Proceedings of the 4th Multi-stakeholder Forum on Climate Change, Water and Energy Security in Ethiopia: Implications on Cooperation in the Nile Basin

Organized by
Ethiopian Nile Discourse Forum/EthNDF

29 March, 2012

Harmony Hotel
Addis Ababa, Ethiopia

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ACKNWOLEDGEMENTS

The Ethiopian Nile Discourse Forum (EthNDF) is grateful for the wonderful job accomplished by the Forum coordination team, key note speakers, paper presenters, discussion moderators and participants as well as all those who have contributed in one way or another towards the success of its 4th Multi-stakeholder Forum. This 4th multi-stakeholder national forum on "*Climate Change, Water and Energy Security in Ethiopia: Implications on Cooperation in the Nile Basin*" has brought together key stakeholders and decision makers from government, academic and research institutions, CSOs/NGOs, water and energy professionals, donors, media houses and private sector actors. We hope that the forum has facilitated dialogue and the exchange of views and among key stakeholders and partners about the necessity of developing harmonized regional water and energy policy through realizing the cooperative framework agreement of the NBI and the need for riparian countries to work towards efficient management and utilization of transboundary water resources and climate proofing development interventions.

ACRONYMS

ADB:	African Development Bank
CDM:	Clean Development Mechanism
CIDA:	Canadian International Development Agency
CRGE:	Climate-Resilient Green Economy
CS-CAFÉ:	Association of Citizens' Solidarity for Campaign Against Famine in Ethiopia
CSOs:	Civil Society Organizations
DFID:	Department for International Development (UK)
ENSAP:	Eastern Nile Subsidiary Action Program
ENTRO:	Eastern Nile Technical Regional Office
EthNDF:	Ethiopian Nile Discourse Forum
EWNRA:	Ethio-Wetlands and Natural resource Association
GCMs:	General Circulation Models
GDP:	Gross Domestic Product
GHGs:	Green Houses Gases
GoE:	Government of Ethiopia
GTP:	Growth and Transformation Plan (of Ethiopia)
IPCC:	Inter-Governmental Panel on Climate Change
IWMI:	International Water Management Institute
IWRM:	Integrated Water Resource Management
LDFs:	Local Discourse Forums
M.a.s.l.:	Meter Above Sea Level
MDGs:	Millennium Development Goals
MoWE:	Ministry of Water and Energy
NAMAs:	Nationally Appropriate Mitigation Actions
NAPA:	National Adaptation Programs of Action
NBD:	Nile Basin Discourse
NBI:	Nile Basin Initiative
NGOs:	Non-Governmental Organizations
ORDA	Organization for Rehabilitation and Development of Amhara State
PET:	Precipitation and Evapo-Transpiration (PET)
REST:	Relief Society of Tigray
SIDA:	Swedish International Development Cooperation Agency
SLM:	Sustainable Land Management
SLUF:	Sustainable Land Use Forum
SNNPR:	Southern Nations, Nationalities and Peoples Regional State
UNFCCC:	United Nations Framework Convention for Climate Change

BACKGROUND NOTE ON:

THE 4TH NATIONAL MULTI-STAKEHOLDER FORUM OF ETHNDF ON: CLIMATE CHANGE, WATER AND ENERGY SECURITY IN ETHIOPIA: IMPLICATIONS ON COOPERATION IN THE NILE BASIN

Background

National context: Ethiopia is highly vulnerable to climate change due to limited financial resources, low levels of income per capita, dependence on rain-fed agriculture, and weak institutional capacity to cope with climate change. Recent studies indicated that, climate change is already hitting Ethiopia affecting the development activities and aggravating the vulnerability of poor communities, especially farmers, who have to cope with not only more droughts but also sudden, violent and unpredictable rainfall and floods.

The major reasons why Ethiopia should be concerned about climate change is that the main natural resources and social activities, namely water, forest, biodiversity, agricultural land agriculture, energy and human health are very sensitive to climate variations.

It is known that Ethiopia contributes about 86% of the water to the main Nile. Currently, the country's water and energy security is risked due to impacts of climate change. This in turn has direct impacts on the water and energy securities of the downstream countries as the hydrology of the Blue Nile is highly sensitive to climate variability in the Ethiopian Highlands.

The Nile Basin Region: The basin hosts more than 300 million people living in eleven African countries namely Burundi, Democratic Republic of Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, South Sudan, Sudan, Tanzania, and Uganda. Majority of people living in the Nile River basin are grappling with persistent food insecurity issues and suffer power shortages and lack of safe drinking water despite the potential for irrigation and power generation. Climate change is likely to aggravate water stress currently faced by some countries in the Nile River Basin. Adaptation to this impact is of crucial importance for political and socio-economic stability and economic growth. There is a great need for adaptation strategies to be developed together with all partners on the basis of sub-regional future scenarios, including expected changes to the hydrological cycle and impact on agriculture, energy and food security. Besides, institutions at all levels must develop capacities to cope with climate change and extreme events. For these to happen, trans-boundary cooperation on the impact of climate change (e.g., floods and droughts) through a better exchange of information and know-how, and early warning systems will have to increase significantly.

Trans-boundary Cooperation under the Nile Basin Initiative: The Nile Basin Initiative (NBI) provides an agreed basin-wide framework to fight poverty and promote economic development in the region. The NBI also provides a process to facilitate substantial investment in the Nile Basin to realize regional socio-economic development. The NBI represents a deep commitment by the Nile riparian countries to foster cooperation and sustainable development of the Nile River for the benefit of all.

However, efforts to integrate climate change into long-term planning and management of the Nile River Basin have been limited, although recent efforts suggest this may be slowly changing. Although broad access to and sharing of data and participatory decision-making are among the aims of NBI, forming strong partnership and networking between NBI and various national and local actors in the region, including NGOs and other stakeholders is still weak.

