institutions, as well as from the private sector. The workshop identified the training needs on climate change for forestry related educational and research institutions at professional and technical levels, as well as the training needs for civil society groups and extension agents that interact with local communities and also private sector on these issues. The training needs identified through the workshop focused on four main areas, namely: Science of Climate Change, Forests and Climate Change Adaptation, Forests and Climate Change Mitigation, and Carbon Markets and Trade. This formed the basis for the workshop participants to develop training modules for professional and technical training, and for short courses for extension agents and civil society groups. The development of the training modules involved 115 scientists from across Africa. The training modules provide guidance on how training could be organized but do not include the text for training; a need that was presented to AFF by the training institutions and relevant agents.

Between 2015 and 2018, AFF brought together 50 African scientists to develop the required text, in the form of compendiums, and in a pedagogical manner. This work was largely financed by the Swiss Agency for Development and Cooperation (SDC) and with some contribution from the Swedish International Development Cooperation Agency (Sida). In this period eight compendiums were developed, namely:

1. Basic science of climate change: a compendium for professional training in African forestry
2. Basic science of climate change: a compendium for technical training in African forestry
3. Basic science of climate change: a compendium for short courses in African forestry
4. Carbon markets and trade: a compendium for technical training in African forestry
5. Carbon markets and trade: a compendium for professional training in African forestry
6. Carbon markets and trade: a compendium for short courses in African forestry

7. International dialogues, processes and mechanisms on climate change: compendium for professional and technical training in African forestry
8. Climate modelling and scenario development: a compendium for professional training in African forestry

Another notable contribution during the period 2011-2018 was the use of the training module on "Carbon markets and trade" in building the capacity of 574 trainers from 16 African countries on rapid forest carbon assessment (RaCSA), development of a Project Idea Note (PIN) and a Project Design Document (PDD), exposure to trade and markets for forest carbon, and carbon financing, among others. The countries that benefited from the training are: Ethiopia (35), Zambia (21), Niger (34), Tanzania (29), Sudan (34), Zimbabwe (30), Kenya (54), Burkina Faso (35), Togo (33), Nigeria (52), Madagascar (42), Swaziland (30), Guinea Conakry (40), Côte d'Ivoire (31), Sierra Leone (35) and Liberia (39). In addition, the same module has been used to equip African forest-based small-medium enterprises (SMEs) with skills and knowledge on how to develop and engage on forest carbon business. In this regard, 63 trainers of trainers were trained on RaCSA from the following African countries: South Africa, Lesotho, Swaziland, Malawi, Angola, Zambia, Zimbabwe, Mozambique, Tanzania, Uganda, Kenya, Ethiopia, Sudan, Ghana, Liberia, Niger, Nigeria, Gambia, Madagascar, Democratic Republic of Congo, Cameroon, Côte d'Ivoire, Burkina Faso, Gabon, Republic of Congo, Tchad, Guinea Conakry, Senegal, Mali, Mauritania, Togo and Benin .

An evaluation undertaken by AFF has confirmed that many trainees on RaCSA are already making good use of the knowledge and skills gained in various ways, including in developing bankable forest carbon projects. Also many stakeholders have already made use of the training modules and the compendiums to improve the curricula at their institutions and the way climate change education and training is delivered.

The development of the compendiums is therefore an evolutionary process that has seen the gradual building of the capacity of many African scientists in developing teaching and training materials for their institutions and the public at large. In a way this has cultivated interest within the African forestry fraternity to gradually build the capacity to develop such texts and eventually books in areas of interest to the continent, as a way of supplementing information otherwise available from various sources, with the ultimate objective of improving the understanding of such issues as well as to better prepare present and future generations in addressing the same.

We therefore encourage the wide use of these compendiums, not only for educational and training purposes but also to increase the understanding of climate change aspects in African forestry by the general public.

Macarthy Oyebo
Chair, Governing Council of AFF

Godwin Kowero
Executive Secretary-AFF

Executive summary

Module overview

Climate change is a global challenge that requires global solutions as GHG emissions have the same impact on the atmosphere affecting everyone. In this regard, action by one country to reduce emissions will do little to slow global warming unless other countries also act accordingly. This means that effective strategies require commitment and action by all major emitting countries as human activities are contributing to climate change, primarily by releasing large amounts of CO2 and other GHGs into the atmosphere. The initial climate change dialogues were mainly at global level, but in recent times there have been many discussions on mitigation and adaptation that have been initiated at regional and national levels. In 1992, countries joined an international treaty called the United Nations Framework Convention on Climate Change (UNFCCC), to jointly consider activities needed to limit average global temperature increases, the resulting climate change, and how to cope with the impacts. By 1995, countries recognised that emission reductions provisions in the UNFCCC were deficient and began negotiations to support global responses to climate change which culminated in the adoption of the Kyoto Protocol (KP) in 1997. The Protocol consists of legally binding emission reduction targets by the developed countries. By 2010, other climate change mitigation and adaptation strategies had emerged to support Reduced Emissions from Deforestation and forest Degradation (REDD+) and the revision of KP.

This module introduces professionals and non-professionals to international dialogues and processes related to climate change, including global, regional, and national level responses to climate change. It also explores the preparedness of the African continent and dialogues, processes and mechanisms to addresses issues of climate change vulnerability, mitigation and adaptation at all levels. For purposes of learning, delivery methods include interactive lectures; group discussions; question and answer sessions; brainstorming and case study activities. Chapter 1 discusses the historical overview of international responses to climate change. Chapter 2 looks at the first multilateral organisations tasked to address climate change, including the World Meteorological Organisation (WMO) and United Nations Environment Programme (UNEP). Chapter 3 is an overview of the UNFCCC, its objectives, principles, actors and institutional arrangement. Chapter 4 is based on a critical analysis of the KP market-based mechanisms of Emissions Trading (ET), Joint Implementation (JI) and Clean Development Mechanism (CDM). Chapter 5 discusses other strategies for climate change mitigation including REDD+. Chapter 6 discusses Africa's preparedness and position in climate change negotiations including participation in international and regional initiatives. Finally, in chapter 7, national CC dialogues, processes and mechanisms are discussed.

Expected learning outcomes

The following are the expected learning outcomes for this module:

1. Analyse international agreements, discussions, conventions, and negotiations on climate change.
2. Evaluate implications of the climate change discussions and negotiations for developing countries.
3. Analyse institutional mechanisms that address forestry related issues of climate change vulnerability, mitigation and adaptation.

Chapter 1: Historical Overview of International Responses to Climate Change

1.1 Introduction

Climate change (CC) presents a threat to various biophysical and social systems that are important in many ways. This is evidenced by increasing temperatures and changing weather patterns that have resulted in shifts in plant and animal productivity and affected different sources of human livelihoods. Decreased/incessant rainfall and rising sea levels threaten freshwater supplies, particularly those in island states. On the African continent, for example, CC is adding to a range of other pressures, such as agricultural expansion, fire and deforestation, which are major drivers of forest loss contributing to CC. African people are dependent on forests for their livelihoods and are therefore more vulnerable to the impacts of CC. The ability to plan for CC adaptation is hampered by a lack of information about current and future climate-related impacts and vulnerabilities. In Africa, CC, like other environmental issues, only became more prominent after the arrangement of climate finances by the World Bank. In order to address the impacts of climate change, global attention is needed that calls upon different parties responsible for the causes of climate change to take some level of responsibility and help those affected. This chapter provides a historical overview of international responses to climate change up to the time when the United Nations Framework Convention on Climate Change (UNFCCC) came into force.

Objectives

By the end of this session, the learner will be able to:

i) Trace the emergence of the CC debate.

ii) Describe the early initiatives for international CC actions and their outcome.

1.2 Weather and climate change history and the inter-national responses

Climate has been changing since time immemorial and this has been explained in ancient texts including religious documents. However, it is not until the scientific community highlighted that CC issues were a reality and relevant in many nations that the wider world population slowly began to take note. Among the drivers of CC are activities linked to industrial manufacturing, fire and combustion of fossil fuels contributing to greenhouse gas (GHG) emissions, all as a result of human needs.

Science has made it possible to determine the impacts of CC and associated drivers over time. Measurements of climate variables began with the invention of the thermometer. Shortly thereafter, in the early 1600s, weather began to be quantified and recorded. The first meteorological network was formed in northern Italy in 1653 (Kingston 1988) and reports of temperature observations were published in early scientific journals (e.g. Wallis and Beale, 1669). Formal international coordination of meteorological observations from ships commenced in 1853 (Quetelet, 1854). By the latter part of the 19th century, systematic observations of the weather were done throughout the world. These measurements continue to be undertaken by nations as part of their metrological programmes that are of value in agriculture, trade and even in warfare. Beyond the areas mentioned, these measurements are progressively becoming important as new realities emerge in all facets of human life. Forestry, seen separately from agriculture, is another sector that greatly benefits from the measurements.

Callendar (1938) produced the next global temperature time series expressly to investigate the influence of Carbon dioxide (CO_2) on temperature. He examined about 200 station records and found that a small portion of them were defective. This was based on quality concerns determined by comparing differences with neighbouring stations or on homogeneity concerns based on station changes documented in the recorded metadata. After further removing two arctic stations because he had no compensating stations from the Antarctic region, he created a global average using data from 147 stations. Most of Callendar's data came from World Weather Records (WWR) (Clayton, 1927). Initiated by a resolution at the 1923 International Meteorological Organisation (IMO) Conference, WWR was a monumental international undertaking producing a 1,196-page volume of monthly temperature, precipitation and pressure data from hundreds of stations around the world, some with data starting in the early 1800s. The IMO was formed in 1873 and was followed by the World Meteorological Convention (WMC) that works to promote and exchange standardised meteorological observations.

In the early 1960s, the data were digitised (National Climatic Data Center, 2005). Callendar in turn created a new global temperature time series in 1961 using results of Willet (1950) as a guide for some of his improvements. Other studies on global temperatures were done by Landsberg and Mitchell (1961), Budyko (1969), Jones et al. (1986) and Hansen and Lebedeff (1987). Since then, global and national data sets have been rigorously adjusted for homogeneity using a variety of statistical and metadata-based approaches (Peterson et al., 1998). Brohan et al. (2006) used global land air temperature and sea surface temperature data to create the longest of the currently updated global temperature time series.

Apart from weather, atmospheric carbon (C) measurements have been and continue to be one of the main measurements taken by scientists. Currently, this is a requirement in some of the devel-

oped countries of their industries before renewal of trading licenses. It keeps tabs on C emissions. The high-accuracy measurements of atmospheric CO_2 concentrations initiated by Keeling (1958), constitute the master time series documenting the changing composition of the atmospheric components (Keeling, 1961; 1998). These data have iconic status in CC science as evidence of the effect of human activities on the chemical composition of the global atmosphere. Keeling's measurements in Mauna Loa, Hawaii provided a true measure of the global C cycle, with an effectively continuous record of the burning of fossil fuel. They also maintained an accuracy and precision that allowed scientists to separate fossil fuel emissions from the natural annual cycles of the biosphere, demonstrating a long-term change in the seasonal exchange of CO_2 between the atmosphere, biosphere and ocean. Other studies found that climate and weather extremes affected plants and animal productivity (e.g. Bumpus, 1899; Dobzhansky, 1947; Johnson et al., 1972).

CC cannot be delinked from what is generally referred to as global warming. This is the rise in global temperature from what is averagely known. While some scientists continue to believe that global warming could be due to changes in sun spots, natural cycles of warming and cooling, or other factors, most scientists agree that it's extremely unlikely that these changes in temperature are wholly natural in origin. Instead, they believe the warming we are experiencing today is due to rising concentrations of heat-trapping gases that form a "blanket" around Earth primarily from human activities.

Activity 1.1 (Brainstorming)

Discuss the response of the international community to the challenges of CC.

The historical CC science showed the changes of climate in some defined statistical sense, without providing a reason for that change. While it was not possible to detect anthropogenic warming, in 1980 Madden and Ramanathan (1980) and Hansen et al. (1981) predicted it would be evident at least within the next two decades. A decade later, Wigley and Raper (1990) used a simple energy-balance climate model to show that the observed change in global-mean surface temperature from 1867 to 1982 could not be explained by natural internal variability. This finding was later confirmed using variability estimates from more complex coupled ocean atmosphere general circulation models (e.g. Stouffer et al., 1994). From the scientific data gathered over time, governments have been convinced to take sides concerning the issues of CC and more so address the issues causing change that may be anthropogenic.

Climate issues were initially discussed in 1961 at the United Nations (UN) General Assembly Resolution where the World Meteorological Organisation (WMO) and the International Council for Science (ICSU) were called upon to collaborate in developing new scientific and technological opportunities for monitoring, predicting and eventually controlling weather and climate. This was prompted by the formation of the WMO world weather watch (WWW) and the WMO/ICSU Global Atmospheric Research Programme (GARP). The WWW provided the basic global arrangement for supporting operational weather forecasting and for describing and monitoring climate, while GARP focused on improved weather forecasting and scientific basis for climate prediction (Davies, 1990).

The first time CC was recognized as a grave problem by an international gathering was in February 1979 at The First World Climate Conference (WCC-1) that attracted about 350 participants

from 53 countries and 24 international organisations representing a wide range of disciplines including environment, agriculture, water resources, energy, biology, medicine, sociology, economics, fisheries and ecology (Zillman, 2009). At the conference a declaration was made calling on all governments to anticipate and prevent potential man-made alterations to global climate regimes that might be harmful to the well-being of humanity. After the WCC-1, a series of international conferences on climate change have been held and attended by policy-makers, government leaders, scientists and other stakeholders who have addressed both scientific and policy issues on climate change. For instance, the Second World Climate Conference (WCC-2) held in 1990 in Geneva attracted 747 participants from 116 countries and led to a binding global convention on climate change. The WCC-2 reviewed the first decade of progress under the World Climate Programme (WCP) where major achievements in the application of climate information to the challenges of food, water, energy and urban and building designed were discussed.

Activity 1.2 (Group Discussion)

Discuss the impacts of human activities and natural forces in the current global warming trend.

The Intergovernmental Panel on Climate Change (IPCC) was established in 1988 by WMO and United Nations Environment Programme (UNEP), to evaluate the extent and timing of CC and its impacts and suggest strategies to mitigate and adapt. This was followed by several other meetings calling for nations to reduce anthropogenic GHG emissions and promote sustainable development including the Earth Summit of 1992 in Rio de Janeiro. The UNFCCC is a product of international environmental negotiations at the Earth Summit, which entered into force on 21 March 1994. The details of the UNFCCC will be discussed in Chapter 3 of this module. A series of meetings have been held to negotiate global ways of combating CC with the most recent being the adoption of the Paris agreement at the Conference of Parties meeting (COP) in Morocco, in November 2016. Table 1.1 provides a summary of the conclusions and recommendations at some of the meetings held before the UNFCCC came into force.

Table 1.1: Important dates in climate change response history

Conference	Year	Organiser	Conclusions and principal recommendations
First World Climate Conference	1979	WMO/UNEP/ ICSU	▪ CO_2 identified as a cause for global warming. ▪ Governments urged to foresee and prevent changes in climate. ▪ World Climate Programme (WCP) initiated.
Villach Conference	1985	WMO/UNEP/ ICSU	▪ Significant CC highly probable. ▪ States should initiate consideration of developing a global climate convention.
10th World Meteorological Congress	1987	WMO	▪ Global warming major threat to sustainable development causing need for periodic scientific assessments.
Toronto Conference	1988	Canada	▪ Global CO_2 emissions should be cut by 20% by 2005. ▪ Develop comprehensive framework convention on the law of the atmosphere.
UN General Assembly	1988	UN	▪ CC “a common concern of mankind”.

Hague Summit	1989	Netherlands	▪ Signatories will promote new institutional authority to combat global warming, involving no unanimous decision making.
Noordwijk Conference	1989	Netherlands	▪ Declaration on atmospheric pollution and CC. ▪ Industrialised countries should stabilize GHG emissions as soon as possible.
IPCC 1st Assessment Report	1990	WMO/UNEP	▪ Global mean temperatures likely to increase by about 0.3 °C per decade, under business as usual (BAU) emissions scenario.
2nd World Climate Conference	1990	WMO/UNEP	▪ Countries need to stabilise GHG emissions and developed nations should establish emissions targets and/or national programmes or strategies.
UN General Assembly	1990	UN	▪ Establishment of Intergovernmental Negotiating Committee (INC) for the Framework Convention on Climate Change (FCCC) with first meeting held in 1991.
Meeting of experts to formulate a prospectus for Global Climate Observation System (GCOS)	1991	Joint Scientific Committee (JSC)	▪ Formulation of GCOS.
11th World Meteorological Conference	1991	WMO	▪ Restructuring of World Climate Programme (WCP) to include for components of data monitoring; applications and services programme; impact assessment and response strategies; and research
UN Conference on Environment and Development (UNCED)	1992	UNCED	▪ INC adopts UNFCCC before UNCED. ▪ UNFCCC opened for signatures.
WCP meeting	1993	WMO/UNEP/ UNESCO/ FAO/UNDP	▪ The CC agenda was made.
	1994	FCCC	▪ UNFCCC entered into force.

Source: Bodansky (1995); Zillman (2009).

Exercise Questions

i) Evaluate the scientific consensus on the causes and consequences of CC.

ii) Explain the relationships between the three international treaties borne out of the Earth Summit.

Summary

In this chapter we have learned about the first international organisations to work on CC that included the WMO and the UNEP. The advances in CC debates shall be discussed in the next chapters beginning with early international organisation followed by UNFCCC and some of its major milestone strategies.

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Chapter 2: The First Multilateral Organisations Tasked to Address Climate Change

2.1 Introduction

The Multilateral Environmental Agreements (MEAs) began with the UN Conference on the Human Environment (UNCHE) held in Stockholm in 1972. This was followed by the first world climate conference in 1979. At this conference, CO_2 was identified as a cause for global warming and the WCP was initiated. This chapter describes the first multilateral organisations and arrangements tasked to address issues of CC. They include the WMO, UNEP, IPCC, The Earth Summit, United Nations Forum on Forests (UNFF) and Sustainable Development Goals (SDGs).

Objectives

By the end of this session, the learner will be able to:

i) Describe the mandates of the first multilateral organisations addressing CC.

ii) Explain the role of the IPCC in CC.

iii) Explain the role of the UNFF on conservation and exploitation of forests.

iv) Explain the international responses to CC.

Activity 2.1 (Brainstorming)

Give examples of multilateral organisations and explain their role in CC.

2.2 The World Meteorological Organization

The World Meteorological Organization (WMO) is an intergovernmental organisation born after much discussion, and adopted through the Paris Draft of 1946. The draft had two annexes; draft General Regulations and draft Technical Regulations. In the intervening period, the work of the International Meteorological Committee (IMC) continued – in particular by making sure the many resolutions and recommendations of the meeting were implemented. The committee also secured recognition by the UN as the preparatory body for the new organisation and accordingly took part in relevant UN activities. After many deliberations, the WMC was finally approved unanimously in 1947. The last meeting of IMO Conference of Directors was held in Paris in March 1951 and IMO remained in operation until the establishment of WMO in 1950, following the entry into force of its Convention, and designation of WMO in 1951 as a specialised agency of the UN. The WMO became the specialised agency of the UN for meteorology (weather and climate), operational hydrology and related geophysical sciences with its headquarters in Geneva, Switzerland (WMO, 2002). WMO has a membership of 191 member states and territories and provides a global scale framework for international cooperation for the development of meteorology, including satellite meteorology, as well as for the attainment of benefits derived from its application.

WMO has a space programme aimed at promoting the availability and utilisation of satellite data and products for weather, climate, water and related applications to WMO Members (WMO, 2017). The space programme has four main components: the space based observing system, access to satellite data and products, awareness and training, and space weather coordination. It coordinates environmental satellite matters and activities throughout all its programmes and gives guidance on the potential of remote-sensing techniques in meteorology, hydrology and related disciplines.

2.2.1 Functions of the World Meteorological Organisation (WMO)

The main functions of WMO:

» International coordination of national meteorological and hydrological services enabling them to provide daily weather forecasts and early and reliable warnings of high-impact weather and climate events.

» Plays a vital role in detecting climate variability and change by monitoring long-term changes in levels of GHG, solar radiation and other atmospheric components to assess their effects on people, climate, regional and urban air quality, and marine and terrestrial ecosystems.

» Promotes water-resource assessments by National Hydrological Services, which, in turn, provide the forecasts needed to plan water storage for domestic requirements, agricultural activities, hydroelectric power generation and urban development.

2.2.2 Achievements of the World Meteorological Organisation

Key achievements of WMO include:

- Improvement in the range and accuracy of weather forecasts, early warnings and seasonal prediction (El Niño).

- Mitigation of natural disasters (collaboration with UN International Strategy for Disaster Reduction (ISDR).
- Climate issues and climate prediction (Climate Agenda, UNFCCC, United Nations Convention to Combat Desertification (UNCCD), etc).
- Protection of the environment e.g. Ozone monitoring and assessment (Vienna Convention).
- Assessment and management of water resources.
- Support to World Summits (e.g. UNCED, World Summit on Sustainable Development (WSSD).

Other multilateral organisations such as the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) contribute to and fulfil several of WMO's objectives and activities. Cooperation of EUMETSAT with WMO dates to the origins of EUMETSAT where WMO is clearly mentioned in its convention. In the pursuit of its primary objective of establishing, maintaining and exploiting European systems of operational meteorological satellites, it considers as far as possible the recommendations made by WMO. It is involved in the WMO Space Programme through various initiatives including:

- Its satellites being a component of the space segment of the Integrated Global Observing System of the WMO WWW.
- It is involved in linking training and data access activities to facilitate the use of and access to satellite data.
- It contributes to the GCOS, a programme co-sponsored by WMO.

EUMETSAT contributes with its activities to a number of WMO programmes, its regional associations (Europe and Africa in particular), its Commission for Basic Systems, the Global Framework for Climate Services (GFCS), as well as some of the WMO co-sponsored programmes related to oceanography, such as GCOS, Global Ocean Observing System, Global Terrestrial Observing System and Joint Technical Commission for Oceanography and Marine Meteorology. Furthermore, it has observer status in the WMO Executive Council and Congress meetings and participates in a vast range of WMO Expert and Task Teams.

2.3 The United Nations Environment Programme (UNEP)

The UNEP became the leading global environmental authority that sets the global environmental agenda, promotes the coherent implementation of the environmental dimension of sustainable development within the UN system and serves as an authoritative advocate for the global environment (UNEP 2017). The UNEP has a global environmental leadership mandate and some convening power. It has participated in initiatives such as the Millennium Ecosystem Assessment, the Global Environment Outlook, the Assessments of Impacts and Adaptations to Climate Change initiative, and National Adaptation Programmes of Action (NAPA), and the Integrated Water Resource Management and Regional Seas Programmes.

The major activities of UNEP include:

- Assessing global, regional and national environmental conditions and trends.
- Developing international and national environmental instruments.
- Strengthening institutions for the wise management of the environment.
- Providing leadership and encouraging partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations.

UNEP is also involved in the following CC activities:

i) Adaptation: Building resilience to CC though various adaptation measures including access to climate finance, ecosystem based adaptation, learning exchanges and adaptation policy and planning.

ii) Mitigation: UNEP takes a multifaceted approach towards CC mitigation in its efforts to help countries move towards climate-resilient and low emissions strategies.

iii) Reducing emissions from deforestation and forest degradation (REDD)

Reducing Emissions from Deforestation and Forest Degradation, or UN-REDD Programme as it is often called, is a collaborative programme of FAO, UNDP and UNEP, created in 2008 in response to the UNFCCC decisions on the Bali Action Plan and REDD at COP-13. As the term refers, it covered elements that would reduce emissions from deforestation and forest degradation. However, REDD+ is a voluntary CC mitigation approach that has been developed by Parties to the UNFCCC. It emerged in 2010. It aims to provide incentives to developing countries to reduce emissions from deforestation and forest degradation, sustainably manage forests, conserve forest carbon stocks, and enhance forest carbon stocks. This means that REDD+ goes beyond what REDD was created for.

iv) Climate finance: supporting developing countries to access climate finance (directly and through accredited entity).

v) Climate and Clean Air Coalition (CCAC): is the only global effort that unites governments, civil society and private sector, committed to improving air quality and protecting the climate by reducing short-lived climate pollutants across sectors. The Coalition's initial focus is on methane (CH_4), black C and hydro-fluorocarbons (HFCs). Actions on short-lived climate pollutants must complement and supplement, not replace, global action to reduce CO_2 under UNFCCC.

The Coalition's objectives are to:

- Raise awareness of short-lived climate pollutant impacts and mitigation strategies.
- Enhance and develop new national/regional actions, including by identifying and overcoming barriers, increasing capacity, and mobilizing support.
- Promote best practices and showcasing successful efforts.
- Improve scientific understanding of short-lived climate pollutant impacts and mitigation strategies.

vi) **Climate Technology Centre and Network (CTCN)**: is the operational arm of the UNFCCC Technology Mechanism, hosted by UNEP and UNIDO. It promotes the accelerated transfer of environmentally sound technologies for low C and climate resilient development at the request of developing countries, provides technology solutions, capacity building, advice on policy and legal and regulatory frameworks tailored to the needs of individual countries. The CTCN facilitates the transfer of technologies through three core services:

- Providing at the request of developing countries to accelerate the transfer of climate technologies.
- Creating access to information and knowledge on climate technologies.
- Fostering collaboration among climate technology stakeholders via the Centre's network of regional and sectoral experts from academia, the private sector, and public and research institutions.

2.4 The Intergovernmental Panel on Climate Change (IPCC)

IPCC was created by WMO and UNEP in 1988. The Panel was tasked to prepare assessments on all aspects of CC and its impacts, with a view of formulating realistic response strategies based on available scientific information. The initial task for IPCC as outlined in UN General Assembly Resolution 43/53 of 6 December 1988 was to prepare a comprehensive review and recommendations with respect to the state of knowledge of the science of CC, its social and economic impacts and possible response strategies and elements for future inclusion in international conventions. IPCC uses comprehensive, objective, open and transparent ways to give scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced CC, its potential impacts and options for adaptation and mitigation. IPCC reports are expected to be neutral with respect to policy, although they may need to deal objectively with scientific, technical and socio-economic factors relevant to the application of particular policies.

