



ClimDev-Africa

UNITED NATIONS

ECONOMIC COMMISSION FOR AFRICA Original:

ENGLISH

The Second Conference on Climate Change and Development in Africa (CCDA-II)

Addis Ababa, Ethiopia
19-20 October 2012

Draft Report of the Second Conference on Climate Change and Development in Africa (CCDA-II)

**Theme: Advancing Knowledge, Policy and Practice on
Climate Change and Development in Africa**

Acknowledgements

Organizing institutions

African Union Commission
African Development Bank
United Nations Economic Commission for Africa

Steering committee members

Abebe Haile Gabriel	Youba Sokona
Josue Dione	Seleshi Bekele
Mohamed Bahils	

Organizing committee members

Technical committee

Seleshi Bekele	Jeremy Webb
Yacob Mulugetta	Florent Gasc

Communication committee

Aloysius Fomenky	Selome Demissie
Florent Gasc	Charles Muraya

Finance and logistic committee

Berhane Mesfin	Konstantin Tsenov
Selome Demissie	Etienne Kabou
Kidist Belayneh	Tesfaye Mekonnen
Rahel Menda	Hirut Kebede
Therese Ouedraogo	Mulutsega Legesse

Meeting rapporteurs

Tatiana Arivelo (ACPC)	Charles Muraya (ACPC)
Calvin Atewamba (ACPC)	Jabavu Nkomo (ACPC)
Mulugeta Ayalew (ACPC)	Alemseged Tamiru (ACPC)
Ange-Benjamin Brida (ACPC)	Seydou Traore (ACPC)
Girmaw Gezahegn (ACPC)	Jeremy Webb (ACPC)
Haruna Gujba (ACPC)	Shamim Zakariya (ACPC)

Citation of this report:

UNECA (2012). "The Second Conference on Climate Change and Development in Africa", Addis Ababa. United Nations Economic Commission for Africa – ACPC Technical Reports

Contents

Acknowledgements	2
Contents	3
Abbreviations and Acronyms.....	5
Foreword	7
Dedication.....	Error! Bookmark not defined.
Executive Summary	8
Recommendations Statement of CCDA-II.....	9
Climate Service Delivery Roundtable Discussion	9
Sustainable Energy Access for All Africans by 2030.....	10
Outstanding Issues in Climate Negotiations: Relevance for Africa	11
Other recommendations.....	12
Introduction.....	13
Opening Remarks	15
Welcoming remarks by Mr. Carlos Lopes, UN Under-Secretary General and Executive Secretary of ECA	
15	
Welcoming remarks by Mr. Lamin Barrow, resident representative of the AfDB in Ethiopia on behalf of	
Dr. Donald Kaberuka, President of the AfDB.....	16
Welcoming remarks by Dr. Maxwell Kwezelamba, Commissioner for Economic Affairs on behalf of Dr.	
Nkosazana Zuma, Chairperson of the AUC.....	17
Keynote speech by Mr. Jeremiah Lengoasa, Deputy Secretary General of WMO	18
Opening of the conference by HE Mr. Hailemariam Dessalegn, Prime Minister of the Federal Republic	
of Ethiopia.....	19
Summary of Plenary Sessions	22
Sub-themes I: Climate Science and Service Delivery	22
Sub-themes II: Sustainable Energy Access for All Africans by 2030	27
Sub-themes III: Outstanding Issues in Climate Negotiations: relevance for Africa.....	30
Summary of Parallel Sessions	33
Sub-theme I: Climate Service Delivery for Development.....	33
Sub-theme II: Sustainable Energy Access for All Africans by 2030.....	48
Sub-theme III: Outstanding Issues in Climate Negotiations: Relevance for Africa.....	55

Conclusion	65
Appendix: CCDA-II Programme	66

Abbreviations and Acronyms

ACMAD	African Centre of Meteorological Applications for Development
AAUs	Assigned Amount Units
ABC	Africa-Brazil-China
ACCFP	African Climate Change Fellowship Program
AfDB	African Development Bank
AGF	UN High-level Advisory Group on Finance
AGN	African Group of Negotiators
AGRHYMET	Regional Centre for Training and Application in Agro Meteorology and Hydrology
AMCEN	African Ministerial Conference on Environment
AMCOMET	African Ministerial Conference on Meteorology
AMCOW	African Ministers' Council on Water
AMMA	AFRICAN MONSOON MULTIDISCIPLINARY ANALYSIS
AUC	African Union Commission
CCAFS	Climate Change, Agriculture and Food Security
CCDA	Climate Change and Development in Africa
CCDU	Climate Change and Desertification Unit
CDM	Clean Development Mechanism
CILLS	Permanent Interstates Committee for Drought Control in the Sahel
ClimDev-Africa	Climate for Development in Africa Programme
COF	Climate Outlook Forum
COMESA	Common Market for Eastern and Southern Africa
COP	Conference of the Parties
COP18	18th Conference of the Parties
CORDEX	Coordinated Regional Climate Downscaling Experiment
CRFs	Climate Research Frontiers
CRGE	Climate Resilient Green Economy Strategy of Ethiopia
CRISTAL	Community-based Risk Screening Tool: Adaptation and Livelihoods
CSC	Climate Services Centre
CSRP	Climate Science Research Partnership
DfID	Department for International Development
EbA	Ecosystem based Adaptation
ECA	Economic Commission for Africa
EU	European union
FAO	Food and Agriculture Organization of the United Nations
GCF	Green climate Fund
GCOS	Global Climate Observation System
GDP	Gross Domestic Product
GEF	Global Environment Facility
GFCS	Global Framework for Climate Services
GHACOF	Great Horn of Africa Climate Outlook Forum

GPCs	Global Producing Centers of Long Range Forecasts
GWP	Global Water Partnership
ICPAC	IGAD Climate Prediction and Applications Centre
ICT	Information and Communication Technologies
IGAD	Intergovernmental Authority on Development
IRI	International Research Institute for Climate and Society
IUCN	International Union for Conservation of Nature
KNUST	Kwame Nkrumah University of Science and Technology
LDCs	Least Developed Countries
MDGs	Millennium Development Goals
MECCA	Monitoring and Evaluation of Climate Change and Adaptation
NEPAD	New Partnership for Africa's Development
NMHSS	National Meteorological and Hydrological Services
NMSs	National Meteorological Services
NWP	Nairobi Water Program
OECD	Organisation for Economic Co-operation and Development
PIDA	Programme for Infrastructure Development in Africa
PM	Prime Minister
PPCR	Pilot Program for Climate Resilience
PRESAO	Seasonal Forecast in West Africa (PRÉvisions Saisonnières en Afrique de l'Ouest)
QELROs	Quantified Emissions Limitation or Reduction Objectives
R&D	Research and Development
RCCs	Regional Climate Centers
RECs	Regional Economic Communities
REDD+	Reducing Emissions from Deforestation and Forest Degradation
SADC	Southern African Development Community
SARCOF	Southern Africa which is the Regional Climate Outlook Forum
SBSTA	Subsidiary Body for Scientific and Technological Advice
SEFA	Sustainable Energy for all Africans
SIDS	Small Island Developing States
SREX	Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation
TIS	Technology Innovation Systems
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UN-ISDR	United Nations International Strategy for Disaster Reduction
WCC3	World Climate Conference-3
WCRP	World Climate Research Programme
WFP	World Food Programme
WHO	World Health Organization
WMO	World Meteorological Organization

Foreword

The CCDA series of conferences are organized under the auspices of Climate for Development in Africa (ClimDev-Africa)¹, and have been critical in driving the climate change dialogue across Africa. In 2012, CCDA-II was preceded by two workshops, one on Sustainable Energy for all Africans (SEFA) by 2030 and the other on support to the African Group of Negotiators (AGN). Besides providing a platform for discourse on these two important issues, the workshops were a good buildup to CCDA-II.

¹ ClimDev-Africa is a partnership between the ECA, AUC and AfDB. It is guided by a climate change response framework agreement and was mandated at inception by African heads of states and governments.

Executive Summary

As highlighted in studies across the continent, Africa has continued to bear the brunt of climate change impacts, mainly due to its low adaptive capacity to respond to the increasingly frequent events. The implication of Africa's increasing population has placed increasing pressure on governments, not only on responses to mitigate widespread poverty, but to also protect these populations during climate related disasters. The climate change and development nexus therefore is important for all stakeholders involved in climate change response, including governments, researchers and practitioners to take cognizance of.

As noted during the first climate change and development conference (CCDA-I), development must be at the centre of any climate change discourse for Africa. As a corollary therefore, the climate for development in Africa (ClimDev-Africa) anchored deliberations of CCDA-I on three main climate change constituencies, namely policy makers, researchers and practitioners. Through carefully selected sub-themes, CCDA-II underscored the foregoing approach and used buildup events to enrich deliberations for each of the conference tracks.

To recognize Africa's efforts at gaining traction in climate science, data and services, the first sub-theme engaged key experts in interrogating the challenges, lessons and opportunities in this area. Discussions specifically zeroed in on climate information and analysis for risk management and adaptation and hydro-met observation capacity. Sustainable energy for all Africans was the focus of the second sub-themes. The role of oil, gas and renewable energy sources in Africa's energy sources mix was explored by a high level panel of climate change and energy experts.

Due to Africa's higher level of vulnerability to shocks triggered by climate change impacts, the UNFCCC negotiations have continued to be a significant pillar in the continents climate change response. In recognition of the need to address challenges encountered during previous COP meetings and explore possible future strategies, the third sub-theme was dedicated to outstanding issues in the negotiations process. Use of climate science in addressing adaptation needs of the continent, including loss and damage, was a factor that stood out during discussions.

As a platform for cross-fertilization of ideas to respond to and highlight lessons and good practices in combating climate change and variability, CCDA-III hosted policy makers drawn from across Africa, researchers working to expand climate science frontiers, practitioners drawn from the grassroots level and the media fraternity. The role of the media in appropriately packaging climate change messages to reach stakeholders was in particular noted.

Recommendations Statement of CCDA-II

The recommendations made by participants for each sub-theme, as captured in the outcome statement, are enumerated below:

Climate Service Delivery Roundtable Discussion

1. On the first day there was a plenary session and roundtable discussion on climate services delivery chaired by Dr. Ken Johm from the AfDB. This featured a keynote address from Mr. Jeremiah Lengoasa, WMO Deputy Secretary, followed by a roundtable discussion between several distinguished personalities consisting of: Mr. Arba Diallo, Mr. Bai-Mass Tall, Dr. Pedro Basabe, Dr. Yvan Biot, Dr. Ernest Afiesimama, Dr. Fatima Denton. The discussion was facilitated by Dr. Seleshi Bekele and Dr. Paxina Chilsehse.
2. The keynote and roundtable discussion set the stage for the parallel sessions on sub-theme 1, by highlighting the impacts of climate change, the risks associated with further climate change and the need for climate services. There exist a number of initiatives addressing climate services, notably the Global Framework for Climate Services (GFCS), which has a range of communities with different roles within the framework. It was noted that a number of African institutions are engaged in addressing the need for improving climate services delivery in Africa and that effective climate services delivery is a prerequisite for managing and reducing risks. Issues such as the need to tailor information for users and the need to reach to last mile (i.e. people) were raised. The need for improved observations to support climate services was also raised.
3. On the second day this sub-theme focused on a range of issues related to climate service delivery for development including: bridging the gaps and best practices for climate science, policy and practice; climate information and analysis for risk management and adaptation; and, frontiers of research and development for climate science, services and policy. From these deliberations the following recommendations were made on this sub-theme:
 - a. National Agencies are the most important link in the climate services chain from global to local and as such governments are encouraged to invest on national and sub-national agencies and their climate services that reach communities.
 - b. The Conference noted the key role played by the regional climate outlook forums and suggested a continuation of improvements in communicating to the users. Regional institutions such as ICPAC and AGRHYMET; Africa wide institutions such as ACPC and ACMAD; Advance Research Institutions such as UK Met Office and Global Institutions such as WMO and GCOS are called for stepping up efforts.

- c. The Conference noted that the research and science community need skilful and actionable forecasts, coupled with effective communication and “knowing the market” to improve the link between research and use.
- d. Climate science research in Africa is not well coordinated and usually undertaken in ad-hoc fashion. Key Institutions in Africa and outside Africa should work together to identify research frontiers that advances Africa’s development and urged to implement them. The conference welcomes the important collaborative initiative undertaken by various institutions in this regard and the CCDA-II participants support the 2013 African Climate Science Conference.

Sustainable Energy Access for All Africans by 2030

- 4. The second plenary and roundtable discussion was on sustainable energy access for all Africans by 2030. This was chaired by Mr. Philippe Niyongabo. This was followed by the roundtable discussion between Dr. Jacques Moulot, Prof. Abeeku Brew-Hammond, Prof. Ogunlade Davidson, Dr. Felix Dayo, Ms. Faith Odongo, Dr. Kevin Urama with Dr. Youba Sokona and Dr. Yacob Mulugetta facilitating the discussion, including audience participation.
- 5. The roundtable discussion first covered the role of oil, gas and renewable energy sources such as hydro, geothermal, wind, solar and bioenergy in the energy mix of African countries. The cost of energy and availability of various energy sources was discussed along with the need for technology to exploit energy resources on one hand and to use energy at the household level. There were mixed views on whether technology and innovation have to be endogenous and issues such as specialization in particular areas of energy and how technology is integrated into energy plans may be more important than where it comes from.
- 6. On day 2 this sub-theme focused on the UN General Assembly declaration that year 2012 is the ‘International Year of Sustainable Energy for All’. Sessions covered the state of sustainable energy for all initiative and the implications for Africa; the water agriculture and climate change nexus; and, currents in the green economy and green growth for low carbon development. Based on the discussions of these issues, the following recommendations emerged:
 - a. Governments need to ensure an enabling policy environment and comprehensive policies that integrate the energy sector with other sectors including social dimensions for the success of the SEFA initiative.

- b. Innovation is essential for effective technology policies, planning and the adoption of modern energy across Africa. Emphasis should be placed by governments on nurturing and developing capacities of local and regional research institutions.
- c. Research and policy communities should develop methods of monitoring and quantifying the impacts of strategies and projects on the livelihoods of local communities.
- d. Government, civil society and private institutions are urged to work together for mainstreaming climate change into development projects.