Similarly, at national levels, policies on water and environmental management and agricultural and hydropower plans have been developed in respective ministries, although cross-sector cooperation at the shared basin level is still at a developing stage. Even though climate change has a fundamental role for water management, reforms in the water sector often have very weak links to climate. One important reason to that is, of course, that not all countries have a water policy, let-alone a comprehensive water policy. An analysis of the existing policy and legal framework in the ten riparian countries has revealed that most of them do not have any policies or laws that deal directly and explicitly with climate change issues. Although some national policies have attempted to address climate change related issues, currently most countries are addressing aspects of climate change through a number of sectoral policies (e.g., environment, agriculture, water, etc), even though climate change may not be the focus of such policies and plans.

Nile Basin Discourse (NBD): is a registered network of civil society organizations established to facilitate civil society involvement in the planning and implementation of developments in the Nile Basin region under the NBI.

The NBD functions through its Secretariat based in Entebbe, Uganda and National Discourse Forums operating in the eleven riparian states of the Nile Basin. It engages the NBI in the planning, implementation and monitoring of NBI projects and programs and brings into these processes voices of civil society.

The overarching objective of the NBD is to promote sustainable and equitable development, poverty reduction, and cooperation between all stakeholders in the Nile Basin. Working at the level of civil society engagement, the NBD seeks to maximize the social, economic and environmental benefits available to poor people within Nile countries and to ensure that there is a more equitable distribution of these benefits across the Nile basin as a whole.

The Ethiopian Nile Discourse Forum (EthNDF) is the Ethiopian chapter of the NBD which is committed to promoting civil society participation and active engagement in the cooperative development and utilization of the Nile water resources at the national level.

EthNDF believes that effective participation of the Ethiopian civil society and the grass root basin communities in the policy making and development processes of the Nile water resource is of crucial importance to the realization of the NBI vision and strategy. For the last couple of years, EtNBDF has been working its level best towards enhancing the role and engagement of civil societies in the processes, programs, and policies of the NBI. Based on this belief, the forum intends to focus on strengthening the local

community participation in climate change adaptation processes, policies and programmes so as to ensure community's water and energy security.

The Nile Basin Discourse has been playing an important role with regard to the joint management of shared water resources. The NBD member CSOs, have been supporting the adoption of adaptation measures at all levels in water and climate-related activities. They have been creating awareness of environmental protection tools and instruments, disseminating information and mobilizing local resources. The NBD wants to support its members to continue their activities in this area.

The one day 4th national multi-stakeholder forum on "**Climate Change, Water and Energy Security in Ethiopia: Implications on Cooperation in the Nile Basin**" was held on 29 March, 2012 at Harmony Hotel in Addis Ababa, Ethiopia. The forum was organized by Ethiopian Nile Discourse Forum/EthNDF. The forum brought together about 130 high level decision makers, Parliamentarians, key government ministries, NBI/ENSAP project managers and coordinators, NDF members including LDFs, professional associations, academic and research institutions, CSOs/NGOs, donors, private sector representatives, regional and sub-regional initiatives, Donors (DFID, CIDA, SIDA ,World Bank, ADB), media professionals and women and youth groups.

The impacts of climate change transcend national political space and pose common challenges to the political communities sharing the same resources. This may serve as an opportunity for those communities to cooperate for combating the common problem. In this regard, the forum provided an avenue for discussing climate change and its threats on water and energy security in Ethiopia and on policy and institutional responses at both national and regional levels. The forum enabled EthNDF/NBD to raise public awareness of and mobilize critical mass on ensuring water and energy security in the face of climate change in Ethiopia and beyond.

Forum Objectives, Outputs, and Outcomes
Objectives
The primary objective of the forum was to discuss on the threats of climate change to the water and energy securities of Ethiopia and its impact on downstream countries of Sudan and Egypt and on the way forward to addressing the threats.

The specific objectives of the forum were to discuss on the:

- Roles and activities of ENTRO/NBI in converting the challenges of climate change into opportunities for cooperation in the ENSAP region;
- Policy and institutional responses for the perceived and real impacts of climate change on water and energy security in Ethiopia;
- Roles of CSOs and other stakeholders in ensuring communities' water and energy security at local and national levels in the face of climate change;
- Strategies for enhanced and better collaboration among the various stakeholders at all levels including government agencies, NBI/ENTRO project offices and CSOs to effectively address the impacts of climate change.

Topics covered during the Forum included the following:

1. Climate Change Challenges on Water and Energy Security in Ethiopia and Possible Implications on the Downstream Countries
2. Addressing Climate Change in the ENSAP Region
3. National Policy and Institutional Responses: Mainstreaming Climate Change in Water and Energy Policies in Ethiopia

4. Roles of CSOs in Enhancing Communities' Awareness and Capacities for Adaptation to Climate Change in Ethiopia

Forum Outcomes and Achievements

As mentioned above, the Forum brought together various stakeholders from government ministries, academic and research institutions, CSOs, water, energy and climate change professionals and decision makers, donors, media professionals, gender and youth groups and private sector representatives. Following the paper presentations, thorough discussions and dialogues were held on the nexus between climate change, water and energy resources, on the need for designing and implementing holistic and climate smart policy, on the need for viable legal and institutional arrangements and regional cooperation in the Nile Basin. As such, the forum has succeeded in achieving the following specific outcomes:

- Enhanced public awareness on the impacts of climate change on water and energy security in Ethiopia and beyond;
- Popularization of climate proofing and other institutional and project issues and action programmes of ENTRO/NBI with regard to climate change issues
- The roles of CSOs in enhancing public awareness and building the capacities of communities with regard to climate change was recognized
- Strategies for future collaboration and partnership among the various climate actors identified and set.
- Report/proceeding on recommendations and discussion points captured to inform NBI program implementation as well as on the role of CSOs in promoting community-based adaptation to climate change.