The first IPCC report published in 1990 gave scientific evidence of the importance of CC as a challenge requiring international cooperation to tackle its consequences. The report focused on the science, impact and possible scenarios. Emissions coming from human activities were increasing the concentrations of the atmospheric GHGs: CO_2, CH_4, chlorofluorocarbons and Nitrous oxide (N_2O), enhancing the greenhouse effect, resulting in further warming of the Earth's surface. Water vapour will increase in response to global warming and further increase the warming. The report included prediction of CC based on 4 scenarios: Scenario A - BAU, Scenario B - increase in global mean temperature of about 0.2°C per decade, Scenario C - just above 0.1°C per decade and Scenario D - about 0.1°C per decade. In this regard, the IPCC became instrumental in the creation of the UNFCCC, which became a key international treaty to reduce global warming and cope with the consequences of CC.

The second assessment report was published in 1995 and it provided important material drawn on by negotiators in the run-up to adoption of the Kyoto Protocol (KP) in 1997. *The third assessment report* came in 2001 and confirmed that warming of the earth's surface was due to human activities resulting in increases in global mean temperature, rising sea levels, and increased heat wave frequencies. The report also stated that future warming will have both beneficial and adverse effects, but for higher levels of warming, adverse effects will predominate. Developing and less endowed countries will be most vulnerable to the changing climate. *The fourth report* in 2007 highlighted that global increases in atmospheric CO_2 concentration were mainly from use of fossil fuels and land use change, whereas CH_4 and N_2O were predominantly from agriculture. The report emphasized the need for the integration of CC with sustainable development policies and the relationships between mitigation and adaptation. *The fifth assessment report* was released in four parts between September 2013 and November 2014 and provides a clear and up to date view of the current state of scientific knowledge relevant to CC. The report consists of three working group reports and a synthesis report which integrates and synthesised material in the working group reports for policymakers. It is expected that *the sixth assessment report* will be finalised by 2022 in time for the global assessment of the outcomes under the UNFCCC Paris Agreement.

2.5 Rio meetings and other sustainable development conferences

2.5.1 The Earth summit

The UNCED, also called the Earth Summit, was held in Rio de Janeiro in June 1992 with the aim of reconciling global economic development with environmental protection. The UN Commission on Sustainable Development was also established by the UN General Assembly in December 1992 to ensure effective follow-up of UNCED. The Commission is responsible for reviewing progress in the implement-tation of Agenda 21 and the Rio Declaration on Environment and Development; as well as providing policy guidance to follow up the Johannesburg Plan of Implementation (JPOI) at the local, national, regional and international levels. The JPOI reaffirmed that the Commission on Sustainable Development is the high-level forum for sustainable development within the UN system. The Earth Summit also influenced all subsequent UN conferences to examine relationships between human rights, population, social development, women, human settlements, and the need for environmentally sustainable development.

At the Earth Summit, Governments adopted three major agreements aimed at changing the traditional approach to development and two legally binding Conventions aimed at preventing global CC and the conservation of biological diversity. The Conventions and agreements are inexorably linked, operating in the same ecosystems and addressing interdependent issues. The agreements were:

i) **Agenda 21** — In Rio, 108 heads of State or Government adopted three major agreements aimed at changing the conventional methods to development. Agenda 21 became a comprehensive programme of action for global action in all areas of sustainable development and a wide-ranging global blueprint for action to achieve sustainable development.

ii) **The Rio declaration on environment and development** — giving a series of principles defining the rights and responsibilities of States. Although the UN Conference on Desertification (1977), had adopted a Plan of Action to Combat Desertification, it was still a major concern for UNCED in 1992. The Conference therefore supported a new, integrated approach to the problem by emphasizing action to promote sustainable development at the community level. The Rio Conference requested the UN General Assembly to create an INC to prepare by 1994 a Convention to Combat Desertification. UNCCD was adopted in June 1994 and entered into force in December 1996. UNCCD aims to combat desertification and mitigate the effects of drought in countries experiencing serious drought and/or desertification, particularly in Africa through effective actions at all levels, supported by international co-operation and partnership arrangements. It was expected that this would be achieved within the framework of an integrated approach which is consistent with Agenda 21, with a view to contributing to the achievements of sustainable development in affected areas.

iii) **The statement of forest principles** - at UNCED, forests were one of the most controversial issues with some of the delegates from developed countries demanding a forest treaty, but the results was a “non-legally binding authoritative statement of principles for a global consensus on the management, conservation and sustainable development of all types of forests,” referred as the “Forest Principles,” and Chapter 11 of Agenda 21 on “combating deforestation”. The statement of forest principles is a non–legally binding statement of

principles to guide sustainable forest management (SFM), which became the first global agreement reached on all types of forests worldwide. Some of the provisions were that:

- All countries, notably developed countries, should make an effort to green the world through reforestation and forest conservation.
- States have a right to develop forests according to their socio-economic needs, in keeping with national sustainable development strategies.
- Specific financial resources be provided for the development of programmes which encourage economic and social substitution procedures.

By 1995, the Intergovernmental Panel on Forests (IPF) was established to continue to the intergovernmental forest policy dialogue with a two year mandate. They developed proposals for action on a number of issues related to SFM, including national forest programmes, forest assessment, criteria and indicators, traditional forest related knowledge, and underlying causes of deforestation. In 1997, the UN General Assembly approved the IPF's outcome and recommended a continuation of the intergovernmental policy dialogue on forests. Consequently, the UN Economic and Social Council (ECOSOC) established the Intergovernmental Forum on Forests (IFF) to continue this work under the commission on sustainable development. The IFF gave conclusions and recommendations for action on: the promotion of implementation and monitoring of the progress of IPF's proposals for action; resources and the transfer of environmentally sound technologies; traditional forest-related knowledge; underlying causes of deforestation; forest conservation and protected areas; trade and the environment; valuation of forest goods and services; forest research; future supply of and demand for wood and non-wood forest products; and the assessment, monitoring and rehabilitation of forest environmentally unstable areas.

The IFF proposed the creation of UNFF to be placed within the intergovernmental machinery of the UN system and invited relevant international organizations, institutions, and instruments and UN organizations to participate in a Collaborative Partnership on Forests. UNFF is an intergovernmental organisation created by the ECOSOC in 2000 after completion of two previous intergovernmental processes that considered how to progress with the Forest Principles to promote the management, conservation, and sustainable development of all types of forests and to strengthen long-term political commitment. The UNFF promotes the management, conservation and sustainable development of all types of forests and strengthens long-term political commitment under ECOSOC Resolution 2000/35. The Forum promotes the implementation of internationally agreed actions on forests at the national, regional and global levels, while providing a coherent, transparent and participatory global framework for policy implementation, coordination and development based on the Rio Declaration, the Forest Principles, Chapter 11 of Agenda 21, and the outcomes of IPF (1995-1997) and IFF (1997-2000), consistent with and complementary to existing international legally-binding instruments relevant to forests. The UNFF and UN General Assembly adopted the UN Forest Instrument (UNFI) in 2007 that shows four shared global objectives on forests and 44 national and international policies, measures and actions for implementing SFM and enhancing the contribution of forests to the 2030 agenda for sustainable development. UNFF also considers the nine major group categories identified in chapter 23 of agenda 21: business and industry; children and youth; farmers; indigenous people; NGOs; local authorities; scientific and technological community; women; and workers and trade unions.

The UNFF Secretariat works closely with representatives of major group networks and organisations who function as focal points to facilitate their participation in the multi-stakeholder dialogues of UNFF. The focal points are invited and identified by organisations from each major group that have specialised interest and expertise in forest related issues, such as associations of forest-products related businesses, organisations of young people who are students of forest management, or trade unions from the forest products related sectors. In addition to this policy engagement, UNFF maintains a close relationship with organizations focused on implementation activities through the Collaborative Partnership Network on Forests, which is an informal, voluntary mechanism created across the major forest-related implementing agencies and convention Secretariats.

iv) **The United Nations Framework Convention on Climate Change (UNFCCC)** sets an overall framework for intergovernmental efforts to tackle the challenge posed by CC. Its objectives are to stabilise GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system, within a time-frame sufficient to allow ecosystems to adapt naturally to CC; to ensure that food production is not threatened; and to enable economic development to proceed in a sustainable manner. Detailed description of UNFCCC will be covered in chapter 3 of this module.

v) **The United Nations Convention on Biological Diversity (CBD) -** whose objective is specified in article 1 as "The objectives of this convention, to be pursued in accordance with its relevant provisions, are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding". The agreement covers all ecosystems, species, and genetic resources. The UN CBD will be discussed in detail in Chapter six of this modul

Activity 2.2 (Group Discussion)

Explain how implementation of the outcomes of the Earth summit can be used to influence climate friendly policy in the forestry sector at national, regional, and global levels.

2.5.2 World Summit for Sustainable Development

Some years after the first global environment conference, UN sought to pursue new initiatives on the implementation of sustainable development and the building of a prosperous and secure future at the World Summit for Sustainable Development (WSSD) in Johannesburg in 2002. The Summit's message focused on improving lives while preserving earth's resources. It also reflected on the complexity of global problems such as poverty and excessive consumption by some populations that have resulted in harmful effects on the environment and natural resources. After the meeting, governments recognised the need to redirect international and national plans, policies and all economic decisions to consider social and environmental impacts of any activity. The result was that eco-efficiency became a guiding principle for all public and private sector planning. Considerations focused on:

- Patterns of production, particularly the production of toxic components, such as Lead in gasoline, or poisonous waste — are being scrutinised in a systematic manner by the UN and Governments alike.
- Alternative sources of energy are being sought to replace the use of fossil fuels which are linked to global CC.
- Reliance on public transportation systems in order to reduce vehicle emissions, congestion in cities and the health problems caused by polluted air and smog.
- Greater awareness of and concern over the growing scarcity of clean water.

2.5.3 RIO +20

"Rio+20" is the short name for the UN Conference on Sustainable Development that took place in Rio de Janeiro, Brazil, in June 2012. The result was 'the future we want' documents. These documents covered the subject of inclusive growth, essentially widely known as green growth. This is a future that is green but provides growth opportunities. It can address problems associated with economic challenges and population growth while ensuring that natural assets continue to provide the resources and environmental services. There is need to catalyse investment and innovation to promote sustainable growth and economic development. Green growth is not a substitute fpr the sustainable development agenda but provides a useful and flexible method of attaining tangible and quantifiable progress throughout its economic and environmental pillars, while taking full account of the social outcomes of the greening dynamics. The focus of green growth strategies is ensuring that natural assets deliver their full economic potential sustainably, including the provision of critical life support services such as clean air, clean water, and the resilient biodiversity needed to support food production and human health.

Functions of green growth policies are shown in Box 2.1.

Box 2.1: Functions of green growth policies

- Enhancing productivity by creating incentives for greater efficiency in the use of natural resources, reducing waste and energy consumption, unlocking opportunities for innovation and value creation, and allocating resources to the highest value use.
- Boosting investor confidence through greater predictability in how governments deal with major environmental issues.
- Opening new markets by stimulating demand for green goods, services and technologies.
- Contributing to fiscal consolidation by mobilising revenues through green taxes and through the elimination of environmentally harmful subsidies. These measures can also help to generate or free up resources for anti-poverty programmes in such areas as water supply and sanitation, or other pro-poor investments.
- Reducing risks of negative shocks to growth due to resource bottlenecks, as well as damaging and potentially irreversible environmental impacts.

2.5.4 The Sustainable Development Summit

This summit is one of the few in the world where deliberations were made by people from various sectors including political leaders, Nobel laureates and decision-makers from bilateral and multilateral institutions, business leaders, diplomats, scientists and researchers, media persons, and members of civil society. SGDs were the outcome of the summit. The SDGs are officially known as: transforming our world: the 2030 Agenda for sustainable development containing intergovernmental set of aspiration goals with 169 targets. The goals are contained in paragraph 54 of the UN Resolution A/RES/70/1 of 25 September 2015. The SDGs, otherwise known as the Global Goals, build on the Millennium Development Goals (MDGs) of 2000 that were to be achieved by 2015. Goal 13 and goal 15 are associated with CC and forests respectively (Box 2.2).

The MGDs were aimed at achieving an array of issues including: reducing poverty, hunger, disease, gender inequality, and access to water and sanitation. Despite the success of MDGs, the target of poverty alleviation was not fully eliminated. The new SDGs, go much further than the MDGs, addressing the root causes of poverty and the universal need for development that works for all people (Clark, 2013).

Box 2.2: Sustainable development goals related to climate change and forestry and their targets

Goal 13: Take urgent action to combat climate change and its impacts

13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.

13.2 Integrate CC measures into national policies, strategies and planning.

13.3 Improve education, awareness-raising and human and institutional capacity on CC mitigation, adaptation, impact reduction and early warning.

13.4 Implement the commitment undertaken by developed-country parties to the UNFCCC to a goal of mobilising jointly US$ 100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund (GCF) through its capitalization as soon as possible.

13.5Promote mechanisms for raising capacity for effective CC-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalised communities.

Goal 15: Protect, restore and promote sustainable use of terres-trial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt **biodiversity** loss

15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.

15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.

15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world.

15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development.

15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.

15.6 Promote fair and equitable sharing of the benefits arising from the utilisation of genetic resources and promote appropriate access to such resources, as internationally agreed.

15.7 Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products.

15.8 By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species.

15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts.

15.10 Mobilise and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems.

15.11 Mobilise significant resources from all sources and at all levels to finance SFM and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation.

15.12 Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihoods.

2.6 The UN Strategic Plan for Forests 2017-2030

The UN Strategic Plan on Forests (UNSPF) functions as a reference for forest-related work of the UN system. It presents an international framework for actions at all levels to sustainably manage all forest types and trees outside forests and halt deforestation and forest degradation while maintaining social, economic, environ-mental and cultural benefits for present and future generations. UNSPF also creates a framework for forest-related contributions to the implementation of the 2030 Agenda for Sustainable Development (2015), the Paris Agreement adopted under UNFCCC (2015), UNFI (2007), UN CBD (1992), UNCCD (1992), and other inter-national forest-related instruments, commitments, processes and aspirations. UNSPF enhances coherence, collaboration and synergies among UN bodies and partners towards its vision and mission, as well as the coherence, guidance and focus of the International Arrangement on Forests (IAF) and its components.

UNSPF is guided by six voluntary and universal global forest goals with 26 associated targets to be achieved by 2030. They support the objectives of the IAF, aiming to contribute to progress on the SDGs, the Paris Agreement adopted under UNFCCC, the Aichi Biodiversity Targets (ABTs), and other international forest-related instruments, processes, commitments and goals. Table 2.1 shows the relationships between UNSPF and SDGs.

Table 2.1: Relationship between UNSPF and SDGs

UNSPF Goal	Relationship with SDGs
Global Forest Goal 1 (Four Targets) Reverse the loss of forest cover worldwide through SFM, including protection, restoration, afforestation and reforestation, and increase efforts to prevent forest degradation and contribute to the global effort of addressing CC.	Supports and contributes to the achievement of SDG targets 6.6, 12.2, 13.1, 13.3, 14.2, 15.1, 15.2, 15.3, 15.4 and 15.8.
Global Forest Goal 2 (Five targets) Enhance forest-based economic, social and environ-mental benefits, including by improving the livelihoods of forest dependent people.	Support and contribute to the achievement of SDG targets 1.1, 1.4, 2.4, 4.4, 5.a, 6.6, 8.3, 9.3, 12.2, 12.5, 15.6 and 15.c.
Global Forest Goal 3 (Three targets) Increase significantly the area of protected forests worldwide and other areas of sustainably managed forests, as well as the proportion of forest products from sustainably managed forests.	Support and contribute to the achievement of SDG targets 7.2, 12.2, 12.6, 12.7, 14.2, 14.5, 15.2 and 15.4.
Global Forest Goal 4 (Four targets) Mobilize significantly increased, new and additional financial resources from all sources for the implementation of SFM and strengthen scientific and technical cooperation and partnerships.	Support and contribute to the achievement of SDG targets 12.a, 15.7, 15.a, 15.b, 17.1, 17.2, 17.3, 17.6, 17.7, 17.16, 17.17, 17.18 and 17.19.

UNSPF Goal	Relationship with SDGs
Global Forest Goal 5 (Four Targets) Promote governance frameworks to implement SFM, including through the UNFI, and enhance the contri-bution of forests to the 2030 Agenda.	Support and contribute to the achievement of SDG targets 1.4, 2.4, 5.a, 15.c, 15.9, 16.3, 16.5, 16.6, 16.7, 16.10 and 17.14.
Global Forest Goal 6 (Five Targets) Enhance cooperation, coordination, coherence and synergies on forest-related issues at all levels, including within the UN System and across Collabo-rative Partnership on Forests member organizations, as well as across sectors and relevant stakeholders.	Support and contribute to the achievement of SDG target 17.14.

Exercise Questions

i) Explain the role of the UNEP in relation to CC.

ii) Explain the role of IPCC in CC mitigation and adaptation.

iii) Explain relationships between the three international treaties borne out of the Earth Summit.

iv) Describe the ways in which CC may affect achievement of SDGs.

Summary

In this chapter, we have learned about the first international organisations to work on CC that included the WMO, the UNEP, the IPCC and their activities on CC. The IPCC was established by the UNEP and WMO in 1988 to provide the world with a clear scientific view on the current state of knowledge on CC and its potential environmental and socio-economic impacts. At global level, The Earth Summit in Rio de Janeiro formed a basis for transformation of atti-tudes and behaviour to bring about the necessary changes. The Earth Summit adopted three agreements and two conventions. Some NGOs such as Green Peace also worked hard to put the CC agenda at the global level. In 2015, the 2030 Agenda for Sustainable Development was adopted at the UN Sustain-able Development Summit outlining 17 SDGs, and their 169 targets. Among the goals, goal 13 and goal 15 are relevant to CC and forestry respectively. There have been several conventions and treaties that have worked as a good background for CC debates. The advances in CC debates shall be discussed in the next chapters beginning with the UNFCCC in Chapter 3.

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Chapter 3: The United Nations Framework Convention on Climate Change

3.1 Introduction

In 1992, the UN Framework Convention on Climate Change (UNFCCC) became the first binding international legal instrument to address CC adopted after two years of intensive negotiations within the INC on CC. It was opened for signatures in Rio de Janeiro at the UNCED and came into force in 1994. UNFCCC has become the basis for concerted international action to mitigate and adapt to CC. Some 197 countries had joined UNFCCC by December 2015, to consider ways of limiting global temperature increases and the resulting CC, and to cope with the change impacts. This chapter provides an overview of the actors, institutional arrangements, procedures and main provisions of the Convention that addresses mitigation and adaptation under various agenda items of the Convention.

Objectives

By the end of this session, the learner will be able to:

i) Outline the purpose of the UNFCCC.

ii) Identify the actors and their roles under the UNFCCC.

iii) Describe the institutional arrangements of the UNFCCC.

iv) Trace the evolution of CC debates under the UNFCCC.

3.2 Actors in UNFCCC

UNFCCC divides countries into three main groups (Parties) according to their diverse commitments: i) ***Annex I Parties*** include industrialised nations that were members of the Organisation for Economic Co-operation and Development (OECD) in 1992, including countries with economies in transition (EIT) such as Russia, the Baltic States, and several Central and Eastern European States; ii) ***Annex II Parties*** include the OECD members of Annex I who are not EIT Parties. They are required to provide financial resources to enable developing countries to undertake emissions reduction activities under the Convention and to help them adapt to adverse effects of CC. In addition, they have to reasonably promote the development and transfer of environmentally friendly technologies to EIT Parties and developing countries. Funding provided by Annex II Parties is channelled mostly through the Convention's financial mechanisms; iii) ***Non Annex I Parties*** include most of the developing countries and some countries recognised by the Convention as being more vulnerable to the unfavourable impacts of CC, including countries with low-lying coastal areas and those prone to desertification and drought.

The Convention supports activities that have potential to respond to the needs and concerns of vulnerable countries, such as investment, insurance and technology transfer. In this regard, the 49 Parties classified by the UN as least developed countries (LDCs) are given special attention under the Convention because of their inadequate capacity to respond and adapt to CC. Given the current state of development of African countries, most of them are LDCs and therefore currently fall here. iv) Apart from the special parties to the Convention, ***observers and non-stakeholder parties*** also participate, including the media. Observer organisations are also divided into three types: a) the UN System and its Specialised Agencies; b) intergovernmental organisations (IGOs); and, c) NGOs. There are procedures that IGOs and NGOs should follow to obtain observer status and they can register delegates once they have received observer status. As of 2016, over 2,000 NGOs and 100 IGOs participate as observers to the UNFCCC. The media is also considered important for the UNFCCC processes as it plays a vital role in information dissemination and education. The historical developments and outcomes of the UNFCCC are illustrated in Table 3.1.

Table 3.1: Historical framing of decisions under the UNFCCC

Year	Description of event
1994	The UNFCCC entered into force.
1995	The 1st COP 1 held in Berlin. IPCC 2nd assessment report.
1996	COP-2: The UNFCCC Secretariat established to support action under the Convention.
1997	COP-3: The KP formally adopted in December.
1998	COP-4 (Buenos Aires): the "Buenos Aires Plan of Action"- Parties adopted a 2-year "Plan of Action" to advance CC efforts and to devise mechanisms for implementing the KP.
1999	COP-5 (Bonn): was primarily a technical meeting, and did not reach major conclusions.

Year	Description of event
2000	COP-6 (The Hague): negotiations on the modalities of the KP with disagreements over consequences for non-compliance by countries that did not meet their emission reduction targets; and difficulties in resolving how developing countries could obtain financial assistance to deal with adverse effects of CC and meet their obligations to plan for measuring and possibly reducing GHG emissions.
2001	COP-6.5 (Bonn): political agreement on the modalities of the KP. IPCC Third Assessment Report.
2001	COP-7: The Marrakesh Accords adopted, detailing the rules for implementation of the KP, setting up new funding and planning instruments for adaptation, and establishing a technology transfer framework.
2002	WSSD. COP-8 (New Delhi): New Delhi Declaration - developed countries urged to transfer technology and minimise the impact of CC on developing countries.
2003	World Climate Change Conference, Moscow. COP-9 (Milan): parties agreed to review the first national reports submitted by 110 non-Annex I countries.
2004	COP-10 (Buenos Aires): Adoption of Buenos Aires Plan of Action. Subsidiary Body for Scientific and Technological Advice (SBSTA) asked to prepare a five-year programme of work on impacts, vulnerability and adaptation.
2005	COP-11: Entry into force of the KP. The first Meeting of the Parties to the KP (COP/MOP 1) held in Montreal. Forests included as a new agenda item under the UNFCCC as “REDD: Approaches to Stimulate Action”.
2006	COP-12 and COP/MOP 2 - Nairobi Work Programme on Adaptation.
2007	The IPCC’s 4th Assessment Report released and climate science became more popular. COP-13: Parties agreed on the Bali Road Map, which charted the way towards a post-2012.
2008	COP-14/CMP 4 (Pozna´n): principles for financing a Fund to help the poorest nations cope with effects of CC and approval of a mechanism to incorporate forest protection into the efforts of the international community to combat CC.
2009	COP-15: Copenhagen Accord provides for explicit emission pledges by all major economies – including, for the first time, China and other major developing countries – but charts no clear path toward a treaty with binding commitments.
2010	COP-16: Cancun Agreements drafted and largely accepted by COP. REDD+ was formally added to the international CC regime based on the decision to encourage developing countries to assist in mitigation efforts by undertaking REDD+.
2011	COP-17: The Durban Platform for Enhanced Action drafted and accepted by COP.

Year	Description of event
2012	COP-18: The Doha Amendment to KP. This included: new commitments for Annex I Parties to the KP who agreed to take on commitments in a second commitment period from 1 January 2013 to 31 December 2020; a revised list of GHG to be reported on by Parties in the second commitment period; and amendments to several articles of KP pertaining to the first commitment period and which needed to be updated for the second commitment period.
2013	COP-19/Meeting of Parties to the Kyoto Protocol (CMP 9): Key decisions adopted include decisions on further advancing the Durban Platform, the GCF and Long-Term Finance, the Warsaw Framework for REDD+ and the Warsaw International Mechanism for Loss and Damage.
2014	COP-20 held in Lima, Peru.
2015	COP-21/CMP11 (Paris): Negotiations resulted in adoption of the Paris Agreement on 12 December, governing CC reduction measures from 2020.
2016	COP-22 (Marrakesh): Focal issues were water and GHG emission reductions.
2017	COP-23/CMP 13/Second Meeting of Parties to Paris Agreement (Bonn).
2018	COP-24 (Katowice): where major focus was on Paris Agreement rule book that is expected to enter into force in 2020. It covered climate pledge guidance, market mechanisms, climate financing, transparency, loss and damage, and Talanoa dialogue

3.2.1. Negotiation groups at regional level

Parties to the UNFCCC and its KP are represented at sessions of the Convention bodies by a national delegation consisting of one or more officials empowered to represent and negotiate on behalf of their government. The tradition of the UN has had Parties grouped into five regional groups, for the purposes of electing the Bureau, namely: African States, Asian States, Eastern European States, Latin American and Caribbean States, and Western European and Other States. These regional groups are not normally used to present the fundamental interests of Parties and therefore, several other groupings become more essential for the climate negotiations.