Outstanding Issues in Climate Negotiations: Relevance for Africa

- 7. The last session on day 1 was a plenary with roundtable discussion on outstanding issues in climate negotiations and the relevance of these issues for Africa. The session was Chaired by Dr. Abebe Hailegebriel, Director of the Rural Development and Agriculture Division of the African Union Commission. Dr. Richard Muyungi gave the keynote address not in his capacity as Chair of SBSTA, but rather in his capacity as the vice president and member of the bureau representing Africa. Distinguished individuals sat on the roundtable discussion consisting of: Mr. Emmanuel Dlamini, Mr. Percy Makombe, Mr. Irvin Minzer, Mr. Xolisa Ngwadla, Prof. Doreen Stabinsky, Mr. Pa Ousman Jarju. The roundtable discussion was facilitated by Dr. Tom Owiyu and Dr. George Wamokoya.
- 8. The keynote address followed by the roundtable discussion drew attention to the fact that climate change is fundamentally a development issue. It was noted that without the multilateral process bilateral process would likely dominate and the potential of unilateral measures by trade partners would arise with significant potential to negatively impact African economic and development interests. Loss and damage along with adaptation were discussed along with an observation that the African position does not always seem consistent across the various groups in which African is part such as SIDS, LDCs and the African Group.
- 9. In the parallel sessions on the sub-theme outstanding issues in climate change negotiations and the relevance for Africa the following issues were explored: the key implications for Africa; the status of climate finance and the key issues for Africa; and, emerging knowledge, science and partnerships for enhancing Africa's negotiation position. Following the discussions several recommendations emerged:

- a. Negotiators, practitioners and researchers should step up efforts to further strengthen the role of science in the negotiations process while also recognizing that this process cannot be based solely on science.
- b. Researchers must assess the implications of different peaking periods for adaptation and loss and damage as well as continue to better understand climate adaptation, its cost under different warming scenarios and its interaction with general development activities.
- c. Developed countries urged to raise the level of ambition in order to set the right carbon price which will in turn encourage investment in mitigation activities.
- d. African Member States enhance preparedness to ensure access, deployment and delivery of finance from the GCF and other sources. Similarly, the developed countries are also urged to commit new and additional finance to the established mechanisms including the GCF.
- e. Researchers and negotiators work together in order to reflect further on the concept, definition and clarity on loss and damage, agriculture and water in the context of Africa.

Other recommendations

10. Other recommendations to emerge from the Conference are:

- a. CCDA-II participant welcomed the establishment of the GFCS. Regional institutions, national systems, policy makers, researcher, development partners and others are urged to support the implementation of the initiative.
- b. Governments are urged to include climate change considerations in all relevant sectoral policies, especially in the areas of agriculture, water, energy, forest, land management, and health as well as the nexus and interplay between them.

Introduction

In his opening statement, the Prime Minister of Ethiopia, H.E. Mr. Hailemariam Dessalegn highlighted the risks related to fast start finance, which is not new and additional; noting the danger that the Green Climate Fund may end up being a shell without any funds. He concluded by noting the importance of the ClimDev-Africa Programme and lauded the analytical work ACPC is doing. Statements by other speakers during the opening ceremony emphasized the importance of sustainable development, green growth, climate resilience and adaptation, low carbon development and energy access. Many initiatives across Africa in these areas were listed by the speakers. The Speakers in addition stressed the need for climate negotiations to address African concerns.

The second Climate Change and Development in Africa Conference, which was held at the United Nations Economic Commission for Africa in Addis, Ethiopia, from 19 to 20 October 2012, brought together over 300 participants from the areas of policy, research and academia, practitioners, civil society and the media to deliberate and share knowledge on how Africa can turn the challenges brought about by climate change into development opportunities. The deliberations covered three key thematic areas: climate services delivery for development, sustainable energy access for all Africans by 2030 and outstanding issues in climate negotiations: relevance for Africa.

As a follow-up to CCDA-I where development first was the key theme, CCDA-II sought to consolidate climate change knowledge, outreach and advocacy, which is a core mandate of the ClimDev-Africa programme. Three communities of policy makers, research and academia and practicing stakeholders, provided the basis for identifying synergies and building linkages between the groups as needed for enhanced climate change action.

As the secretariat of the ClimDev-Africa programme, ACPC provided logistics support for the conference while technical proceedings were informed by consultations between the three ClimDev-Africa programme partners, namely the Climate Change and Desertification Unit of AUC, the ClimDev-Africa Special Fund of the African Development Bank and African Climate Policy Centre of the Economic Commission for Africa.

This report captures the proceedings and main outcomes of CCDA-II. It is organized in three main sections. Section I contains key recommendations drawn from the outcome statement, Section II provides the introduction and details of the deliberations, while Section III presents the discussions in the plenary and breakout sessions. The breakout sessions were organized under the following three thematic areas:

- Sub-theme 1: Climate Service Delivery for Development
- Sub-theme 2: Sustainable Energy Access for All Africans by 2030
- Sub-theme 3: Outstanding Issues in Climate Negotiations: Relevance for Africa

The conference programme is presented in the appendix.

Opening Remarks

Welcoming remarks by Mr. Carlos Lopes, UN Under-Secretary General and Executive Secretary of ECA

In his statement welcoming guests, the ECA executive secretary commended the Prime Minister of Ethiopia for his first outing at the UN conference center since assuming office, noting that it was testimony to the importance he attaches to tackling the vexing issue of climate change. He dedicated CCDA-II to the late Ethiopian Prime Minister Mr. Meles Zenawi for his regionally recognized climate change and development leadership in Africa.

The ECA executive secretary further decried the stark truth that Africa is already being affected in various ways by climate change impacts. He cited increasing temperature, more frequent and severe incidents of drought and floods, retreats in snow coverage and rising sea levels, to mention a few obvious effects of climate change. Unlike most other regions, the ECA executive secretary singled out Africa as facing the challenge of adapting to climate change from the lower end of the development spectrum. In this respect, he noted, climate change will impact on sectors including health and energy. Water and sanitation will similarly be impacted by climate change and all the sectors will require appropriate policy responses.

In his speech, Mr. Carlos lauded the CCDA-II theme 'Advancing Knowledge, Policy and Practice in Climate Change and Development' as being pertinent to the need for knowledge which is informed by practice to design policies that promote development in the face of climate change.

With regard to the climate services sub-theme of the conference, the executive secretary noted the importance of climate science as a critical source of information for vulnerable groups including farmers and local communities. Lack of this critical knowledge, he emphasized, can be a significant handicap in the ability of populations to cope with climate change impacts, not to mention similar effects on the ability to embrace green growth.

In addition and of significance note, Mr. Carlos aptly cited the daunting task before African countries in undertaking and implementing policies to respond to climate change. The three pan-African institutions, namely the ECA, AUC and AfDB are thus appropriately tasked with assisting governments to respond to this challenge.

In conclusion, Mr. Carlos wished the conference participants fruitful deliberations and challenged them to come up with actionable points, giving the following two examples:

- African countries can chart clear policy and development pathways that are climate resilient and of low carbon intensity particularly in energy, agriculture and water.

- In COP18, Africa's position in the negotiations should be well prepared so as to obtain its unchanging objectives of securing access to more finance, appropriate technology, and capacity development opportunities.

Welcoming remarks by Mr. Lamin Barrow, resident representative of the AfDB in Ethiopia on behalf of Dr. Donald Kaberuka, President of the AfDB

On behalf of the African Development Bank and the President, Mr. Barrow conveyed apologies for Dr. Kaberuka's inability to grace the event due to other engagements. In his speech, Mr. Barrow noted the estimated cost of responding to climate change in Africa at \$ 40 billion every year, which translates to about 3% of the continents GDP. In consequence, climate change casts a long shadow on Africa's development aspirations, including the prospects for achieving the Millennium Development Goals.

As a player in climate change response, the AfDB has focused on assisting its African member states to address its impacts, as well as build resilience of communities through adaptation and mitigation actions. He underscored one critical factor in this support as expansion of Africa's access to existing and emerging climate finance instruments, including global mechanisms, such as Global Environmental Facility and Climate Investment Funds.

In his speech, Mr. Kaberuka cited the World Meteorological Organisation which has noted that Africa requires, at a minimum, three times the current number of meteorological stations in order to provide adequate and effective climate support services for development. To exacerbate the current situation, existing observation stations have inadequate capacity to provide regular, timely, credible and reliable climate services in most of our countries.

The president in addition not only lauded the CCDA-II conference design for availing the opportunity to take stock of progress that has been made on various issues that resonate with the sub-themes of the conference, but also for serving as a robust platform for information exchange on recent key research findings and best practice pursuant to the agenda of advancing inclusive and low carbon the green growth in our economies.

Mr. Kaberuka noted that the recently concluded second session of the African Ministerial Conference on Meteorology in Victoria Falls, Zimbabwe, emphasized the need for adequate financial resources to support Africa's meteorological services to enable provision of essential services. In this regard, AfDB believes in ClimDev-Africa programme as an effective platform to provide complementary services and support to African countries. In particular, the ClimDev-Africa Special Fund, one of the programme's components, provides an effective vehicle for channeling funding for demand driven operations.

In conclusion, Mr. Kaberuka reiterated the bank's commitment to continue to support member countries, in collaboration with the other premier Pan African institutional partners, and through the ClimDev-Africa programme to mount robust responses aimed at building resilience and for mitigating the threats arising from climate change.

Welcoming remarks by Dr. Maxwell Kwezelamba, Commissioner for Economic Affairs on behalf of Dr. Nkosazana Zuma, Chairperson of the AUC

Dr. Kwezelamba began by conveying apologies from Her Excellency Dr. Nkosazana Zuma, chairperson of the AUC, who could not attend the CCDA-II due to other pressing commitments. He then proceeded to read her statement verbatim. Dr. Zuma opened her statement by recognizing the presence of His Excellency the Prime Minister of the Federal Democratic Republic of Ethiopia for gracing the conference with his presence, and further acknowledging the important role played by his illustrious predecessor, H.E. Ato Meles Zenawi, who displayed exceptional interest and devotion to championing Africa's cause on climate change issues.

As a developmental concern, on various forums, Africa continues to emphasize the nexus that exists between environmental, social, and economic dimensions of sustainable development. As the climate change phenomenon impacts all sectors, from agricultural production and health, to foreign policy and international security, and given that climate change will be with us for a long time to come, it is imperative that conferences of this kind continue to articulate the challenges facing humanity and the risks of delayed action or, as is the case, the dangers of inaction.

At Rio+20 Conference held in Brazil in July 2012, concerns were raised about the limited progress regarding the international responses to climate change, mobilisation of funds, and the need to exploit inter-linkages between climate change and other issues such as water, energy and food, and short-lived climate pollutants.

And, therefore, in a conference such as this, the message to upscale effective and appropriate international responses is crucial to advance with a view to accelerating the reduction of global greenhouse gas emissions.

Africa cannot shy away from responsibility to upscale effective and appropriate response to accelerate the reduction of global greenhouse gas emissions and to remind the world that the risks are mounting, and speed is of the essence to operationalize the Green Climate Fund. It also needs to renew the call on the parties to implement their commitments under the UNFCCC and Kyoto Protocol, and to build upon progress achieved notably in Cancun and in Durban. In advance of the next COP in Doha, Dr. Zuma singled out opportunities in South-South climate change cooperation. In particular, China's contribution and the matching funds by Brazil, through Africa-Brazil-China (ABC) cooperation, will ease African countries' quest to transition to green economies.

In the same vein, Dr. Zuma alluded to the establishment of the African Green Economy Partnership, a complementary programme that will promote coordinated and consolidated support to African countries in their transition to Green Economy, as well as ecosystem-based adaptation programmes to build the ecosystem resilience of local communities.

The outcome of Rio+20 placed a special premium on the UN Sustainable Energy for All Initiative, whose main goals are of critical importance to Africa's poverty reduction and sustainable development imperatives. They include the development of renewable energy, expansion of energy access and promotion of energy efficiency. These goals correspond to the target results of the Programme for Infrastructure Development in Africa (PIDA), a key thrust of NEPAD. The Partnership for Sustainable Consumption and Production in Africa has notable support in developing local and national sustainable consumption and production programmes, including eco-labeling Mechanism for the purpose of improving access for sustainable African products to regional and global markets. These initiatives to complement other efforts geared towards realizing a Green Economy approach.

With regard to the upcoming Doha negotiations, Africa's development agenda on climate change must emphasize the integration of disaster risk reduction in adaptation activities as well as stress the establishment of an International Climate Risk Insurance Facility and a mechanism to address loss and damage.

In support of sustainable development and the achievement of the MDGs in critical climate-sensitive sectors, Dr. Zuma noted that quality climate information and services are indispensable prerequisites in addressing the needs of local, national and regional decision makers. She expressly singled out the contribution of UNECA, AfDB, UNEP, WMO and the EU for their commitment to support Africa in building resilience to climate change and variability.

Keynote speech by Mr. Jeremiah Lengoasa, Deputy Secretary General of WMO

Mr. Lengoasa's keynote speech was significant as it set the tone for the entire conference. In his speech the WMO deputy secretary general cited empirical evidence drawn from the organization's perspective of climate change observations from around the world, ranging from increases in global average terrestrial and ocean temperature to increase in atmospheric carbon dioxide concentrations. Of particular note from the deputy secretary general's speech is that for almost 10,000 years before the start of the industrial period in the mid-18th century, carbon dioxide concentrations remained nearly constant at 280 parts per million. Since then it has increased to 389 parts per million, with 39% increase in 160 years. Land precipitation is changing significantly over broad areas, with increases and decreases in different parts of the world.

In general, availability of data and data density shows clearly when depicted on the world map, thus putting some constraints in the ability to offer solutions at a regional level. Africa, of course, is slightly shaded, but the areas where we have data scarcity are very clear.

The deputy secretary general further presented slides from a book scheduled for publication at COP18, which not only deals with decadal analysis of the change in climate for 2001 to 2010, but working with partners (WFP, FAO, WHO and others) would look at impacts related to that. According to WMO, observations have been made showing rainfall downtrends in west and east Africa, prolonged droughts in 2004 to 2005 affecting over 11 million people in East Africa,

Southern Africa and Central Africa, and at least 5 million facing serious hunger. All of this is knowledge that has been shared broadly.

One mechanism the speaker highlighted for addressing impacts of climate change is disaster risk reduction. Disaster risk management is one concept that a lot of people are using. It is clear that when there is a catastrophe there is a recovery period that is required. And the emphasis of the new initiatives is to try help build resilience through increased spending pre the catastrophe, mitigation measures, adaptation measures – but also ensuring that in so doing, there is cost reduction from damages and faster recovery period for society, for example in terms of food security.

In the realm of scientific policy and technical communities, there are new initiatives in addition to projects like CORDEX (which is a regional downscaling experiment with an initial African focus). These are seeking to create new knowledge in how we link what we understand of the physical earth system and what we understand of the human system. Another initiative is Future Earth, which is zooming in on research for global sustainability. Whether looking at the increase of McDonalds restaurants, or at the damming of rivers or the increase in water use, all of these point to a planet which is under pressure and therefore the need for working differently in identifying solutions. Critically, the initiative has an emphasis on people, and understanding the earth system science, with impact of environmental change on people, adaptation and transformation.

The other programme that is currently under development is the global framework for climate services. One of this seeks to provide climate services for the most vulnerable, aiding in the adaptation to seasonal yearly and multi yearly occurring events close the gap between climate data providers and users, and also serving as a platform to bring together all stakeholders ranging from globally acting agencies to an individual farmer on the ground. And this is the vision of the global framework with its four pillars – research modelling and prediction; observations and monitoring; From WMO's perspective, ACPC acts as a melting pot for ideas, for concepts and for merging these communities.

Opening of the conference by HE Mr. Hailemariam Dessalegn, Prime Minister of the Federal Republic of Ethiopia

HE Mr. Hailemariam Dessalegn, Prime Minister of the Federal Republic of Ethiopia commenced his speech by welcoming all invited guests to the conference in particular and Ethiopia in general. From Ethiopia's experience, the PM noted the disastrous consequences climate change impacts that have occasioned a heavy strain on efforts to put sufficient food on the table for its people. As a result, he noted, the CCDA conference is fitting and proper as a platform to deliberate on the issues. However, the conference must do so in a manner that will generate results that are equal to the salient climate change challenges Africa faces today.