The Forum was officially opened by His Excellency Mr. Wondimu Teklie, State Minister, Ministry of Water and Energy. In his opening statement, H.E. Ato Wondimu recognized the global nature of climate change and Ethiopia's high vulnerability to the multidimensional impacts of climate change, with limited capacity to cope with short-term climatic shocks or adapt to longer-term trends. As we all know, Ethiopia has entered into its new millennium (in the year 2000) with high hopes of renaissance and a better life for all of its citizens. One of the challenges the country will have to face to make this dream a reality is climate change and its consequences on the country's natural resource base. Cognizant of this fact, the government of Ethiopia has been exerting maximum efforts to properly manage its water resources at both national and trans-boundary levels. At national level, adaptation to climate change has been made part of a National Water Strategy. At the trans-boundary level, the Water Policy, Sector Strategy and the Development Programmes all promote trans-boundary cooperation, including joint development and management of the shared resource. With regard to the institutional arrangements, Ethiopia has a Boundary and Trans-boundary Rivers Affairs Directorate, in the Ministry of Water Resources, now the Ministry of Water and Energy, which is dedicated to promoting inter-riparian cooperation. Ethiopia's Water Resources Management Policy incorporates fostering regional cooperation on trans-boundary waters, based on the principle of equitable and reasonable utilization. The Ethiopian Water Sector Strategy also gives particular attention to ascertaining Ethiopia's entitlement and use of trans-boundary waters and promoting fair regional cooperation.

As a reflection of and in realization of its national policies, Ethiopia has been an active member and promoter of the Nile Basin Initiative and its vision. Ethiopia believes that water and energy security in the basin would be ensured if and only if there is genuine and sustainable regional cooperation based on win-win approach that is backed by legal and institutional arrangements. The Ethiopian government firmly believes that the impacts of climate change and other stresses on water resources and changes to flooding risks require adaptation on the part of governments, water resource management institutions, water users and a host of other stakeholders in the Nile Basin. Co-operative management of shared river systems among riparian states is an adaptation initiative that requires co-ordination at the regional level and co-operation between national governments. For the successful realization of Ethiopia's water resources development policies and strategies at national and inter-riparian levels, the government sees ranges of stakeholders (CSOs/NGOs, academic and research institutions, and donors).

According to the State Minister of MoWE, Ethiopian CSOs/NGOs can play important role in climate change adaptation and in rationally defending Ethiopia's right and genuine position on the development of water infrastructure for the expansion of clean and sustainable energy and for climate change adaptation and mitigation. Lastly, Mr. Wondimu re-iterated Ethiopia's commitment to work with riparian countries and other stakeholders at home and abroad in order to ensure its water and energy security and combat the threats of climate change.

In his welcoming address, Mr. Mengesha Workneh, Chairman of EthNDF, welcomed all participants and introduced the entire agenda of the workshop. In his address, Ato Mengesha underscored the effect of climate change on the availability and quality/use of both water and energy resources. Climate change acts as an amplifier of the already intense competition over water and energy resources. Mitigating climate change as well as adapting to inevitable climate change risk needs to be considered together. According to him, at the national level, protection and conservation of Ethiopia's environment is critical in ensuring river systems continuity in supplying water to economic activities and ecosystems. In addition, accelerating access to electricity for the rural poor offers new opportunities for agriculture including access to cheap and sustainable sources of energy to stimulate rural and overall economic development which in turn would lessen communities' dependence on natural resources and create climate resilient communities. At the sub-basin level, technology, innovation, a sense of shared responsibility and political will are critical elements that bring real and sustainable solutions to the risks of climate change. Resolving growing issues surrounding water and energy priorities will require better and integrated policy frameworks and political engagement to address them satisfactorily for all stakeholders within and across political boundaries. At last, Ato Mengesha urged water and energy professionals to intensify their policy oriented, research, the Eastern Nile countries to minimize water wastages and losses everywhere and achieve water and energy efficiency for meeting unmet and growing demands for water and energy, CSOs, including the NBD, to continue working hard in cresting climate resilient communities and ecosystems through public awareness and capacity building campaigns, and media houses to make climate change their regular headlines and newscasts.

Following the welcoming and official opening speeches, four research papers were presented by the respective authors. A 20-minite documentary film on the role of CSOs and other stakeholders in environmental rehabilitation, watershed management and climate change adaptation with special focus on the experience of SLUF consortium members in mobilizing local communities to combat siltation and other environmental risks in the Choke mountain (Central Ethiopian Highland), upper catchment of the Abbay (Blue Nile) River was presented to the audience. The documentary film attracted the attention of most Forum attendants. Each of the presentations was followed by thorough discussions and question and answer sessions. The papers presented at the Forum include the followings:

1. Climate Change Challenges on Water and Energy security in Ethiopia and Possible Implications on the Downstream Countries (By *Semy Ayalew, Addis Ababa University)*
2. Addressing Climate Change in the ENSAP Region (By *Mohamed El-Muntesir, ENTRO)*
3. National Policy and Institutional Response: Mainstreaming Climate Change in Water and Energy Policies in Ethiopia (By *Fekahmed Negash, MoWE)*
4. What Roles can CSOs Play in Enhancing Climate Resilience in the Water and Energy Sectors: A Case Study in the Central Ethiopian Highlands (By *Habtemariam Abbate, Executive Director of SLUF).*

Towards the end of the one day national multi-stakeholder forum, participants held general discussion on the way forward. Following the general discussion, the participants forward recommendations on the way forward and adopted a position statement.

The proceedings contain messages from the State Minister of MoWE, the Chairperson of EthNDF, and summary of key messages of the four papers presented at the forum and the general discussions, and the recommendations on the way forward. The position statement which was developed and endorsed by all forum participants at the closing session of the forum was also included at the end of the report. The Forum programme and the complete list of Forum participants are annexed to the report.

Mengesha Workneh
Chairperson, EthNDF

Your Excellency Wondimu Teklie, State Minister of MoWE:
Honorable Members of Parliament:
Dear Participants:
Ladies and Gentlemen:

I am extremely honored and pleased to welcome you all to this important and timely Forum on ***Climate change, water and energy security in Ethiopia and implications on cooperation in the Eastern Nile basin***. This forum focuses on: climate change and its impacts on water and energy in Ethiopia and the Nile co-basin countries of the Sudan and Egypt and on policy and institutional responses at both national and regional levels. I do hope that this forum will provide an avenue, for discussing the threats of climate change to the water and energy securities of the Eastern Nile countries and on the way forward to combat the threat.