The developing countries generally work through the Group of 77 to establish common negotiating positions. However, because the G-77 and China is a diverse group with differing interests on CC issues, individual developing countries also intervene in debates, as do groups within the G-77, such as the African States, the Small Island Developing States and the group of LDCs. The European Union (EU) is another group that meets privately to agree on common negotiating positions. There is also an umbrella group called the Coalition, made up of non-EU developed countries which formed following the adoption of the KP. Although there is no formal list, the Group is usually made up of Australia, Canada, Japan, New Zealand, Kazakhstan, Norway, Russia, Ukraine and the United States. Other groups, such as the Environmental Integrity Group, include countries such as Switzerland, Mexico, Liechtenstein, Monaco and the Republic of Korea. The Arab Group also stands on its own. Several other groups also work together in the CC process, including the BASIC Group (Brazil, South Africa, China India), countries from the Organization of Petroleum Exporting Countries (OPEC), the Independent Alliance of Latin America and the Caribbean (AILAC), a group of countries of Central Asia, Caucasus, Albania and Moldova (CACAM), the Cartagena Dialogue, the Like Minded Group, the Bolivarian Alliance for the Peoples of our America and the Coalition for Rainforest Nations.

3.3 Objectives and principles of the UNFCCC

3.3.1 Objectives of the UNFCCC

The second and third assessment reports of the IPCC emphasised the need for substantial cuts in emissions to allow stabilisation of atmospheric GHG concen-trations at a level that would prevent serious anthropogenic interference with the climate system. Based on this, Article 2 of the Convention states that the main objective of the Convention is to "achieve, in accordance with the relevant provisions of the Convention, stabilization of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system" (UNFCCC, 1992). The objective reflects fears that the earth's climate system is threatened by a rise in atmospheric GHG concentrations, caused by increased human induced GHG emissions. However, the Convention does not give a limit for total anthropogenic GHG emissions which would have to be followed to reach the objective and does not indicate the level of total GHG concentrations beyond which "dangerous anthropogenic interference with the climate system" would occur. However, the question of the acceptable amounts of GHG concentration reductions cannot be resolved by science alone but also need political commitments.

3.3.2 Principles under the UNFCCC conference

Principles under the convention are specified in Article 3 of the UNFCCC and include the following:

i) **Common but Differentiated Responsibilities -** The Parties should protect the climate system for the benefit of present and future generations of humankind on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating CC and the adverse effects thereof (Article 3.1). Furthermore, the *Polluter Pays Principle* also applies to make the party who is responsible for causing the pollution to pay for the damage caused by pollution (Article 3.1).

ii) **Sharing the Burden of Global Climate Action -** The specific needs and special circumstances of developing country Parties, especially those that are particularly vulnerable to the adverse effects of CC and of those Parties, especially developing country Parties, that would have to bear a disproportionate or abnormal burden under the Convention, should be given full consideration (Article 3.2).

iii) **Precautionary Principle -** precautionary measures to anticipate, prevent or minimise the causes of CC and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with CC should be cost-effective to attain global benefits at the lowest possible cost (Article 3.3).

iv) **Sustainable Development –** The Parties have a right to, and should promote sustainable development. Policies and measures to protect the climate system against human-induced change should be appropriate for the specific conditions of each Party and should be integrated with national development programmes, taking into account that economic development is essential for adopting measures to address CC (Article 3.4).

v) **No-Harm Principle -** promote a supportive and open international economic system that would lead to sustainable economic growth and development in all Parties, particularly developing country Parties, thus enabling them to better address problems of CC. Measures taken to combat CC, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade (Article 3.5).

Activity 3.1 (Brainstorming)

To what extent has the UNFCCC achieved its purpose of addressing CC issues?

3.4 Role of Conference of Parties (COP)

The COP is the supreme decision-making body of the Convention. All States that are Parties to the Convention are represented at the COP, for the review of implementa-tion of the Convention and any other legal instruments that the COP adopts and decides necessary to promote the effective implementation of the Convention, including institutional and administrative arrangements. The key task for the COP is to review national communications and emission inventories submitted by Parties. Based on this information, the COP assesses the effects of the measures taken by Parties and progress made in achieving the ultimate objective of the Convention. The COP meets every year, unless the Parties decide otherwise. A total of 22 COPs have been held with over 300 decisions by 2016.

COP meets in Bonn, the seat of the Secretariat, unless a Party offers to host the session. The COP Presidency rotates among the five recognised UN regions of Africa, Asia, Latin America and the Caribbean, Central and Eastern Europe and Western Europe and Others. There is a tendency for the venue of the COP to also shift among these groups. The sessions of the COP are often held in parallel with sessions of the SBSTA and the Subsidiary Body for Implementation (SBI). Other bodies such as *ad hoc* groups, working groups, joint working groups, joint liaison groups, negotiating groups etc. have been set up by the COP to undertake specific tasks and they report back to the COP when they complete their work.

3.4.1 The COP Presidency and Bureau of the COP

The COP Presidency normally rotates among the five UN regional groups, with the President usually being the minister of environment in his or her home country. S/he is elected by acclamation immediately after the opening of a COP session. Rule 22.1 of the draft Rules of Procedure (FCCC/CP/1996/2) of the COP provides for a Bureau, comprised of a President, seven Vice-Presidents, Chairs of the subsidiary bodies established by Articles 9 and 10 of the Convention, and a Rapporteur. The role of the Bureau of COP is to facilitate the work of COP and promote agreements among Parties. Accordingly, the rules of procedure stipulate that the President remains under the authority of COP and that S/he must remain impartial and not exercise the rights of the representative of a Party. The Bureau of COP is mainly responsible for questions of process management and assisting the President by providing advice and helping with various tasks (e.g. members requiring consultations). The Bureau is also responsible for examining the credentials of Parties, reviewing the list of IGOs and NGOs seeking accreditation and submitting a report thereon to the Conference. The Secretariat often seeks advice and guidance from the Bureau on relevant matters as well.

The Bureau also supports COP through the provision of advice and guidance regarding the ongoing work under the Convention and its Protocols, the organisation of their sessions and the operation of the Secretariat, especially at times when not in session. The Bureau is elected from representatives of Parties nominated by each of the five UN regional groups and Small Island developing States. Meetings of the Bureau are convened by the President and are usually held on a regular basis during COPs; once during the sessions of the Subsidiary Bodies (SBs), and between sessional periods as needed (typically once or twice per year). The agendas for Bureau meetings are prepared by the Executive Secretary under the guidance of the President.

3.4.2 Subsidiary Bodies and Secretariat

The Convention has two permanent multidisciplinary SBs that advise the COP: the SBSTA (Article 9) and the SBI (Article 10). The SBSTA and the SBI are mainly technical specialists serving as the main working bodies of the Convention.

The Secretariat, also known as the CC Secretariat, services the COP, the SBs, the Bureau and other bodies established by the COP as specified in Article 8 of the Convention. The tasks of the Secretariat include preparation of official documents for COP and the SBs, coordinating in-depth reviews of Annex I Party national communications and compiling GHG inventory data and carrying out tasks as specified in the programme of work that is adopted by COP and other tasks decided by COP. They make practical arrangements for sessions of COP and its SBs; assist Parties, mainly developing countries, in implementing their commitments; provide support to negotiations and coordinate with the Secretariats of other relevant international bodies, such as GEF and its implementing agencies (UNDP, UNEP and the World Bank), the IPCC and other related Conventions.

3.4.3 Climate finance mechanisms

C finance is an important income stream for GHG mitigation projects. The World Bank and partners started a prototype C Fund in 2000 and this became the first global Fund to create demand for C credits. The C Fund and other facilities helped to catalyse global markets for emission reduction. The funding mechanisms under the World Bank include: i) the Prototype C Fund - pioneered the Kyoto mechanisms; ii) the Community Development C Fund - focused on small projects with measurable benefits to poor communities; iii) Bio C Fund - focused on land-use, land-use change, and forestry projects; iv) Umbrella C Facility – Tranche 1, mainly for China; v) Forest C Partnership Facility (FCPF) - focused on REDD; and, vi) C Partnership Facility (CPF) - focused on long-term investment programmes and technologies for transition to low-C economies.

Furthermore, the Climate Investment Funds (CIF) are sponsored by multi-lateral banks (Word Bank, African Development Bank, Asian Development Bank, European Bank for Reconstruction and Development, Inter-American Development Bank) to promote investment through the Clean Technology Fund and the Strategic Climate Fund where the latter provides financing for pilot projects developing new approaches or scaling-up activities aimed at a specific CC challenges through targeted programmes. CIF supports efforts to empower transformations in energy, climate resilience, transport and the forestry sectors to manage the effects of CC and reduce GHG emissions. Four types of programmes are supported by CIF: i) Clean Technology Fund; ii) Pilot Programme for Climate Resilience integrating climate resilience into development plans and financing private public partnerships; iii) Scaling up Renewable energy in Low Income Country Programme – renewable energy solutions; and, iv) Forest Investment Programme (FIP) – supports developing countries reduce emissions from deforestation and enhancing forest C stocks (REDD+).

The UNFCCC and the KP recommended that financial assistance from Parties with more resources flow to those less endowed and more vulnerable. In this regard, developed country Parties (Annex II Parties) provide funds to assist developing country participants to implement activities under the UNFCCC. To assist in this, the Convention established a financial mechanism for the developing country Parties. The funds are operational under three mechanisms of GEF, GCF and Adaptation Fund. The GEF funds can be used by developing countries and countries with economies in transition to meet the objectives of the international environmental conventions and agreements and funds are given to government agencies, private sector organisations, research

institutions, Civil Society Organizations (CSOs), and other potential partners, to implement projects and programmes in participating nations. The GEF has two categories of funds: i) The Special CC Fund established under the UNFCCC in 2001 to finance projects relating to adaptation; forestry, energy, technology transfer and capacity building, industry, transport, agriculture, and waste management; and economic diversification; and, ii) The LDC Fund (LDCF) – also established in 2001 to support a work programme to assist LDC Parties in the preparation and implementation of their NAPAs.

The GCF supports efforts by developing countries to respond to CC impact by limiting their GHG and adapting to CC. The Fund is also supported by the Paris Agreement to focus on low emission and climate resilient development. The Adaptation Fund started in 2001 and is financing concrete adaptation projects and programmes in developing country parties to the KP especially those vulnerable to impacts of CC. These are financed through 2% of proceeds coming from certified emission reductions from Clean Development Mechanism (CDM) project activities or other sources. Other trust funds under GEF are the Capacity Building Initiative for Transparency and the Nagoya Protocol Implementation Fund.

Some funding mechanisms are country or region specific such as Netherlands CDM Facility, C Fund for Europe (jointly managed with European Investment Bank), Netherlands European C Facility (jointly managed with International Finance Corporation), Italian C Fund, Spanish C Fund and Danish C Fund.

3.5 Provisions for mitigation and adaptation under the Convention

3.5.1 Provisions for mitigation

The UNFCCC activities focus on mitigation and adaptation to CC. Mitigating CC and its impacts is one of the activities of the Convention's objective. The aim is to fulfil the ultimate goal of the UNFCCC to stabilise atmospheric GHG concentrations at a level that would prevent dangerous anthropogenic interference with the climate system. This can be achieved either by limiting or, as appropriate, reducing anthropogenic GHG emissions by sources or by preserving or, as appropriate, enhancing sinks and reservoirs of GHGs. The full range of GHGs are addressed by the Convention as Parties adapt or take precautionary measures to anticipate, prevent or minimise the causes of CC and mitigate its adverse effects taking into account different socio-economic contexts and covering all relevant sources, sinks and reservoirs of GHGs. Most of the developing countries contribute to GHG emissions through deforestation, and not from industrial emissions. Therefore, only industrialised economies (Annex 1 Parties) that ratify the Protocol commit themselves to limiting emissions of six GHGs (Figure 3.1).

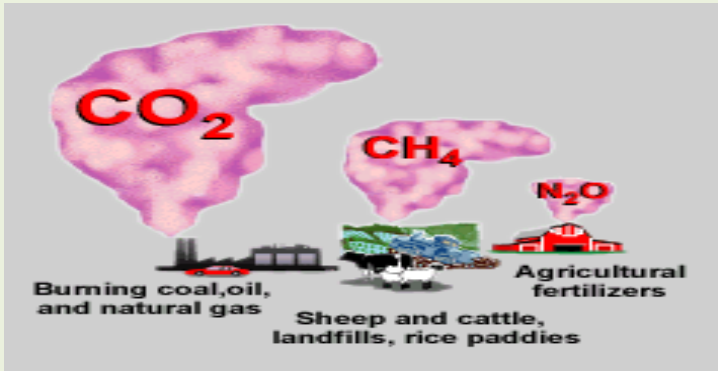
Greenhouse Gas	Source
A. Anthropogenic gasses	
• Carbon Dioxide (CO_2) • Methane (CH_4) • Nitrous Oxide (N_2O)	
B. Fluorinated gases	
HydrofluoroCs (HFCs)	http://www.climate-change-emergency-medical-response.org/climate-change-solutions.html
Sulphur hexafluoride (SF_6)	Emitted by refrigerants used by businesses and residences
PerfluoroC (PFC)	Released through the leakage of refrigerants used in vehicle air-conditioning systems
Nitrogen trifluoride (NF_3)[1]	An extremely potent greenhouse gas that is used for several purposes when transmitting electricity through the power grid. Chemical by-product of aluminium smelting and semiconductor manufacturing, it consists of one or two C atoms combined with four to six fluorine atoms but no chlorine.

Figure 3.1: Greenhouses gasses and their sources

[1]UNFCCC Decision 1/CMP.8 indicated the emissions of NF_3 to be considered in the second commitment period.

CO_2, CH_4 and N_2O come from anthropogenic and natural sources whilst fluorinated gases are only derived from human-related activities, e.g. some manufacturing processes (e.g. aluminium and semiconductor production). Fluorinated gases remain in the atmosphere for over a century and exhibit very high global warming potentials compared to other GHGs, to such an extent that they can have large effects on global temperatures at small atmospheric concentrations. Other GHGs are Ozone (O_3), water vapour and Nitrogen trifluoride (NF_3). Naturally occurring gases that do not contribute directly to the greenhouse effect include Sulphur dioxide (SO_2), Carbon monoxide (CO), oxides of nitrogen (NOx) and non-methane volatile organic compounds (NMVOC).

The Convention requires the following:

- All Parties take into account their responsibilities and capabilities to formulate and implement programmes containing measures to mitigate CC.
- All Parties to develop and periodically update national GHG inventories of emissions and removals.
- All Parties to promote and cooperate in the development, application and diffusion of climate friendly technologies.
- All Parties in developing countries to adopt national policies and measures to limit GHG emissions, and protect and enhance C sinks and reservoirs.
- The extent to which developing countries will implement their commitments will depend on financial resources and the transfer of technology.

Several mitigation measures have been reported to the UNNFCC by Annex I and Non Annex I Parties (See Table 3.2).

Table 3.2: Mitigation measures reported by Annex I and Non Annex I countries

Annex I Countries	Non Annex I Countries
Policies and measures which covered all the important sources of emissions such as: • Transport • Energy • Industrial processes • Agriculture • Land use change and forestry • Waste management	Energy supply and demand Agriculture Land use change and forestry Waste management

Other mitigation activities include:

i) Education, training and public awareness - Parties are called upon to inform the public about causes of CC and sources of GHG emissions, as well as actions that can be taken at all levels to address CC.

ii) Capacity-building in developing countries and in EITs adopted at COP 7 (decisions 2/CP.7 and 3/CP.7 respectively) including assessments for implementing mitigation options and issues around GHG inventories, managing emission databases, systems for collecting data, managing and using activity data and emission factors.

3.5.2 Provisions for adapting to climate change under UNFCCC

Adapting to the adverse effects of CC is a major area of action for Parties under the Convention together with mitigation. Adaptation received less attention than mitigation in the early years but the IPCC Third Assessment Report helped to put adaptation on the map when Parties agreed at COP 7 on a process to address the adverse effects of CC supported by establishment of three new special funds. While all societies are either adapted or adapting to their climate to some extent, capacity to adapt to new variability and more rapid changes differ significantly and adaptation must be supported by policy. Klein (2003) showed that emerging policy responses, such as the funds created by the Marrakesh Accords to finance adaptation under the UNFCCC and KP, reflect adoption of a 'realist' views. This was followed by a realisation of the vulnerability and lack of capacity of developing countries to adapt to CC. In order to deal with CC, a complimentary approach between adaptation and mitigation is required.

Under Article 4, all Parties are expected to:

- Commit themselves to "formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to facilitate adequate adaptation to CC" subject to the principle of common but differentiated responsibilities and specific national and regional development priorities, objectives and circumstances of all Parties.
- Cooperate in preparing for adaptation to the impacts of CC.
- Develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture, and for the protection and rehabilitation of areas, particularly in Africa, affected by drought and desertification, as well as floods.
- Take CC considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions.
- Annex II Parties are required to assist the developing country Parties that are particularly vulnerable to the adverse effects of CC in meeting costs of adaptation.
- Activities under adaptation:
  - *i)* Collecting, compiling, synthesising and disseminating information on effects, vulnerability and adaptation, including information on methodologies, techno-logies and activities reported in national communications and NAPAs. Annex to decision 29/CP.7 gives principles and proposes a process for preparing NAPAs, providing a structure for the NAPA document.
  - *ii)* Liaising/cooperating with international and other UN organisations.
  - *iii)* Facilitating support for capacity-building and enabling activities.
  - *iv)* Developing mechanisms to disseminate information and increase public awareness – including clearing houses, information systems and workshops.
  - *v)* Facilitating the exchange of information and sharing experiences and views among Parties on practical ways of helping implement the Convention.
  - *vi)* Implementing concrete adaptation actions.

Exercise Questions

i) Explain the role of the UNFCCC on issues relating to CC.

ii) Critically analyse the barriers that continue to hinder rule development for adaptation in the UNFCCC process up to COP-6.

iii) Describe the different actors in the UNFCCC process.

iv) Explain the two main areas of focus for UNFCCC provisions.

v) Explain the concept of adaptive capacity.

Summary

This chapter discussed the UNFCCC by looking at the objectives, principles, actors, institutional arrangements, and main provisions of the Convention that address mitigation and adaptation under various agenda items of the Convention. It also examined financing of CC activities that have been done through World Bank initiatives, GEF, GCF and FIP.

From the foregoing chapters, and sections, we note that the MEAs began with the UNCHE held in Stockholm in 1972. The process has been on-going since then.

It must be noted that COPs are still going on and so the process will continue. Chapter 4 discusses one of the major frameworks under the UNFCCC that was adopted in 1997- The KP.

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Chapter 4: The Kyoto Protocol: Mechanisms for Climate Change Mitigation

4.1 Introduction

This chapter discusses one of the institutional instruments under UNFCCC called KP as one of the market-based mechanisms for CC mitigation. Concepts of Emissions Trading (ET), Joint Implementation (JI), and CDMs are described as well as the limitations and challenges of market-based mechanisms toward CC mitigation.

Objectives

By the end of this session, the learner will be able to:

i) Describe the KP and explain why it was created.

ii) Explain elements of the KP.

iii) Assess the limitations and challenges of market-based mechanisms toward CC mitigation.

iv) Distinguish among credits, offsets and permits.

Activity 4.1 (Brainstorming)

Analyse factors that necessitated the operationalization of the KP.

4.2 The Kyoto Protocol (KP)

UNFCCC adopted the KP at the third session of COP 3 in Kyoto, Japan. KP is an instrument under UNFCCC with the ultimate objective of stabilising atmospheric GHG concentrations at levels that will prevent dangerous interference to the climate system (Kyoto Protocol, 1992). In pursuit of this objective, KP builds upon and enhances many of the commitments under UNFCCC to enhance international cooperation in combating CC. The major difference between UNFCCC and KP is that the Convention encourages industrialised nations to stabilise GHG emission whilst the Protocol commits them to do it. This is achieved by adhering to legally binding GHG emission reduction targets to limit average global temperature increases and the associated CC.

COP serves as CMP to KP. CMP meets annually during the same period as COP and observers can attend the meetings to the Protocol, but without the right to take decisions. The implementation of KP followed rules (Box 4.1) that were adopted at the 7th COP held in 2001 known as the Marrakesh Accord and then entered into force on 16 February 2005, and by 2009 had been ratified by 192 Parties including some 42 African countries. Article 22 of the Protocol specifies a process of ratification, acceptance, approval or accession by Parties to UNFCCC.

Box 4.1: Articles 5, 7 and 8 of the 1997 Kyoto Protocol

Provides the means for Annex I parties to demonstrate, and share information on, progress made in implementing their GHG emissions reduction and limitation targets. They also provide for: national systems for estimating GHG gas emissions and removals (Article 5.1), the methodologies for applying adjustments to GHG inventories (Article 5.2), systems for reporting information on implementation of the Protocol (Article 7), and the systems for review of information submitted under Article 7 (Article 8).

An amendment to Annex B of KP done in 2006 was accepted by 29 Parties but has not entered into force. There were two commitment periods under KP; the first started in 2008 and ended in 2012 and the second began on 1 January 2013 and will end in 2020. In the first period, KP set binding emission reduction targets for 35 industrialised countries including 28 from the European community. The targets contributed about 5% emissions reduction compared to 1990 levels and followed specific implementation and reporting procedures. The second period was based on Doha amendment to KP (2012) and had the following amendments:

i) A new commitment for Annex I Parties to KP who agreed to take on commitments in a second commitment period from 1 January 2013 to 31 December 2020.

ii) A revised list of GHGs to be reported on by Parties in the second commitment period.

iii) Amendments to several articles of KP which specifically referenced issues pertaining to the first commitment period and which needed to be updated for the second commitment period.

KP only compels developed countries because it was recognised that they were largely responsible for the high levels of atmospheric GHG emissions and were required to reduce these by 5.2% compared with 1990 levels between the years 2008-2012. This heavier burden was placed on developed nations under the central principle of *common but differentiated responsibility* (CBDR) (Box 4.2) with limited allowance to pollute and any further emissions attracted some costs. The logic of CBDR was paramount in enabling negotiators to agree on an international legal framework for climate policy in the 1990s.

Box 4.2 Common but Differentiated Responsibilities and Respective Capa-bilities (CBDR–RC) - is a principle within UNFCCC that acknowledges different capabilities and differing responsibilities of individual countries in addressing environmental issues while building on initial framework of CC being an environmental issue (UNCED, 1992; UNFCCC, 1992). Subsequently, CC was linked to the paradigm of sustainable development, highlighting intra- and inter-generational equity emphasising the contribution of developing countries to current global environmental problems, their limited capacities to deal with them and the realisation of poverty reduction as an important political priority. The responsibilities to stabilise the climate takes into account the historical contribution of developed and developing countries to current levels of GHG emissions (Sands et al., 2012). All Annex 1 Parties were obliged to reduce their GHG emissions which are the result of more than 150 years of industrial activities and should therefore lead in combating CC and its effects (UNFCCC, 1992). Pauw et al. (2014) stressed the need for flexible implementation of CBDR taking into account the multiplication of country coalitions among developing countries and the rise of emerging economies.

KP facilitates, promotes, and enforces compliance of Annex I Parties to targeted commitments by:

- Helping parties to meet their targets of removing C from the atmosphere in other countries in a cost-effective way.
- Encouraging sustainable development through investment and technology transfer.
- Urging developing countries and the private sector to contribute to emission reduction efforts.

To achieve these targets, compliance to KP involves reporting and verification procedures, flexible market-based mechanisms (which have their own governance procedures), a compliance system and strategies on activities in form of investment, insurance and/or technology transfer to answer the special needs and concerns of the vulnerable economies (Figure 4.1).

Developing countries (Non-Annex 1 Parties) had no emission reduction targets for the first commitment period as they were recognised as being more vulnerable to the adverse impacts of CC, prone to rising sea levels, desertification and droughts. All Annex I Parties were expected to follow a set of rules and regulations to achieve their emission reduction and limitation commitments following an accounting and compliance system. The compliance system established by the Protocol is one of the most comprehensive and rigorous systems among all international treaties and strengthens the Protocol's environmental integrity, support the C market's credibility and ensures transparency of accounting by Parties in emissions trading.

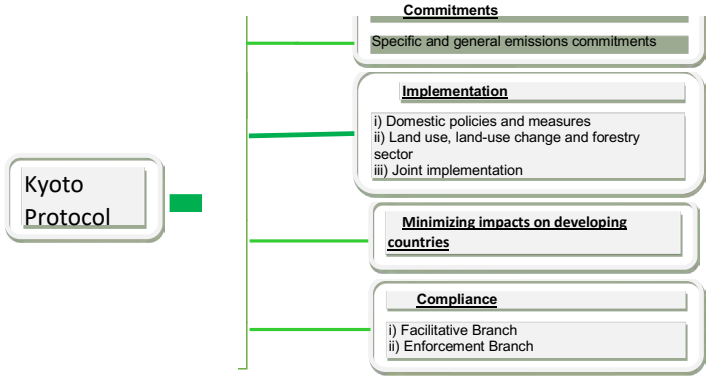

Figure 4.1: Elements of the Kyoto Protocol

4.3 Emissions trading

KP operationalised UNFCCC by creating a market for GHG emissions, most prevalently CO_2 becoming a new commodity created in the form of emission reductions or removals. Thus, KP began to internalise what was acknowledged as an unpriced externality (Box 4.3).

Box 4.3: Carbon Trading

C trading, also called emissions trading, is a popular term used to describe the action of buying, selling, and trading C credits, offsets and permits within various C markets. C trading is a market mechanism that creates incentives to reduce pollution. A **cap** is set on the emissions allowed. A **permit** means that its holder has the right to pollute up to a certain level, whereas a C credit or **offset** is a certificate stating that someone else has made a commitment to reduce C emissions on behalf of the owner of the credit or offset. In forestry, credits are issued for each tonne of CO_2 equivalent (CO_2e) based on the amount of C absorbed or sequestered by the forest. By 2007, the market for C credits was worth approximately US$ 120 billion. In addition to the Kyoto framework, there is a thriving voluntary market fuelled by demand from customers who are not obliged to purchase credits "C offsetting", but who can see benefit in voluntarily doing so. An example of this is the promotion of tree planting by many companies including funeral companies, car hire companies and airlines as a way to "offset" or compensate for their C emissions.