The Prime Minister took the opportunity to laud the role played by the late Prime Minister Meles, in championing Africa's Renaissance through his articulation and work on climate

change issues. Of particular note was his exceptional dedication to the cause of the continent and to the country he loved. His commitment was also borne out of his unshakable belief that Africa should be given the attention and support it deserves in its efforts to mitigate and adapt to the adverse impacts of climate change to which its contributions have been minimal. Under his leadership, the Ethiopian government launched a Climate Resilient-Green Economy initiative a year ago, with a long-term ambition to achieve net zero carbon emissions by the year 2025. Ethiopia's investment in developing renewable energy potential, including hydropower, wind and geothermal power generation projects is testimony to the commitment to building a green economy.

Africa's negotiations on climate change have been based on a common platform. This has been efficiently coordinated and supervised by the Assembly of African Heads of States and Governments, the Committee of African Heads of States and Governments on Climate Change which the late Prime Minister Meles chaired, the African Ministerial Conference on Environment, and the African Group of Negotiators. Among notable decisions reached have been the agreements to set the long-term temperature goal at two degree centigrade and to review this goal between 2013 and 2015 and the agreements on both short-term and long-term financial mobilization targets.

Equally important are developments related to the establishment of the Green Climate Fund, the establishment of institutions for adaptation and development and the transfer of adaptation and mitigation technologies; the agreement on a second commitment period of the Kyoto Protocol; and last but not least, the agreement to develop a new legal instrument, either a protocol or an agreed outcome with legal force, under the convention applicable to all parties for the period after 2020.

Africa, indeed, is obliged to lobby for the scaling up of national and international efforts in relation to adaptation, mitigation, finance and technology development and transfer. The performance of developed countries in activating the short-term financial commitments at the Copenhagen Climate Conference was indeed 'extremely disappointing', as actions have failed the test of funds being "additional".

There is now a real risk that the Green Climate Fund will be an empty shell that cannot respond to the real and significant finance needed for climate action in Africa. The need is urgent and African countries must thus continue to articulate concerns and delimit their positions with added vigor.

Africa's collective efforts offer a real change of turning a corner if we can help to achieve genuine progress at the 18th Conference of the Parties to the Framework Convention on Climate Change, to be held in Doha, next month. Our efforts in this direction must, of course, be based on scientific research and empirically sound assessments. Africa in general and individual African countries in particular should put a high premium in cutting-edge knowledge, an endeavor that ClimDev-Africa continues to support, especially through ACPC's work.

The PM further challenged the participants of CCDA to craft mechanisms of bridging existing gaps in climate change initiatives throughout Africa, and more importantly, engage in deliberations that provide substantial recommendations to limit Africa's exposure, its risks and vulnerabilities in the face of adverse impact of climate change. In particular, CCDA outcome should avail advice and suggestions for sound adaptation and mitigation strategies.

In conclusion, the Prime Minister wished participants fruitful deliberations and a pleasant stay in Addis-Ababa, a home away from home.

Summary of Plenary Sessions

Sub-themes I: Climate Science and Service Delivery

Chair: Mr. Ken Johm, Division Manager, African Development Bank

Facilitators: Dr. Seleshi Bekele(UNECA/ACPC) and Dr. Paxina Chilsehse (AfDB)

Keynote remarks were made by Mr. Jeremiah Lengoasa, WMO Deputy Secretary general.

The panellists for the session were Dr. Ernest Afiesimama (Nigerian Meteorological Agency), Mr. Arba Diallo (Mayor of Ouagadougou), Mr. Bai-Mass Tall (Secretary of AMCOW), Dr. Yvan Biot (DfID advisor), and Dr. Fatima Denton (ACPC Coordinator).

Key Notes

Mr. Jeremiah Lengoasa, WMO Deputy Secretary general

The presenter focused on the global framework for climate services (GFCS), i.e. looking for new ways of knowledge generation for variable and unpredictable environment and make available for decision making and development processes. According to him, many National Meteorological and Hydrological Services (NMHSs) of African countries do not have enough capacity to deliver the high demand of climate services as well as the existing climate services do not often reach to grass root level affected by disease, flood, famine and drought at community level. So, there is need of coordinated and integrated approach. Additionally, GFCS is a global collective effort which is built in collaboration with UN family, partners, and stakeholders. It needs to address the full value chain that incorporates observations, research, product development and service delivery including various actors.

The purpose of GFCS is to enable data management of risks of climate variability and change in adaptation to climate change through developing and incorporating science based climate information and prediction into planning, policy and practice. Climate services require historical data sets, active climate monitoring as well monthly, decadal and seasonal climate prediction and climate projection as product and output which may inform how the user may access the right product for decision making and use them appropriately including the uncertainty aspect. The climate products and outputs must be available at time and space scale of the user need, dependable, credible, usable, responsive, flexible, affordable and sustainable. The principles of GFCS were identified by high level panel which was established to develop the GFCS following its approval and establishment by heads of states and government and ministers in 2009 at WCC3 in Geneva.

The principles of GFCS are to prioritize of capacity building of climate vulnerable developing countries, ensuring data availability in three geographical domains, i.e., international, regional and national level and operational climate services. Climate information and services should be a public good provided by governments which have a central role to play its managements. The

promotion of free open exchange of climate-related observational data can go beyond the physical parameters that we normally measure. The other important parameters for the provision of climate services are socio-economic data. The GFCS will primarily focus on water, disaster risk management, health, and agriculture and food security as it has been already identified as a grand challenge by various institutes.

The pillars of the GFCS are capacity building, climate observing and monitoring, climate service information system, users interface as well as research, modeling and prediction. The important milestones achieved so far are: all the documents translated and the interaction between climate information provider and user scheduled.

Panel discussion

Facilitator: Dr. Afiessimama, do you think GFCS help African countries and regions? If so in what ways and how should African institutions organize themselves to maximize uptake of the opportunity? How do you see the roles of research and where are we in Africa in these regards?

Dr. Afiessimama started to respond by explaining the vision of GFCS that enable society to better manage the risk and opportunity rising from climate variability and change especially for those who are the most vulnerable. He added that GFCS would create a new opportunity for Africa particularly in low carbon economy, poverty reduction and improve life for climate vulnerable community in Africa. This would help to mitigate or adapt to the extreme weather events affecting communities. Pilot projects have been conducted by the GFCS at national level for effective use of climate services in some African countries.

On the other hand, Dr. Afiessimana talked about AMCOMET which is a framework to strengthen the existing institutions for weather and climate services delivery. The framework needs a strategy for facilitating the cooperation development and provision climate services in Africa at continental region and national level. Strengthening the existing institutions, organizing climate activities in Africa and ensuring an effective and efficient climate services delivery are critically important, he added. There are also too many organizations that require facility and synergy of some of these existing structures for the ongoing climate related projects in Africa and these are the ways to key GFCS to the system, he pursued.

On the role of researchers, the framework has a set of challenges in the climate science community, he said. The level of research in Africa is very low due to the issue on observational network, driving GFCS process to the researchers could end to a great achievement, he stated.

Facilitator: A number of African institutions have started to address the need for improving climate services delivery. Effective climate services delivery is indeed a prerequisite for managing and /or reducing risks and maximizing opportunities associated with climate. These services ensure climate resilience development and facilitate real time adaptation to climate variability and change. Mr. Arba Diallo, as the former Executive Secretary of United Nations Desertification Convention and Current mayor of Ouagadougou, in order to move forward and

taking Burkina Faso as an example: What do you see the tackling challenge of African countries such as yours? Together with ACPC, GWP has also recently completed a dialogue workshop on ground water? How do the research and practice community help in implementing these strategies?

Mr. Diallo informed about the real case in Dori, located in the north of Ouagadougou in which the amount of rainfall during the last rainy season was doubled as it used to be. Although the forecast was made by ACMAD, AGRHYMET, CILLS, the need to make information and data available in real time to the end users was urged. He added that strengthening the meteorological stations network and equipment was relevant, in order to improve their services. No matter what is the global framework but going down to the ground level and taking into account the information available are important, he said. Furthermore, science should be pushed forward in order to reduce the cost of adaptation that is actually endorsed by the vulnerable society.

Facilitator: Mr. Bai Mass Tall, as Executive Secretary AMCOW, water is one of the most important resources and has got a number of users sector with strong bondage to climate change and variability. Building on your experience on the arrangements of water sector, what is the best way to engage policy makers? What are the major areas of work under AMCOW framework related to climate change and water? How do the research and practice community help in implementing these strategies?

Mr. Tall started by explaining the current flooding in Nigeria and Senegal where one million people have been displaced from natural disaster. Regarding the framework, the UN system was judged good at giving new acronym, framework, and initiative that contains different package of concerns. Since then, the discussion is about coming from top-down approach that would not work unless the policy makers were not engaged, he uttered (Ministers). Besides, tailor-made information for the policy makers is very useful to target development such as Climate Resilience and poverty alleviation. He insisted in the fact that research should be available in a real time for better preparedness of the future events and its impacts.

Facilitator: Dr. Yvan Biot, as senior policy advisor at DfID: Where do you think your roles are important as development partner? What is DfID currently working on issues of climate services at global level related to Africa? Are there emerging strategies that African countries can pay attention?

Dr. Biot put in place that partnership for development is one element of infrastructure in hydro meteorological services of research and data. The National Meteorological Services are the most players of the GFCS family so it is crucial if they really have the capability to provide services. The donors have conceived their support to the African meteorological stations to be an African agenda led by African institutions and this is why DfID have being supporting the development of ClimDev-Africa and the development of ACPC from the beginning. The process really became an African process rather than a donor led process. Hence, the African community designed it in a way they wished it. The donor is satisfied that ClimDev-Africa and

ACPC belong AUC, AfDB and UNECA. The strategy with regards to support to the African Meteorological station and the Hydrometeorological services is through ClimDev-Africa and ACPC and they are required to tell the needs and how they can be addressed. On the other hand, productive partnership with all the countries in Africa has to happen through an effective coordinated mechanism.

Dr. Yvan Biot does agree that research is crucially important and many things could be done in research as being involved in a research programme on climate science over the last three to four years really focusing on model development, on improving the accuracy of forecasting, making sure that the forecasting is answering questions coming from the field. Moreover, a lot of evidences that improved climate service really save life. He reminded what happened in 2008 when the international federation of the Red Cross acted on the information that was given out by climate scientist about the likelihood of floods in West Africa. So really climate services make the life much easier and that makes the intervention much less costly. But on top of the research in improving the forecast predictability and reliability, more evidence is needed from the ground in terms of impact, what works and what doesn't along the full chain between the producing the forecast and those who are using it through different case studies. So more we have had those case studies more we have evidences to convince and take deeper into the finances through the ministry of finance, or department of finances, he stated.

Facilitator: Dr. Fatima Denton, as the former coordinator of the Climate Change Adaptation Programme and the new coordinator of ACPC: How do you see the role of ACPC and ClimDev-Africa for GFCS? What critical issues should we consider for climate change adaptation programme in Africa?

Dr. Denton worth noted that a lot of money had been spent in very complicated models, in very complex studies, in source of information, in climate delivery and services, but she remained asking "who is the information for?" She added that when thinking globally it was important to find a way to get down to the local scale that enables to understand how this huge resource and wealth of information that was generated could actually being really used by those who needed it.

On the other side, Dr. Denton resumed about the roles of ACPC. First, it can be seen as a broker of knowledge. Moreover, adaptation is a social process; hence the users and suppliers of climate information should sit and talk together. The necessity to create, convene a space of dialogue at ACPC was addressed. Actually, farmers are interested in different types of knowledge and information, so it is important to assist and make them very strategic in their decisions, she quoted.

ACPC is also focusing on analytical work, help in understanding the political economic realities and how the intersection of policy and planning can happen in terms of the real needs of communities. In this regards, the indigenous knowledge should be taken into account, complementary knowledge of the farmers and scientists is very important. She supported the

principle of having an entrepreneurial perspective and seeing communities, policy makers as clients.

The third role that ACPC could play is to suit the climate information to the local reality and need, documenting in what is happening in different scale. The existing local-cultural practices that the farmers are using and investing in order to follow up and take up new strategies in adaptation such as media should be enhanced, she uttered.

Dr. Denton advocated that institution is a fundamental framework for the sustainability of adaptation and mitigation in Africa. To this end, there is a need to measure the matrix challenges.

Summary of discussion

The struggle for coherence was raised; followed by some questions such as how the discussion of the regional coordination mechanism in support of the AU and its specialized technical committees is. How is the UN coordination at the country level? How to download knowledge from the global, regional to the country level? Small island developing states are in danger of sinking but what are the partners going to say about their own countries (outside Africa)?

An Ecologist from Nigeria continued the discussion by recapitulating what he has learnt from the round table. Hence, he acknowledged that the scientific knowledge base in whole of Africa has been very poor, for instance in Nigeria, a lot of researchers haven't been producing anything. Most of the scientists are losing their confidence from the policy makers, the politicians don't listen very often to the scientists because the politicians are very quick and want to invest and that's where the international community and the donor agencies come in, he reported. He pointed also that there has been a lack of coherence not only within the national institution but also between the donor agencies. The disconnection between actual development, educational research and policy making is evident in many countries in Africa.

Another question like how can global forums for collaboration bringing countries, international donors and technical institution together could be a value to Africa was raised.

A researcher representative reacted and disagreed on the issue that researchers in the university communities were not doing much. She highlighted the problem related to the gap between the researchers, policy maker and end-users; there always is disunity without forum convening the three components. She urged that only a cohesive forum with an integrated mission focus can lead to a proper development in Africa.

The last speaker was showing his concern on the issue of coordination in the region in terms of GFCS because a bad experience was noted previously. The best thing that should be looked into is how this framework could be implemented at continental level. Or should it be aimed at going to the national level, regional level and Sub regional level? In this regards, some strategies were proposed in which regional institution should be strengthen and improved so

that they can address this in a more effective way. At national level, partnership is one important key of success, he added.

In the end the chair wrapped up the session and stressed that the identification of the users' needs are fundamental. Give the data to the researchers for analysis and package in the way that the policy makers can understand to decision making.

Sub-themes II: Sustainable Energy Access for All Africans by 2030

Chair: Mr. Philippe Niyongabo, Head of Energy Division Department of Infrastructure & Energy, African Union Commission.

Facilitators : Dr. Youba Sokona (ACPC), Dr. Yacob Mulugetta (ACPC)

The panellists for the session were Dr. Jacques Moulot (African Development Bank), Prof. Abeeku Brew-Hammond (Kwame Nkrumah University of Science and Technology, Ghana), Prof. Ogunlade Davidson (Fourah Bay College, University of Sierra Leone), Dr. Felix Dayo (Triple 'E' Systems, USA), Dr. Kevin Urama (Africa Technology Policy Studies Institute, Kenya), and Dr. Daniel-Alexander Schroth (European Union)

Panel discussion

Facilitator: African countries are faced with the challenge of improving and providing access to affordable modern energy services. The continent is also discovering huge amounts of fossil fuels. Why should Africa's energy system be built on Renewable Energy?