Dear participants:
Ladies and Gentlemen:

Ethiopia is extremely vulnerable to climate induced hazards such drought, flooding and associated disasters. These extreme weather events have resulted in loss of lives, property and disruption of livelihoods. Thus, climate change is already affecting the security of Ethiopia's sustainable development. Rain-fed agricultural production, rapidly growing population, and a decline in per capita environmental resource availability (including arable land, water, pasture, forest and biodiversity) render the livelihoods of the majority of the population sensitive to climate-related shocks including drought and flooding. Droughts, flooding and storms are all signs of shifting rain patterns.

In the downstream countries of the Sudan and Egypt, the reservoirs are reportedly said to be losing their capacity to hold water as severe erosion and flood from Ethiopian highlands bring silt and debris down to settle in behind dams due to deforestation and environmental degradation in the upper catchments of the Blue Nile basin.

For sure, climate change, if not properly addressed, will increase the frequency and severity of these extreme events. In addition to loss of lives and livelihoods, droughts and floods can lead to shortages in water and energy in both Ethiopia and the downstream countries. Lack of water due to drought can lead to a halt in power production.

Currently, Ethiopia is striving to meet rapidly growing demand in the energy and water sector due to fast upward moving population growth, urbanization, and industrialization in the country. Energy and water demands increase not only with an increase in the sheer number of population but also due to an increase in income and living standards of people. At low income levels, energy and water are used for basic needs such as drinking, cooking and heating. But as income increases, people use more energy and water for refrigerators; swimming pools, transport, watering and cooling that meet their new lifestyle and diet needs. An increasing spiral demand for more energy will drive demand for more water, and vice versa.

Water, energy and climate change are inextricably linked. If we truly want to find sustainable solutions, we must ensure that we address all three in a holistic way. They are pieces of the same puzzle and therefore it is not practical to look at them in isolation. They also touch all parts of our culture and are interconnected with other issues, such as our values, ecosystems and livelihoods.

Water and energy are indispensable for the achievement of the eight Millennium Development Goals (MDGs) and the Growth and transformation Plan (GTP). In Ethiopia the majority of its people have no access to electricity and more than 90 % of the rural population still rely on traditional fuels such as wood, dung and agricultural residues as their sole source of energy while the country has enormous potential for energy production, particularly hydropower, which will have to be exploited in the face of a growing population and economy that are increasingly placing stress on water resources, and generating further energy needs.

Climate change comes on top of current pressures on resource systems and efforts to protect water resources and expand access to water and energy services in the country. To combine thinking on future adaptation strategies that align water and energy resource development, it is helpful to revisit our policies and institutional set ups at both national and sub-regional levels.

Ladies and Gentlemen:

Climate change will affect availability and use of both water and energy. Climate change acts as an amplifier of the already intense competition over water and energy resources.

Mitigating climate change as well as adapting to inevitable climate change risk needs to be considered together. At the national level, protection and conservation of our environment is critical in ensuring river systems continue to supply water to economic activities and ecosystems. In addition, accelerating access to electricity for the rural poor offers new opportunities for agriculture including access to cheap sources of energy for water pumping. If access can be improved, and energy needs for agriculture anticipated and met, then a potential barrier to agricultural growth can be avoided. Rapid growth in agricultural production could then stimulate rural and overall economic development which in turn would lessen communities' dependence on natural resources and create climate resilient communities.

At the sub-basin level, technology, innovation, a sense of shared responsibility and political will are critical elements that bring real and sustainable solutions to the risks of climate change. Resolving growing issues surrounding water and energy priorities will require better and integrated policy frameworks and political engagement to address them satisfactorily for all stakeholders within and across political boundaries

In the face of a fast growing population and economic development that leads to increasing demands and competition for water, it is essential to adopt an integrated approach to the management of water to serve both energy and agricultural needs. Experience elsewhere has shown that the synchronized analysis of all water use sectors at the policy and implementation levels will enable significant increases in productivity and positively influence development and growth. This also requires an integrated management of land, water and biological resources and ecosystems at a range of scales from the individual land users and communities to sub-catchments and river basin levels.

Ladies and Gentlemen:

Ethiopia has a vastly untapped potential of water and renewable energy sources. And in particular, Ethiopia's large hydropower potential appears an attractive option for meeting energy needs, not only in Ethiopia, but also in the Eastern Nile region. Accelerated hydropower development is already apparent in Ethiopia that has gone to the extent of connecting the country with the Sudan, Kenya, Djibouti and I do hope that this will further continue to interconnect Ethiopia-via the Sudan with Egypt and facilitate the establishment of regional power grids and energy markets. In many cases, hydropower dams in Ethiopia are promoted as being suitable for multiple functions in and outside the country, such as supplying water for irrigation and drinking, supplying cheap energy, silt control and regulated water flow downstream, reduce water wastage through evaporation, and etc. The best case in point is the Great Ethiopian Renaissance Dam launched just a year ago.

In the face of climate hazards, increasing water and energy use efficiency through investment in relevant technologies and infrastructure is critical route to achieving the development goals in Ethiopia and beyond. In this regard, the Ethiopian Nile Discourse Forum urges:

1. Water and energy professionals to intensify research activities to address the challenges of water and energy;
2. Decision makers at home and in the downstream countries to recognize the link between water and energy and create a policy environment that supports joint efforts to address climate change;
3. The Eastern Nile countries to minimize water wastages and losses everywhere to achieve water and energy efficiency so that increasing demands for water and energy may be met;
4. Media to make climate change their regular headlines and newscasts since public understanding of, and opinion on, climate change issue relies heavily on media coverage;
5. CSOs, including my organization, the Nile Basin Discourse, to work hard in creating climate resilient communities via capacity building and public awareness enhancing about water-energy linkages, conservation, as well as the effects of climate change.

Ladies and gentlemen:
The objectives of the forum are to discuss on the:

- Climate change challenges on water and energy security in Ethiopia and implications on the downstream countries;
- Roles and activities of Eastern Nile Technical Regional Office, known by its acronym ENTRO and the Nile Basin Initiative in converting the challenges of climate change into opportunities for cooperation in this sub-region;
- Policy and institutional responses for the perceived and real impacts of climate change on water and energy security in Ethiopia;
- Roles of CSOs and other stakeholders in ensuring communities' water and energy security at local and national levels in the face of climate change
- Strategies for enhanced and better collaboration among the various stakeholders at all levels for better addressing the impacts of climate change.