Source: IPCC: http://www.ipcc.ch./.

The exchange of emission permits is also referred to as C trading and can take place within a nation or can be an international transaction. The global market for GHG emissions under KP offers significant opportunities for financial institutions and suggests emissions reduction from the planet's atmosphere regardless of place while stimulating green investment in developing countries. In the voluntary C market, Voluntary Emission Reductions (VERs) (also called Voluntary Emission Units or VCUs) can be acquired by public or private entities interested in voluntarily offsetting their emissions. A unit of VERs and VCUs represents an emission reduction of one ton of CO_2 equivalent (tCO_2e). Emissions trading promote newer, cleaner infra-structure and systems, with possible longer-term benefits. KP encouraged businesses to make climate-friendly investment decisions, encouraged governments to put in place legislation and policies to meet their commitments and created a market for C.

There are two types of C trading:

i) Emission trading – Under article 17 of KP, allowed emissions trading among the 35 countries where industrial plants that don't use up allocations of GHG output could sell the resulting credits/permits to those who overshoot their allowances for the purpose of fulfilling their commitments. The C market allowed offsetting, trading and banking of GHG emission reduction credits to meet mandatory assigned amounts in the 1st commitment period.

ii) Offset trading - is also called C project or 'Baseline-and-credit' trading. Under this scheme, there is a reduction in GHG emissions to compensate for offset emissions made elsewhere, e.g. by using wind or solar energy. The components of an effective emissions market are shown in Figure 4.2.

Cost containment provisions allow **efficiency** in discovering the lowest-cost solutions wherever they are to be found. Offset-based mechanisms offer the opportunity. Long-term **clarity** and predictability of rules, targets and the regulatory systems guiding emissions markets worldwide.

→ Adequate **compliance** periods, allowing companies to structure a "make or buy" approach to their emissions reductions over time for countries or sectors that have yet to introduce an allowance-based approach to participate in the market.

Scarcity of emission allowances in order to create the **price** signals for low-C investments.

Figure 4.2: Components of an effective emissions market.
Source: The Inter-national Emissions Trading Association (IETA).org

The EU operated a domestic market based emission trading scheme (Emissions Trading Scheme (EU ETS)) to promote reduction of GHG emissions since January 2005. Various regional and national emissions trading schemes were developed in some countries e.g. UK, New Zealand, Australia and USA. USA used several C trading schemes including Chicago Climate Exchange, California Climate Action Reserve, California's Global Warming Solutions Act and Regional Greenhouse Gas Initiative. The US acid rain programme employed a Sulphur emissions cap and trade system and successfully reduced emission by more than 50%.

KP incorporates three innovative market mechanisms – International Emissions Trading (IET) and the two project-based mechanisms of JI and the CDM. Countries can meet part of their targets through these mechanisms that ideally encourage GHG reduction where it is most economical, such as in the developing world. Non-Compliance to KP has penalties. A country that does not fulfil the requirements for measurements and reporting loses the privilege of getting credit through JI projects. On the other hand, a country that crosses its emission cap, and does not try to bridge the difference by using any of the available mechanisms, must make up the difference plus an additional 30% during the next period. A country can also face a ban from participating in the "cap and trade" programme, e.g. Bulgaria was suspended from C emissions trading under KP as a result of poor transparency and untrustworthiness (EuroActive.Com 2012).

In Text Question(s)

i) What do we mean by the principle of Common but Differentiated Responsibility?

ii) C is the answer to CC. Critically evaluate this statement.

4.3.1 International Emissions Trading (IET)

Over the first commitment period, Parties had targeted commitments under KP (Annex I Parties) to limit or reduce emissions. The targets were expressed as levels of allowed emissions, or assigned amounts. Assigned Amount Units **(AAUs)** accrue when emissions units are more than the actual target and can be traded and sold under KP's emissions trading scheme. The units may be transferred relative to equivalence to one tonne of CO_2, in the form of either, a Removal Unit **(RMU),** an Emission Reduction Unit **(ERU)** or a Certified Emission Reduction **(CER).**

4.3.2 A removal unit (RMU)

A removal unit is usually on the basis of Land Use, Land Use Change and Forestry (LULUCF) activities such as afforestation, reforestation and deforestation that occurred since 1990 and any elected human-induced activities under Articles 3.3 and 3.4, in the form of forest management (which were mandatory in the second commitment period), revegetation, cropland management or grazing land management. LULUCF is funded through GEF where only 15 out of the fifty two projects funded by the GEF Adaptation Fund have been from Africa at the time of reporting. To ensure compliance with their commitments, Parties reported their emissions by sources and removals by sinks of CO_2 and other GHG resulting from direct human-induced land-use change and forestry activities from LULUCF annually.

KP stipulates that the net change in C stocks and GHG emissions by sources and removals by sinks, include sources and removals by sinks of CO_2 and other GHGs from:

i) Afforestation, reforestation, and deforestation occurring since 1 January 1990 (Article 3.3, Decision 9/CP.4).

ii) Additional agricultural soil and LULUCF activities (Article 3.4).

iii) Projects aimed at reducing GHG emissions from sources and enhancing GHG removals by sinks (Article 6 and potentially Article 12).

Reporting of LULUCF activities under KP requires information on estimates of the changes in C stocks and anthropogenic GHG emissions and should consider uncertainties, transparency in reporting, verifiability and follow guidelines given in decisions 15/CMP.1 and 17/CMP.1 (for the first commitment period) and decision 6/CMP.9 (for the second commitment period). The annual reporting begins with onset of the activity or beginning of the commitment period, whichever comes later. Parties also have to report supplementary information related to LULUCF under the provisions of KP and the Marrakesh Accords and depending on the reported commitment period, reporting of LULUCF activities under KP applies different guidelines (Decision 5/CMP, Decision 7/CMP, Decision 6/CMP9, Decision 2/CMP.6).

For the second commitment period, reporting information on activities under Articles 3.3 and 3.4 of KP in accordance with Article 5, 2, of the Protocol, Annex I Parties are required to apply the IPCC Guidelines for National GHG Inventories (2006) and apply, as appropriate, the IPCC (2013) Revised Supplementary Methods and Good Practice Guidance (2003) from KP consistent with revision of the UNFCCC reporting guidelines on annual inventories for Annex I Parties.

When accounting for LULUCF activities under KP, it is important to specify whether accounting is based on land units or activities and the amount of C related to the activities. The C accounting for each activity under LULUCF can either be *Land-Based* or *Activity-Based* Accounting (Figure

4.3) and the C accounting system must adhere to the basic scientific principles of C processes and the institutional terms and objectives of UNFCCC. The Parties could decide to adopt either one of these approaches, or some combination of the two.

	Land-Based Accounting	Activity-Based Accounting
STEP 1	Definition of Applicable LULUCF Activities under the Kyoto Protocol referring to Specific Land Areas	Definition of Applicable LULUCF Activities under the Kyoto Protocol
STEP 2	Land Units per Activity	Changes in Carbon Stocks and Net GHG Emissions per Activity, Unit of Area, and Time Period
STEP 3	Changes in Carbon Stocks and Net GHG Emissions per Land Unit and Time Period	Land Area per Activity
STEP 4	Sum over Land Units and Commitment Period	Sum over Activities and Commitment Period

Figure 4.3: Basis of Carbon accounting under LULUCF. (Source: IPCC 2000)

The land-based approach estimates total C stock change in applicable C pools on land units and involves an initial identification of land units followed by determination of the total change in C stocks on these land units over the commitment period. Adjustments can then be made to reflect decisions that the Parties may adopt regarding baselines, leakage, and timing issues. Aggregate emissions or removals are the sum of stock changes (net of adjustments) over all applicable land units.

On the other hand, the activity-based approach starts with the C stock change attributable to designated LULUCF activities. First, each applicable activity's impact on C stocks is determined per unit area. This impact is multiplied by the area on which each activity occurs. This equation may also include adjustments to reflect policy decisions by the Parties. Cumulative emissions or removals are calculated by summing across applicable activities. Potentially, a given area of land could be counted more than once if it is subject to multiple activities. This potential double-counting could result in erroneous accounting if the effects of activities are not additive. Alternatively, the Parties could decide that each land unit could contain no more than one activity. In this case, the combined impact of multiple practices applied in the same area would be considered a single activity. Box 4.4 gives an example of estimation of C benefits from avoided deforestation.

BOX 4.4: Estimating global environmental benefits from reduced deforestation

A project is focused on an area in which 300 ha are currently being deforested per year, and the project intends to reduce the deforestation to 100 ha per year for five years. One estimate of average forest C stock per ha in a country can be obtained from FAO in its 2015 Global Forest Resource Assessment (FAO, 2015). As an example, the country of Cameroon is listed as having 135 Mg C per ha in 2015. Assuming deforestation removes all living forest C mass, then the direct C benefit of not deforesting 300 ha per year for five years is:

5 years x 100 ha per year x 135 Mg C per ha = 67 500 Mg C benefits, or
67 500 Mg C x 3.67 = 247 725 Mg CO2 eq. benefits,
where 3.67 is the conversion factor for changing C benefits to CO_2 benefits.

To calculate indirect C benefits, one may assume that the project will continue to reduce the deforestation rate by 100 ha per year for an additional 15 years after the project ends.

The indirect benefits are:

100 ha per year x 15 years x 135 Mg C per ha = 202 500 Mg C benefit, or
523,600 t C x 3.67 = 743 175 Mg CO2 eq. benefit

Total direct and indirect CO2 e.g. benefits are then
247 725 +743 175 = 990 900 Mg CO2 eq.

4.3.3 Joint implementation (JI)

Projects under JI generate ERUs and are defined in Article 6 of KP. Under JI, a country is allowed to develop an emissions-reduction project in another of the 35 nations, for credit against the first country's target from an emission-reduction or emission removal project with each ERU equivalent to one tonne of CO_2. Transfers and acquisitions of these units are tracked and recorded through KP registry systems. The International transactions log ensures the secure transfer of ERUs between countries. The Joint Implementation Supervisory Committee under the authority and guidance of CMP supervises the verification of ERUs generated by JI projects following the specified verification procedures.

A JI project must provide a reduction in emissions by sources, or an enhancement of removals by sinks, that is additional to what would otherwise have occurred. Projects must have approval of the host Party and participants have to be authorized to participate by a Party involved in the project. JI offers Parties a flexible and cost-efficient means of fulfilling a part of their Kyoto commitments, while the host Party benefits from foreign investment and technology transfer.

4.3.4 The Clean Development Mechanism (CDM)

The CDM is one of the three market-based flexibility mechanisms created under KP to assist developed countries in achieving their emission targets at a lower cost by allowing offsets of their obligations through projects in developing countries. KP allows an Annex I Party with an emission-reduction or emission-limitation commitment to implement an emission-reduction project in

a Non -Annex I country. The CDM became the first global, environmental investment and credit scheme of its kind, providing standardised emissions offset instrument and was the only mechanism in which African countries can participate under the compliance C market created by the KP. In this way, the CDM engages developing country parties in CC mitigation while promoting their sustainable development (UN, 1998). The CDM Executive Board (EB) supervises CDM under KP and prepares decisions for CMP including the accreditation of operational entities. Unfortunately, global statistics for UNFCCC, CDM projects show less than 3% of registered CDM projects in Africa (Figure 4.4 below).

The CDM became officially operational in 2005 when KP entered into force but was provisionally operating since 2001 (UNFCCC, 2002). CDM directs finance from the private and public sectors in developed countries to innovative low C projects in developing countries, mainly, afforestation and reforestation projects, to reduce CO_2 concentrations in the atmosphere by enhancing forest C sinks and reservoirs (Box 4.5).

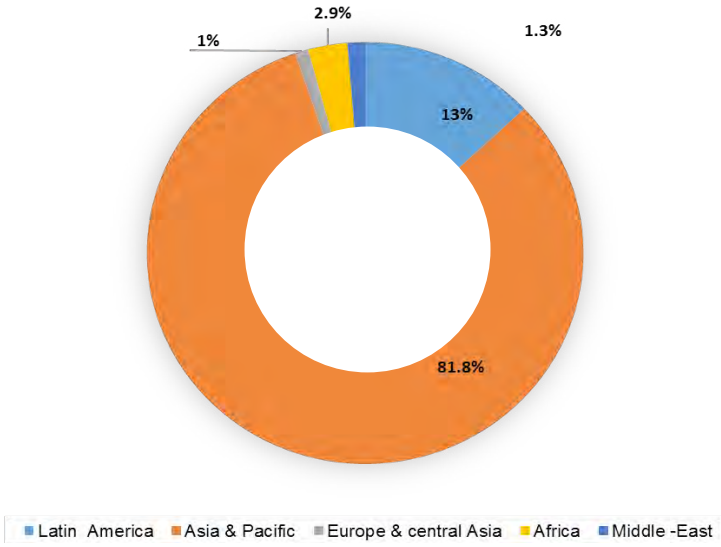

Figure 4.4: Global distribution of CDM projects by region

Box 4.5 Definitions

Carbon source is anything that releases more C than is absorbed. Forests, soils, oceans and the atmosphere all store C and this C moves between them in a continuous cycle.

Carbon sink is a reservoir of C that accumulates and stores C for an indefinite period e.g. through photosynthesis by plants and algae.

Carbon footprint is the total set of GHG emissions caused directly and indirectly by an individual, organisation, event or product.

A share of the proceeds from every CDM project is deposited in an Adaptation Fund used to contribute to sustainable development by financing CC adaptation in developing countries. To date several mechanisms available for funding CDM projects are shown in Table 4.1.

The CDM accomplishes the objectives of UNFCCC by making provision for investment by industrialised countries and industry to reduce C emissions and promote C sequestration projects in developing countries to meet their Kyoto targets. Such projects sell CER credits, each equivalent to one tonne of CO_2. The CDM projects should foster economic growth in developing countries which are also most vulnerable to the impacts of climate change), but following a lower than "BAU" C emissions pathway.

Table 4.1: Sources of funding for CDM projects

Source	Area
Africa C Asset Development Initiative	Launched in 2009 to supports potential CDM projects. Provides grants for early costs, technical assistance for local project developers and C finance training for local financial institutions.
African Biofuels and Renewable Energy Fund	Open to all renewable energy projects in Africa, including those eligible under the CDM. Covers projects on biofuels, fuel-switching to biomass energy, hydro power, wind power, CH_4 leakage, and capture of CH4 from landfills and forestry.
The African Development Bank's African C Support Programme	This was a two- year programme that provided direct technical assistance to project developers and African designated national authorities on CDM processes. The programme assisted in the development and approval of a methodology for cross-border electricity transmission projects. ADB supports projects with CDM potential.
The Intra-African, Caribbean, and Pacific Climate Support Facility	The Facility is part of the Global Climate Change Alliance and provides customised short-term technical assistance to projects in African, Caribbean, and Pacific countries in any of the five priority areas, which include: project identification and formulation, feasibility studies, assistance in securing funding, training, work-shops and capacity-building, and policy development. Services can be implemented within a month after approval of the required assistance.
UNFCCC's loan scheme for countries with fewer than 10 Registered CDM projects	Projects should generate at least 7,500 CERs per year (projects in LDCs), and 15,000 CERs per year (non-LDCs). Support includes development of Project Design Document (PDD), Validation of the PDD by a Designated Operational Entity (DOE) and Verification by a DOE of the first issuance of CERs.

Source	Area
UNFCCC'S regional collaboration centres in Lomé and Kampala	Help to identify opportunities for potential projects and programmes eligible under the CDM, provide direct support to the design of CDM projects and programmes by addressing technical and procedural issues in the project design and validation phase, clarify problems identified by third-party validators, identify priority areas for the development of standardized baselines based on the emission profile of the country in order to considerably simplify local CDM projects, identify projects and programmes that would benefit from standardized baselines and support the design of such projects and programmes and providing institutional capacity development to various institutions, including universities, in-dependent development organizations and government agencies.
World Bank Bio C Fund (afforestation and reforestation support)	Launched in December 2011 to increase the number of projects that sequester or conserve C in forests and landscapes, such as REDD (and afforestation and reforestation) CDM projects.
World Bank C Initiative for Development (access to energy support in low-income Countries)	Launched in December 2011 to build capacity and develop tools and methodologies to help less endowed countries to access C finance, mainly in the area of energy access. Also uses emission-reduction-based performance payments to support projects that use clean and efficient technologies in low-income countries.
World Bank CPF	Supports CDM Programmes of Activities by developing large scale emission reduction programmes and purchasing the resulting CERs. In order to scale up C finance, the CPF collaborates with governments and market participants on investment efforts and sector-based interventions consistent with low-C economic growth and the sustainable development priorities of the host developing country.
World Bank Institute	Training seminars on the CDM.

Projects facilitating renewable energy production, energy efficiency and reforestation can earn credits under the CDM. Forestry projects are one way in which sustainable development might be achieved by rural communities, while contributing to local environmental values as well as income. CDM projects involve a variety of activities and technologies in various sectors including renewable energy, waste handling and disposal, manufacturing industries, and afforestation and reforestation.

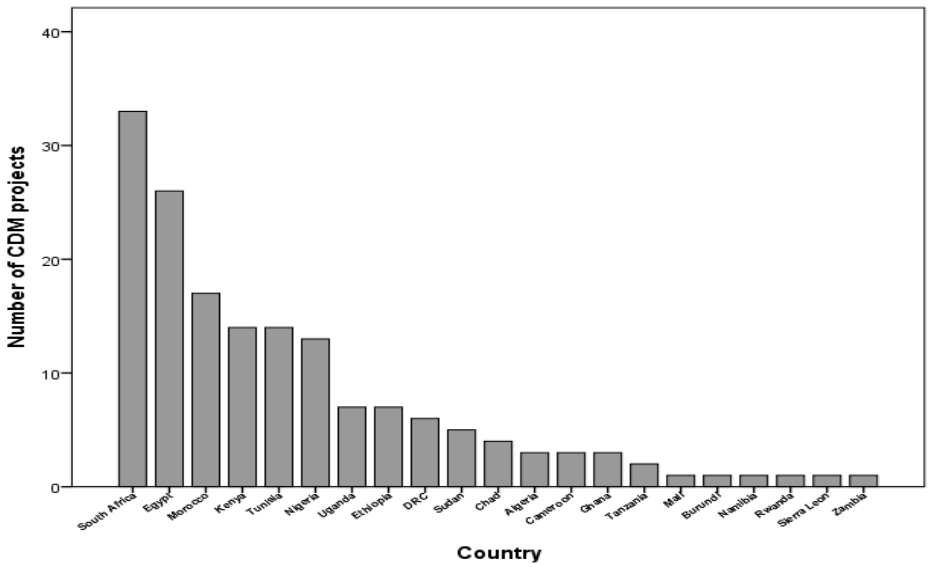

Figure 4.5: Distribution of CDM projects in Africa by country.

About 21 countries in Africa have CDM projects at different stages of implementation. The highest numbers are in South Africa, Egypt and Morocco (Figure 4.5 above). South Africa's main experience with C markets is through CDM projects covering bio-fuels, energy efficiency, waste management, cogeneration, fuel switching and hydro-power. Other sectors include manufacturing, mining, agriculture, energy, waste management, housing, transport and residential. Revenues from these projects are exempted from taxation.

A total of 360 CDM projects from South Africa were submitted to its Designated National Authority (DNA), with 222 Project Idea Notes (PINs) and 138 PDDs. Out of the 138 PDDs, 90 have been registered by the CDM EB including 35 Programme of Activities. About 12 reached CER issuance, whilst 48 are at different stages of the CDM project cycle (DNA approval, validation stage, and/or request for review) (South African Government, 2015). In Afforestation projects, forests are established in areas that were never forested or that have not been forested for at least 50 years prior to project activities (UNFCCC, 1997). A CDM project activity might involve, for example, a rural electrification project using solar panels or the installation of more energy-efficient boilers.

An example of a CDM forestry project in Africa is the Humbo project in Ethiopia. In developing countries, the risk of displacement of forests made forest projects not eligible for the CDM except afforestation and reforestation (GOFC–Gold, 2015).

CDM is subject to the authority and guidance of COP to the KP (CMP) and the operation of the mechanism is managed by the CDM Executive Board composed of ten representatives of governments from developing and developed countries which are party to KP, including a number of authorised observers. CDM EB annually reports to CMP and incorporates heavily negotiated decisions taken by CMP (UNFCCC, 2011). Five advisory bodies support CDM EB in approval of projects for registration, issuing CERs, and accrediting DOEs. DOEs are third party reviewers which verify that projects comply with the rules of CDM and they submit requests for registration and CER issuance (UNFCCC, 2011). Furthermore, the Board and its bodies are serviced by a Secretariat which issues advice after verifying the completeness and accuracy of projects applying for registration (UNFCCC, 2011).

Technical issues associated with CDM projects include social impacts, leakage, additionality and permanence. Social impacts are covered by the sustainable development component of CDM which is defined and approved by the host country's DNA. Subbarao and Lloyd (2011), however, criticised the CDM process for being rather relaxed on issues of social impacts. In this regard, projects attaining an outstanding social impact may voluntarily request certification by Gold Standard Foundation. The Gold Standard is an effort to normalise, incentivise and value the social impacts of CDM projects. All proposed CDM projects should meet some basic criteria, in order to be officially classified as a CDM project eligible to earn CERs under KP. The following requirements must be met:

i) **Project must gain approval from the host economy that is a party to the KP.** Both participating economies should have an assigned authority for CDM. Each Non-Annex 1 economy that has ratified KP has a DNA that is authorized to accept or reject proposed CDM projects. In order to secure this approval, project developers should demonstrate how the project contributes toward the sustainable development objectives of the host nation. Furthermore, both should agree to undertake the initiative voluntarily including the participation of stakeholders. The project must not cause any degradation in local social, economic or environmental domains.

ii) **Project emission reductions must be above and beyond BAU.** Emission reductions that are additional to that which would occur in the absence of the certified project activity will only be eligible to earn CERs (UNFCCC, 1998). The project must demonstrate that it was undertaken for its emission reduction benefits known as "*additionality*".

iii) **Project must generate real, measurable and verifiable GHG reductions.** The project must measure and report the amount of GHGs reduced (in tonnes) verified by an independent party. The project also can not cause GHGs to increase in another location, e.g. across a border - this is known as *"leakage".*

iv) **Projects must bring appropriate technology.** Technologies that are transferred must be appropriate to the needs and business environment of the host country.

v) **Total involvement.** The owner of the credits must be identified and involved in all contract negotiations about transfer of ownership of the CERs and Parties must be able to prove that the CERs generated are owned by the party selling them.

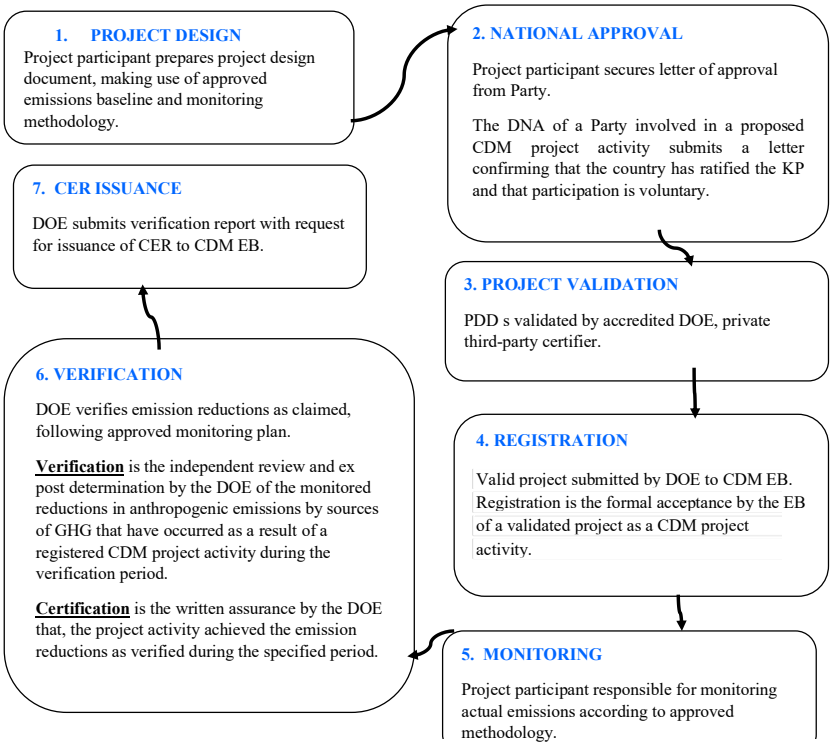

Figure 4.6: The CDM project cycle

Communication and negotiation for CDM projects follow a seven step process covering a minimum period of 12 months: project design; national approval; valida-tion; registration; monitoring; verification; and CER issuance (Figure 4.6). The project design, implementation and monitoring of emissions are the responsibility of the project participants (which may be public or private entities). In afforestation/ reforestation projects, the project design involves the submission of a PDD and a proposal of a baseline and monitoring methodology for approval by the Board. Alternatively, the project can use a methodology previously approved by the Board. Due to the technical complexity, sometimes project participants hire consultants and specialists to develop the PDD and methodologies. Thereafter, the PDD receives authorisation by the host country's DNA, which confirms the contribution of the project to sustainable development. The project must also be validated by a DOE certified by the CDM Board before registration. The DOE then submits the project to the CDM Board for registration, which formally recognises the project is capable of producing offsets. After registration, the project participants monitor the emissions and request the DOE to verify them. The DOE submits the verification report to the board and, if approved, CERs will finally be issued. The crediting period for a proposed afforestation or reforestation CDM project activity is selected by the project participants, and may either be a 20-year crediting period, renewable twice or a single 30-year crediting period (5/CMP.1, Annex, paragraph 23). Where the project is renewed, a DOE determines and informs the EB that the original project baseline is still valid or has been updated taking account of new data where applicable (www.cdmrulebook.org/715.html).