Dr. Moulot responded by emphasising that Africa should use all available energy resources to develop its energy systems but this should be done in a sustainable manner. He stated that the idea of developing the energy system of Africa solely on renewables may not be possible due to the technicalities involved. Dr. Urama, agreeing with the notion of using all available resources to improve energy access also pointed out that the huge renewable energy potentials in the continent provide Africa with a comparative advantage to develop technical capacity in renewable energy systems and also use these resources. According to Dr. Urama, renewable energy will reach masses of population in rural areas. The major problem is a lack of institutional and policy frameworks.

Prof. Davidson also reiterated the position that it is only appropriate for Africa to use both renewable energy and fossil fuels to improve energy access. He also cautioned that the debate around whether to use renewable or fossil fuels sends conflicting messages to policy makers. Africa has huge potentials for both types of energy resources. About 49 out of the 54 countries in Africa are either exploring for oil or producing oil. According to him, this suggests fossil fuels will/should play a part in the future energy system. Prof. Davidson also stated that the major issue has always been the lack of capacity to process oil and gas resources for domestic consumption. Thus there is a need to develop institutions and frameworks to harness both types of energy resources.

According to Prof. Brew-Hammond, the question of improving energy access in Africa is not about renewable or fossil fuels. The determining factor should be the least cost options. Prof. Brew-Hammond stated that currently, the thermal and hydro options are the least cost options. Thus, they should play a lead role in improving modern energy access while we continue to build on other renewable energy systems for the future as they are currently expensive. He also emphasized that regional approaches to building these energy systems are necessary, which will also boost trade and regional integration. Dr. Dayo cautioned that Africa must remove the donor funding approach and concentrate on using domestic resources to finance and plan its energy access agenda. He stated that each country must look at the resources available in-country to see the comparable advantage and then we build these systems together through regional integration.

Facilitator: How have the issues and challenges relating to the African energy systems been discussed by the SEFA technical group?

According to Prof. Brew-Hammond, the SEFA technical group consists of many stakeholders from all fields. He stated that the SEFA technical group created the framework, but national and regional approaches to address the energy access agenda must be determined by Africans. The technical group identified action areas for the success of the SEFA that Africa can use. These include finance, capacity building, technology innovations, and policy and institutional frameworks.

Facilitator: Does Africa have the adequate policies or institutional frameworks to achieve the SEFA?

Prof. Davidson pointed out that Africa currently does not have adequate policies and institutional frameworks that can promote the SEFA. According to him, some countries are doing better than others but Africa needs institutions that deal with rural areas. For example, there is a need for policies and institutions that can handle the question of subsidy, because off-grid systems in the rural areas might not be the solution or they could be more expensive? There is also a need to get utilities to the rural areas. According to Prof. Davidson, regional projects and policies are getting better but the finance is simply not there.

Facilitator: In what ways can Africa raise the finances to improve energy access?

Dr. Moulot stated that the investment needs are US\$40 billion per year to achieve 60% electricity access by 2040 in Sub-Saharan Africa and double of that investment will be needed for 100% electricity access by that time. According to Dr. Moulot, there is a need for other innovative sources of financing such as infrastructure funds and the capital market in addition to the traditional sources of finances.

Facilitator: What are the constraints of the carbon market in Africa?

Dr. Dayo stated that Africa has not benefited from the carbon markets. He pointed out that the major demand for offset is Europe and investments seem to flow only to those regions where there are potentials for credits whereas Africa's emissions are too low at the moment. Dr. Dayo suggested that Africa should think of developing its own carbon market as other developing countries are developing domestic carbon markets.

Facilitator: What are the current available technologies we can use in our energy system and what is the role of Research and Development (R&D) in ensuring technology innovation?

According to Dr. Urama, R&D is not being funded in Africa, at the moment. He also pointed out that Africa is also not building indigenous capacity. He emphasised the critical need to invest in R&D to ensure technology development and innovation. On the types of technologies needed to improve energy access, Dr. Urama mentioned that smaller systems such as wind and solar PV technologies can address the problems of meeting basic human needs, but are not sufficient enough to promote industrialisation. He suggested investments in technologies such as geothermal and huge hydro power will be beneficial in terms of industrialisation, regional integration and technology development.

Facilitator: What are the key elements that need to be fulfilled to ensure the success of SEFA in Africa?

Dr. Schroth pointed out that there are five key elements that will determine the success of the SEFA agenda in Africa and they include political commitment, country customisation or ownership of the SEFA agenda, promoting public-private partnerships, policy reforms that address bottlenecks in promoting investments in energy access and clear MRV frameworks for monitoring success.

Summary of discussion

The comments from the audience re-emphasised what the panellist have mentioned. In addition, the need for concentrating on process efficiency as well as using more efficient technologies was emphasized. The need for education and awareness-raising was also pointed out.

The chair also re-emphasised the main points from the round table and discussions. These include:

- Priorities should be given to energy in the development agenda;
- Promote energy diversification in the energy mix. Keep all options open;
- Regional co-operation and integration are needed to improve energy access;
- The need for effective policy and institutional frameworks;
- The need to encourage public-private partnerships;
- Mobilisation of adequate financing will be crucial;
- The need to strengthen the role of regional and local institutions, private institutions, etc;

- Capacity development is crucial;
- Resources and energy efficiency will also be critical;
- The need to improve energy planning frameworks and databases.

Sub-themes III: Outstanding Issues in Climate Negotiations: relevance for Africa

Chair: Dr. Abebe Haile Gabriel, Director Rural Economy and Agriculture, African Union Commission

Facilitators : Dr. Dr. George Wamokoya, (COMESA) Dr. Tom Owyio (ACPC)

Keynote remarks were made by Mr. Richard Muyungi, SBSTA Chair

The panellists for the session were Mr. Emmanuel Dlamini (AGN Chair), Mr. Percy Makombe (South Africa), Mr. Irvin Minzer (Potomac Energy Fund, USA), Mr. Xolisa Ngwadla (South Africa), Prof. Doreen Stabinsky (College of the Atlantic, Bar Harbor, USA), and Mr. Pa Ousman Jarju (AGN member from Gambia)

Key Notes

The key note speaker, Mr. Richard Muyungi, remarked that Africa is growing and this must be sustained in the face of challenges of climate change, particularly extreme weather events causing loss and damage. He submitted that advancing Africa's development agenda within a changing climate requires issues of adaptation, mitigation and means of implementation to be properly addressed in fair and equitable manner. These, the speaker further remarked, require enhancing actions and collaborative engagements by engaging all parties. Mr. Muyungi also advised that there is a need to tap on mitigation opportunities in the agriculture sector.

Panel discussion

The first speaker, Mr. Emmanuel Dlamini, highlighted two priority areas for Africa. The first related to the global cap and its implications for Africa. He noted that emissions do contribute to economic wellbeing and hence the main priority is to ensure that Africa gets a fair share of the atmospheric space, an opportunity to develop. The second priority for Africa is what is often spoken as the 'ambition gap'. This, according to the chair, has three elements: mitigation gap, a gap between commitment period in the Kyoto Protocol and the finance gap.

The second speaker, Mr. Percy Makombe, made a broad point that developed countries have a historic responsibility to mobilize finance which is 'new and additional': "we should not rob Peter to pay Paul". In addition, he remarked that finance for adaptation should not extend Africa's debt burden and hence should be provided mainly on grant basis.

The third speaker, Mr. Irving Mintzer, mentioned four things in relation to how Africa could access the technologies and investments required for clean energy without compromising its need to develop? The first is the importance of developing strategic plan and integrating it into

the investment strategies. Second, there is a need to reinforce existing capacity through training of new generation of engineers. Third, while broadening the vision towards 'low carbon development', the key emphasis should remain on development. Fourth, there is a need to ensure accountability in the domestic and international arenas.

The fourth speaker, Mr. Xolisa Ngwadla, noted that negotiations so far delivered on operations mechanisms which include the institutional infrastructure for finance, technology, adaptation, and mitigation. He submitted that the negotiations under the Durban Platform should build on the institutional architecture agreed so far. Mr. Ngwadla expressed his concern that the negotiations on the issue of ambition are moving towards measures outside the UNFCCC such as that of addressing short-lived climate forcers, chlorinated gases and removal of fossil fuel subsidies.

The last speaker, Professor Doreen Stabinsky, took note of the recent decision of AMCEN which, among others, emphasized the need to negotiate agriculture as a matter of adaptation in relation to Africa. The speaker noted that the Adaptation Committee is a good place to link adaptation, agriculture and means of implementation. The speaker remarked that agriculture is a critical sector that would suffer 'loss and damage' but warned against the tendency to think loss and damage in terms of only sea level rise.

Summary of discussion

The following are some of the reactions from the audience:

- How could we ensure that financing for adaptation and mitigation is adequate and that such finance is mainly grant and from public sources; and that the private sector gets into supporting and financing adaptation activities?
- Are there things Africa can do independently?
- Why should African countries keep on negotiating? What leverage do they have to ensure that their interests are accepted in the international negotiations? Is it a sufficient leverage to say to the developed countries that if they do not do such and such we are going to die?
- If in Doha there is a push to abandon on the principle of common but differentiated responsibilities, how would African negotiators respond to this?
- A question was asked as to whether the negotiators are aware of the fact that a temperature rise of 2oC could mean 4oC for some parts of Africa?

The speakers and other participants raised the following points by way of response:

- The consensus decision-making process is raised as a leverage that Africa can use. It is to be noted that in the UNFCCC process decisions are to be taken if there is no objection by any one of the members. Therefore, African countries could have a significant role to ensure that their interests are accounted for in any decision.

- African countries are becoming a recognized bloc because they are speaking with one voice. The absence of African ministers at the last minute when important decisions are made is raised as a problem.
- Africa has two choices: the multilateral platform such as the UNFCCC process or unilateral trade measures such as the one taken by the European Union regarding aviation. In the unilateral front, African countries will be the losers. It is, therefore, imperative that African countries should remain engaged in the multilateral platform. In addition, it was pointed out that additional leverage originates from the fact that African countries negotiate not only as a single group but as member of a larger group of G77+China.
- African negotiators could work with the African civil society organizations which can be noisy but helpful leverages.

Summary of Parallel Sessions

Sub-theme I: Climate Service Delivery for Development

Topic I.1: Bridging the gaps and best practices for Climate Science, Policy and Practice

Summary of presentations

Paper I.1.1: Successful experiences bringing the gap between climate scientist and end-users in Africa – Dr. Arame Tall

The presenter reported that a wide gap stood between those who had knowledge, the climate scientists and those who actually had information on the likely impact of climate change in Africa. At the community level, there is a systematic bottleneck that prevents the trickling down of the available climate science to the communities that need this information. Six bottlenecks have been identified such as the distance national forecaster or national hubs of knowledge, the language barrier because scientists have incomprehensible jargon, the poor communication channels which is just inappropriate for communicating climate information to end users, the scientific barrier in terms of skill level and accuracy of the information. Trust also is important to make significant behavioral change in the basis of information, and finally the low capacity to act on forecasts which is a more development question. The presenter pointed out that the first five issues could be easily overcome by dialogue or at least could be alleviated through different extent. One of the successful experiences bridging the climate science and user gap in Africa on disaster management is the Red Cross 2008 emergency Appeal based on PRESAO forecast which was also confirmed by different source of climate information. The second example of successful experience comes from the need of partnership at national level because Red Cross cannot do it alone. In this regards, seven workshops led by the ACCFP, Red Cross and UN-ISDR across Africa had been recorded from 2009 to 2011. The third initiative bridging the climate science-user gap is the GFCS National Workshops to establish Frameworks for climate Services at the national level led by the WMO. The forth successful experience is on climate and health working group which was launched in Addis in 2010. The fifth is on agriculture sector, the CCAFS efforts to scale up the climate services for farmers across the Eastern and Western Africa have been discussed. She ended with the Climate Change and Development in Africa (CCDA) which is found to be a good process to learn lessons from different experiences. She added that the policy dialogue that takes place at this forum is critical that should be sustained.

Paper I.1.2: The benefits of climate information to the health sector- Dr. Vitalis Chipfakacha

Dr. Vitalis C. introduced that fifteen member states make up the SADC secretariat and three different languages are spoken in these member states. He illustrated from his presentation the importance of giving information to the others that could unexpectedly make fall prey if it is not provided. In the health system, climate is very important because it has an impact on the vectors. He affirmed that vector diseases influenced by climate variability were affecting and

causing the death of millions of people in the continent, particularly Malaria. Besides, the presenter talked about the best practices in Southern Africa which is the Regional Climate Outlook Forum, the main source of information in the region for preparedness of the coming events. The achievements of SARCOF meeting were presented including capacity building of climate practitioners, health experts & users; development of national seasonal climate prediction models; improved accuracy of seasonal climate forecasts in the region; regular insurance of user-tailored seasonal climate forecasts information by NMHS and improved cooperation between NMSs and users. However, some challenges were noted such as loss in translation remains a problem, the language used between the forecaster are not easy to understand and to put in practice especially when it is brought to the politicians and authorities. Issue on cultural differences was brought up such as the probability of occurrence doesn't make sense in some languages. It was observed that weather change is not a national priority in Africa. The lack of adequacy in the use of the information was identified as well as the lack of efficient response in multi-sectoral approach. Concerning the early warning systems, there is need to find way of making sure the emergency of the information and to make it understood despite the difference in languages. Dr. Chipfakacha ended his talk by noting that in order to achieve common goals it is preferable to be on the same track.

Paper I.1.3: Horn of Africa Drought and Famine Crisis: Climate Science influencing regional policy- Dr. Joseph Mutemi

Dr. Mutemi acknowledged greatly the support of different partners esp. the AfDB accorded to the climate information services not only in the Horn of Africa but in the Eastern Africa. He focused on the issue underlying drought resilience for policy and best practices. It was observed that the impacts associated droughts were usually devastating affected regions and areas implying that regions and nations should devote attention to the development and implementation of regional and national strategies and policies to reduce the economic, social, and environmental consequences of drought. Strategically, it consists of essential components including state-of-the-art drought monitoring, analysis and forecasting infrastructure, facility that monitors and provides early warning of drought including onset and end, determine its severity, and deliver that information to a various socio-economic users in many climate sensitive sectors in advance. With this information, the impacts of drought could be reduced and could lead to the ending of drought emergencies as envisioned in the joint declaration by the IGAD and East Africa Heads of States and Governments regional policy.

Summary of discussion

Questions

Q1. In the institutional matter is there any secretariat in the SARCOF and how is it funded, in general the process? Concerning the monitoring and evaluation, what is the achievement? What is the way forward and what impact can be demonstrated in this regards?

Q2. The importance of radio was evoked, it's a way of communicating with local language to the people, and it's the most effective medium and widely used that can be a very powerful tool combined with the mobile technology in changing farmers' behavior and limits the sensitivity of people in terms of epidemic such as Cholera, in the case of Mozambique. There is no one from the media in the list of participant of the COF; it's recommended that a serious consideration be given in putting radio in the future plan.

Q3. Issue on desegregation between men and women both in terms of impact and also in terms of potential agents were raised.

Q4. One thing missing is the social data related to vulnerability and rainfall that refers to the agriculture livelihood, physical vulnerabilities that goes beyond the livelihood deficits. Such kind of dataset needs to be taken into account. (Comments in the science category)

Q5. What the Regional Climate Centers (RCCs) see as the role of the seasonal forecasting information coming from the dynamic prediction systems that Global Producing Centers of Long Range Forecasts (GPCs) run in SARCOF and Great Horn of Africa Climate Outlook Forum (GHACOF) process.