Ladies and Gentlemen:
If the participants of this forum would gain adequate information on the threats of climate change to the water and energy securities of Ethiopia and its impacts on downstream countries of the Sudan and Egypt and come up with concrete recommendations on the way forward, the objectives of this forum will have been largely met.

In conclusion, I would like to once again welcome you all and invite you to fully participate in this forum and benefit from the informal environment that is created for further information exchange and networking.

I thank you!

Wondimu Teklie
State Minister, Ministry of Water and Energy

Honorable members of parliament
Invited guests
Dear participants
Ladies and Gentlemen

I am honored to be with you this morning at this important and timely forum which discusses on **Climate change, water and energy security in Ethiopia and implications on cooperation in the Nile basin.** First and for most I would like to thank the Ethiopian Nile Discourse Forum for organizing this meeting and inviting me to officiate the same.

Climate change has become a global development challenge. In this contemporary world, across the planet earth, we see ever more flooding, ever more drought, and ever more storms. People are dying everywhere, and communities are being wrecked. The impacts we are already witnessing from climate change are unlike anything we have seen before. Very recent incidents in places from drought-stricken Mongolia to flood-stricken Thailand, from fire-ravaged Australia to Himalayan communities are clear evidences for the severe climate impacts the world is facing today.

Ladies and gentlemen:

Africa is one of the most vulnerable continents to climate change and climate variability. Ethiopia is seen as one of the African countries most vulnerable to the impacts of climate change, with limited capacity to cope with short-term climatic shocks or adapt to longer-term trends. As we all know, Ethiopia has entered into its new millennium with high hopes of renaissance and a better life for all in the coming decades. One of the challenges the country will have to face to make this dream a reality is climate change and its consequences on the country's natural resource base. Ethiopia's agriculture, water resources, energy sector, biodiversity and ecosystems are prone to the impacts of climate change. Thus climate change will highly disrupt the livelihood of the Ethiopian people unless appropriate measures are taken at all levels.

Cognizant of this fact, the government of Ethiopia has been exerting maximum efforts to properly manage its water resources at both national and trans-boundary levels. At national level, adaptation to Climate Change has been made part of a National Water Strategy. With this regard, the Ethiopian government has adopted several measures that would support adaptation to climate change. To ensure sustainable development and management of the water resources of the country, its water sector has gone through various reform measures, which include the development and adoption of the Integrated Ethiopian Water Resource Management Policy; the Water Sector Strategy to translate the policy into action; and the Fifteen Year Water Sector Development Programme. The

government has also enacted the required legislation including the establishment of basin authorities such as the Awash and the Abbay River Basin Authorities to pursue sustainable development and management of the country's water resources. The overall policy objective is to enhance and promote national efforts towards the efficient, equitable and optimum utilization of the water resources of Ethiopia for significant socio-economic development on a sustainable basis. Ethiopia has also submitted its Nationally Appropriate Plan of Adaptation to the UNFCCC as early as June 2008.

At the trans-boundary level, the Water Policy, Sector Strategy and the Development Programme all promote trans-boundary cooperation, including joint development and management of the shared resource. With regard to the institutional arrangements, Ethiopia has a Boundary and Trans-boundary Rivers Affairs Directorate, in the Ministry of Water Resources, now the Ministry of Water and Energy, which is dedicated to promoting inter-riparian cooperation. Ethiopia's Water Resources Management Policy incorporates fostering regional cooperation on trans-boundary waters, based on the principle of equitable and reasonable utilization. The Ethiopian Water Sector Strategy also gives particular attention to ascertaining Ethiopia's entitlement and use of trans-boundary waters and promoting fair regional cooperation.

Ladies and gentlemen:

As a reflection of and in realization of its national policies, Ethiopia has been an active member and promoter of the Nile Basin Initiative and its vision. Ethiopia believes that water and energy security in the basin would be ensured if and only if there is genuine and sustainable regional cooperation based on win-win approach that is backed by legal and institutional arrangements. We believe that Nile is not an exclusive property of any one country but the ten, now eleven, riparian states and hence should be managed collaboratively by these basin states. The Ethiopian government firmly believes that the impacts of climate change and other stresses on water resources and changes to flooding risks require adaptation on the part of governments, water resource management institutions, water users and a host of other stakeholders in the Nile Basin. Co-operative management of shared river systems among riparian states is an adaptation initiative that requires co-ordination at the regional level and co-operation between national governments.

Invited guests
Ladies and gentlemen

Ethiopia possesses abundant water resources and hydropower potential, yet less than 5 percent of irrigable land in the country has been developed for food production and more than 80 percent of Ethiopians lack access to electricity. Consequently, the Ethiopian government is pursuing huge plans to develop water infrastructure mainly hydropower and irrigation. This is the principle of hitting three birds with one stone. The first bird is tap into this underused water and hydropower potential; the second bird is getting Ethiopian citizens out of the malaise of poverty and underdevelopment; and the third bird is combating the impacts of climate change on water and energy sector.

Invited guests
Ladies and gentlemen

In those good old days where population size was very small, rain-fall was abundant and regular, per capita environmental resource availability (including arable land, water, pasture, forest and biodiversity) was large, construction of water infrastructure was considered as luxurious and futile task. But currently, it has become a necessity not only for mitigating and adapting to climate change but also for meeting the targets of the MDGs and the GTP as well as for ensuring the livelihoods of millions of Ethiopians who are under chronic and transitory food insecurity. That is why Ethiopia has moved into a revolutionary step in water infrastructure development and will continue to do so in the future without violating international principles and conventions governing international watercourses.