The Ecosystem Market place (2015) stressed that African nations who feel they missed out on potential financing through the CDM (which was mostly channelled to renewable energy megaprojects in China and India) should lobby for an upcoming international climate arrangement to include a "CDM-like" mechanism to direct funds for emissions reductions in Africa, possibly through the GCF.

4.4 Communications and negotiations under the Kyoto Protocol

International climate negotiations have been dominated by a shift of the agenda away from mitigation towards adaptation as a result of lobbying efforts by African governments and CSOs. Roger and Belliethathan (2014) showed that African governments and negotiators lack adequate information, skills and technical expertise to better understand the agenda items, including the climate science and legal aspects surrounding the climate debate and other countries' negotiation positions, coupled with a lack of clear government mandates in CC debates. The participation and representation of African countries in international negotiations are costly, and African nations frequently lack the resources to send many delegations to climate summits. The representations of African countries have been inadequate with some sending only two negotiators to cover meetings discussing different themes and topics in parallel sessions. Furthermore, communication among African negotiators at planning meetings, events and processes prior to the COP meetings is affected by language barriers (French/Spanish/English/Portuguese/local languages). The African negotiators have, however, been able to improve their negotiating capacity and effectiveness, through working together with their CSOs and frequently including more experts from NGOs in their delegations. The CSOs are officially recognised as observers in the UNFCCC with no seat at the negotiation table. CSOs consist of a variety of actors commonly described as non-state, not-for-profit, voluntary organisations, networks, associations, groups and movements that are independent from government and the market. In some cases, CSO and NGO are used interchangeably.

UNFCCC has three main constituencies of environment, business and research accounting for over 80% of all registered active CSOs. UNFCCC recognises nine different observer constituencies: environmental NGOs; business and industry NGOs; local government and municipal authorities; indigenous peoples organisations; research and independent NGOs; trade union NGOs; farmers, women and gender groups; youth NGOs, and media groups recognised by the UN. In CC negotiations, CSOs from East and West Africa strongly advocated for REDD to be a stand-alone key topic as they still have vast forest reserves requiring protection and sustainable use in their home countries. These are also the regions in which the majority of REDD projects are being implemented under UNFCCC.

At least seven different approaches are used by CSOs in climate negotiations, some of them simultaneously and ranging from participation in government delegation to street demonstrations and peaceful protests. The top three approaches used by African CSOs when they engage in climate negotiations include submitting position papers via NGO networks, networking with other NGOs and attending COPs as members of a government delegation. The approaches were closely followed by engaging with the home government before COPs, submitting position papers directly to UNFCCC and issuing press releases/doing media outreach. The most frequently used of these approaches were networking with other NGOs and engaging with the home government. Other frequently used strategies include holding side events, informing the public about the negotiations, and carrying out campaigns and demonstrations. African CSOs worked with negotiators by providing technical support and advice to national governments or as part of government delegations and, sometimes, they submit text directly to the UNFCCC Secretariat. CSOs and NGOs produce pamphlets/flyers/articles in the Climate Action Network.

Madziwa and Betzold (2014) gave examples of CSOs and NGOs active in climate negotiations. In Malawi, the Civil Society Network on Climate Change is a consortium of CSOs set up in response to the growing interest and work of CSOs in CC and disaster risk reduction. In Kenya, the Climate Change Network works on enhanced policy advocacy and effective and informed participation in the CC and sustainable development debates. In South Africa, an NGO, Project 90 by 2030 became involved with the CC negotiation process at COP17 (Durban, 2011) after realising the importance of international-level engagement in contributing towards the implementation of international programmes and international climate negotiation processes.

Activity 4.2 (Brain storming)

Discuss some limitations and challenges of market-based mechanisms toward climate change mitigation.

4.5 Limitation and challenges of the Kyoto protocol

Following the discussions above, several limitations and challenges can be outlined from existing and prospective projects under KP. The main obstacles to implement-tation of CDM projects in Africa include:

- Limited access to finance by potential developers. In many African countries, the investment climate is unfavourable, compounded by a lack of entities capable of bundling projects for GHG offsets and the majority of potential in small projects having difficulty in attracting funding and limited access to finance.
- Lack of knowledge about CDM. CDM projects are a new area in Africa and also are a new subject that requires the building of capacities at all levels to widen the understanding and participation. This is evidenced by the lack of experience and technical skill in most countries due to the complexity of the processes. Most developing countries have no trained national CDM consultants. Local communities lack the understanding to participate in CDM projects as Africa's technological background is challenged and always requires support to undertake projects as it mostly relies on borrowed technologies.
- In some communities where CDM has been implemented, projects failed to meet community expectations. The community struggled to understand the concept of emissions trading with most of the community members having unrealistic expectations of the level of income that would be generated through C sales.
- Clean technologies come at a cost and there is a challenge on the affordability, suitability and political support for locally/demand driven innovations/inventions. There is need for identification of suitable interventions for Africa and upscaling them for the African scenario.
- There is need for ways to promote international cooperation including maximum participation of developing countries, i.e. relative to how abatement duties, or emission entitlements, are allocated across countries over longer periods of time.
- The inclusion of agricultural GHG offsets could be encouraged by market-based trading schemes which will allow credits for reducing their GHG emission through offset trading, or trading of credits. This should be supported by a credible system of direct or indirect sanctions developed to deter free-riding.
- Another challenge relates to CDM compliance issues and the initial slow adoption of CC mitigation and adaptation innovations.

Exercise Questions

i) Explain how the following Kyoto mechanisms help to stimulate green investment and help Parties meet emission targets in a cost-effective way:

   a International Emissions Trading.

   b. Clean Development Mechanism.

   c. Joint implementation.

ii) Critically evaluate the opportunities and challenges of C trading.

Summary

In this chapter we learnt that the Kyoto Protocol incorporates three innovative market mechanisms – IET and the two project-based mechanisms of JI and the CDM. We also examined the challenges faced by African countries in implementing CDM programmes. In the next session, we shall look at emerging CC mitigation and adaptation strategies including REDD and REDD+.

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Chapter 5: Emerging Climate Change Mitigation and Adaptation Strategies

5.1 Introduction

The first fifteen years of UNFCCC neglected issues of deforestation in developing countries although this was the greatest cause of forest related emissions. De-forestation and forest degradation are caused by both anthropogenic and climatic factors, including recurrent droughts and flooding which reduce forest C stocks. In many parts of Africa, unsustainable exploitation of timber, clearing for agriculture and wood fuel constitute the main sources of forest degradation contributing to the negative impacts of CC. This chapter discusses the emerging concepts in CC debates including REDD and REDD+, their main elements and process, agriculture, forestry and other land uses (AFOLU) and the associated legally binding and non-legally binding instruments.

Objectives

By the end of this session, the learner should be able to:

i) Explain the emergence of REDD as an international strategy for CC solutions.

ii) Discuss components of AFOLU and the relationship with LULUCF.

iii) Critically assess the feasibility of current distribution and composition of demonstration and readiness investments for REDD+ in African countries and their role in reducing GHG emissions.

iv) Analyse the main elements of REDD+.

v) Describe the phases and process of REDD projects.

vi) Distinguish between legally binding and non-legally binding instruments.

5.2 REDD and REDD+

The science of C sequestration has improved, with technology and tactics allowing greater consensus on data for bio-C from forestry and other land-use projects. Forests cover c. 31% of the total global land area (4 billion ha) (FAO, 2010). Although this figure may seem high, the world's forests continue to disappear with a net losses of 8.3 million ha and 6.2 million ha per year for the periods 1990 - 2000 and 2001- 2010, respectively. The conversion of forests to other land uses is responsible for around 10% of net global C emissions (IPCC, 2013). Although efforts to reduce the rate of forest loss have been made, deforestation remains very high, with the greatest loss occurring in tropical regions, Africa included, especially in the sub-Saharan region. Tropical forest loss affects biodiversity and forest-dependent communities, apart from the release of CO_2 into the atmosphere (Amazon Institute of Environmental Research, 2005).

Projects contributing to emission reductions from avoided deforestation and forest degradation, SFM, conservation and enhancement of forest C stocks were not eligible projects under CDM or under any of the KP mechanisms. The CDM initiatives excluded issues of deforestation and forest degradation which have severe adverse impacts on forest biodiversity, the availability of wood and non-wood forest products, soil and water resources, local livelihoods and sometimes become important safety nets for the rural poor (FAO/UNDP/UNEP, 2008). The idea of avoided deforestation emerged in the policy dialogue, leading to mitigation options viewed as a cost-effective route for GHG reduction in developing countries (Cotula and Mayers, 2009). Several technical issues hindered early efforts to combat tropical deforestation and reducing emissions from deforestation including issues of permanence, additionality and leakage (Streck et al., 2008).

The need to reduce emission from deforestation (RED) arose after the KP. UN later adopted a specific programme dedicated to REDDUN-REDD supported by FAO, UNEP and UNDP. The initiative of REDD became a new mechanism under UNFCCC with an economic incentive for developing countries to conserve and enhance forest C sinks (UNFCCC, 2008; RECOFT, 2011; Angelsen, 2008) (Box 5.1). In this regard, interventions in the regulated Kyoto-based markets then acknowledged reducing emissions from deforestation and forest degradation as a critical element of CC mitigation with conservation, sustainable management of forests and enhancement of forest C stocks upgraded to also receive the same emphasis as avoided emissions from deforestation and forest degradation (UNFCCC, 2011). The REDD concept incentivises developing countries by rewarding them financially for any emission reductions achieved through a decrease in forest conversion to other land uses (Parker et al., 2009) relative to baseline stocks and/or projected rates of reduction of deforestation and forest degradation (Transparency International, 2012). The levels of REDD activities are, however, unequal between regions, and were not able to achieve maximum emission reductions because some crucial factors were ignored. The potential imposition of international rules and solutions raised some controversial issues about livelihoods, national sovereignty, economic well-being and local impacts in developing countries (Peskett and Brockhaus, 2009).

Box 5.1: Overview of REDD developments

After ratifying KP in 1997, there was more interest in RED. Over several rounds of negotiations, UNFCCC COP adopted decisions that provided the architecture leading to the global REDD mechanism in 2007. Several countries then confirmed their support and pledged funding for the establishment of REDD at the 2009 Copenhagen Accord. UNFCCC COP established rules and provided methodological guidance for the operationalisation of REDD. In the 2010 Cancun Agreements, REDD became REDD+. This was followed by the Durban Platform for Enhanced Action in 2011, the 2012 Doha Climate Gateway and the Warsaw Framework for REDD+, that saw REDD+ mechanisms including other technical issues such as non-C benefits, safeguards, non-market-based approaches, scaling-up and financial support for REDD+. In December 2015, the Paris Agreement was adopted and this became the latest step in the evolution of the UN CC regime charting a new course for global efforts to combat CC.

Source: UNFCCC 2005/7/8/9/10/1/12/13/15.

Interest and political will for action on REDD was boosted by the UNFCCC Bali Action Plan of 2007 (UNFCCC, 2008) resulting in development "readiness" plans by 28 tropical forest countries to prepare for payments for reducing deforestation against a BAU baseline (Ecosystem Marketplace, 2015). Specific criteria for investment have been diverse and uneven although UNFCCC indicated that emission reductions should be coupled with sustainable development benefits for host countries.

Cerbu et al. (2011) analysed 100 REDD demonstration projects and 79 national REDD readiness activities and showed that investments did not prioritise effective emission reductions, and unevenly valued the production of additional benefits for income, biodiversity and water protection services.

In 2010, at COP-16, REDD became REDD+, to reflect the new components of potential roles of forests in mitigating CC through conservation, SFM and enhance-ment of forest C stocks. In this regard, REDD evolved to include biodiversity, community, gender and poverty values and is intended to help developing countries to move from dirty energy technologies and other C-intensive economic development projects that drive deforestation to cleaner technologies which reduce GHG emissions. The projects can be verified by credible standards, the most common being Verified C Standards (VCS) and the Gold Standard. The Warsaw Framework for REDD+ (COP 19) building on previous relevant decisions adopted at COPs 13, 15, 16, 17 and 18, became a turning point by adopting seven decisions on issues relating to REDD+ with potential to generate social and environmental benefits in addition to GHG emission reductions encompassing the following:

Reducing emissions from **deforestation** and
Reducing emissions from **forest degradation** } **REDD**

Sustainable forest management
Conservation of forest C stocks
Enhancement of forest C stock } **+**

Reduced deforestation and forest degradation plays a significant role in CC mitigation and adaptation and can yield significant sustainable development benefits. Initially, REDD+ presented a win-win deal for both developed and developing country parties. However, as the negotiations progressed, REDD+ became increasingly complicated, technically and politically, and more expen-

sive to realise. Unlike CDM, there is no central institution or authority validating REDD+ activities.

There are other important arrangements for REDD+, mostly in the area of investments for REDD-readiness under the World Bank FCPF and FIP which were developed under the broader CIF portfolio, established by the multilateral development banks. FCPF became operational in June 2008, and created a framework and processes for REDD+ readiness to help countries get ready for future financial incentives for REDD+. Furthermore, the facility helps each participating country to develop reference scenarios, formulate and adopt a REDD+ strategy, designing measurement, reporting and verification (MRV) systems and setting up REDD+ national management arrangements, using techniques that include all key national stakeholders including the appropriate safeguards. FCPF currently has 36 REDD Country Participants (13 in Africa, 15 in Latin America and the Caribbean, 8 in Asia-Pacific). The FCPF Participants Committee must assess a country's Readiness Package before the country can enter into an Emission Reductions Payment Agreement with the C Fund (CF) to build on readiness achievements (FCPF, 2015). Furthermore, programmes implemented at the sub-national scale will need to be consistent with the national systems outlining measures to assess and minimize the risk of leakage (FCPF, 2015).

CF is the second fund of the FCPF which became operational in May 2011 to provide payments for VERs from REDD+ programmes in countries that make considerable progress towards REDD+ readiness. REDD Country Participants qualify for CF based on a progress assessment by the FCPF Participants Committee. Programmes submitted to CF (about US$ 390 million committed or pledged by ten public and private contributors, each having provided at least US$ 5 million) must meet the following criteria:

- Focus on sustainable emission reductions including social and environmental benefits.
- Enough scale of implementation, e.g. at the level of an administrative jurisdiction sub- national or at the national level.
- Consistency with emerging compliance standards under UNFCCC and other regimes.
- Diversity, to create knowledge value for FCPF and other Participants.
- Clear mechanisms so that incentives for REDD+ are extended to those who need them.
- Transparent stakeholder consultations.

To date, voluntary actors have piloted REDD project-level activities that reduce deforestation through activities involving conservation, enhancement, and SFM. The Ecosystem Market Place (2015) showed REDD as the most popular offset project type among voluntary buyers. VCS include areas subject to different eligible activities such as Avoiding Planned Deforestation and/or Degradation (APDD), Avoiding Unplanned Deforestation and/or Degradation (AUDD) and re-forestation. The VCS REDD methodology module is applicable to forest land that would be deforested or degraded in the absence of the project activity but there are no methodologies for activities to reduce emissions from forest degradation caused by illegal harvesting of trees for timber (VCS, 2013; 2015). Other standards are also recognised world -wide. Although VCS projects include distinct sets of activities governments are now establishing policies and programmes to mitigate GHG emissions across entire national or subnational authorities. In the forestry sector, REDD+ programmes can be accounted for and credited using the world's first jurisdictional-scale framework, the VCS Jurisdictional and Nested REDD+ (JNR) framework which integrates government-led and project-level REDD+ activities and establishes a clear pathway for subnational- and project-level activities to be incorporated within broader REDD+ programmes (VCS, 2011). The JNR was initiated in 2010 (Cancun) with the final requirements released (vs 3.4) in 2014. Projects under JNR must be scaled up and incorporated into provincial, state and national frameworks to

ensure effective measurement of large-scale emission across entire jurisdictions. To be eligible for REDD+ readiness mechanism, each country should demonstrate the following:

i) **Technical capacity** – ability to monitor and account for forest C emissions over time.

ii) **Institutional capacity** – government enact and enforce forest protection laws regarding forest land tenure with transparent national emissions accounting.

iii) **Social capacity** – safeguards for multi-stakeholders in REDD+ – including forest dependent communities, local government and NGOs to be protected against potential risks while promoting benefits. Seven safeguards must be supported throughout the implementation of REDD+ actions. These are known as the "Cancun Safeguards", and were agreed to at COP 16.

iv) **Economic capacity** – design and implement REDD+ for equitable distribution of economic benefits.

5.2.1 The REDD process

The REDD process follows eight basic steps (Figure 5.1 below) and takes more than one year even up to three years or more depending on responses. The process of REDD+ begins with an idea for a project which reduces or avoids C emissions and requires some extra financing or needs some assistance to secure finance. Partners are identified before development of a PIN, and then decide on a Standard to use and present a project to credit buyers. After this, seek funding for your PDD followed by implementation, culminating in verification and issuance. REDD projects can generate income for 10 years or more. One of the conditions is that the project should contribute to the sustainable development of the local community. In some countries in Africa, REDD projects have created environmental jobs, income, built schools, introduced energy efficient technologies among other benefits to the communities.

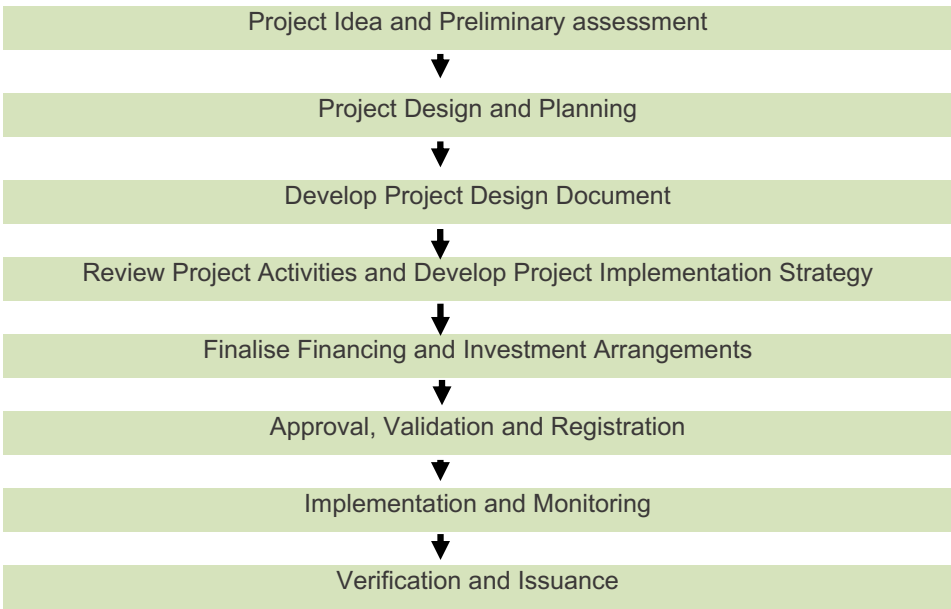

Figure 5.1: The basic steps of REDD

Key issues about REDD+:

i) ***Reference levels*** – serve as benchmarks for assessing performance in implement-ting REDD+ activities are expressed in t CO_2 eq per year, consistent with anthropo-genic forest-related GHG emissions and removals from the GHG inventories.

ii) ***Leakage*** - efforts for reducing emissions in one place shifts them to another location or sector where they are uncounted and perhaps uncontrolled.

iii) ***Permanence*** - trees only absorb C as long as they are alive and growing. Simply planting new trees is not enough; they need to be protected throughout their growing lifespan.

iv) ***Safeguards -*** seven safeguards were listed under the Cancun agreement for the REDD + implementation.

v) ***Governance*** - guidelines and frameworks for monitoring governance have been developed by many institutions such as the World Bank, FAO, UNREDD, but there is a need for harmonisation of policies and common indicators. Sound governance is highly linked to the successful implementation of the safeguards. Need to ensure that REDD will not adversely impact the rights and livelihoods of the millions of people who live in or around forests, especially in poorly governed states.

vi) ***MRV*** - C emissions from deforestation and degradation are estimated from changes in two important variables, *viz.* area of deforestation and degradation, and C stock densities per unit area which need to be assessed using remote sensing technologies combined with ground measurements and established inventories.

vii) ***Finance -*** The Eliasch Review (2008) estimated that $ 17–33 billion a year was required by 2030 to half emissions from the forest sector. Reductions are generated through the inclusion of forest C credits in a global C trading scheme, thus providing countries with the opportunity to offset their own emissions by purchasing cheaper credits for forest C emission reductions.

When implementing REDD projects, countries may follow a phased approach to allow them to gradually build capacities and acquired data (Table 5.1).

Table 5.1: REDD phases. Source: UNFCCC, 2011. Dec. 1/CP16 par.73

Implementation Phase		Characteristics	MRV activities
Phase 1	Readiness	National strategy or action plan formulation, development of policies and measures, and capacity building.	Capacity-development needs and roadmap development.
Phase 2	Transition, implementation, and capacity building	Implementation of national policies and measures and national strategies or action plans (further capacity building), technology development and transfer, and results-based demonstration activities.	Demonstration activities and monitoring system development.
Phase 3	Full implementation	Implementation of national policies and measures on the whole national territory, results-based actions that should be fully measured, reported, and verified.	National performance monitoring system, fully operational MRV system to report REDD+ mitigation performance in CO_2 e.

Activity 5.1 (Brainstorming)

i) How feasible is the REDD process to small-holder farmers in Africa?

ii) Discuss the role of REDD+ and other nature-based solutions in reducing global temperatures by 2°C.

The REDD rule book specifies seven decision areas for REDD+ projects (Table 5.2) (Climate Law and Policy, 2014).

Table 5.2: Important decision areas for REDD+ projects. (Source: Climate Law and Policy 2014).

Decision Area	Description
Measurement, reporting and verification (MRV)	• Developing countries must fully measure, report and verify "anthropogenic forest-related emissions by sources and removals by sinks, forest C stocks, and forest C stock and forest-area changes" resulting from the execution of REDD+ activities and emissions displacement at national level. • Use most recent IPCC guidelines as a basis for estimating forest related emissions, removals, forest C stocks and forest area changes.
Forest reference emission levels (REL) and forest reference levels (FRL)	• Benchmarks for assessing performance in implementing REDD+ activities expressed in t CO2eq per year. • Developing country Parties undertaking REDD+ activities should develop a step-wise national forest REL and/or FRL transparently.
National Forest Monitoring Systems (NFMS)	• Establish a "robust and transparent" National Forest Monitoring System (NFMS) incorporating, sub-national systems, for monitoring and reporting REDD+ activities and estimating anthropogenic forest-related GHG emissions guided by the most recent IPCC guidelines. • NFMS should build upon existing systems, enable the assessment of different types of forests in the country and be flexible to allow for improvements.
Safeguards (referred to as the Cancun Safeguards)	• A robust and transparent NFMS for providing information on how safeguards are being addressed and respected. Seven safeguards were outlined: ✓ Consistency with existing forest programmes and international agreements. ✓ Transparent and effective national forest governance structures. ✓ Respect for the knowledge and rights of indigenous peoples and local communities. ✓ Full and effective participation of relevant stakeholders. ✓ Protection of natural forests and biodiversity. ✓ Addressing the risk of reversals ('permanence'). ✓ Addressing the risk of displacement of emissions ('leakage').

Decision Area	Description
Drivers of deforestation	• The Warsaw Framework for REDD+ integrates drivers and recognises the importance of addressing the drivers of deforestation and forest degradation in the context of REDD+, but does not set out any requirements for countries. • Countries are encouraged to share the results of their actions on UNFCCC's REDD+ web platform.
Finance and results based payments	• Before receiving results-based finance for REDD+, developing countries must ensure that: ✓ The anthropogenic forest-related emissions by sources and removals resulting from the implementation of REDD+ activities are fully measured, reported and verified following UNFCCC guidance. ✓ They present most recent summary of information on how all Cancun safeguards have been addressed and respected before receiving payments.
Institutional arrangements	• Includes institutional arrangements that are expected to be implemented at country level. • No decision was adopted on international institutional arrangements for REDD+. • The national REDD+ entity or focal point can nominate their entities to obtain and receive results-based payments, so long as the nominated entities comply with the requirements of the entities providing the payments.

5.3 Agriculture, Forestry and Other Land Use (AFOLU)

AFOLU is a term defined by IPCC Guidelines (2006) to describe a category of agri-culture and land use activities which contribute to anthropogenic GHG emissions. IPCC (2007) showed that AFOLU accounts for more than 30% of total global anthro-pogenic GHG emissions. Information on AFOLU emissions provides an improved knowledge base contributing to discussions on the role of agriculture within the UNFCCC Conference of the Parties/Meeting of the Parties (COP/MOP).

To improve the general consistency and completeness of the national GHG inventories, AFOLU combines two previously distinct sectors LULUCF and Agri-culture. AFOLU includes projects under the following categories: Afforestation, Re-forestation and Revegetation, Agricultural Land Management, Improved Forest Management, Reduced Emissions from Deforestation and Degradation (REDD), Avoided Conversion of Grasslands and Shrub lands, and Wetlands Restoration and Conservation.

Activity 5.2 (Group Discussion)

i) Discuss the key issues on REDD and REDD+.

ii) Assess how adaptation can be used to reduce the impacts of CC on forests.

KP further enabled developed countries to take measures to reduce or limit emissions from LULUCF as part of their climate mitigation commitments. AFOLU activities generate GHG emissions by sources as well as removals by sinks, caused by the oxidation and fixation of organic matter via photosynthesis and complex microbial processes associated with human management and disturbance of eco-systems. They comprise non-CO_2 emissions by sources from agriculture, CO_2 and non-CO_2 emissions by sources from Forestry and Other Land Use, and CO_2 removals by Forestry and Other Land Uses sinks. Emissions from forestry report net emissions (or net removals), being defined as emissions by sources minus removals by sink. GHG emissions from agriculture mainly consist of non-CO_2 gases, specifically CH_4 and N_2O produced from biological activities linked to bacterial decomposition processes in cropland and grassland soils and in livestock's digestive systems.