Q6. How much is all these knowledge we have on agriculture climate variability impacting national policy?

Q7. Concerning the seasonal forecasting, have you reached a plateau in the ability to predict the seasonal timescale?

Q8. Where is the input into the user interface of the GFCS from the sub national and the community level coming from?

Q9. On the time series plot illustrating the time evolution of hydro meteorological disasters, there is a curiosity to know the reason of the sudden decline in 2009.

Q10. Regarding the investment in information services is there any data showing the investment in any of the member states of the Regional Economic Centres (RECs).

Responses from presenters

R1&2. The impact of SARCOF has been demonstrated for instance a couple of years ago, Namibian people were very well prepared for the coming floods in such a way that that everybody understands what's going on. It shows that this initiative is helping, and SADC is following to see their efforts on the other side. They've learnt a lot from the cholera cases that it is necessary to react immediately when regional level is reached.

R3. It's a standard procedure in SADC that disaggregated data is used otherwise it will be sent back and get the right ones. SARCOF is also instructed that they need to make sure that there is a gender balance on issues and the numbers especially the women to be part of this because they are the most found and the most vulnerable in the villages and can spread the information quickly. The best way is to work together to come up with the information and then let the climate services within the regional blocks give the information generated on its own period.

R4.5.6. Clarification: The source of the information is not a problem provided it is accurate and done in a way that it is useful. Be it generated locally or nationally or regionally, what the practitioners want is reliable information. Furthermore, people should be proud of their institutions, how do they perform, and they need support to improve their performance and production.

R7. Addressing to the question whether there is an (observable) trend in improvement in meteorological services or not, Dr. Yvan B. noted that the national services do exist and they are improving, the scientists as well so it's a question of continuing the effort, he added. Mr. Brad G. continued this point in terms of efforts across Africa particularly in Southern Africa, it's a process he said and efforts have been made over the last few years, the policy makers can understand the value. Mr. Jerry L. followed on the discussion by reporting that there are quite a number of countries dealing with the early warning capability. Adding to that, a lot of sensitization of policy makers is from the services perspective. Data remain the issue that prevent from supplying the information needed. Even as we invest today in the early warning capability, climate data is really a cumulative of the daily observation so we will really see the value of the climate perspective of the investment being made today in the over next few years to decades. Dr. Nyenzi B. enchainned the discussion with the processing in the RCCs which started form very far, some progresses have been made he insisted by looking at what they are producing. He informed that the interaction between these centers and the people within the regions have definitely improved and that should continue, investment is needed to have it more and more improved.

R8. Concerning the national mechanism of the GFCS, there are three pilots; the first attempt at working in a country where there is some but limited climate service availability, the dialogue initiated was how do we start given priority to the most vulnerable countries counted about 70 in the world where there is no service capability at the moment or very limited service capability, most of those countries are in Africa. The first level condensation is at national level, the next level is how the national services organize themselves, at this point WMO have no experiences except through a very specific project for instance dialogue in agriculture. It is also important to note that this user interface is new and as get driven particularly by thematic areas, WHO was found to have a very different regional and national organization set up than

the WMO which relies on national meteorological and hydrological services. UNDP also has a very different set up from WHO set up. The best mechanism to differ to those entities is to get feedback from the users and engage them to establish their needs as well as the service they need and vice versa.

R9. Graph computed from crib data and basically in 2009 the data status has stopped, so we assume it as a rising trends. Moreover, most of the national data for instance in Mozambique and Uganda is showing a rising trend that didn't stop in 2009.

Recommendations and way forward

- On the policy side, The National Agencies are the most important link in the climate services chain from global to local. They note and appreciate that governments across Africa are improving their hydro-meteorological climate services. There is much to be gained from this investment: every dollar invested can yield a return of at least \$7. The governments are urged to keep up the good work. It is crucial that climate services be extended effectively to the sub national level. This requires policymakers to get to know their user communities and to facilitate two-way communication.
- On the practice side, the panel noted the key role played by the regional climate outlook forums. They also noted that they could do better in terms of effective communication to the users.
- On the science side, the meeting noted the importance the scientists to know their market. Users request from them more skillful forecasts, more actionable forecast and more easily understood language.
- The end-users need not only useful but useable climate information. The final lesson is that the gap bridging process will not happen in vacuum, it needs to be financed, mediated and supported.
- There is a need to invest in climate and meteorology
- The Gap between forecaster and vulnerable community is bridgeable
- The gap bridging process will not happen in a vacuum, it needs to be mediated and supported. One way to do that is through partnerships.

Topic I.2: Climate Information and Analysis for Risk Management and Adaptation

Chair: Mr. Hama Arba Diallo

Summary of presentations

Paper I.2.1: ACPC's Pilot case studies in African Countries – Dr. Seleshi Bekele

The presenter underscored that ACPC is an integral part of ClimDev-Africa which is an initiative of key African institutions UNECA, AUC and AfDB. Moreover, ClimDev-Africa is aiming to construct a solid foundation in Africa for the response to climate change based on solid science and observational structure, partnerships, creation of knowledge and integration of the action required. The four result areas of ClimDev-Africa are availing climate information; packaging and dissemination; analytical work and informed decision-making awareness; and finally functioning of the programme. One way of doing is also to try to bring together the three communities (research, policy and practice) which are linked with the priority areas (climate finance and economics, climate resilient development and low carbon development) through the objectives in one hand and the result areas in second hand. After highlighting the role of climate information in the Socio-Economic Development, followed by the hydro-meteorological situation in Africa, progresses in the above result areas were addressed. Hence, in terms of climate change and development pilot countries support programme, the main focus is on the key problem areas such as data rescuing and management, new data network upgrading and expansion. Besides, ACPC intervene in the capacity building for climate monitoring and early warning activities in climate change adaptation mainstreaming climate issues in the university curricula. In this line, seven pilot countries have been covered namely Ethiopia, Rwanda, The Gambia, Zambia, Kenya, Malawi, Mali and Mozambique. Needs assessment and kick-off workshop are preliminarily processed before the project implementation. Among others Ethiopia is the pilot country on the progress to its implementation phase. Progresses in the result area have been made on the mapping of climate data and information for African NMHSs covering a number of countries; on the impacts assessment of loss and damage in selected African countries in collaboration with the UNFCCC; on the database of African greenhouse emissions sources and sinks; and the last but not the least, on the preparations for setting up long-term climate projects and scenarios through different perspectives. Dr. Seleshi concluded his presentation by stressing on three key messages. On the research side, Africa's research focus and research capacity should be strengthened and research community need to work in partnership to enhance relevance and effectiveness. On the practice side, NMHSs, regional institutions and user communities were urged to improve the data and information management for better coverage and applications. From this end, the policy makers can step up policy instruments and investments for climate data generation, management and applications.

Paper I.2.2: Ecosystems – Based Adaptation – IUCN (International Union for Conservation of Nature)

The presenter briefly talked about the IUCN which is a membership organization that brings on board the secretariat as an executive arm, the commissions that provides the scientific base informing work in the field and at the policy level. It has also members in the worldwide working in the diversity of issues including the theme on Ecosystem based Adaptation (EbA). In a very simple term EbA is intended to be a strategy that aims to maintain rebuilding and increasing resilience of social and ecological ecosystems in view of reducing vulnerability of people and ecosystems through different approaches. The work that IUCN is being doing is briefly to have project initiatives in the field to draw lessons from the ground to inform sub national, national, regional and international levels. Partnership is also developed with different numbers of organizations, number of tools helping to identify the vulnerability of people. Regarding the impacts and vulnerability assessment, IUCN is trying to fill the gap between nature based equitable approaches like EbA needs and food security. It is also dealing with the capacity building, supporting policy influence, networks building within countries regions and global. Adding to that the organization is also involved on the REDD+ and Climate Change Adaptation Strategies that are fair and just based on the human rights relevance particularly the indigenous people rights. It's learnt from this experience the relevance of having a participatory community risk and vulnerability assessment to integrate adaptation requirement into planning processes, the presenter quoted. Non-climatic factors that will undermine adaptation actions in the short, medium and long term should also be addressed. Market linkages are really relevant for all EbA measures. Planning and implementation of EbA should be taken into account, land use mapping and agro-ecological zoning. More importantly, having baselines are relevant allowing to measure progress and contribution in the intervention made on the ground and at the policy forum, and also to measure impact, to build on flexible responsive local institutions and try to pursue the work and see the links between EbA and ecosystem disaster risk reduction. Another element is to quantify value and monitor the streams of the ecosystem services and finally address key capacity requirements such as climate data and appropriate research.

Paper I.2 3: Climate Data Rescue in Selected Countries in Africa – Mr. Kinfu H/Mariam

The presenter mainly talked about the Ethiopian case on climate data rescue that can contribute to the improvement of the information for decision-making. Some basic problems of the climate data in addressing the climate change were the deteriorating and non adequacy number of weather stations. There is an issue on the location of the stations; most of them are located in the cities and quite few in the rural area. Consequently, it has an impact on the quality, access and use of the available data. Due to this fact, solution has been proposed in improving the availability and improving the access and use of the data. In order to achieve the first component, it is necessary to rescue available data, quality control and combine local

observations with global products such as satellite proxies and model reanalysis data. So in order to make it accessible and usable, online-access to data is provided with the analysis tools and products as well as products for specific applications were developed. Relatively, users training on how to understand the product demand, and use climate data have been started. Highlight on the basic concept of blending were given by having it compared with the conventional station data and satellite data. It comes up that the blended data has both a better estimation and a high spatial coverage that makes this blending concept robust. This methodology of producing new and rich dataset which is very useful for the climate research has been implemented in the National Meteorological Agency of Ethiopia in collaboration with IRI, Reading University and EUMETSAT. After Ethiopia, this initiative is to be expanded over African NMHSs starting from Tanzania and Madagascar; the processes are ongoing. The same project will begin soon in Burkina, Mali and Niger. The presenter strongly noted that it would not certainly difficult to do this work for Africa because not only the raw satellite data has been already obtained and processed but also the methodology and the computing codes has been further developed.

Summary of discussion

Questions

Q1. From the observation, generally everything seems to be blamed on climate change mostly in the press, and in the analysis of risk management there is tendency to lose sight on reinforcing factors, how that tendency to aggravate climate change impacts. Something like damns, management of river basins, urban houses and rural development, deforestation, over grazing of livestock, poor infrastructure development, and now people working in these sectors seems to be slightly neglected, everybody wants to be a climatologist and practically these are the factors that actually sometimes aggravate the impacts of climate change. There should be an interface between all the hydro meteorological work and the entire science going on climate change. Similarly, work in the area of forestry, species protection should be equally considered.

Q2. Is the information derived from the hydrological data in terms of early warning system relevant? How do the information access to the isolated and vulnerable communities? Who is stimulating the information shaping? How to channel this information to the different stakeholders for their preparedness esp. the women spending their time in the housework? Why not taking account an empirical aspect for disseminating the information (e.g. mosque, arbre à palabre ...). There was an insistence in the synergy of the stakeholders' action, in other words, there is lack of organization in the intervention in terms of climate change and that reinforce the vulnerability of the community.

Q3. The correlation between the climate change and conflict in Africa was not yet discussed although it is an important issue when persistent drought leads to massive migration and

displacement. It results conflict between two groups, those who are settling and migrating esp. the pastoral in the new areas where there are water resources and grazing land. Overpopulation also relatively creates another conflict, so there is a need to address the relationship between climate and insecurity which has a potential to reverse the economic growth seen in Africa.

Q4. Where do you think the adaptation system should start? What kind of adaptation should be implemented?

Q5. What are the tools for adaptation?

Q6. UNFCCC comments on the EbA which is a fundamental way of looking at processes concerning supplying climate services. Upon the UNFCCC side, it was observed that EbA is increasingly becoming a subject of discussion in several work programmes. We have a social ecological system that takes climate change as a one exacerbating factor amongst many others, and therefore anything that we do in terms of mitigation and adaptation that immediately become an input to the system again, so that you constantly taking countless of whatever you do in terms of addressing climate and that's not recognized as something with the negotiation but it's rapidly approaching a point.

Q7. Is the IUCN aware that in ecology the solutions of today become a problem after 20 years, 50 years, what can be done on that kind of perspective.

Q8. How do you communicate uncertainty in the observational data for the users?

Q9. What is the process of downscaling the information to make sure that the farmers and other users are able to access to this prepared dataset?

Responses

R1. The role of climate data information was enhanced in the presentation. And even if the focus is on climate change, it is important to see the applications on various sectors but fundamentally climate information is a basic to do proper plan and enhance development for instance the past historical information is fundamental and useful to do the planning, design, implementation and also the operation of such system. On the issue that "climate change is an excuse", Mr. Arba Diallo made his point that it should be taken into account while attempting to do business as usual.

R2. Effective communications are indeed needed, innovations on how to communicate to the end-users across the different level. The presenter agreed the relevance of the suggestions using different way of communications, and the communication should be effective by taking account the available data and information in order to manage risk and make production

system and livelihoods sustainable. Synergies of various actors are important by having pertinent and effective communication to the climate information users at different sectors and levels.

R3. The issue of conflict was also a critical concern, from different perspective that is strongly linked to different resources for instance oil and gas having a strong implication in terms of regional and global conflict. Certain initiatives recognize this challenge that it should be addressed in a broad spectrum of intervention through climate change axe.

R4. From IUCN experience, after many years of engaging in adaptation initiatives at different levels, the contribution initiated on the ground could not be measured into improving the adaptation strength of the community as well as the ecosystem. Hence, needs assessment through the participatory method was at first used to understand the vulnerability of people and the ecosystem. The second process is identifying the adaptation measures to be put in place, by looking at the vision of responsibilities and roles of the stakeholders and the sustainability of those interventions. The next step is using some tools for monitoring the progress, planning, and learning process of adaptation.

R5. One tool mentioned during the presentation is CRISTAL which is a screening process identifying the vulnerability of the people, looks at potential adaptive measure. Another tool is the climate vulnerability looking at the social and ecological systems using participatory and consultative method. The MECCA (Monitoring and Evaluation of Climate Change and Adaptation) toolkit developed by AGRHYMET and IUCN and other partners, is also important in the planning process, monitoring evaluation of adaptive measure both at social and ecological level. IUCN is piloting this initiative in southern Africa. There is also another framework that really helps to understand the underlined cause of adaptation and security in relation to climate change risks, looking specifically at the rights and governance issues.

R8. There is always a problem of data quality whatever the quality control made. Blending process was proved to be a relevant approach to improve the historical/original data that can be reprocessed in order to have other improved data and this is the best data that can be provided to the users.

R9. Access to the data is only limited to those who have an access to the internet. There is a thought of developing additional tool and disseminate through mobile. We have to work towards so that end users can have an access to this data for analysis. The presenter highlighted that it's not a forecast; it's just a product of information in terms of graphs that can help to do analysis.

Recommendations and way forward

- Mainstreaming climate change in all sectors, and support interface between climate meteorology information and other actors involved in the forest, land management, etc..
- Empirical communication tools (Mosque, arbre à palabre, ...) is important to be taken into account in the climate information dissemination,
- For the adaptation, the measures go through identifying the need from people and ecosystem, and their vulnerability, then application of tool for action learning process.
- Solution in data rescue, improving availability, and accessibility are essential to end-users.
- Agriculture needs best practices; it has to be considered as climate sensitive and resilience system.