Ladies and gentlemen:

For the successful realization of its water resources development policies and strategies at national and inter-riparian levels, the government sees ranges of stakeholders (the academic and research institutions, CSOs and NGOs, donors, etc) as true development partners. Academic and research institutions are expected to innovate technologies needed for water resources management and generation of alternative energy sources; donors are expected to support the government's development efforts with the necessary funding; and CSOs/NGOs are expected to enlighten and mobilize communities at home and abroad in support of Ethiopia's water resources policy and strategy which, by any standard is absolutely faire and rational. CSO/NGOs are also expected to widely engage in the protection and conservation of the environment as part of ensuring water and energy security in the face of climate challenges, thus complementing the current nation-wide movement of the Ethiopian farmers in protecting and rehabilitating the natural environment and managing and protecting our rivers, streams and dams from siltation. We further encourage the CSO/NGOs to rationally defend Ethiopia's genuine positions against the so-called Europe-based environmentalists and human right activities that have been negatively campaigning against Ethiopia's renewable and clean energy development efforts. We particularly urge the Nile Basin Discourse (NBD) to do more in this aspect given its international exposure and access.

Ladies and gentlemen

In conclusion, I would like to re-iterate that the government of Ethiopia is committed to work with riparian countries and other stakeholders at home and abroad in order to ensure its water and energy security and combat the threats of climate change. Once again thanking the organizers, I now declare that this forum is officially opened. I wish you a very successful discussions and fruitful deliberations.

I thank you!!!

Semu Ayalew
Addis Ababa University

Dr. Semu in his presentation attempted to address: (1) climate variability and vulnerability, (2) Status of future climate change in the Nile basin, (3) impacts of climate change on the hydrology and water resources development in Ethiopia,(4) combined effects and future uncertainty and (5) what then.

1. Variability and Vulnerability

As per the presenter, Ethiopia experienced pronounced effects of climate variability and drought over the last 40 years. The none-climatic drivers such as population explosion, land and forest degradation further exposed the country to climate driven vulnerability. He further noted that Ethiopia has lower level of adaptive capacity and resilience to changes.

2. Climate Change Status in the Nile Basin

Climate change impact studies associated with global warming as a result of GHGs emissions has been given ample attention worldwide in the recent decades. Water resources ought to receive special concern as they are very vulnerable to change in climate and have a potential to be strongly impacted in their availability and quality. The Nile River is a water resource which is already under immense pressure due to various competitive uses as well as social, political and legislative conditions. On top of these, previous studies show that many parts of the Nile Basin are sensitive to climatic variations implying that climate change will have considerable impact on the resource. Therefore, it is necessary to analyze the possible changes in the different water resources

aspects under the changing climatic conditions. However, due to variable climatic regions this impact might not be similar throughout the Nile basin.

Potential impact of climate change in the Nile Basin has been studied using outputs from General Circulation Models (GCMs) by different researchers on different catchments during the past years. The studies used the approach of translating specified changes in climatic inputs into changes in hydrological regimes. Dr. Semu's discussion in this sub-section was based on a made by Elshamy et al. (2009) on the "Impacts of climate change on Blue Nile flows using bias-corrected GCM scenarios". The study analyzed the output of 17 general circulation models (GCMs) included in the 4th IPCC assessment report. Downscaled precipitation and potential (reference crop) evapo-transpiration (PET) scenarios for the 2081–2098 period were constructed for the upper Blue Nile basin. There is no consensus among the GCMs on the direction of precipitation change for the upper Blue Nile basin. Changes in total annual precipitation range between −15% to + 14% but more models report reductions (10) than those reporting increases Changes to the water balance of the upper Blue Nile were assessed using the Budyko framework. The basin is shown to belong marginally to a moisture constrained regime. However, during the wet season the basin is largely energy constrained. All models predict the temperature to increase between 2_C and 5_C and consequently PET to increase by 2–14%. In terms of the water balance the ensemble mean for the 2081–2098 period is shifted towards a higher aridity index (PET/P) compared to baseline climatology. In this scenario the basin is therefore moving towards a more moisture constrained regime.

However, Dr. Semu warned of the importance of being aware of the limitations of such studies. According to him, it would therefore be very interesting to see how the results of this study would compare with simulations of regional climate models with a better representation of the water cycle over the basin this study.

3. Impact on Water Resources Development

According to a study by Kim et al (2008) at Utah University which investigated the impact of climate change for IWMI base on GCM output the climate in most of the Upper Blue Nile River Basin is likely to become wetter and warmer in the 2050s (2040-2069). The study mentioned that there is high probability low flows may become higher and severe with mid- to long-term droughts becoming more likely to become less frequent. According to the study, the potential future dam operations are unlikely to significantly affect the water availability to Sudan and Egypt. With all uncertainties in the GCM models, the Authors suggested that t Blue Nile he region is likely to have the future potential to produce hydropower, to have increase flow duration, and increase water storage capacity without affecting outflows to the riparian countries in the 2050s.

4. Combined Effects and Future Uncertainty

In the light of the uncertainties in climate phenomena and the weaknesses of current global GCM models to accurately predict the future, it is important to factor the role of non-climatic stressors and underlying drivers of vulnerability. Dr. Semu specifically mentioned the challenges of increased population, variability and degradation in Ethiopia which necessities not only hydropower expansion but also the expansion of irrigation agriculture, the challenge of not recognizing the huge potential of ground water stored in

the region, the challenge of not recognizing the potential that rainfall can bring on water storage availability in the region, and the challenge of not working towards efficient water productivity and crop productivity as major challenges that need to be overcome for the development and optimal utilization of transbondary water resources in the region.

5. What Then?

In this sub-section, Dr. Semu outlined some short, medium and long term adaptation strategies and future directions. He specifically mentioned regional policy and strong regional institutions, water management and non-consumptive use of development as short term adaptation strategies, water management and water use shift as medium term strategies and Nubian Aquifers and Industrial Egypt in the long term strategies. As a way forward, Dr. Semu mentioned the need for scientific cooperation and collaboration, establishment of genuine regional institutions and clean break from the past for the bright future.

Discussion: Question and answers

Questions: Following the presentation on "Climate Change, Water and Energy Security in Ethiopia and Possible Implications on Cooperation in the Nile Basin", the following questions were raised to the presenter Dr. Semu Ayalew.