IPCC (2014) showed that AFOLU emissions could change substantially with alterations of significant mitigation potential from agriculture, forestry, and bioenergy mitigation measures. Emissions come from processes linked to the following:

i) ***Enteric Fermentation*** - CH_4 gas produced in digestive systems of ruminants and to a lesser extent of non-ruminants.

ii) ***Manure Management*** - Emissions from manure Nitrogen applied to cropland as organic fertiliser, left on pasture by grazing animals, or processed in manure mana-gement systems. Both N_2O and CH_4 emissions are released.

iii) ***Rice Cultivation*** - Emissions from rice cultivation consist of CH_4 emitted by anaerobic decomposition of organic matter in paddy fields.

iv) ***Synthetic Fertilisers*** - Emissions consist of direct and indirect N_2O emissions from N added to agricultural soils by farmers. Specifically, N_2O is produced by microbial processes of nitrification and de-nitrification taking place after addition on site (direct emissions), and after volatilization/re-deposition and leaching processes (indirect emissions).

v) ***Crop Residues*** - Emissions consist of direct and indirect N_2O emissions from N in crop residues and forage/pasture renewal left on agricultural fields by farmers.

vi) ***Cultivation of Organic Soils*** - Emissions are those associated with N_2O emissions following drainage of agriculture land (including crop- and grassland areas).

vii) ***Burning Savanna*** - Emissions consist of CH_4 and N_2O gases produced from the burning of biomass vegetation in five land cover types of: savannah, woody savannah, open shrub land, closed shrub land and grasslands.

viii) ***Burning Crop Residues*** - Emissions from burning crop residues consist of CH_4 and N_2O gases produced by the combustion of crop residues burnt on-site, net of removals for animal consumption, decay in the field, and use in other sectors (e.g. biofuel, domestic livestock feed, building materials, etc.).

ix) ***Energy Use in Agricultur****e* - Emissions consist of CO_2, CH_4 and N_2O gases associated with direct fuel burning and electricity generation for agriculture, including fisheries, comprising estimates for energy used in machinery, power irrigation, and fishing vessels.

Non-CO_2 emissions are linked to loss by burning of biomass and organic soils. GHG emissions from net forest conversion consist of CO_2, produced by the oxidation of C in biomass stock lost due to conversion of forest land to other land uses, mainly to agriculture as either crop- or grazing land (Tubiello et al., 2014). Categories include:

Forest Land - Annual emissions/removals consist of net C stock change in the living biomass pool (above- and belowground) associated with forest and net forest conversion to other land uses.

Cropland - The emissions are those associated with CO_2 following soil drainage due to the cultivation of organic soils for crop production.

Grassland - The emissions are those associated with CO_2 following soil drainage due to the cultivation of organic soils for livestock production. Biomass burning- emissions consist of gases produced by the burning of biomass.

AFOLU projects can be verified under VCS and must address the risks associated with land use changes in one area resulting in emissions elsewhere (leakage). To overcome the risks, VCS developed innovative mechanisms to address some of the key concerns with some of the mechanisms including the pooled buffer account, the non-permanence risk tool and the leakage assessment requirements (VCS, 2011). One of the biggest challenges faced by AFOLU projects is proper accounting of project risks caused by natural phenomena such as fire, pests and CC.

In Text Question

Explain how the interests of all forest users can be protected and benefits distributed under the requirements of a successful REDD+ mechanism.

5.4 Market based initiatives and legally binding instruments

KP established a flexible broad-based international mechanism that provides a valuable starting point for shaping national, regional and international climate policies leading to development of price based or quantity based approaches. The trade-off between price-based approaches and quantity-based approaches is either greater compliance cost certainty or greater environmental certainty (Center for Climate and Energy Solutions, 2015). Market based mechanism results in the creation of allowances or emission reductions which can be traded, non-market mechanisms encompass all activities designed to manage GHG emissions which do not create units for sale. Sectors or groups participating in the C market are expected to operate under an emission allocation process with a functional registry to ensure the environmental integrity of the mechanism. The flexible mechanisms provide incentives for the promotion of emission reduction activities, including investments in renewable energy and energy efficiency technologies, in both industrialised and developing countries.

The global C market consists of many different markets which can be categorised as regulatory (also known as mandatory or compliance) and voluntary markets, or into cap-and-trade and baseline-and-credit schemes. ***Regulatory markets*** have rules of participation stipulated by governments and backed by some degree of legal enforce-ment, while in ***voluntary markets***, individuals and/or organizations freely choose to accept emission limits or to acknowledge emission reductions in one place as equivalent to emission reductions elsewhere (offsetting). Each C credit represents an emission reduction equivalent to one tonne of CO_2e (Ascui and Neeff, 2013).

The formulation of market-based climate policies helps to minimise compliance costs while also avoiding the dangerous consequences of a considerably changing climate. Market based mechanisms to reduce GHG emissions include taxes, subsidies, cap-and-trade, baseline and credit system, renewable electricity standards, energy efficiency resource standard/target and Corporate Average Fuel Economy (CAFE) standards. Some of the standards have not been applied in Africa except the taxes and subsidies and to a lesser extent the cap and trade.

Taxes and subsidies are forms of market based mechanisms to reduce GHG emissions which are price based. Taxes to reduce GHGs can be in two broad forms: an emissions tax, which taxes companies directly based on the GHG emissions they produce, and a tax on goods or services that are generally GHG-intensive - an example would be a C tax on petrol. On the other hand, subsidies include programmes that provide government assistance for specific types of low-emitting activities or technology applications function in a similar way to taxes, in that they provide a specific financial mechanism to motivate a particular environmentally beneficial outcome (negative taxes). For example, tax credit for using solar energy and other renewable energy technologies which reduce GHG emissions (Center for Climate and Energy Solutions, 2015).

Another market-based mechanism is called cap-and-trade which is "*quantity-based*." A cap-and-trade system sets an overall limit on emissions, requires entities subject to the system to hold sufficient allowances to cover their emissions, and provides broad flexibility in the means of compliance. Entities can comply by undertaking emission reduction projects at their covered facilities and/or by purchasing additional emission allowances (or credits) from the government or from other entities that have reduced emissions below the amount of allowances held. For example, the regulatory authority can determine the total quantity of pollution (a "cap") that will be allowed instead of setting a price on each unit of pollution. Companies buy and sell emission allowances

(tradable certificates that allow a certain amount of emissions) based on their needs. The limited number of these allowances creates scarcity. The requirement that regulated businesses hold enough allowances to cover their emissions ensures the cap is met and creates demand for the allowances. If it is less costly for a company to reduce emissions than to buy allowances, the company can reduce its own emissions. Similarly, if a company can reduce emissions below its requirements, so it has excess allowances, the allowances can then be banked for future use or sold in an open market to a firm that finds it more difficult (costly) to reduce emissions (Center for Climate and Energy Solutions, 2015). The cap and trade has been used to reduce ozone-depleting substances under the Montreal Protocol (UN, 2000).

A baseline and credit programme is similar to a cap-and-trade programme. The programme establishes a defined emissions limit either in terms of absolute emissions or emissions per unit of output. Firms that emit below their baseline limit would be able to create credits and sell them to firms that emit more than their baseline limit. For example, in the power sector, standards could be based on tons of CO_2 per megawatt hour of electricity produced with a specific type of technology. With a baseline and credit approach, firms would be able to meet a technology-based standard either by reducing their own emissions or by buying credits from other firms (Center for Climate and Energy Solutions, 2015).

Renewable electricity standards are a form of electricity portfolio standard specifically aimed at urging commercialization of less-polluting technologies in the electric power sector. These standards can be designed so that each utility within a particular territory must obtain a certain percentage of its delivered electricity from a defined set of clean or renewable sources. This can be supported by preparation of particular clean or renewable electricity standards.

An energy efficiency resource standard/target is a mechanism to encourage more efficient generation, transmission and use of electricity. The standard is similar in concept to a clean or renewable electricity standard, in that the former requires utilities to reduce energy use by a specified and increasing percentage or amount each year (Center for Climate and Energy Solutions, 2015). CAFE standards are used for regulating the fuel economy whilst Feebates are a regulatory programme creating a schedule of fees and rebates (hence “feebates”) to the purchase price of a good based on an aspect of the good that policy hopes to influence (Center for Climate and Energy Solutions, 2015).

Parties that do not operate under such conditions can use the CDM whilst Parties which have economy wide caps can utilize JI. Markets could play a vital role in accelerating this action towards the achievement of the December 2015 Paris Agreement where countries want to limit global warming to 2°C while pursuing efforts towards 1.5°C. In this regard, companies and individuals should take responsibility for offsetting their own emissions as well as entities that purchase “pre-compliance” offsets. There should be co-existence between voluntary markets and compliance markets driven by regulated caps on GHG emissions, i.e. operation of cap-and-trade and offsets.

5.4.1 Legally binding instruments

Non-market based mechanisms form an important component of the global efforts to reduce GHG emissions, encompasses initiatives that are not dependent upon the sale of allowances or emission reductions as a source of finance but fight against human induced CC. As such, there are many kinds of initiatives which are already in use but are not considered to be market based.

For example, non-C market mechanisms such as grants, energy efficiency or performance standards, awareness raising etc. are activities that are already used in various ways and which could also be used to help reduce GHG emissions without relying on the sale of allowances or emission reductions. Although non-market approaches do not deliver a specific target they reduce emissions from sectors which are not suitable for C market mechanisms. The resulting reduction in GHG emissions will be reported in national GHG inventories which can be easily and accurately monitored, verified and reported.

In the voluntary forest C market, standards are used to normalise, incentivise and value the social impacts of emissions projects. The world's most widely used voluntary GHG standard is the VCS, holding the majority market share of AFOLU projects, with CDM in second place (Peters-Stanley et al., 2012) and has certified more than 50 % of forest C credits (Diaz et al., 2011). More than 1300 certified VCS projects have collectively reduced or removed more than 134 million tonnes of GHG emissions from the atmosphere (Peters-Stanley et al., 2012). Other standards for forest C projects include: the Climate Action Reserve (or The Reserve), the American C Registry, Brasil Mata Viva, Forest Carbon Standard International, VCS REDD, Plan Vivo, Climate Community and Biodiversity and CFix (Diaz et al., 2011). Although third-party verification by international C standards is not a requisite for the selling of credits in over the counter credits, there is a trend towards the use of such standards as buyers prefer certified offsets (Diaz et al., 2011). Other compliance initiatives, e.g. measures proposed by the International Civil Aviation Organization which would commit the aviation industry to C-neutral growth starting in 2020, are also looking to include credits issued from programmes that meet rigorous criteria and thus deliver real emission reductions (ICAO, 2011).

5.4.2 Non Legally Binding Instrument (NLBI)

UNCED (1992) discussed the importance of forests to sustainable development and countries had intense negotiations over whether or not to have a forest convention to promote the management, conservation and sustainable development of all types of forests. They could not agree on a forest convention but agreed on the non-legally binding authoritative statement of principles for a global consensus on the management, conservation and sustainable development of all types of forests, also known as the forest principles, as well as Chapter 11 of Agenda 21 on combating deforestation. The international dialogue on forest policies was continued under UN through IPF (IPF,1995-1997) and IFF (IFF,1997-2000) which resulted in the over 270 IPF/IFF proposals for action, and the establishment of UNFF. UNFF was established as part of a new international arrangement on forests to carry on the work building on the IPF and IFF processes. In 2006, UNFF adopted the four shared global objectives on forests.

The UNFF members agreed on and adopted the Non-Legally Binding Instrument on all Types of Forests (NLBI) also commonly known as the UNFI, adopted after nearly 3 years of intense negotiations by the UN General Assembly in 2007. The adoption of UNFI is an important step to move forward in achieving global sustainable forest management. It was the first time since UNCED (1992) that UNFF member states were able to agree on a series of measures to strengthen forest sector governance, technical and institutional capacity, policy and legal frameworks, forest sector investment and stakeholder participation, within the framework of national forest programmes. The adoption of UNFI came at a critical point, when CC is high on the agenda of the international forestry community where deforestation and forest degra-dation are considered as major sources of GHG emissions. Implementing UNFI will contribute to mitigating the effects of CC and

the implementation of UNFCCC activities/strategies. UNFI strengthens the policy and institutional capacities of countries in combating deforestation and forest degradation, and achieving SFM.

Exercise Questions

i) Discuss the potential of REDD for CC mitigation and adaptation in Africa.

ii) Identify and list the eligible activities of REDD+ that developing countries are expected to implement to reduce emissions and enhance removals of GHGs.

iii) Explain the seven decision areas that set the context and provide guidance for all REDD+ activities.

Summary

In this chapter we learnt about emerging CC adaptation and mitigation strategies including REDD and reducing emission from AFOLU. REDD+ includes reducing emissions from deforestation and forest degradation + forest conservation + sustainable management of forests + enhancement of forest C stocks. For each REDD project, FREL and FRL are used as benchmarks for assessing each country's performance in implementing REDD+ activities. FCPF has created a framework and processes for REDD+ readiness, which helps countries get ready for future systems of financial incentives for REDD+. National GHG inventories under AFOLU combine two previously distinct sectors: LULUCF and Agriculture to improve the general consistency and completeness of the national inventories.

AFOLU projects include several project types. Finally we showed that market based mechanism results in the creation of allowances or emission reductions which can be traded, whereas non-market mechanisms encompass all activities designed to manage GHG emissions but do not create units for sale.

Non-legally binding authoritative statement of principles for a global consensus on the management, conservation and sustainable development of all types of forests, also known as the forest principles is a product of UNFF.

In the next chapter, we shall determine Africa's preparedness and position in CC negotiations.

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Chapter 6: Africa's Preparedness and Position in Climate Change Negotiations

6.1 Introduction

The African continent is not only highly vulnerable to climate extremes, but it also has low capacity to adapt to the adverse impacts of climate change (Niang et al., 2014). This is compounded by other dynamics such as poverty, political instability and other historical inequalities. CC therefore, imposes great risks for the African continent due to the economic growth that depends on climate-sensitive sectors such as forestry and agriculture. The African Union is the principal organization for the promotion of socioeconomic integration across African countries. There are several African negotiating platforms that include adequate, sustainable, predictable, new and additional financial resources and investment to support action on adaptation, mitigation and technology cooperation, in addition to legally binding adaptation frameworks. This training session describes Africa's preparedness and position in CC negotiations.

Objectives

By the end of this session, the learner will be able to:

i) Evaluate preparedness and position of Africa in CC negotiations.

ii) Explain some of the continental and regional initiatives to tackle CC and sustainable development.

ii) Analyse the CC challenges and opportunities for Africa.

Activity 6.1 Brainstorming (20 Minutes)

Africa lacks the capacity for CC change negotiations. Critically assess the efficacy of this statement.

6.2 Progress towards climate change compliant policies

Participation of African countries in regional and international CC forums suffers because they have inadequate resources to build stronger and larger negotiating teams for their countries. Also, there is limited participation of civil society in crafting country positions on CC. Details are still emerging on the source and magnitude of adaptation finance, and the arrangements by which these funds will be administered. However, it is clear that, in order to make a strong case for adaptation finance, African countries will have to demonstrate that they are able to utilise adaptation funding efficiently, transparently, and for the purpose it was intended.

There has been some progress by African CSOs who have continually assessed their strategies for engagement towards better climate deals for the continent's long-term future. The progress towards achievement of this goal has met with numerous obstacles and setbacks for African negotiators and CSOs, primarily due to the power and resource imbalances when compared with colleagues from the industrialised world (Madziwa and Betzold, 2014). Although the contribution of Africa to global GHG emissions is minimal, dependence on natural resources coupled with the combination of certain geographical and economic factors make the African continent most vulnerable to the adverse effects of CC in form of droughts, floods, intermittent rainfall resulting in reduction of crop and livestock productivity.

Although Africa lags behind the West on climate adaptation strategies and implementation, some African countries have participated in the development of national and regional CC compliant policies to reduce vulnerability to CC. Scattered and incoherent climate related policies exist but are not sufficient to give the continent a survival chance under adverse CC impacts (Mburia, 2015). CC vulnera-bility and adaptation preparedness documents are available for most countries, e.g. Tanzania, Uganda, Zimbabwe, Kenya etc. One of the most common documents is the national CC response strategy.

Africa's contribution to the mitigation of GHG emissions will play a significant role in responding to the coordinated processes mainly through UNFCCC. However, Africa's major focus on successful adaptation depends upon technological advances, institutional arrangements, availability of financing, and information exchange. To date, Africa's contribution in international CC processes has not been effective due to **insufficient capacity** (critical mass) attributed to little understanding of the processes, and this has resulted in **poor ownership** and **low implementation** of the agreements.

In 2011, ADB mobilised funds for adaptation and mitigation, through climate finance instruments created and/or administered by the Bank, including GEF, CIF, Sustainable Energy Fund for Africa and the Congo Basin Forest Fund. ADB supports CC resilient and low-C growth in Africa. However, compared with other continents, Africa receives only a meagre share of the global climate funding.

The African continent has a group of ten distinguished individuals from the private and public sector who advocate for equitable and sustainable development for Africa constituting the African Progress Panel. The Panel builds coalitions to leverage and broker knowledge and to convene decision-makers to create change in Africa and also highlights critical steps that must be taken by leaders in the international public and private sector. The 2015 AU Summit provided a platform for deepening inter-national cooperation and a down-payment on measures with the potential to put Africa on a pathway towards an inclusive low-C energy future and the world on a pathway to avoid climate catastrophe (APP, 2015).

"Africa, too, has no choice other than join hands to adapt and mitigate the effects of CC. For Africa, CC is both a challenge and an opportunity. If Africa focuses on smart choices, it can win investments in the next few decades in climate resilient and low emission development pathways."

H.E. Jakaya Mrisho Kikwete, President of the United Republic of Tanzania

Source: APP, 2015.

CC provides African governments with an added incentive to put in place policies that are long overdue and to demonstrate leadership on the international stage. The African Heads of State initiated the African Adaptation Initiative in response to a mandate by African Heads of State at the 25th AU Summit, June 2015. Countries such as Ethiopia, Kenya and Rwanda have already developed climate-resilient development strategies aimed at reducing poverty, raising productivity and cutting GHG emissions.

The trading of C offsets in Africa has lagged behind that of other regions with less than 3% of offsets sourced under CDM and voluntary project development worth a cumulative $ 253 million on African-based offsets over the past decade (Ecosystem Marketplace, 2015). Most of the buyers in Africa have been interested in projects supporting avoided deforestation, cook stoves, and other pro-poor projects. Other initiatives include avoided conversion of grasslands and blue C methodologies for mangroves. As of 2013, the EU ETS allowed offsets from least developed countries, including many African countries. Demand for African-based offsets reached 6.7 $MtCO_2e$ in 2014 with average prices of $ 5.7/ tCO_2e, which was above the global average (Ecosystem Marketplace, 2015). On the other hand, suppliers reported transactions from 21 African countries in 2014 with Kenyan projects having highest transactions in 2014 (3.1 $MtCO_2e$) accounting for nearly half of the continent's volume over time. Other project developments have also been realised in DRC, Uganda, Ghana, and Mozambique. Voluntary C market participants are also focusing on South Africa, where C tax (120 rand/ US$ 10) was scheduled to start in early 2016 under the voluntary carbon standards, VCS and Gold Standard.

Box 6.1: VCS Recognised as Offset Mechanism under Draft South African Carbon Tax Regulation

On June 20th, The South African Government published a draft regulation for its new C tax, which includes a provision that would allow covered entities to use C credits to cover a portion of their tax liability. The regulation cites VCU's issued by the VCS Programme as compliance instruments. This innovative new mechanism to price C represents a turning point for voluntary carbon market standards as South Africa would become the first government to fully recognize the requirements and infrastructure provided by voluntary standards like the VCS Programme**.** California has already recognized the VCS as a 3rd party Offset Project Registry and permitted certain VCS project types to participate as Early Action Offset Projects as their cap-and-trade programme was initiated. In the case of South Africa, if the regulation moves forward, they will recognize not just the registry functionality provided by VCS, but the entire suite of given requirements and the infrastructure provided by the VCS Programme, from underlying standards and methodologies to auditing process and the registry system. In effect, this government-level recognition of the VCS Programme and other voluntary standards places the VCS on the same playing field as traditional compliance market mechanisms such as the CDM, ushering in a new era in the C crediting landscape. Although South Africa's regulation is still in draft phase, it presents a potentially new opportunity for credits from voluntary standards for use in compliance markets.

Source: Ecosystem marketplace (2015).

In South Africa, CO_2 accounts for approximately 80% of total GHG emissions and South Africa is the 12th largest emitter of CO_2 in the world responsible for nearly half the CO_2 emissions on the African Continent (CDC Climate Research, 2015). The implementation of South Africa's C tax in 2016 could create an annual compliance offset demand of up to 30 $MtCO_2e$ (Camco Clean Energy, 2012) (Box 6.1 above).

6.3 Processes and mechanisms - African forestry in regional, continental and global conventions and institu-tions and resources for implementation

6.3.1 The UN Convention to Combat Desertification (UNCCD)

UNCCD is the only legally binding, near universal, agreement on land issues that systematically addresses land degradation and desertification, by placing a strong focus on the African region. UNCCD promotes sustainable land and forest manage-ment practices and the restoration of forests and degraded lands and prevention of land and forest degradation. It is one of the eight founding institutions of the Collaborative Partnership on Forests (CPF) established in Rome in April 2001 functioning as a policy forum and partnership on all types of forests, including dry forests. CPF provides resources to facilitate the UNFF process, in particular the implementation of the proposals for action, and other related internationally agreed actions on forests especially IFF and IPF. All parties to UNCCD are obliged to report the status of their land cover. Land cover in the drylands consists of grasses, crops, shrubs and trees that cover the land and good cover is needed to ensure that the land is productive. Bare land which is often the result of processes of desertification, leads to poor productivity, loss of water, loss of soil and environmental degradation.

In Africa, the Great Green Wall for the Sahel and Sahara Initiative (GGWSSI) programme was endorsed by African Heads of State and Government in 2007. In this initiative, the AU Commission is supported by EU, FAO and the global Mechanism of UNCCD to work with thirteen countries (Algeria, Burkina Faso, Chad, Djibouti, Egypt, Ethiopia, the Gambia, Mali, Mauritania, Niger, Nigeria, Senegal and the Sudan) in collaboration with other partners to develop national action plans and project portfolios at country and trans-boundary levels using a multi-stakeholder approach. They support capacity development, formulation of national strategies and plans, facilitation of partnerships and mobilization of resources. GGWSSI is an initiative in the Sahel and Sahara region aimed at strengthening the resilience of the people and natural systems with sound management of ecosystems, sustainable development of land resources, protection of rural heritage and improvement of the living conditions of local populations (FAO, 2016). Activities include sustainable management and use of forests, rangelands and other natural resources in drylands. Furthermore, the programme seeks to contribute to CC mitigation and adaptation, as well as improving food security and livelihoods of the people.

About 120 communities in Mali, Burkina Faso and Niger created a green belt on more than 2,500 ha of degraded and arid land by planting more than two million seeds and seedlings from fifty native species. In 2016, the AU Commission and FAO launched a € 41 million 'Action Against Desertification' project funded under the 10th European Development Fund programme to support six African countries (Burkina Faso, Ethiopia, Gambia, Niger, Nigeria and Senegal) with the large-scale restoration of production landscapes that are affected by desertification and land degradation. GGWSSI is also supported by GEF in Chad, Mali, Niger and Burkina Faso with baseline projects on agricultural development and local development.

UNCCD acknowledges challenges posed by conditions of extreme poverty that fuels land degradation in Africa and supports other initiatives such as agroforestry and soil conservation to combat

desertification (Africa Regional Action Programme). UNCCD was instrumental in the formulation of the New Partnership for Africa's Development (NEPAD) Environment Action Plan to combat desertification widely based on the Sub-regional Action Programmes elaborated to implement UNCCD at sub-regional levels (UNCCD, 2015). UNCCD is also creating a conducive framework to support the achievement of NEPAD by developing several tools including indicators to monitor progress towards reducing land degradation. Furthermore, UNCCD initiated the sub-Saharan wide sustainable land management programme (TerrAfrica) on Sustainable Land and Water Management with the World Bank and NEPAD.

6.3.2 The United Nations Convention on Biological Diversity (CBD)

UN CBD is a comprehensive, binding agreement covering the use and conservation of biodiversity which was created and adopted by governments at the Earth Summit in Rio de Janeiro in 1992. UN CBD was signed by 193 governments who agreed on a comprehensive strategy for sustainable development by setting out commitments for maintaining the world's biodiversity. The Convention has 3 main goals:

- The conservation of biological diversity.
- The sustainable use of its components.
- The fair and equitable sharing of the benefits from the use of genetic resources.

COP meets every two years to consider new issues and adopt targets and work programmes to address biodiversity loss. The implementation of UN CBD by African countries has had a positive impact, not only on the conservation and sustainable use of biodiversity, but also on environmental management in general. In addition, the implementation of the Convention through national biodiversity strategies and action plans, has led to the better conservation of existing protected areas (UNEP, 2010). Several protocols support conservation of biodiversity.

The Cartagena Protocol on Biosafety to UN CBD was adopted on 29 January 2000 and entered into force on 11 September 2003 as an international agreement aiming to ensure the safe handling, transport and use of living modified organisms resulting from modern biotechnology that may have adverse effects on biological diversity, taking also into account risks to human health. To date, 170 Parties have ratified the Cartagena Protocol with 47 of them being African countries that have either signed, ratified, accepted, approved or acceded to the Protocol (https://www.cbd.int/abs).