Topic I.3: Frontiers of research and development for climate science, services and policy

Chair: Dr. Maxwell Donkor (UNECA)

Summary of presentations

Paper I.3.1: Foundational Paper on the Frontiers in African Climate Science Research – Dr. Arame Tall

Dr. Arame Tall enhanced the steering committee of climate science research which has been set up and has had an agenda to advance knowledge for sustainable development in Africa. The committee has more than 18 members. She highlighted the importance of coordination on African climate research to satisfy the demands of the climate service to users. She was also emphasizing the cross cutting issues of climate research and the delivery of climate research output harmonization by working through the existing climate service centers such as NMHSs at national level, regional climate centers at regional and sub-regional level as well as GFCS at international level. In this regards, the UNECA/ACPC and WCRP proposed an African climate conference in October 2013. Many are the objectives of this conference including provision of a forum to exchange, review and assess the knowledge on climate science frontier, and then develop proposals for funding to advance climate research in Africa. It also aimed to develop and strengthen the network of climate researchers and practitioners working on the African climate system, and finally to create a platform for knowledge sharing, advocacy and consensus building for climate research in Africa to serve sustainable development needs. The output of the African climate conference will be the development of concert research programme and proposals which enable to collaborate with climate researcher across the continent.

Paper I.3.2: SCRP experience in climate change analysis - Dr. Richard Graham

Dr. Richard described the African Climate Science Research Partnership (CSRP) programme which was started in 2010. The first programme of CSRP is working in collaboration with fellows of African climate institutes and this programme will come about an end. The programme has broader scope. It covers understanding climate drivers of the climate variability and change in Africa, develop users relevant application and it has a capacity building component. The presenter also explained how the CSRP was developed. It is as result of the initial consultation with the users of African climate prediction, continuous participation of regional climate outlook forum of Africa, workshops and fellowship schemes. Moreover, the CSRP focused on five key areas such as improving understanding of model drivers; developing user driven prediction products; Increasing forecasting detail; and Capacity developing including the support of regional climate outlook forum. The presenter informed about the research findings of the CSRP programme basically on the accuracy of the climate prediction in various spatial and temporal scales in Africa.

Paper I.3.3: Research Strategies for the West Africa - Dr. Cheik Kane

Dr. Cheik Kane presentation mainly focused on the AMMA project and had shown how the framework in Africa could go head in climate science research. AMMA of project was

established in 2002 with the objectives of to improve the understanding the West African monsoon variability, to provide the underpin science to link AMMA social issues and to define and implement relevant and prediction strategies as well as to ensure that the AMMA research is integrated in prediction and decision making activities.

AMMA project was multidisciplinary and the spatial scale varies from local to large scale. During the experiment, data was collected from aircraft, ships and radiosondes. The experimental data are stored in the database system in France and also mirrored in AGRHYMET. He also mentioned the phase II of AMMA project which is the continuation of the phase I.

Discussion 1.3.4: Working Groups by Region facilitated by RCCs (North, ACMAD/AGRHYMET, ICPAC, CSC, and Central)

Accordingly, each group discussed on the following three points and each group summarized their discussion as shown below.

- Q1. What are the priority end user climate information and decision-support needs in your region? Who are the end users? What are the decision-making processes which need to be informed? Climate information and service needs for each decision-making process needing to be informed
- Q2. Which fundamental Climate Research Frontiers / Knowledge gaps prevent us from delivering on expressed user needs?
- Q3. Validate a list of CRFs for your region:-

Responses:

Eastern Africa Group

R1. Key sectors were identified, namely:

- Agriculture (Crop, livestock, fisheries);
- Health (Diseases – Malaria, Rift Valley fever, Cholera and other water borne diseases);
- Water resources – for domestic consumption, urban supply, irrigation, for livestock, and hydro power among many other uses of water;
- Transport – aviation, water, road and construction of bridges;
- Power sector (Hydro electric power) – how much water will be available in dam reservoirs?
- Infrastructure and drainage systems

R1. Common end- user needs (Those that cut across most sectors):

Seasonal rainfall forecasts need improvement, for example in aspects touching on accuracy and reliability, e.g. :

- Onset (when?), amount (how much below or above normal?), duration or cessation (how long?). This will facilitate their decision on planting dates and nature of crops to plant;
- Intensities and frequency of extremes within the season (intra-seasonal forecasts)
- Frequent updates within the season - expected (potential for) dry spells within the season and how long?)
- Seasonal temperature forecasts – (this gives information on evaporation potential and therefore availability of water for irrigation alongside other longer term uses).
- There is need to forecast drought for various sectors, for example for livestock management, and rain fed agriculture (long dry spell during post crop harvest period). Downscaling forecasts to user relevant scales – location specific forecasts (provide detailed information at particular sites).
- Some end users need quantitative rather than qualitative data, and/or information to use as inputs in impacts models (floods, malaria, water stress).
- End users need a blended climate forecast (integrate traditional or indigenous knowledge) i.e. their participation and consultation in arriving at the forecast.
- End users require good communication from climate service providers (avoid use of scientific jargon)

R1. Information needing improvement:

Forecast of seasonal totals with better skill and detail e.g. climate extremes (floods and droughts) and availability of water for irrigation in case of dry spells.

R2. For long-term planning, the Information gaps are:

- Forecast for next 1 – 2 years;
- Trends / frequencies (e.g. of droughts) over next 5 – 10 years;
- Climate change scenarios (model improvements over Africa needed)

End users need information on uncertainty on future climate change projections (a range of possible future climate) or scenarios for different regions and downscaled climate change projections (location specific climate projections) at scales relevant to their different needs. End users encouraged collaborating with climate scientists to understand the extent of current climate in determining the “present” day climate factor in specific sectors as basis of modeling the impacts under future change scenarios. E.g. Particular livelihood activities such as crops being grown in particular areas of Africa might become non-ideal for same areas in future due to climate change. Such information is basis for long term planning and sustainable development.

Southern Africa Group

R1. Key users: Defense Department

- Limit of predictability: Climate scientist must explain the limits of climate predictability so that the end users can appreciate the work
- Include climate information in the Curriculum: Increase education on understanding climate information such as probability.
- Include Indigenous knowledge
- Data coverage:
 - Sensitize decision makers to invest more on data collection;
 - More quality control;
 - Improve data management and storage

End-users must start doing research and link their results with climate variability and change ;
Ex: Malaria outbreak

Recommendations and way forward

- Identify and prioritize the needs of climate information for various sectors by mapping the current climate knowledge gaps in Africa.
- Strengthening climate services NMHSs and Regional Centers by advancing knowledge climate services based on the identified research agenda;
- The research products have to be operationalized for improving climate services;
- Prioritize climate research based on the users need

Sub-theme II: Sustainable Energy Access for All Africans by 2030

Topic II.1: The state of sustainable energy for all initiative: implications for Africa

Chair: Prof. Abeku Brew-Hammond, Kwame Nkrumah University of Science and Technology (KNUST)

Summary of presentations

Paper II.1.1: Sustainable Energy for all (SEFA) framing paper – Dr. Yacob Mulugetta

Dr. Yacob Mulugetta's presentation highlighted the key issues that need to be considered to ensure the achievement of the objectives of the Sustainable Energy for All Agenda. Dr. Mulugetta stressed the need for effective policy and institutional frameworks that integrate energy policies with other sectoral policies as well as climate policies. Having the right institutions that bring together multiple actors including public, private and civil society will also be crucial. The presentation also highlighted that effective energy planning framework will also be important in addressing the present and future energy development challenges. This will be particularly important in the integration of local, regional and national plans including the integration of off-grid systems into national planning. The presentation also highlighted the roles of technologies, financing and research in improving access to modern energy services in Africa while also stressing the importance of ownership of the energy access agenda by African countries.

Paper II.1.2: Financing energy access – Mr. Benoit Lebot

Dr. Benoit Lebot's presentation focused on the scale of financing needed for modern energy access in Africa and the strategies needed to mobilise these funds. Financing from different sources including private, public, multilateral and bilateral sources amongst others, will be critical in raising the funds required for universal access to modern energy. Dr. Lebot highlighted the need for enabling policies and actions that will help in mobilising financial resources for sustainable energy access. Actions such as reduction in balance of system, elimination of taxes and tariffs on clean energy, reduction in subsidies on fossil fuels and the promotion of entrepreneurship and income-generating activities were recommended. Dr. Lebot also recommended African countries can learn lessons from the mobile technology market to accelerate access to sustainable energy. The lessons that can be learnt include the standardisation of technologies, introduction of low-cost technologies and pre-paid platforms in the markets, and liberalization of markets through a sound regulatory environment. There is also a need for other non-economic strategies including developing clear policy statements and targets, consumer education and community participation, and research and development.

Paper II.1.3: Technology innovation for energy access in Africa – Dr. Lawrence Agbemabiese

Dr. Agbemabiese focused on the frameworks and conditions necessary for technology innovation for energy access. Technologies for energy access are a portfolio of technologies that can address supply, demand and most importantly energy access and that fundamental for the deployment of technology is the capacity to innovate. This requires institutions, the

businesses, the support services and other dimensions. Innovation happens in the context of innovation systems, consisting of institutions and other dimensions. Dr. Agbemabiese highlighted that an innovation systems approach offers a powerful tool for deeper understanding of the life-cycle of innovations to inform more effective technology policies and planning in Africa. The presentation demonstrated the Toyola Cookstove Initiative as a successful innovation in Africa by highlighting the set of interacting events that are involved in the build-up of this innovation. Technology Innovation Systems (TIS) require seven dynamic functions that determine the success or failure of the innovation. These include entrepreneurial activities, knowledge development and knowledge diffusion, guidance of search, market formation, resources mobilization and support from advocacy coalitions. Dr. Agbemabiese concluded by stating that the key to entrepreneurial success during the formative stages of any TIS is active learning – learning by exploring and learning by doing. He also stated that scaling-up innovations and ensuring the long-term sustainability of innovations and technologies are crucial. Thus there needs to be an enabling innovation policy environment and institutional arrangements that stimulate the innovation and promotion of technologies for energy access.

Paper II.1.4: Mainstreaming gender in energy access – Dr. Rose Kutin-Mensah

Ms. Mensah-Kutin's presentation focused on mainstreaming of gender in the energy access agenda. The presentation highlighted the absence of clear policies that integrate gender in energy access, which has resulted in differentiated impacts on the lives of men and women from the lack of energy. For women, energy interventions are a means of reducing drudgery of work, saving time and improving lives. Ms. Mensah-Kutin stated that mainstreaming of gender into the energy access agenda will address inequalities through ensuring that policies, programmes and projects benefit women and men equally in all aspects and at all levels of society. The presentation concluded by recommending mainstreaming of gender in all aspects of the energy access agenda including the political, economic, environmental and social aspects.

Summary of discussion

The discussions highlighted the importance of effective policy and institutional frameworks that will promote the SEFA agenda. The need for integrating energy policies with other sectoral policies and climate change policies was also emphasised. There is also a need to have institutions that engage all relevant stakeholders. The role of technological innovation in improving energy access was also highlighted. Financing from different sources including public, private and carbon finance will be critical in raising the funds necessary to achieve the SEFA objectives in Africa. Mainstreaming of gender into the energy planning process was also emphasised.

Recommendations and way forward

- The need for effective policies and clear targets for achieving the SEFA objectives
- The need for energy policies, programmes and plans to mainstream gender into the energy access agenda
- Enterprises can serve as a mechanism for improving energy access as well as technological innovation
- Nurturing of local research institutions will be crucial for building local technological capacity

Topic II.2: Water-agriculture-energy and climate change nexus

Chair: Dr. Stephen Karingi, UNECA

Summary of presentations

Paper II.2.1: Technical paper on water, energy and climate change – Dr. Gisela Prasad

Dr. Prasad's presentation highlighted the critical need to pay attention to the water-energy-food and climate change nexus in Africa. The presentation focused on case study examples that highlighted the need for planning processes and policy frameworks to explore and include the water-energy nexus in development. Dr. Prasad stated that governments are generally aware of the water-energy-food nexus but policy makers and technology developers do not have access to tools to make sound, integrated and systematic assessment of policy or technological solutions and these tools have to be designed.

Paper II.2.2: Programme for Infrastructure Development in Africa (PIDA) presentation – Mr. Philippe Niyongabo

Mr. Niyongabo's presentation show-cased the Program Infrastructure Development for Africa (PIDA) as a platform that will enhance African integration and expedite the development process through multi-sectoral infrastructure development including telecom/ICT, water, energy and transport. For example, in the energy sector, PIDA aims to develop efficient, reliable, cost-effective, and environmentally friendly infrastructure that will enhance access to modern energy services. This include developing regional and continental hydroelectric power projects and other renewable energy resources, and implementing high-capacity oil refineries and oil and gas pipelines to harness fossil fuel resources in the continent. Mr. Niyongabo concluded by highlighting the need for tackling soft governance issues, keeping strong political commitment and advocating for strong partnerships as necessary conditions for the success of PIDA.

Paper II.2.3: Climate and Infrastructure in Africa's Major River Basins– Mr. Nagaraja Rao Harshadeep

Dr. Harshadeep's presentation highlighted the importance of analysing the climate sensitivity of infrastructure in Africa. The presentation focused on the rationale for the African Climate and Infrastructure Diagnostic programme of the World Bank. The programme will help to quantify the impacts of climate change on performance of infrastructure as well as identify, demonstrate and cost robust adaptation approaches for planning, evaluating and designing specific infrastructure investments in the face of climate uncertainty. The programme will also help to formulate actionable recommendations for policy makers on how to enhance the climate resilience of infrastructure development, and help mobilize the required resources.

Paper II.2.4: Experiences from Pilot Program for Climate Resilience (PPCR) - Dr. Paxina Chilsehse

Dr. Chileshe's presentation focused on mainstreaming climate change in development planning by sharing experiences and lessons learnt from Pilot Programme for Climate Resilience (PPCR)

projects in Mozambique, Niger and Zambia. The presentation highlighted that effective institutional, policy and regulatory frameworks for climate change in African countries, integrating climate resilience into sensitive sector strategies, raising awareness of climate change issues among law and policy makers and private sector participation amongst others, are crucial elements for successful climate-resilience projects. Dr. Chilishe also emphasised the need for functional climate information systems and improved analysis to reduce climate risks and make informed decisions. There is also a need to document evidence and lessons learnt from projects for policy development and planning to fill gaps in other sectors as well as help the scale-up of projects.

Summary of discussion

The discussions highlighted the absence of policies and frameworks that address water-energy-food and climate change nexus. It was also highlighted that policy makers and technology developers do not have access to tools to make sound, integrated and systematic assessment of policy or technological solutions. The case study examples from the PIDA, PPCR and World Bank's Africa Climate Infrastructure Diagnostic also set the stage for emphasising the need for infrastructure, capacity building, and community involvement in climate strategies.

Recommendations and way forward

- There is need to develop policy frameworks that cut across and integrate different sectors especially exploring the water-energy-food security nexus in the context of climate change.
- The engagement of the private sector and local communities will be crucial for mainstreaming climate change into development projects.
- There should be methods of monitoring and quantifying the impacts of strategies and projects on the livelihoods of local communities.