- What do you mean by when you said genuine regional cooperation among riparian countries in the Eastern Nile Region?
- You have discussed in some length about the socio-economic and institutional dimension of water infrastructural development and other initiatives in the Eastern Nile Region? What about the political dimension?
- To what extent there are linkages between research and policy making and development investment in the water and energy sector?
- Are there regional forums for better understanding, policy harmonization and consensus building on climate change, water and energy issues in the Eastern Nile Region?
- In relation to climate change, water stress and energy insecurity, are there common issues and among the Easter Nile countries which they consider most vulnerable and needing urgent policy attention?

Answers:

In reply to the above questions, Dr. Semu provided the following responses

- In Ethiopia, the importance of factoring the vulnerability of the country and to climate change and non-climate change risks including population growth and soil and forest degradation is well recognized. Rapid population growth, climate variability and environmental resource degradation in Ethiopia necessitates not only hydropower development but also the expansion of irrigation agriculture. Ethiopia recognizes the need for regional cooperation and genuine involvement of riparian countries in the development of transboundary water resources for achieving poverty eradication, economic transformation and climate change adaptation/mitigation. Co-operative management of shared river systems among riparian states is an adaptation initiative that requires trust and genuine co-ordination at the regional level and co-operation between national governments. Genuine engagement is about breaking from the past,

is about new engagements and viable institutional arrangements and policy frameworks based on mutual and equitable benefits sharing.

- Development is a multidimensional process. It involves economic, social, environmental and political factors. Water resources should be developed for sustainable and multiple uses. The huge untapped water resource in the Nile Basin should be utilized in a more equitable and sustainable way to help the riparian countries adapt to climate change and embark on accelerated and sustained economic development. In planning and developing water infrastructure, we have to consider both the expansion of hydropower and water productivity for crop productivity (the expansion of irrigation agriculture). All there require investing in water infrastructure and equally also good political will and cooperative spirit among resource user groups/claimants. As an expert and technical person, I will be comfortable to provide answers and suggestions to technical issues in my area of expertise.
- The nexus between research-policy—practice in many African countries is weak. However, if the objective is to bring about structural transformation in economic and social systems and the promotion of accelerated and sustained development, policy and practice need to be informed by applied research.
- Climate change is a global problem. It is a development challenge for all riparian countries in the Nile Region. As the Nile Basin countries are mainly agrarian with less developed rural infrastructure and extremely climate-sensitive livelihoods, I think agriculture, water and energy are common issues that the countries to work with in order to combat the effects of climate change and embark on sustainable development.

Mohamed El-Muntesir, ENTRO

Context

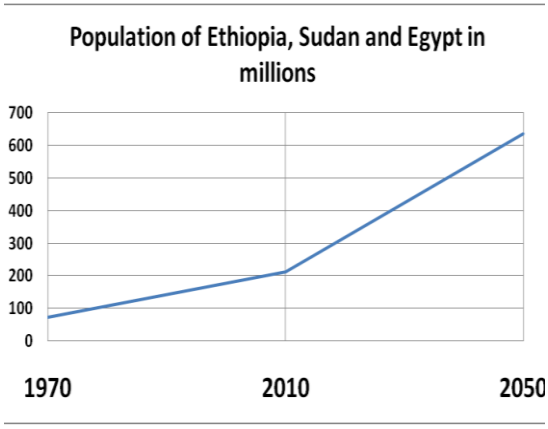
According to Dr. Mohamad, climate change will increase the likelihood of Eastern Nile countries to face water shortages and stresses greatly threatening expansion of the Eastern Nile countries' economies

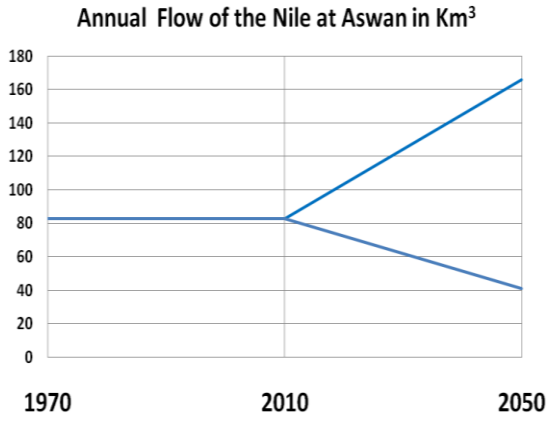
Climate Change and Sustainability

In his discussion of the link between climate change and sustainable economic development in the Nile Basin, Dr. Mohamed said that one of the main threats to sustainable development over the Nile basin is the process of climate change, since it redistributes the natural occurrence of the hydrologic phenomena that supplies water to different regions.

Climate Change Trends

In his discussion about climate change and demographic trends in the Eastern Nile Region, Dr. Mohamed said that while the population of Ethiopia, Egypt and Sudan has been growing fast in the past 5 decades, and is further projected to grow in an alarming and unabated way in the coming 40 years, if appropriate sustainability measures are put in place the annual flow of the Nile may not be promising (See the graphs below).





ENTRO's Climate Proofing Efforts

According to Dr. Mohamed, in order for ENTRO to address the important issue of climate change, an "Approach Paper" was developed in May 2009 describing a comprehensive strategy on how to respond to the challenges and opportunities associated with climate change. The strategy consists of five pillars which taken together constitute a systematic approach to climate change. Before 20009, climate change related activities within ENSAP projects were carried without the benefit of such coordinated overall strategy. This study on "Climate Smart/Proof ENSAP Projects" has been launched as a follow-up to the "Approach Paper" with a focus on how to achieve climate change proofing within each of the ENSAP projects that are managed by ENTRO.

The five pillars are the following.

- *Prediction*: Developing regional climate change models to improve information for forward planning and decision-making; and scenario-building to address worst-case 'black swan' events and define appropriate management strategies to deal with them
- *Adaptation*: Developing regional capacity to conceptualize, pilot and up-scale locally-relevant adaptation activities to address both high probability climate change impacts and also low-probability high-impact events.
- *Mitigation*: Investing in a range of low-regret/no regret mitigation measures to combat local issues such as anthropogenic deforestation and desertification.
- *Education*: Enhanced efforts in education, research, and outreach, not only to develop future generations of scientists, engineers, and policy makers who will deal with climate change, but also to build capacity and spread awareness among all stakeholders from community men, women, children and leaders and community-based organizations to local and national politicians, government officials and other decision-makers of policies and programs.
- *Opportunities:* Vigorous pursuit of funding and other opportunities available to support climate proofing activities at regional and national level, including the Clean Development Mechanism (CDM) of the Kyoto Protocol to get certified emission reductions (CER) for any new hydropower project on the Nile.