At the sixth meeting of COP to UN CDB in April 2002, the parties adopted a strategic plan, including the target of "achieving by 2010 a significant reduction in the current rate of biodiversity loss at the global, regional and national levels as a contribution to poverty alleviation and for the benefit of all life on Earth". This 2010 biodiversity target was subsequently endorsed by WSSD and the General Assembly and was incorporated as a new target under the MDGs. However, African governments were unable to achieve the 2010 biodiversity target because biodiversity was not sufficiently integrated into other sectors, such as agriculture, fisheries, economy and tourism (UNEP, 2010). In 2010, governments gathered in Japan at the 10th COP to UN CBD and set a new strategy to save the world's biodiversity including boosting the global area of protected land to 17%, and marine protected areas to cover 10% of our oceans by 2020. Parties declared the period 2011-2020 as the decade for biodiversity and confirmed this by developing a strategic plan for biodiversity with a ten-year framework for action by all countries and stakeholders to save

biodiversity and enhance its benefits for people. The strategic plan serves as a flexible framework for the establishment of national and regional targets and it promotes the coherent and effective implementation of the three objectives of UN CBD. The plan is comprised of a shared vision, a mission, strategic goals and 20 impressive targets, collectively known as the Aichi Targets (Box 6.2). In order to implement the strategic plan for biodiversity 2011-2020 and help tackle the mass extinction of species and the loss of vital habitats around the world, Parties are required to:

- Review, and as appropriate, update and revise their National Biodiversity Strategies and Action Plans (NBSAPs) in line with the strategic plan for biodiversity 2011-2020.
- Develop national targets, using the strategic plan and its ABTs as a flexible framework, and integrate the national targets into the updated NBSAPs.
- The national targets are developed taking into account national priorities and capacities with a view of also contributing to the collective efforts to reach the global ABTs.
- Adopt the updated NBSAPs as a policy instrument.
- Use the updated NBSAPs for the integration of biodiversity into national development, accounting and planning processes.
- Monitor and review implementation of the NBSAPs and national targets, using indicators.

Box 6.2: The Aichi Biodiversity Targets.

Source: CBD 2010a www.cbd.int/sp/targets/.

Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society

By 2020, at the latest,

- people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably;
- biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems;
- incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions;
- Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.

Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use

By 2020,

- the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced;
- all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that over-fishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits;
- areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity;
- pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity;
- invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.
- By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by CC or ocean acidification are minimized, so as to maintain their integrity and functioning.

Strategic Goal C: Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity

By 2020,

- at least 17% of terrestrial and inland water, and 10% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascapes;
- the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained;
- the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.

Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services.

- By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and wellbeing, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.
- By 2020, ecosystem resilience and the contribution of biodiversity to C stocks has been enhanced, through conservation and restoration, including restoration of at least 15% of degraded ecosystems, thereby contributing to CC mitigation and adaptation and to combating desertification.
- By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.

Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building

- By 2015, each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national bio-diversity strategy and action plan.
- By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.
- By 2020, knowledge, the science base and technologies relating to biodiversity, its values functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.
- By 2020, at the latest, the mobilization of financial resources for effectively implementing the strategic plan 2011-2020 from all sources and in accordance with the consolidated and agreed process in the strategy for resource mobilization should increase substantially from current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.

Five of the UNSPF goals for 2017-2030 are also closely linked to the ABTs (CBD 2010b) (Table 6.1).

Table 6.1: Relationship between UNSPF and ABTs

UNSPF Goal	Relationship with ABTs
Global Forest Goal 1 Reverse the loss of forest cover worldwide through SFM, including protection, restoration, afforestation and reforestation, and increase efforts to prevent forest degradation and contribute to the global effort of addressing CC.	Supports and contributes to the achievement of, ABTs 5, 7, 9, 11, 14 and 15.
Global Forest Goal 2 Enhance forest-based economic, social and environ-mental benefits, including by improving the livelihoods of forest dependent people.	Support and contribute to the achievement of, among others, ABTs 4, 14 and 18.
Global Forest Goal 3 Increase significantly the area of protected forests worldwide and other areas of sustainably managed forests, as well as the proportion of forest products from sustainably managed forests.	Support and contribute to the achievement of, among others, ABTs 7, 11, 12 and 16.
Global Forest Goal 4 Mobilize significantly increased, new and additional financial resources from all sources for the implementation of SFM and strengthen scientific and technical cooperation and partnerships.	Support and contribute to the achievement of ABT 19.
Global Forest Goal 5 Promote governance frameworks to implement SFM, including through the UNFI, and enhance the contribu-tion of forests to the 2030 Agenda.	ABTs 2 and 3.

The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the CBD entered into force on 12 October 2014 as an international agreement which aims at sharing the benefits arising from the utilization of genetic resources in a fair and equitable way (CBD, 2010c). It has been ratified by 78 Parties. About 40 African countries are Parties to the Nagoya Protocol but only 14 have signed, ratified, accepted, approved or acceded to the Nagoya – Kuala Lumpur Supplementary Protocol to the Cartagena Protocol on Biosafety (CBD, 2000).

The Southern African Development Community (SADC) region developed a regional biodiversity strategy to provide a framework for cooperation and implementation of provisions toward sustaining the region's biodiversity. The strategy outlines tactics for addressing focal areas that cut across several sectors – forestry, wildlife, agriculture, and others considering practical constraints on sustaining biodiversity in the region. A total of 101 countries had submitted (July 2016) new NBSAPS under CBD, aimed at implementing the Strategic Plan for Biodiversity 2011-2020. Among the submissions was Gambia who stated that "By 2020, ecosystem resilience and the contribution of biodiversity to C stocks shall be enhanced, through conservation and restoration of at least 50% of degraded ecosystems - ABT 15" (UN CBD, 2010a).

6.3.3 The International Tropical Timber Organization (ITTO)

ITTO is an intergovernmental organization promoting the conservation and sustainable management, use and trade of tropical forest resources representing the bulk of the world's tropical forests and global tropical timber (ITTO, 2013). The International Tropical Timber Agreement (2006) is the international treaty under which ITTO operates and was negotiated under the auspices of the UN Conference on Trade and Development in 2006. ITTO negotiations focus on: providing an effective framework for cooperation and consultation between countries producing and consuming tropical timber; promoting expansion and diversification of inter-national trade in tropical timber and improving structural conditions in the tropical timber market; promoting and supporting research and development to improve forest management and wood utilization; and encouraging the development of national policies for the sustainable utilization and conservation of tropical forests and their genetic resources, and maintaining the ecological balance in the affected regions. (Though using the term Tropical, ITTO is an exclusive club of exporters and consumers. Other tropical countries are excluded).

ITTO has a programme designed to assist tropical member countries to manage and conserve the forest resource base for tropical timber by embracing aspects of SFM (planning, reduced impact logging, community forestry, fire management and biodiversity) and transboundary conservation. In addition, ITTO has special themes on criteria and indicators for SFM, restoration and planted forests, forest law enforcement and the sustainable use and conservation of mangrove ecosystems. Thematic areas include: Reducing Deforestation and Forest Degradation and Enhancing Environmental Services in Tropical Forests (Decision 10(XLIV)), Community Forest Management and Enterprises, Trade and Market Transparency, Forest Law Enforcement, Governance and Trade, and Industry Development and Efficiency. There are ten ITTO producer member countries in Africa: Cameroon, Central African Republic, DRC, Republic of Congo, Côte d'Ivoire, Gabon, Ghana, Liberia, Nigeria and Togo. ITTO supports six projects in four African countries.

The Secretariat of ITTO and the Secretariat of CBD signed a Memorandum of Understanding on 2 March 2010 aimed at strengthening collaboration in the pursuit of their common objectives of conserving and sustainably managing tropical forest resources. The main purpose of the MoU was to identify, develop and implement targeted joint activities on forests and biodiversity, with involvement of the other relevant organizations, including the development of an ITTO support programme for the implementation of the CBD programme of work on forest biodiversity in ITTO producer member countries (referred to as the Joint ITTO/CBD Collaborative Initiative for Tropical Forest Biodiversity) (ITTO/CBD, 2011). The main objective of the Initiative is to reduce losses of biodiversity with the direct participation of local stakeholders and addressing the main drivers of biodiversity loss in tropical forests (deforestation and forest degradation) through the implementation of the CBD Programme of Work on Forest Biodiversity, focusing on the common objectives of the Strategic Plan for Biodiversity 2011-2020 and the ITTO Action Plan (ITTO, 2013). Progress has been made towards the achievement of forestry-related ABTs 5, 7 11 and 15 (ITTO, 2013).

In addition, ITTO supervises the Independent Market Monitoring multi-year project financed by the EU to support implementation of bilateral Voluntary Partnership Agreements (VPA) between EU and timber supplying countries. The VPAs are an essential component of EU's Forest Law Enforcement Governance and Trade (FLEGT) Action Plan which defines EU's policy to promote legal logging and trade in legally licensed timber. Once agreed, the VPAs include commitments and action from both parties to develop a Legality Assurance System which licenses timber and timber products for export to EU. Independent Marketing and Monitoring acts in response to demands

for independent timber market monitoring from VPA partner countries and commitments to impact assessment made in the agreements and builds on the opportunity presented by Legality Assurance System development to improve the quality of timber trade statistics and effectiveness of timber market development programmes for legally licensed FLEGT timber.

6.3.4 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

CITES is an international agreement between governments to ensure that some species of plants and animals are protected, ensuring their survival in the wild with benefits for the livelihoods of local people and the global environment. The vision of CITES is "Conserve biodiversity and contribute to its sustainable use by ensuring that no species of wild fauna or flora becomes or remains subject to unsustainable exploitation through international trade, thereby contributing to the significant reduction of the rate of biodiversity loss and making a significant contribution towards achieving the relevant ABTs (Resolution Conf. 16.3 – 4)". Although under CITES, countries adhere voluntarily, they have agreed to be bound by the Convention and becomes legally binding to the Parties. CITES provides a framework to be respected by each Party, which has to adopt its own domestic legislation to conform to CITES. CITES has been among the conservation agreements with the largest membership, with 183 Parties, among them 51 African countries.

The trade in wild animals and plants crosses borders between countries, creating the need for efforts to regulate movement under international cooperation to safeguard certain species from over-exploitation and extinction. Hence, CITES now accords varying degrees of protection to more than 35,000 species of animals and plants, regardless the form of them being traded, i.e. as live specimens, fur coats or dried herbs. The main activities under CITES include the programme on Minimising the Illegal Killing of Elephants and other Endangered Species (2014-2018) — an initiative of the ACP Secretariat that is funded by EU. The programme is fully dependent on donor support for its implementation mandated by CITES resolution Conf 10.10. EU has been the main donor for the programme in Africa since 2001 whereas in South Asia, support to the Implementation of the programme was funded by the US Fish and Wildlife Service (2014-2016). The programme operates in 60 sites in 31 countries harbouring the African elephant and in 27 sites in 13 range states of the Asian elephant (https://cites.org/eng/prog/mike/places).

ITTO and CITES have a programme for Implementing CITES listings of tropical timber species to ensure that international trade in the species is consistent with their sustainable management and conservation. In Africa, the programme assists national authorities to meet the scientific, administrative and legal requirements for managing and regulating trade in *Pericopsis elata* **(Afrormosia) found in Central Africa,** by developing guidelines to ensure that utilization is not detrimental to the survival of CITES-listed species. CITES funding is focused in Cameroon, Republic of Congo and Madagascar.

6.4 Regional Economic Communities in Africa

The African Union is a continental organization dealing with issues on the African Continent affecting all member countries. AU supports projects such as the African Forest Landscape Restoration Initiative, the Great Green Wall, the African Landscapes Action Plans and other CC, Biodiversity and Land Degradation Initiatives.

Furthermore, there are groups of countries that have come together to form regional economic communities. These adopt the AU's instrument for the coordination of one of the priority areas, the Comprehensive Africa Agricultural Development Programme, which is the agricultural component of NEPAD, within AU. AU has six regional organisations: Common Market for Eastern and Southern Africa (COMESA) which is a tripartite organisation, East African Community (EAC), Economic Community of Central African States (ECCAS), Economic Community of West African States (ECOWAS), Inter Governmental Agency for Development (IGAD) and SADC. In addition to these, there are other transboundary natural resource management initiatives such as Central African Forestry Commission (COMIFAC), Autorité du Bassin du Niger, Commission du Bassin du Lac de Tchad, Nile Basin Initiative, and Commission Internationale du Bassin Congo-Oubangi-Sangha. Another is the Central African Economic and Monetary Community. Some of these regional economic communities handle climate and forestry related issues, though there is no overarching bureau in Africa that deals with forestry and climate issues. Forestry related activities in each of the regional bodies are discussed in the following sections.

6.4.1 Common Market for Eastern and Southern Africa (COMESA)

COMESA launched the CC Initiative in 2008 to address CC and its impacts and promote sustainable economic and social resilience. The initiative supports the formulation of enabling policy and institutional frameworks by enhancing financing mechanisms; enhancing research, information management and communication; and operationalising the C Fund. In February 2009, COMESA was the first REC in Africa to submit a proposal for "An African Position on CC" to UNFCCC ad hoc working group in Nairobi, Kenya. The position was discussed at the African Ministerial Conference on the Environment (AMCEN) with recommendations that the programmes and structures for mechanisms such as REDD be suited to the conditions that prevail in an African context, by concentrating on the fundamental issues linking REDD and the full range of AFOLU. The proposal recommended the use of both market and non-market means to support capacity development for the design and implementation of reducing GHG emissions from deforestation and forest degradation and promoting C sequestration through AFOLU in Africa and throughout the developing world. The initiative has helped the region to place the CC agenda at the heart of the most important economic activities that affect Africans (African Development Bank Group, 2015).

6.4.2 East African Community (EAC)

All the EAC Partner States have ratified the Cartagena Protocol. National and regional priorities on biosafety were identified and a road map for developing the EAC Biosafety Policy Framework has been prepared. EAC institutionalised a Joint Participation in International Conventions and Treaties on Environment and Natural Resources Management. To implement the outcome of the Rio Summit on Sustainable Development: The Future We Want, an EAC Post-Rio+20 Plan of

Action was developed and approved by the EAC Council of Ministers. Technical preparations, including development of regional position papers in readiness for international policy discourse on Biological Diversity, CC and Disaster Risk Reduction under UN CBD, UNFCCC and the Hyogo Framework for Action on Disaster Risk Reduction are ongoing. Development of the strategy to combat poaching and illegal trade in wildlife and wildlife products is also underway. The EAC Secretariat supports the effective preparations for the regional and international policy forums, particularly UNFCCC as an accredited observer organisation to UNFCCC since December 2012. The Secretariat organises annual national and regional preparatory meetings to identify CC priorities and develop CC position papers to inform national and regional engagement during COPs to UNFCCC and MOP to KP.

For example, Tanzania and Uganda implement REDD+ policies to address the drivers of deforestation and degradation. Examples of policies include enhancing community based forest management, developing 'payment for environmental service' schemes and changes to agricultural and energy policies. Financial support is already being given to both countries to develop national REDD+ plans, and in the case of Tanzania, start implementing projects. The innovation in REDD+ is that financial support from the international community to implement these policies is likely to be linked to performance in reducing deforestation and degradation rates. Furthermore, EAC worked in collaboration with COMESA, SADC and the AU Commission through AMCEN, to consolidate a unified African position on CC as a basis for the Africa Group of Negotiators under UNFCCC to strengthen their capacity to articulate Africa's position within UNFCCC.

6.4.3 The Southern African Development Community (SADC)

The Declaration and Treaty of SADC (1992) recognises the dependence of SADC communities on agriculture and natural resources for their livelihoods and identifies food security, sustainable utilisation of natural resources and effective protection of the environment as the key objectives for sustaining the development process. Furthermore, the treaty emphasises that the exploitation and utilisation of natural resources requires appropriate management and conservation to guarantee that development does not affect biological diversity and richness of the region's environment and natural resource base. The Treaty recognises forestry as a key natural resource and a major component of the environment, which should be sustainably managed for the benefit of the SADC communities.

The SADC Council of Ministers approved the SADC Regional Indicative Strategic Development Plan in August 2003. The Plan considers environment and sustainable development as a vehicle to ensure equitable and sustainable use of the environment and natural resources. Heads of State and Government also approved the restructuring of SADC institutions and programmes to increase operational efficiency. The 21 sectors originally coordinated by member countries were clustered into four directorates, managed centrally at the SADC Secretariat in Gaborone, Botswana: Food, Agriculture and Natural Resources; Trade, Industry, Finance and Investment; Infrastructure and Services; and, Social, Human Development and Special Programmes. The Food Agriculture and Natural Resources Directorate comprises seven technical areas of cooperation, namely food security, agricultural and natural resources research and training, crop development, livestock production and animal disease control, fisheries, wildlife, and forestry with priority objectives of poverty eradication, food security, sustainable utilisation of natural resources and effective protection of the environment (Mubaiwa, 2005).

In the SADC region, the past two decades recognised the role of forestry in poverty alleviation, food security and environmental protection. A SADC Protocol on forestry was developed to contribute to achieving the region's socio-economic development goals. The article highlights the ori-

gin of cooperation and integration in the sub- region, threats to the region's forests, and the role of the SADC Protocol on forestry and future challenges to fostering cooperation in the management of the region's forest resources. The sub-region has also taken thematic actions such as tourism.

All SADC member states signed and ratified UNFCCC, KP, CBD, and UNCCD and are regular participants to the sessions of UNFF and the Committee on Forestry. Member states have initiated policy and legislative reviews, national action plans and programmes to address challenges of CC, the loss of forest cover and land degradation, loss of biodiversity and the means of implementing SFM. The SADC forestry strategy provides a framework for both regional cooperation and international engagement on forest issues; paying special attention to issues that transcend national boundaries and to encourage concerted action by SADC Member States in the management, conservation and sustainable use of their forests. The forestry strategy is based on the vision to develop and maintain a vibrant and evolving forestry sector that contributes to rural development, poverty reduction and industrial progress, while retaining the vital ecosystem services of forests such as water supply, CC mitigation, and protecting biological diversity and thereby providing the motivation for countries to co-operate for their protection, management, and sustainable use. The mission is to facilitate co-operation among member states by promoting active protection, management and sustainable use of forest resources, through sound policy guidance and application of requisite skills and best available technology, in order to enjoy multiple benefits of forests in perpetuity.

At the extra-ordinary Summit on Agriculture and Food Security in Dar es Salaam in 2004, a short and a medium to long term plan of action was made with forestry enhancing agricultural productivity, creating wealth to improve access to food through Non-Timber Forest Products and providing food and medicines which mitigate impacts of HIV/AIDS. The long term plan of action was aligned to the Regional Indicative Strategic Development Plan, focusing particularly on sustainable utilisation of natural resources, reducing vulnerability to natural disasters, strengthening private sector participation in agriculture and rural development, increasing access of agricultural products into high value markets, strengthening human resource development, research and technology development and dissemination, and main-streaming gender and policies to combat HIV/AIDS in the agriculture sector. The potential of forestry and related fire management activities to contribute to all these activities is manifold and was highlighted.

The SADC Regional Fire Management Programme supports international commit-ments and contributes to the international fire and forestry dialogues of UNFF. The SADC Regional Fire Management Programme document preparation process was supported by the German Technical Cooperation - SADC Sustainable Forest Management and Conservation Project (SADC, 2010). SADC also supports the establishment and development of Trans-Frontier Conservation areas with the goal of conserving biodiversity and to develop guidelines for tourism concessions and transboundary fire management.

6.4.4 Economic Community of West African States (ECOWAS)

Regional Ministers in-charge of forests and wildlife in ECOWAS adopted the Convergence Plan for the Sustainable Management and Utilisation of Forest Ecosystems and the Sub Regional Action Programme for Combating Desertification at a meeting held in Abidjan, Côte d'Ivoire in 2013. ECOWAS has shown commitment by undertaking the harmonisation of the forest policies of its member States in collaboration with FAO. ECOWAS has a Sub-Regional Programme of Action to Reduce Vulnerability and Adaptation to CC aiming at developing and strengthening the resilience and adaptability of the sub-region to CC and extreme weather events over the next 10 years.

6.4.5 Central African Forestry Commission (COMIFAC) and Economic Community of Central African States (ECCAS)

COMIFAC is a transboundary natural resource management initiative with a declaration recognising the importance of protecting the Congo basin ecosystems as an integral component of the development process and commitment to work together to promote the sustainable use of forest ecosystems. Countries include Cameroon, the Republic of Congo, Chad, Equatorial Guinea, Gabon, and the Central African Republic. The Congo Basin Forest Partnership works as a bridge between donors and implementing agencies and provides a forum for dialogue between its partners. The vulnerability of the region to CC is shown by the degree to which they are susceptible to, and unable to cope with adverse effects of CC. They have adopted a plan of action for the period 2015-2025, that has six priority areas of intervention: i) harmonization of forest and environmental policies; ii) sustainable management and exploitation of forest resources; iii) conservation and sustainable use of biological diversity; iv) combating the effects of CC and desertification; v) socio-economic development and multi-stakeholder participation; and, vi) sustainable financing. These interventions are serviced by three cross-cutting issues of training and capacity building, research and development and communication, awareness, information and education.

Responses to CC generally emphasise mitigation as well as adaptation. COMIFAC and its member states have worked in line with international agreements to have a common position on REDD and implementation of REDD+ and MRVs. The few initiatives on adaptation have focused on the agriculture sector although adaptation is also required in the forest sector because of its importance in supplying timber and NTFPs. The ecosystem based adaptation methods have been implemented through rational use of forest resources, thus facilitating adaptation. Apart from COMIFAC, other organisations, such as ECCAS, are also widening regional adaptation possibilities through disaster risk management and CC initiatives. Furthermore, the Fonds vert du système de l'économie verte de l'Afrique centrale, was established by AU through ECCAS, as an instrument for financing environment and CC programmes and is managed by the Climate Commission of the Congo Basin.

In Text Questions

i) Evaluate the importance of climate action in saving African forests and woodlands.

ii) How can we build greater cooperation on influencing climate friendly policy in the forestry sector?

6.5 Progress in REDD+ and CDM preparedness - (AMCEN + CAHOSC)

Africa is well endowed with a variety and an abundance of biodiversity, and its forests play important ecological, social and economic roles. Up to 98.8% of African forests are natural forests, with 90% of the wood used for fuel. Forest resources account for about 6% of GDP in Africa, the highest in the world. Africa has 17% of the world's forest area supporting about one billion people. African forests are concentrated in the tropical regions with Western and Central Africa constituting 49% of the forest area, while Eastern and Southern Africa have 40%. DRC alone has more than 25% of the region's forest cover, while Northern Africa has little more than 9%, principally along the coast of the western Mediterranean (FAO, 1997).

There are widespread political commitments by African governments to forest related CC mitigation initiatives. The continent has demonstrated enhanced commitments through their participation in important international dialogues on forests, such as UNFF and by signing and ratifying forest-related multilateral agreements such as UN CBD, UNFCCC and UNCCD. The continent has also created regional bodies and programmes that address forest-related matters and the environment. These include: the AMCEN, with the objective to strengthen cooperation between African Governments on economic, technical and scientific activities in order to halt the degradation of the region's environment, and satisfy food and energy needs of the region's people; Committee of African Heads of State on Climate Change focusing on the urgency of adaptation calling for specific action to enhance adaptation, and NEPAD that has a substantive set of actions on forests and the environment. Furthermore, African countries have established the TerrAfrica Platform – supported by FAO and the World Bank – which aims to promote and boost sustainable land management through cross-sectoral approaches. Political commitment has also been demonstrated at sub-regional level. This is particularly so in Central Africa with the Congo basin, the second largest contiguous track of tropical rain forests in the world. This is the only sub-region with a formal well-articulated and resourced forum of ministers in charge of forests.

Twenty nine African countries are UN-REDD partners at different stages of the REDD process and working on different projects ranging from conservation to tree planting. The focus of REDD+ on the management, conservation and sustainable develop-ment of all types of forests, provided an important framework and a strong foundation for SFM. Progress by African countries include: development and implementation of National Forest Programmes, strengthening of political commitment through policy formulations, gazetting forest protected areas for biodiversity conservation, and promoting community-based forest management (UN Economic Commission for Africa, 2014). Most national forest policies recognise the vital role of all types of forests in CC and water resources with establishment of mechanisms for protection of sensitive sites such as wetlands, hill sanctuaries, riparian buffer zones and forest corridors. Other initiatives include agroforestry interventions such as shelterbelts, live fences and windbreaks to protect soil, water and ecological functions while providing forest goods.

There is need for improvement in Africa's participation in forest based C projects. Only one project has successfully made its way to the CDM market whilst six and four are under the voluntary carbon market and the voluntary over the counter market, respectively (FCPF, 2015). World Bank Climate Finance has only sponsored one forestry related project in Madagascar. Renewable energy and REDD+ are seen as the voluntary market activities which are most likely to help to close the emissions gap in 2020. Furthermore, government programmes and C markets are seen as

having the greatest potential to boost engagement with REDD+ internationally. Box 6.3 shows a summary of progress on REDD+ implementation in some African countries (Hedges and Chapman, 2011).

Box 6.3 Summary of the implementation of REDD+ projects in five African countries

Kenya. The majority of Kenya's forests are either in public ownership and managed by the Kenyan Forestry Service, managed in trust arrangements by local authorities, owned by local communities or to a lesser extent, privately owned. The country exhibits a strong political will to engage multilateral mechanisms to deal with deforestation being one of the UN-REDD partner countries and one of the African nations involved with FCPF. Kenya's REDD+ preparations show a willingness to test different approaches to benefit sharing in order to support community participation in forest management. One of the approaches that has been tried with varying degrees of success is the Community Forestry Associations.

Ethiopia. Over the past two decades, Ethiopia's forest cover declined due to population growth, unsustainable forest management practices (including the use of fire to clear forest land) and conversion to agricultural land. The country submitted an R-PP to FCPF, focusing on utilising the emerging international framework and financial support for REDD+ to assist in addressing deforestation. Ethiopia's land tenure system is fragmented with the governance structures devolved to both federal and regional levels, although not all regions have enacted local land laws. The national REDD+ strategies aim to engage local communities while maintaining links to the centralised political decision-making processes. The dominance of statutory tenure may form the basis of a consistent national approach to forest C rights dependent on local land ownership. Ethiopia's developing REDD+ strategy recognises the role that existing or future demonstration projects capable of creating C credits may have in testing key mechanisms relevant to REDD+ implementation. In particular, such projects become a potential source of knowledge of C accounting and benefit sharing. This positive approach is similar to that of Kenya, in recognising the role of such projects in the development of a national approach to enhance the attractiveness of the country for private co-investment in REDD+ projects.