Topic II.3: Currents in Green Economy/ Green Growth for low carbon development

Chair: Ms. Alessandra Tissot, Country Director, United Nations Development Programme, Ethiopia

Summary of presentations

Paper II.3.1: Inclusive Green Growth – Ms. Isatou Gaye

Ms. Gaye's presentation focused on the need for an inclusive green growth agenda for Africa. Ms. Gaye noted that although Africa's economies are growing, poverty is still widespread across Africa while the current growth is also leading to environmental degradation. Inclusive green growth should be stepwise or iterative and should provide an avenue to address Africa's economic growth in a sustainable manner. Ms. Gaye also highlighted the need for institutions such as the UN Economic Commission for Africa to provide advisory services on leveraging best practices in establishment of green growth policies. The speaker concluded by recommending that Africa should identify quick win sectors where little effort is needed to advance the green growth agenda, since negotiations on financing of green growth did not go well in Rio.

Paper II.3.2: Organisation for Economic Co-operation and Development (OECD) - Ms. Alexandra Trzeciak-Duval

Ms. Trzeciak-Duval's presentation focused on the possible frameworks for developing green growth policies in developing countries. The presenter emphasised the need for national governments to play the leading role. This role should facilitate green growth inclusion into budget planning, harmonization of policies, easing of technological transfer and creation of environmental services markets, etc. Ms. Trzeciak-Duval also pointed out that green growth must lead to short-term improvements i.e. higher GDP, jobs, poverty reduction, social equity as well as long-term resilience and resource security. According to the presenter, green growth should be people centric, and for this reason has been referred to as "pink growth" in some quarters. Ms. Trzeciak-Duval also stated that the OECD policy framework for green growth underscores more effective legislation, training, research oriented to green growth, enforcement of behaviour of the private sector by government, getting rid of dirty subsidies and use of sustainable green growth procurement. The presenter noted that green growth strategies are in place in Rwanda and Ethiopia, and proposed that African countries should resist donor initiatives that hamper green growth, following the example of India. The importance of sharing green growth technologies was also noted by Ms. Trzeciak-Duval.

Paper II.3.3: Green Economy and Africa – Dr. Frank Sperling

Dr. Sperling's presentation focused on the green growth perspectives in Africa. The presentation re-iterated the need for an alternative development pathway as opposed to the business-as-usual pattern, which is causing and exacerbating the impacts of climate change. Dr. Sperling also pointed to the need for Africa to develop clean energy systems to reduce the increasing ecological footprints as the African economy continues to grow. The presenter also emphasised that the green growth agenda should be approached in an incremental manner and with utilization of innovative financing to ensure success. Dr. Sperling identified three focal

areas for addressing green growth that include building sustainable infrastructure, efficient and sustainable use of natural assets and building resilience and adaptive capacity. For green growth development planning, the presenter posed the following questions:

- How can “lock-in” to unsustainable development pathways be avoided?
- How do development choices compare in terms of economic, environmental and social costs and benefits?
- How to leverage innovative financing instruments for transitioning to Green Growth?

Summary of discussion

The discussions highlighted the need for green growth to be defined in the African context for Africa to take ownership of the elements it should entail. In addition, the green growth in Africa should be seen in terms of natural resources management to gain in efficiency, because Africa is already green in many aspects. There is also a need to quantify the costs of not moving towards the green economy. A recurring assertion in the session is that green growth should be inclusive as well as government driven. It requires an iterative or incremental approach for it to be successful.

Recommendations and way forward

- Green growth should follow a stepwise, iterative and incremental process approach that is inclusive.
- Countries should make express efforts to share technologies used in green growth.
- A new paradigm is needed to address green growth. Political response should take cognizance of this.

Sub-theme III: Outstanding Issues in Climate Negotiations: Relevance for Africa

Topic III.1: The state of climate change negotiations and implications for Africa

Chair: Mr. Fred Onduri Machulu, lead negotiator from Uganda

Paper III.1.1: The Kyoto protocol: where to? – Dr. Gebru Jember

Mr. Gebru Jember spoke on key issues relating to the Kyoto Protocol. The speaker noted that some parties have not yet submitted their Quantified Emissions Limitation or Reduction Objectives (QELROs). Ranges of figures instead of specific figures were used by some parties. As such it is difficult to set Assigned Amount Units (AAUs), for individual countries, which is a prerequisite for the operation of the flexibility mechanisms of the Kyoto Protocol. The African Group and LDCs negotiated for five-year second commitment period on the ground that any longer period would lock-in insufficient ambition. On the other hand, the European Union negotiated for eight years on the ground that its end would coincide with the coming into force of the new climate regime being negotiated under the Durban Platform. Regarding surplus AAUs from the first commitment period, Africa's position is for parties to be constrained in their ability to use such surplus units and for part of the surplus units to be converted into financial resources for supporting climate action in developing countries.

Paper III.1.2: African countries responsibility and opportunities under the Durban Platform – Mr. Xolisa Ngwadla

Mr. Xolisa Ngwadla noted that developing and developed countries diverge on the means of addressing the mitigation gap and enhancing ambition under the Durban Platform. Developed countries proposed a range of supplementary and complementary actions including addressing maritime and air transport, short-lived pollutants, and chlorinated gases. On the other hand, developing countries submitted that removing conditionalities, tightening accounting rules and enhancing action on means of implementation will be the primary avenues for enhancing ambition. The risks for Africa include such actions (as proposed by developed countries) outside the UNFCCC replacing commitments under the UNFCCC; environmental integrity by creating hot-air; and that in the case of black-carbon the understanding of how exactly it forces climate is not clear. The Kyoto Protocol is a good mitigation instrument but does not adequately address issues of adaptation and means of implementation. Unlike the Berlin Mandate, the Durban Platform for Enhanced Action, albeit not very specific, provides for broad scope to include all elements such as mitigation, finance, adaptation, technology and capacity building. The future legal outcome should have global commitments including, for example, the temperature goal and goals relating to mitigation, adaptation, and means of implementation. It should also embody specific commitments regarding mitigation, adaptation and means of implementation. The specific commitments should be differentiated. In addition, this future regime should embody operational mechanisms. Negotiations on the operational mechanisms

should not start anew and rather build on the institutional framework built so far. The speaker also argued that the future regime should have reporting and compliance provisions whilst providing the flexibility and national circumstances for a wider participation.

Paper III.1.3: Outstanding issues on shared vision – Professor Doreen Stabinsky

Professor Doreen Stabinsky spoke on the implications for non-Annex I countries of various scenarios of peaking for global emissions and Annex I reduction efforts. If emissions peak in 2015, the 2oC political goal is likely to be met. If, on the other hand, emissions peak in 2020, the odds of reaching the political goal will be reduced to 40 percent. Even countries in the South would require peaking fairly soon to achieve a 2100 political target of 2oC. Exactly when emissions in developing countries would need to peak depends on how much the developed countries reduce their emissions and when they peak. Still most developing countries would need to peak within the next few years as well. The time frame for global peaking of emissions and peaking of emissions from developing countries has important implications for Africa. The fact is there is little atmospheric space remaining, because of historical emissions by developed countries. That means countries in Africa would have to chart a different path towards meeting their development needs. This will require huge financial and technological resources, which have to be provided by the historically responsible.

Summary of discussion

The following are some of the points raised:

- What it would take to again push the negotiations into appreciating the role of science? Is there a role for scientists from developing countries in pushing for that? While there is discussion of the need for evidence based policy, this does not appear to be happening.
- What is your view on the outcome of these negotiations in light of the current economic slowdown in Europe? Is there an alternative to the UN process?
- There is mismatch between science and where negotiations are going. Given the climate change negotiations are not following science, perhaps science needs to follow the negotiations and say more about the implications of where we are going to.
- The Report of the CDM Policy Dialogue called for the rescue of the carbon market. What do the panelists have to say on this?

The following are the highlights of the responses by the speakers:

- Pushing science into the negotiations is essential and there are a couple of platforms to bring this into the negotiations. Scientists have been projecting more and more alarm into the political negotiations process.
- The difficulty of negotiating solely based on science was raised. National circumstances are also important. Some political decisions will have to be made and there will necessarily be trade-offs.

- The impact of the economic slow-down should be seen from two angles. First, mitigation and finance commitments are influenced by the health of their economics. Second, the slow-down could potentially create hot air and it might also mean increase of emissions in the future.
- The health of the CDM was said to be based on the demand for credits and an increase in the level of ambition would increase demand from those that need to offset emissions. It is not only the ambition of the KP parties but also all Annex I parties considering the fact that there will be fungibility between CDM and the New Market Mechanism. Sectoral crediting mechanism as part of the CDM would help Africa to supply credits.

Topic III.2: The status of climate finance: key issues for Africa

Chair: Mr. Kem Johm, Division Manager, African Development Bank

Summary of presentations

Paper III.2.1: Traditional and innovative sources of finance for Africa – Dr. Daniel-Alexander Schroth

The speaker on sources of climate finance remarked the costs of climate change to Africa are expected to rise from 9-12 billion dollars by 2015 to 31-41 billion dollars in 2030. The costs reflect the challenge and the need for climate finance to address climate change. Various climate instruments were addressed starting with concessionary funds (such as GEF, Clean Technology Fund, Forest Investment Program, Pilot Program for Climate Resilience, Program for Scaling-up of Renewable Energy in Low Income Countries), private capital and market mechanisms. The Clean Technology Fund was discussed and that its main focus is on low emissions technologies. Examples were provided on how the Clean Investment Funds of the World Bank are helping Africa. In addition the various funds administered by the GEF were discussed. Moreover, the Sustainable Energy Fund for Africa was discussed. The speaker provided examples of projects that used global funds, including geothermal energy project in Kenya and rural electricity project in Morocco. The speaker noted that there exist a lot of instruments but these are not sufficient and there needs to be additional instruments. What is more, not all opportunities are currently being used; there is a need to tap into existing instruments.

Paper III.2.3: Adaptation finance – Arnab Bose

Mr. Arnab Bose spoke on issues of adaptation finance in Africa, methods to raise finance for adaptation and strategies and options for the AGN. Estimates of adaptation costs for developing countries vary from around 30 billion per annum to over 100 billion for annum and new studies each suggest higher figures. Most people think that there is an underestimation of costs of adaptation. Only 10 percent of the required funds have been pledged but even less committed and delivered. The speaker took note of the report on sources of long-term finance by the High-level Advisory Group appointed by the Secretary General of the United Nations. He remarked that to date there has been very little progress on many of the things the AGF suggested. He highlighted the opportunities provided by investment grade finance. Investment grade finance is associated with lowest transaction costs. Most finance for climate is investment grade; however, only a small proportion flows into adaptation suggesting that adaptation has not figured out a way of attracting such finance. The speaker suggested that investment grade finance is what is required for adaptation. The business model can be addressed separately from the financial model. The business model takes care of the product and the financial model looks at how the product can be financed. He mentioned the example of Google where users do not pay but the service is financed through advertisements and other innovative methods. It was discussed how utilities may want various forms of insurance to be

resilient to various risks including those relating to climate change. Mitigation can be off-shored and outsourced. Adaptation cannot be outsourced but required actions in each location.

Paper III.2.4: Global governance of national and international market mechanisms – Mulugeta Ayalew

Mr. Mulugeta M Ayalew spoke on issues relating to the global governance of market and non-market mechanisms and what the AGN should take account of. The Durban conference launched two work programmes on this issue. The first relates to the development of a global framework to govern various market and non-market mechanisms that could be developed unilaterally or bilaterally. The second one relates to the elaboration of modalities and procedures for the New Market Mechanism, which is defined by the Durban conference. The speaker presented three reasons why there should be a global framework for market and non-market mechanisms. These include issues relating to environmental integrity when credits generated through such mechanisms can be used to offset one's emissions; fragmentation of market mechanisms and issues of fair access. Furthermore, there is the risk of double counting and reporting. To avoid such issues it is important to have common accounting and reporting standards. Non-additional units need to be avoided as this does not help the climate problem but simply creates transactions. There is a need for an agreement on what types of finance can be counted towards financial obligations of developed countries.

Paper III.2.5: the Climate Resilient Green Economy Strategy of Ethiopia - Mr. Zerihun Getu

Mr. Zerihun Getu introduced the recently formed facility for mobilization and allocation of finance for the implementation of the Climate Resilient Green Economy Strategy of Ethiopia. It is to be noted that Ethiopia plans to be a middle income country by 2025 while also ensuring that by this time it achieves a carbon neutral status. The Strategy identifies the mitigation opportunities in various sectors and identified about 60 initiatives that could be implemented towards meeting this green economy objective. It is estimated that about 150 billion dollars will be required for this ambitious target. This facility has the purpose of mobilizing this finance. The speaker further described the governance structure of the facility.

Summary of discussion

The following are the main subjects of the discussion:

- Mitigation brings global benefits and hence relatively attracts the private sector. In this regard, it was pointed out that we need to communicate adaptation as an investment rather than a cost.
- The Green Climate Fund is an anticipated source of finance for Africa but it was questioned whether African countries are being prepared and readied to access this fund. It was pointed out that enabling environment should be created nationally. It was also noted that the African Development Bank is working to get Africa ready for the Green Climate Fund.

- What can motivate the private sector's involvement, for example, on adaptation in agriculture in rain-fed small-scale agriculture? What are the modalities? What kind of lessons can be learned from other countries?

The speakers raised the following points by way of responses and further elaboration:

- What needs to be addressed is the meaning of adaptation. Everything that we are doing is adaptation but climate adaptation is different. It is not necessarily an investment and it is not getting due attention.
- Regarding the involvement of the private sector, duplication and distribution of drought, heat resistant seeds and insuring loss and damage are mentioned as examples.
- In relation to the need to separate the business from the financial model, it was remarked that the basic question is: there could be people who want a product but are not willing or not able to pay for it.

Recommendations and way forward

In this session, the participants underscored the need to further investigate and work on two issues. The first relates to the need to investigate on means and modalities of engaging the private sector in adaptation activities. Second, projects to prepare and ready African countries to participate in global financing mechanisms should be designed and implemented.

Topic III.3: Emerging knowledge, science and partnerships for enhancing Africa's negotiation position

Chair: Dr. Youba Sokona, ACPC

Summary of presentations

Paper III.3.1: Loss and damage in UNFCCC – Dr. Lawrence Flint

Mr. Lawrence Flint spoke on the status of the work program on loss and damage. There were five expert meetings and four of which were regional. There were certain understandings and misunderstandings that needed to be dealt with in these meetings. The first relates to the meaning of loss and damage: what do we mean by loss and damage? It might be easier to define 'loss' as those that are irrecoverable and 'damage' as those adverse consequences which are repairable. The problem is, however, when it comes to the issue of attribution. When a building goes down, it may be easy to assess the resulting loss and damage. But attribution would be a different issue. Is it because of climate change or is it because the building was not built strong enough in the first place? More generally the issue of attribution relates to how much of the actual loss and damage is because of climate change and what portion of what is due to human induced climate change. A related issue which was problematic in the discussion of loss and damage was the baseline from which we should agree. Second, the distinction between extreme weather events and slow onset events occupied quite a bit of time in the discussions. Over the year the discussion moved from extreme events to the much larger issue of slow onset events. Most of the approaches that have been identified relate to extreme events and not to slow onset events. A third area where there was quite a bit of discussion relates to the distinction between economic and non-economic losses. You may be able to quantify economic losses but how do you come to terms with loss of culture, tradition, institutions and governance structures? We do not yet have sufficient tools with which we can articulate and quantify non-economic losses. The approaches and tools available to address climate change were divided into four. The first is the risk reduction tools and approaches, which are about prevention of loss and damage. The second is risk retention tools. The third is the risk transfer tools—largely about insurance tools. And lastly, very limited tools were identified to deal with slow onset events. The speaker identified the following key messages to have emerged from the five expert meetings on loss and damage: losses and damages are occurring now and increasing are likely to increase exponentially; the relationship between extreme weather events and slow onset events is not fully appreciated and needs to be investigated; the idea of cascading of impacts that occur across sectors; the fact that the magnitude of losses and damages particularly because of slow onset events are probably larger than any decision and policy making capacity—temporal or resource capacities; we do not have tools to address non-economic losses; no single type of approach is likely to work and insurance which is branded as the strong approach for dealing with climate change does not work on its own and there are limitations in terms of enabling environment; relevance of institutions and governance at all

levels; there is no relationship among data, information, useful knowledge, and knowledge capital; perhaps loss and damage is beyond adaptation.

Paper III.3.2: Water in Nairobi Work Programme – Mr. Alex Simalawi/Dr. Seleshi Bekele

The second speaker covered the issue of water and the Nairobi work program. The Nairobi Water Program (NWP) is undertaken under SBSTA and is being implemented by parties, governmental and non-governmental organizations and the private sector and other stakeholders. The main objective is to improve the understanding and assessment of impacts of and vulnerabilities to climate change and to make informed decisions on practical adaptation actions and measures. The NWP covers nine areas including modeling scenarios, downscaling, research and technologies for adaptation and economic diversification. There are 261 partners out of which 57 are working in Africa. There are 170 action pledges and 28 experts working on water of which 12 are working in Africa. In 2011 the UNFCCC secretariat working with the Global Water Partnership (GWP) and NWP partners developed a publication which deals with impacts and vulnerabilities in the water sector; adaptation planning, measures and actions in the water sector; communication and dialogue to raise awareness; and practical adaptation actions that are being taken. The speaker also provided an example of an action pledge by GWP.

Paper III.3.3: Agriculture in UNFCCC – Dr. Tom Owiyo

The third speaker, Mr. Tom Owiyo, spoke on the state on negotiations on agriculture. One of the issues the negotiators have to contend with is the scientific evidence that underpins the position that Africa takes. Predictions are not consistent and it is very difficult for policymakers to rely on them because of the fact that some of them indicate that agriculture will actually benefit as a result of temperature increase or increased precipitation but others indicate the reverse. What is important is that regardless of the model you look at irrigated agriculture has better capacity to withstand the impacts of climate change. This is one more reason why Africa needs to invest in irrigation. Only 4-6 percent of Africa's total agriculture production is under irrigation. There is a general agreement that agriculture is integral to the UNFCCC process. It plays a critical role in food security both for developing and developed countries. The ultimate objective of the convention is expressed in terms of food production; it says that the levels of concentration of greenhouse gases in the atmosphere should be stabilized within a time frame that is sufficient to allow ecosystems to adapt naturally and to ensure that it does not threaten food production and the ability of economies to grow in a sustainable manner. Agriculture especially in the context of Africa is the most vulnerable sector to the impacts of climate change. It is also an emitter; it accounts globally for 14 percent of GHG emissions. So while we talk about the need to adapt we can also have some co-benefits from improved agricultural practices that sequester carbon. The Durban conference requested SBSTA to consider issues relating to agriculture with the aim of exchanging views and invited parties and observer

organizations to make submissions. From these submissions there is general agreement on the central role of agriculture in the climate process but parties disagreed on whether to discuss agriculture as a matter of mitigation or adaptation. The speaker traced the development of the issue through the Bonn and Bangkok sessions of the negotiations. AMCEN passed a decision in Arusha in September 2012 providing that with respect to non-Annex I parties agriculture should be negotiated as an adaptation matter and with respect to Annex I parties it should be negotiated as a mitigation matter.

Paper III.3.4: Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX) – Dr. Balgis Osman-Elasha

The last speaker outlined the IPCC special report on extreme weather events, launched in 2011. It is a report produced over a two and half years period by more than 200 experts. The report addresses important issues. The report demonstrated which used to occur infrequently will be the new normal if we are not prepared for it. The report highlighted the need for disaster and climate change communities to work together. The key findings of the report include: increased frequency and intensity of extreme weather events; and impact depends on vulnerability of the exposed. In relation to Africa, the report found that Africa is vulnerable to different types of weather extremes including drought (which has the most devastating impact), floods and heat waves. Long-term adaptation strategy is needed. The speaker mentioned the case of floods in Nairobi where the impact is magnified because of rapid population growth in urban areas vulnerable to floods. The speaker indicated that this may, for example, be addressed through addressing poverty in urban areas and causes of migration.

Summary of discussion

The following are some of the points raised:

- What is the future and coherence of the climate change negotiations with the emergence of all of these issues including water, agriculture and loss and damage?
- Why is the fact that Africa is diverse limiting to have common position?

The speakers then raised the following points by way of responses and further clarification;

- There is a need for further research on: what losses and damages are occurring in different parts of Africa in different sectors; and what priorities should be placed in different sectors.
- The diversity of capacities and needs across Africa imply that there should be different positions. These cannot be addressed with a single common position.
- The issue of governance in loss and damage came up in relation to the various approaches. It refers for example to the ability to police an insurance company. Governance is also an issue in terms of community organizations. The issue is particularly brought up in the context of small island states in terms of representing positions.

Conclusion

The overall objective of the conference was to build on CCDA-I in establishing a forum for dialogue and raise awareness of important climate change and development issues and options, and to mobilize further actions. To this end, CCDA-II engaged policy makers, researchers, practitioners, civil society and other stakeholders with the aim of ensuring policies, strategies, programmes and practices in Africa take into account the reality of climate change. CCDA-II also aimed at strengthening the basis of Africa's participation and position in the 18th UN Climate Change Conference (COP 18/CMP 8), held in Doha, Qatar, to ensure the continent's concerns and priorities are reflected in a post-2012 climate change regime.

The theme of CCDA-II reflected the need for Africa to address development in the context of climate change, and emphasized the importance of African ownership of its own policy formulation and decision making processes.

Appendix: CCDA-II Programme

Day 1, Friday, October 19, 2012 (Conference Room 2)		
8h00-all day	Registration for CCDA-II (registration open all day)	
9h00-10h30	Opening ceremony <ul style="list-style-type: none"> Welcoming Remarks <ul style="list-style-type: none"> UNECA: Dr. Carlos Lopes, UN Under Secretary-General and UNECA Executive Secretary AfDB: Mr. Lamin Barrow, resident representative of the AfDB in Ethiopia AUC: Dr. Maxwell Kwezelamba, Commissioner for Economic Affairs Guest speaker: Mr. Jeremiah Lengoasa, WMO Deputy Secretary General Opening of Conference <ul style="list-style-type: none"> H.E. Hailemariam Desalegn, Prime Minister, Federal Democratic Republic of Ethiopia 	Master of Ceremony: Dr. Josue Dione, Director, Food Security and Sustainable Development Division, UNECA
10h30-11h	Coffee/Tea break	
11h-12h30	Climate Science and Service Delivery <ul style="list-style-type: none"> Keynote – Global Framework for Climate Services (GFCS) .Mr. Jeremiah Lengoasa, WMO Deputy Secretary General Round Table – Mr. Arba Diallo, Mr. Bai-Mass Tall, Dr. Pedro Basabe, Dr. Yvan Biot, Dr. Ernest Afiesimama, Dr. Fatima Denton, IUCN Discussion 	Chair: Dr. John Ken Facilitator: Dr. Seleshi Bekele and Dr. Paxina Chilsehse
12h30-14h	Lunch	
14h00-15h30	Sustainable Energy Access for All Africans by 2030 <ul style="list-style-type: none"> Keynote – Mr. Mihret Debebe, DG of EEPKO, Ethiopia Round Table – Dr. Jacques Moulot, Prof. Abeeku Brew-Hammond, Prof. Ogunlade Davidson, Dr. Felix Dayo, Ms. Faith Odongo, Dr. Kevin Urama Discussion 	Chair: Mr. Philippe Niyongabo Facilitator: Dr. Youba Sokona & Dr. Yacob Mulugetta
15h30-16h	Coffee/Tea break	
16h-17h30	Outstanding Issues in Climate Negotiations: Relevance for Africa <ul style="list-style-type: none"> Keynote - Mr. Richard Muyungi, SBSTA Chair Round Table- Mr. Emmanuel Dlamini, Mr. Percy Makombe, Mr. Irvin Minzer, Mr. Xolisa Ngwadla, Prof. Doreen Stabinsky, Mr. Pa Ousman Jarju Discussion 	Chair: Dr. Abebe Haile Gabriel Facilitator: Dr. George Wamokoya & Dr. Tom Owyio
	Cocktail and Launching of African Climate and Development Society (ACD-Soc)	

Day 2, Saturday, October 20, 2012 Parallel Session I (Conference Room 2)	
	Sub-theme I : Climate Service Delivery for Development
09h00-10h30	Chair: Mr. Yvan Biot Bridging the gaps and best practices for Climate Science, Policy and Practice Paper 1: Successful CLIVAR experience – Dr. Arame Tall/Mr. Yospeh AC Paper 2: Success Stories in Climate Service in Southern Africa — Mr. Brad Garanganga Paper 3: Successful Experience in Bridging the Gaps, the CCAFS experience – Dr. Ousmane Ndiaye / Dr. Dr. James Kinyangi Paper 4: Horn of Africa Drought and Famine Crisis: Climate Science Influencing Regional Policy – Dr. Joseph N. Mutemi Discussion
10h30-11h00	Coffee/Tea break
11h00-12h30	Chair: Mr. Hama Arba Diallo Climate Information and Analysis for Risk Management and Adaptation Paper 1: ACPC's Pilot Case Studies in African Countries – Dr. Seleshi Bekele Paper 2: Ecosystems-Based Adaptation - IUCN Paper 3: Climate Data Rescue in Selected Countries in Africa – Dr. Tufa Dinku /Mr. Kinfe H/Mariam Paper 4: Satellite Based Information Generation for Risk Management and Adaptation in Africa and Future Strategies – Dr. Vincent Gabaglio Discussion
12h30-14h00	Lunch
14h00-15h30	Chair: Dr. Maxwell Donkor Frontiers of research and development for climate science, services and policy Paper 1: Foundational Paper on the Frontiers in African Climate Science Research – Dr. Arame Tall/Dr. Seleshi Bekele Paper 2: SCRIP experience in climate change analysis – Dr. Richard Graham Paper 3: Research Strategies for the West Africa – Cheik Kane Paper 4: Working Groups by Region to be facilitated by RCCs (North, ACMAD/AGRHMET, ICPAC, CSC, Central) Discussion
15h30-16h00	Coffee/Tea break
16h00-17h30	Plenary (Conference Room 2) Presentation of summary of parallel sessions Outcome statements Discussion
17h30-18h00	Closing Session (Conference Room 2) Closing by Mr. Carlos Lopes, UN Under Secretary-General and UNECA Executive Secretary

Day 2, Saturday, October 20, 2012 Parallel Session II (Conference Room 3)	
	Sub-Theme II: Sustainable Energy Access for All Africans by 2030
09h00-10h30	Chair: Prof. Abeku Brew-Hammond The state of sustainable energy for all initiative: implications for Africa Paper 1: Sustainable Energy for all (SEFA) framing paper – Dr. Yacob Mulugetta Paper 2: Financing energy access – Mr. Benoit Lebot Paper 3: Technology innovation for energy access in Africa – Dr. Lawrence Agbemabiese Paper 4: Mainstreaming gender in energy access – Dr. Rose Kutin-Mensah Discussion
10h30-11h00	Coffee/Tea break
11h00-12h30	Chair: Dr. Stephen Karingi Water-agriculture-energy and climate change nexus Paper 1: Technical paper on water, energy and climate change – Dr. Gisela Prasad Paper 2: Programme for Infrastructure Development in Africa (PIDA) presentation – Mr. Philippe Niyongabo Paper 3: Climate and Infrastructure in Africa's Major River Basins – Mr. Nagaraja Rao Harshadeep Paper 4: Experiences from Pilot Program for Climate Resilience (PPCR) – Dr. Paxina Chilsehse Discussion
12h30-14h00	Lunch
14h00-15h30	Chair: Ms. Alessandra Tissot Currents in Green Economy/ Green Growth for low carbon development Paper 1: Organisation for Economic Co-operation and Development (OECD) – Ms. Alexandra Trzeciak-Duval Paper 2: Green Economy and Africa – Dr. Frank Sperling Paper 3: Inclusive Green Growth – Dr. Josue Dione Discussion
15h30-16h00	Coffee/Tea break
16h00-17h30	Plenary (Conference Room 2) Presentation of summary of parallel sessions Outcome statements Discussion
17h30-18h00	Closing Session (Conference Room 2) Closing by Mr. Carlos Lopes, UN Under Secretary-General and UNECA Executive Secretary

Day 2, Saturday, October 20, 2012**Parallel Session III (Conference Room 4)****Sub-Theme III:****Outstanding Issues in Climate Negotiations: Relevance for Africa**

09h00-10h30	Chair: Mr. Pa Ousman Jarju The state of climate change negotiations and implications for Africa Paper 1: The Kyoto protocol: where to? – Dr. Gebru Jember Paper 2: African countries responsibility and opportunities under the Durban Platform – Mr. Xolisa Ngwadla Paper 3: Outstanding issues on shared vision – TBA Paper 4: National policy responses to a global climate challenge: illustrative cases - UNDP Discussion
10h30-11h	Coffee/Tea break
11h-12h30	Chair: Mr. Kem John The status of climate finance : key issues for Africa Paper 1: Traditional and innovative sources of finance for Africa – Dr. Daniel-Alexander Schroth Paper 2: Operationalization of the GCF - Mr. Jan Kowalzig Paper 3: Adaptation finance – Arnab Bose Paper 4: Global governance of national and international market mechanisms – Mulugeta Ayalew Discussion
12h30-14h00	Lunch
14h00-15h30	Chair: Dr. Youba Sokona Emerging knowledge, science and partnerships for enhancing Africa's negotiation position Paper 1: Loss and damage in UNFCCC – Dr. Lawrence Flint Paper 2: Water in Nairobi Work Programme – Mr. Alex Simalawi/Dr. Seleshi Bekele Paper 3: Agriculture in UNFCCC – Dr. Tom Owiyo Paper 4: Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX) – Dr. Balgis Osman-Elasha Discussion
15h30-16h00	Coffee/Tea break
16h00-17h30	Plenary (Conference Room 2) Chair: Josue Dione Presentation of summary of parallel sessions: Seydou Traore, Haruna Gujba and Mulugeta Ayalew Outcome statements: Seleshi Bekele Discussion
17h30-18h00	Closing Session (Conference Room 2) Closing by Mr. Carlos Lopes, UN Under Secretary-General and UNECA Executive Secretary