Tanzania. Demonstration projects have already been initiated to assist with the process of designing a nationally appropriate REDD framework. Tanzania has a history of Participatory Forest Management, on 4 million ha of forested land. The forest and environmental management regimes have potential to support REDD+ strategies for reversing the deforestation trends. Project reports showed that issues of governance and unfair benefit sharing within communities and the state of governance at each level of government compromise the objectives of the REDD+ projects making the benefit-sharing mechanisms unable to inform REDD process. This becomes a major issue for successful participatory forest management as part of REDD+ preparations. Of significance is the issue that Tanzania's REDD+ strategy development included the investigation of the modalities for establishing a national REDD Trust Fund designed to ensure that international financial flows regarding REDD are appropriately channelled to conservation and community needs. The presence of both multilateral and bilateral support alongside some evidence of local political will to develop REDD+ strategies makes Tanzania a promising candidate for REDD+ investments.

Ghana loses approximately 65 000 ha of forests per year and struggles to prevent widespread degradation of forests in both protected and unprotected areas of the country. Much of the land is under customary/indigenous tenure systems. Ghana was selected in February 2010 to host a pilot REDD+ project through the FIP administered by the World Bank. The country was the most complex and most promising among all the prospective REDD+ host countries but have had difficulties in defining forest C ownership. Ghana displays a multi-layered system of land tenure covering statutory, customary and informal arrangements. The insecurity of land tenure created by this complex system creates a regulatory risk for REDD+ projects, which is why current efforts to prepare for REDD+ emphasise the importance of reviewing Ghanaian land ownership. Any specific REDD+ policy must begin by clarifying the legal status of tree tenure as this is important for REDD+ strategies. There are few benefits for the rural poor who rely on forests for their livelihoods which needs adequate compensation for the opportunity cost of conserving the forest (for example, the revenue foregone by not exploiting the forest for agriculture or timber exploitation). A study by the Katoomba Group provided historical examples of benefit sharing structures. Ghana has, however, had a constitutionally specified benefit-sharing mechanism with respect to forest revenues unlike other countries.

Democratic Republic of Congo (DRC) faces some political instability which does not act as a barrier to REDD+ projects as evidenced by one planned REDD+ project site in a conflict-prone area in the east of the country. In DRC, REDD+ programmes have been active and the country has been selected as a pilot under both FIP and UN-REDD. The country also participates in the dialogue on conservation of the Congo Basin held under the auspices of COMIFAC. REDD+ is supported by multilateral commitments in the country. Conflict between State policy and customary rights affects forest governance and the issues need to be addressed as part of the REDD+ strategy. They also planned to develop a centralised national funding mechanism including 11 provincial sub-funds for REDD+ independently managed and audited. As in Tanzania, this model becomes an important indirect strategy for attracting private sector co-investment into REDD+ projects and programmes in DRC. The country's strategy also focused on some institutional issues related to the development of an MRV system. There is room for further development of forestry code to support REDD+ activities occurring in accordance with the country's national strategy.

Effective monitoring, evaluating and reporting on the implementation of SFM, requires support from policy and institutional reforms. For example, ITTO member countries use the ITTO set of criteria and indicators for tropical rain forests in developing their own sets. They use them to monitor, assess and report on forest management at national level and to fulfil international reporting obligations.

Activity 6.2 (Group Discussion)

i). Discuss the state of Africa's preparedness and position in CC negotiations.

ii). How can Africa maximise benefits of the CC mechanisms?

6.6 Opportunities and challenges for Africa

6.6.1 Opportunities for Africa

REDD may offer opportunities for local communities to get direct financial payments for C preserved in forests and some indirect investments in infrastructure. In some countries, e.g. Tanzania, REDD+ could result in an expansion of community-based natural resource management approaches with associated rights and additional revenue to community institutions. Enhanced environmental protection may also offer other benefits. Investments in REDD readiness and demonstration activities can have more benefits if directed to advance both CC and sustainable development objectives. REDD+ could act as an incentive for government or investors to revegetate poorly defined surplus land.

Africa already has a small number of C Offset Buyers including Nedbank, Absa Group, Sappi, Barloworld and Sanlam (Ecosystem Marketplace, 2015) but these are too few to cover the whole continent. There is room for improvement.

If projects invest extensive amounts of time with community groups for education and regular follow up to manage their expectations, success will be inevitable. All countries can support UNFF as the key intergovernmental mechanisms to facilitate and coordinate the implementation of SFM at the national, regional and global levels, thus contributing to conservation and sustainable use of forest resources.

6.6.2 Challenges for Africa

The small number of REDD demonstration projects in Africa suggests a repeat of the inequitable distribution of projects already seen under CDM. There are a number of risks and barriers for local communities to benefit from REDD+ in African countries:

- Conflicts could arise between different types of management systems, or existing conflicts could be exacerbated by REDD+.
- Insecure tenure is a major issue, which makes it difficult to ensure emission reductions are permanent, and may therefore make investment unattractive.
- Lack of clarity over rights to C and lack of access to legal systems even where rights are well defined may exclude poor people.
- The lack of understanding about how benefits and costs of REDD+ for communities balance out.
- Establishing and maintaining benefit sharing systems will require significant government capacity.
- Additionality means that areas with low deforestation rates are unlikely to benefit from REDD+.
- High transaction costs of implementing REDD+ in areas where forests (or their ownership) are fragmented, may exclude communities from REDD+ schemes.
- Lack of coordination between multilateral initiatives in terms of communication and developing common approaches on safeguards, MRV and administrative processes.

- In many cases, FCPF and UN-REDD share a common template for national proposals for funding yet they follow different processes.
- Developing countries have limited technical equipment and know-how.
- Limited knowledge of C stocks in alternative forest types and forest uses.
- For the adaptation plans, challenges remain on the abilities to integrate adaptation into local development agendas.

Exercise Questions

i) Explain the challenges Africa faces in dealing with CC negotiations.

ii) Describe financial sources available for Africa to implement CC interventions.

iii) Identify three types of forestry projects applicable to achieve the Aichi targets in Africa.

Summary

In this session, we have learnt about Africa's preparedness and position in CC negotiations and involvement in several international agreements. African forestry is being implemented under, international agreements including UNCCD, ITTO, CBD, NEPAD, GGWSSI and African Regional Economic Communities.

The focus of REDD+ on the management, conservation and sustainable development of all types of forests, provided an important framework and a strong foundation for SFM. Twenty nine African countries are UN-REDD partners at different stages of the REDD process and working on different projects ranging from conservation to tree planting. The six African Union regional organisations (i.e. COMESA, EAC, ECCAS, ECOWAS, IGAD and SADC) have strategies for CC mitigation and adaptation.

All regional economic communities in Africa have made some reasonable progress in the implementation of CC mitigation and adaptation. In the next chapter, we shall review national CC dialogue, processes and mechanisms.

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Chapter 7: Review Of National Climate Change Dialogue, Processes And Mechanisms

7.1 Introduction

This chapter provides an in-depth description and analysis of the national CC dialogue, processes and mechanisms in Africa. Among the aspects covered are the distinction between NAPAs and National Appropriate Mitigation Actions (NAMAs) and their relevance to Africa; the applicability of MEA clusters in African forestry; and the various categories of activities funded by the GEF.

Objectives

By the end of this session, the learner will be able to:

i) Discuss how international arrangements affect the African continent.

ii) Distinguish between NAPAs and NAMAs and their relevance to Africa.

iii) Explain the applicability of MEA clusters in African forestry.

iv) Identify categories of activities funded by the GEF.

Activity 7.1 (Brainstorming)

Analyse the various viewpoints on national CC dialogue, processes and mechanisms in Africa.

7.2 History of MEAs

The first generation of MEAs dealt with single issues and they became holistic after the Earth Summit. MEAs are agreements between three or more nations/states which may take the form of "soft-law", setting out non legally-binding principles with some aspect of the environment which parties are obligated to consider when taking actions to address a particular environmental issue or "hard-law" which specify legally-binding actions to be undertaken toward an environmental objective (See Table 7.1).

Table 7.1: Types of legally binding and non-legally binding MEAs

Legally Binding	Non- Legally Binding
• Treaties • Conventions • Agreements • Protocols • Accords • Pacts	• Resolutions • Decisions • Declarations • Recommendations • Action plans • Principles • Codes of conduct

MEAs include treaties and protocols which are either regional or global. The MEA information portal gives updates of MEAs under four categories: ***biodiversity*** (45 regional and 15 global), ***chemicals and wastes*** (45 regional and 23 global), ***CC atmosphere and land*** (45 regional and 15 global) and ***marine and fresh water*** (45 regional and 8 global) (The UN Information Portal on MEAs, 2018). The multiplicity of approaches to environmental governance, can largely be attributed to the historical development of environmental institutions and their complexity (Kanie, undated). MEAs began with UNCHE, Stockholm (1972). After UNCHE, Governments set up UNEP, which continues to act as a global catalyst for activities to protect the environment. GEF was set up in 1991, and is implemented by the World Bank, UNDP and UNEP. GEF provides funding for activities aimed at achieving global environmental benefits in four areas:

- CC.
- Loss of biodiversity.
- Pollution of international waters.
- The depletion of the ozone layer.

The Earth Summit (UNCED) in Rio de Janeiro (1992) came 20 years after the first global environment conference, aiming to challenge governments to consider economic development and find ways to stop the destruction of unique natural resources and pollution of the planet. The Earth Summit became the climax of a process of planning, education and negotiations among all UN Member States. The early MEAs are described in Chapter 2 of this module. For each MEA, a formal scientific body is established to meet periodically through COPs to assess different aspects and implementation of MEAs. To date, MEAs have become the bases for international environmental governance debate and policy.

The process of MEA follows the sequence: ***Adoption → Signature → Ratification, acceptance or approval → Entry into force → Accession, withdrawal or denouncing***

Adoption - is the act by which the form and content of a proposed treaty text are concluded and established.

Signature - Is an act by which a State provides a preliminary support of the instrument. Signing does not create a binding legal obligation but does show the intent to examine the treaty domestically and considering ratifying it. While signing does not commit a State to ratification, it does oblige the State to desist from acts that would defeat or undermine the treaty's objective and purpose.

Ratification - Is the international act whereby a State indicates its consent to be bound to a treaty if the parties intended to show their consent by such an act.

Acceptance/approval - is the establishment of consent to be bound by a treaty, depending on domestic legal or policy requirements.

Entry into force - a treaty does not enter into force when it is adopted but the provisions of the treaty determine the date on which it enters into force, usually at a stated time after ratification or accession by a predetermined number of States.

Accession - Is the act whereby a State acknowledges the offer or the opportunity to be a party to a treaty previously negotiated and signed by other States. It has the same legal effect as ratification. Accession usually occurs after a treaty has entered into force.

Withdrawal/Denunciation – refers to a unilateral act by which a State that is currently a party to a treaty ends its membership in that treaty**.** MEAs also acknowledge involvement of civil society in all facets of the negotiating, implement-ting, and monitoring aspects of international accords dealing with sustainable development concerns. MEAs can be grouped by geographical location (global, regional, multilateral and/or bilateral) or by regulatory tools used (stand-alone, frame-work or appendix-driven) but are basically divided into four main clusters (Table 7.2).

Several sets of analysis and efforts have been developed at global and regional levels to attempt to consolidate MEAs in order to facilitate functions as well as to establish the rules, limitations and synergies of differing international systems. The international discourse on forest policies was nevertheless continued under UN through IPF (IPF, 1995-1997) and IFF (IFF, 1997-2000).

ECOSOC adopted Resolution E/2000/35, outlining an international arrangement on forests and establishing UNFF as a subsidiary body of ECOSOC on 18 October 2000. The international arrangement on forest encompassed UNFF as UN's principal forest policy making body, the Collaborative Partnership on Forests (led by FAO), the Multi-Stakeholder Dialogue, inputs and support from regional and sub-regional processes and evolving financial arrangements.

Table 7.2: MEAs clusters, their description and occurrences in Africa

Cluster	Description	African Conventions
Biodiversity- UN CBD	International Trade in Endangered Species, Migratory Species, Wetlands	Maputo, Lusaka on Cooperative Enforcement, Wildlife Conservation in SADC, Victoria Fisheries
Freshwater and Marine Environment	International Water Conventions: UN Convention on the Law of the Sea, UN Water Convention, draft UN Aquifers Law, Ramsar Convention, IMO, International Convention for the Prevention of Pollution from Ships, Transboundary River Basin Agree-ments, 17 Regional Seas Conventions	Maputo, Nairobi, Abidjan, Mediterranean Conventions and their Protocols, 21 Trans-boundary Freshwater Treaties
Hazardous wastes and chemicals	Control of Transboundary Movement of Hazardous Wastes and Their Disposal (Basel), Prior Informed Consent for Certain Hazardous substances	Maputo, Bamako
Protection of the Atmosphere	Vienna on Ozone Protection, Montreal Protocol on Substances Depleting the Ozone Layer, UNFCCC, KP	Maputo, Regional Framework Agreements on Air Pollution (east, southern, west and central Africa)

The main objective of the international arrangement on forests is to promote the management, conservation and sustainable development of all types of forests and to strengthen long-term political commitment to this end by:

- Promoting the implementation of internationally-agreed actions on forests at the national, regional and global levels.
- Providing a coherent, transparent and participatory global framework for policy implementation, coordination and development.
- Carrying out principal functions, based on the Rio Declaration, the Forest Principles, Chapter 11 of Agenda 21, and the outcomes of IPF and IFF, in a manner consistent with and complementary to existing international legally-binding instruments relevant to forests, such as UN CBD, UNFCCC and UNCCD.

7.3 NAPAs, NAMAs and Intended Nationally Determined Contributions (INDC)

7.3.1 National Adaptation Programmes of Action (NAPAs)

The international community recognised the particular vulnerability of the LDCs to the impacts of CC more than fifteen years ago. The UNFCCC signatories initiated the development of NAPAs in Marrakech in 2001 to help LDCs identify most urgent and immediate (priority) activities for which further delay would increase vulnerability and/or costs at a later stage. NAPAs take into account existing coping strategies at the grassroots level, and build upon that to identify priority activities, rather than focusing on scenario-based modelling to assess future vulnerability and long-term policy at state level. In the NAPA process, prominence is given to community-level input as an important source of information, recognizing that grassroots communities are the main stakeholders.

LDCF was established at the seventh COP as a funding mechanism to access funding for preparation and implementation of NAPAs. GEF manages LDCF to support the preparation and the implementation of the NAPAs. African countries have been required to also provide National Communications on CC impacts and vulnerabilities and are supported to produce NAPAs that are action-oriented, country-driven, flexible and based on national circumstances. In Africa, a variety of NAPA projects exist depending on adaptation needs. About 33 African countries have undertaken steps to fulfil such commitments and submitted NAPAs to UNFCCC. The LDCs can build upon NAPAs to formulate and implement their National Adaptation Plans (NAPs). The implementation of NAPAs is, however, affected by the lack of funding and human and institutional capacity.

NAPAs identify priority CC adaptation activities for implementation. All West African LDCs have developed NAPAs. The Cambridge Programme for Sustainability Leader-ship in West Africa focused on CC adaptation and resilience, as well as opportunities for development and economic growth. The programme worked with 15 members of ECOWAS and has done research with partners from Green Actors of West Africa in Benin, Côte d'Ivoire, Gambia, Guinea, Guinea-Bissau, Mali, Niger, Sierra Leone and Togo. The work was made possible through funding from the Netherlands Govern-ment's Eco-Regional Grants Programme under the IUCN's National Committee of the Netherlands (Robison and Brooks, 2010).

Gambia has an integrated project for advancing national planning, raising awareness and increasing knowledge sharing, building capacity and creating national rapid response and early recovery mechanisms - Disaster Risk Reduction and CC Adaptation programme. The Ministry of Environment, Water Resources and Forests in Côte d'Ivoire held a national workshop for reforestation in 2003, which culminated in the adoption of a policy to create a supervisory forestry organisation and a national forest fund, develop a programme to strengthen capability in forestry, revise the forest code, establish a national centre for seeds and forest plants and develop a framework to regulate deforestation. In Togo, the government adopted strategies to generate and disseminate agro-meteorological information, promote peri-urban market gardening and livestock farming and to undertake environmental impact assessments.

7.3.2 Nationally Appropriate Mitigation Actions (NAMAs)

The NLBI can be used to facilitate and coordinate implementation of forestry activities under the various international forestry programmes and processes. These plans may provide the basis, or even condition, on which African countries could apply for adaptation funds in the future. Furthermore, plans for NAMAs, while not yet required in the form of binding commitments, may

become a condition for countries to access funds for mitigation. The NAMAs are a product of the Bali Action Plan of 2007 during the 13th Conference where developing countries would be supported through technology transfer, finance and capacity building, in order to manage their forests to mitigate CC within the context of REDD (UNFCCC, 2007). Mitigation actions for developing countries are: voluntary and nationally appropriate and must be fully supported (Article 4.7 of the Convention) and enabled by finance, technology development and transfer, and capacity building from developed countries. In the context of sustainable development, NAMAs include any action that reduces emissions in developing countries and contributes to sustainable development being supported and enabled by technology, financing, and capacity-building. Examples of NAMAs in Africa are: rural electrification with renewable energy in Gambia which offers the country an opportunity to accelerate access to electricity through small-scale, off-grid and stand-alone projects, as well as income-generating opportunities for the local population; in Namibia, where the NAMAs support off-grid energisation master plan; Ghana and Cote d'Ivoire identified solutions to increase the efficiency and effectiveness of the current charcoal value chain and enable the countries to eradicate a major driver of deforestation while increasing energy security and sustainability .

UNDP provides substantial inputs to national low-C, climate-resilient development strategies and plans and the review of sector policies, which can provide the foundation for NAMAs. UNDP also played an important role in supporting countries as the implementing agency of GEF, accessing and delivering CC finance, joint management of the National Communications Support Programme and delivering initiatives like MDG C, capacity development for policy makers, the MDG Achieve-ment Fund, Africa Adaptation Programme, CC-Adaptation and Development Initiative, UN REDD, C Neutral and Climate Resilient Territories, and the 2007 Human Development Report on CC (activities totalling more than 220 million US$ in catalytic funding) (UNDP).

In Text Question

Evaluate the level of success of your country's national policy responses to CC.

7.3.3 Intended Nationally Determined Contribution (INDC)

In 2015, most countries submitted an INDC in preparation for COP 21. These set out the steps each government intends to take to address CC and over 90 of the countries highlighted the role of markets. Forests feature prominently in the Paris Agreement adopted at COP21 of UNFCCC where Parties were encouraged to implement REDD+ and joint mitigation and adaptation activities, without ignoring non-C benefits. The agreement also calls for enhanced action on adaptation. Countries are now focused on action and implementation of their ambition to limit global warming to 2°C while pursuing efforts towards 1.5°C. The C markets could play a vital role in accelerating this action. Countries agreed to publicly outline what post-2020 climate actions they intend to take under a new international agreement in their INDCs. Adherence to the INDCs determines whether the world achieves the ambitious 2015 agreement on a path toward a low-C, climate-resilient future. Forests are central to both mitigation and adaption strategies, as reflected in their inclusion in a large majority of countries INDCs which underpin the COP 21 agreement. To date 53, African countries have submitted their INDCs to UNFCCC and only five were assessed by the climate tracker. Out of the five only three (Morocco, Ethiopia and Gambia) were rated as sufficient (Box 7.1).

Box 7.1: Assessment of African INDCs by Climate Tracker

Fifty three African countries submitted their INDCs to UNFCCC in preparation for COP 21 and these were assessed by the Climate Action Tracker. Only five African INDCs were assessed and the summary of the assessment shows only three countries had INDCs rated as sufficient. **Morocco** was rated as "sufficient" because they put forward an economy-wide target to reduce emissions by 13% below BAU in 2030. Conditional to financial support and an international agreement for post-2020, Morocco offers to reduce emissions by 32% below BAU in 2030. **Ethiopia** INDC was rated as "sWufficient" because it put forward the goal to limit net GHG emissions including emissions or removals from LULUCF to 145 MtCO2e by 2030. This represents a reduction of at least 64% below the Ethiopian BAU scenario by 2030, where net emissions are projected to reach 400 $MtCO_2e$. **Gambia's** INDC was rated "sufficient" as they offered to reduce emissions excl. LULUCF by 0.079 $MtCO_2e$ in 2025 unilaterally, with an additional 1.34 $MtCO_2e$, conditional on the availability of international financial and technical support. **Gabon** was not rated due to uncertainty about the level of emissions and abatement from the LULUCF sector, which accounts for 92% of Gabon's projected emissions in 2025. Gabon has pledged at least a 50% reduction relative to BAU emissions by 2025, which corresponds to a 3% increase in overall emissions relative to 2000 levels, or a 72% increase excluding LULUCF emissions. A rating of the contribution excluding LULUCF would be "medium". **South Africa** was rated as "inadequate" and they proposed to reduce GHG emissions levels to between 398–614 $MtCO_2e$ over 2025–2030. After accounting for LULUCF, this target is equivalent to emissions of 20–82% above 1990 levels excluding LULUCF. The other 48 African countries who submitted their INDCs to UNFCCC were not assessed by the Climate Action Tracker.

Source: Climate Action Tracker

7.3.4 National Adaption Plans (NAPs)

The NAP process was established in 2010 by COP to UNFCCC to enhance country-led planning and preparedness for CC adaptation in medium and long-term planning. NAPs' objectives include the reduction of vulnerability to CC impacts and to the integration of adaptation into all levels of development planning. The NAP process brings together institutional integration and coordination to adaption planning involves several sectors. The NAPs are expected to enhance on going national development planning processes, safeguard development gains and build a country's resilience.

Africa is most vulnerable to the impacts of CC but has limited capacities to cope. The continent is poorest on earth with most people primarily dependent on climate sensitive sectors, such as agriculture, fisheries and forestry. Many African countries are at various stages of integrating adaptation into their national development plans and CC policies. For example, Kenya and Cameroon formulated and submitted their NAPs to UNFCCC. Botswana, Cote d'Ivoire, Nigeria, Seychelles, South Africa, and Zimbabwe made substantial progress to initiate and launch their NAPs, building on previously established climate strategies and policies for integration into their planning and budgeting over the medium- to long-term development plans. Mauritius has a National Climate Change Adaptation Policy Framework that aims at main-streaming adaptation into national development planning. The NAP processes have also been initiated in Gabon, Congo, Equatorial Guinea and Swaziland. At regional level, the Africa Adaptation Initiative was launched at COP 21 in Paris for facilitating access to support, addressing adaptation financing gaps, scaling up adaptation initiatives, and to implementing measures for addressing losses and damages.

7.4 Opportunities and challenges

7.4.1 Opportunities

There are various opportunities available for Africa countries. Among them are the following:

i) Clustering approach can be used to maximise the benefits of MEAs and resolve obstacles of overlaps, fragmentation, and proliferation. Grouping/clustering involves merging, or integrating agreements according to different variables to improve and make international governance system more robust.

ii) Provision of clear environmental and performance indicators to measure effectiveness of MEAs,

iii) Establishment of funding targeted at Africa to harness both public and private funds for AFOLU and REDD. These funds are available from various source at the international level for example the World Bank, and regional development banks.

7.4.2 Challenges

There are several constraints that limit progress in implementation of the policies/ strategies or action plans in Africa and these include:

i) Limited overlap in data requirements of the different processes due to different emphasis.

ii) The MEAs have different reporting schedules and sometimes do not share the same data.

iii) Data on food security and health often lacking to determine the benefits of implementing MEAs.

iv) While MEAs are legally binding, they suffer from the inability or unwillingness of Parties (many of which are developing countries or countries in transition) to implement and enforce them with inconsistencies in implementation regimes between countries.

v) The volume and complexity of associated obligations and responsibilities hinders implementation of most MEAs in Africa. This is compounded by lack of political will and inadequate financial and human resources.

Some of the challenges include the multitude of existing MEAs with inadequate synergies among their different reporting requirements. For the African continent, there is weak capacity to implement, comply and enforce compounded by inadequate funding for selected MEAs. The different ministerial mandates or technical expertise affecting national representation and follow up in intergovernmental processes as the implementation and coordination for each MEA is by different focal points in different ministries (e.g. agriculture, forestry, environment, tourism, trade, etc.). Report back by those who attend is always a challenge. Some challenges related to the agreements in regional economic communities include issues of inadequate or no reporting by countries and limited or no funding from national budgets and donors.

Exercise Questions

i). Distinguish between NAPAs and NAMAs and their relevance to Africa.

ii). Explain the applicability of MEA clusters in forestry.

iii). Identify categories of forestry activities funded by the GEF.

Summary

In this session, we have learnt about national CC dialogue, processes and mechanisms in the African context. We began by defining MEAs and showed that they take two forms of being either “soft” or “hard”. MEAs can be grouped by geographical location (global, regional, multilateral and/or bilateral) or by regulatory tools used (stand-alone, framework or appendix-driven) but are basically divided into four main clusters. There are several issues including overlaps and dispersed efforts. African countries have been required to provide National Communications on CC impacts and vulnerabilities and are supported to produce NAPAs. The NAPAs are designed to be action-oriented, country-driven, and flexible and based on national circumstances. There are a variety of NAPAs projects depending on adaptation needs. In the context of sustainable development, NAMAs refers to any action that reduces emissions in developing countries while contributing to sustainable develop-ment being supported and enabled by technology, financing, and capacity-building. In 2015, most countries submitted INDCs in preparation for COP 21. These set out the steps each government intends to take to address CC and over 90 of the countries highlighted the role of markets.

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