Climate Proofing ENSAP

In presenting the impact of climate change and the adaptation needs in the Eastern Nile region, Dr. Mohamed said that NSAP went through various impact, capacity, forecast

and feasibility studies and identified main impacts, secondary impacts and current environmental and social stresses. Following such through studies and climate proofing approaches, ENSAP has developed 5 major climate proofing plans for 1) Baro-Akobo-Sobat which is a Show-Case for Water Resources Management and Development in a Changing Climate, 2) Eastern Nile Climate Change Response Financing Support Project, 3) Eastern Nile Climate Change Detection and Advisory Services at Watershed Level, 4) Eastern Nile Adaptation to Climate Change: Improving Irrigation Water Productivity Using an Irrigation Information Management System, and 5) Eastern Nile Regional Climate Projection and Hydrological Impact Assessment Plan.

Eastern Nile Regional Climate Projection and Hydrological Impact Assessment

According to Dr. Mohamed the goal of the Eastern Nile Regional Climate Projection and Hydrological Impact Assessment is to develop a comprehensive regional climate change projection and hydrological impact assessment in the Eastern Nile to support policies, planning and development. More specifically, it has the objective of developing detailed regional climate projections and information on the hydrological impact of climate change, utilizing regional capacity for fast track statistical downscaling to support planning of current projects, and improving knowledge and capacity of ENSAP staff and understanding of policy makers on the impact of climate change. The project is expected to make available d detailed regional climate change information based on regional scenarios, produce and disseminate information on the implications of regional climate change projections on hydrological systems under different regional development scenarios, provide more detailed and more accurate climate change impact information to policy makers and upgrade the capacity of ENSAP to support policy makers and water managers.

Discussion: Question and answers

Questions: Following the presentation on "Addressing Climate Change in ENSAP Region", the following questions were raised to the presenter Dr. Mohamed El-Muntasir.

- What is the operational definition of climate proofing? How can we distinguish it from the concept of climate change adaptation mainstreaming? How do you perceive the concept itself in the face of great uncertainties in climate change events and model based predictions?
- There are several initiatives in the Nile Basin and various institutions and actors are operating in the sub-region. To what extent the various engagements and institutional interventions are coordinated and harmonized?
- To what extent ENTRO projects are participating and empowering poor and vulnerable communities who are at the forefront of climate change in the Nile Basin?
- What are ENTRO's concrete achievements in climate change adaptation and mitigation?
- What specific climate models and technologies have been developed to accurately predict climate phenomena and provide relevant information for producers and small farmers and pastoralists in the Nile Basin?
- Why poor and vulnerable countries like Ethiopia and Sudan or even Egypt which contributed least the climate problem are expected to mitigate their Carbon emissions

which may affect their own development? What is the contribution of these countries to GHGs emissions?

Answers:

In reply to the above questions, Dr. Mohamed provided the following responses

- Adaptation actions are taken to cope with a changing climate, e.g. changes in the amount and distribution of rainfall, higher temperatures, scarcer water resources or more frequent storms, either at present or anticipating such changes in future. Adaptation aims at reducing the risk and damage from current and future harmful impacts cost-effectively or exploiting potential benefits. Adaptation can encompass national or regional strategies as well as practical steps taken at community level or by individuals. Adaptation measures can be anticipatory or reactive. Adaptation applies to natural as well as to human systems. Climate proofing implies ensuring the sustainability of investments over their entire lifetime taking explicit account of a changing climate. O the other hand, climate change mainstreaming is the process of assessing the implications of climate variability and change on development planning, policy decision making and project/program implementation, in all areas and at all levels. It is a strategy for making climate change concerns and risks in the design, implementation, monitoring and evaluation of development policies, initiatives and programmes.

- Climate change directly impacts both the demand- and supply-side of water resources and energy services. Water and energy systems and infrastructures are already subject to shifting rainfall regimes, substantial temperature and other climatic changes. Climate change can also indirectly impact any part of the energy sector. For example, a change in water supply can affect energy production/supply and distribution and consequently services to energy users. However, energy policies need to be increasingly driven by the need to promote clean and affordable energy in poor countries and to mitigating greenhouse gases emissions in industrialized countries. When vulnerability is discussed at the national and/or regional level it is important to link it with the issues of energy supply security and how to improve it.
- There are ongoing initiatives, plans sand projects aimed at combating climate change and harnessing the benefits of transboundary water resources in the Nile Basin and elsewhere in Sub Saharan African countries. There are efforts to coordinate the various activities, harmonize plans and create operational synergies among the various institutions and actors in the sub-region. It is a challenge but there are important developments and initiatives as coordination and collaboration are key for effective management of common resources and regional prosperity and stability.
- At ENTRO, we recognize that climate Change will increase the likelihood of Eastern Nile Countries to face water shortage and stress and therefore greatly threatens these countries' economies. One of the main threats to sustainable development over the Nile basin is the process of climate change, since it redistributes the natural occurrence of the hydrologic phenomena that supplies water to different regions. ENSAP projects consider the critical linkages between water and energy resources, potential climate change Impacts on these resources

including the effects of current social and environmental stresses. In this regard, ENSAP's climate change proofing planning approach addressing institutional and project issues focus on five pillars; predictions, adaptation, mitigation, education and capturing opportunities. We are in the process of soliciting funds to initiate climate proofing activities and to continue building institutional and regional/local capacities. ENTRO projects consider community participation, awareness raising and capacity building of poor and vulnerable communities as major issues and the design and implementation of activities consider the indispensable role of community participation and empowerment issues.

- In order for ENTRO to address the important issue of climate change, an "Approach Paper" was developed in May 2009 describing a comprehensive strategy on how to respond to the challenges and opportunities associated with climate change. Before 2009, climate change related activities within ENSAP projects were carried without the benefit of coordinated overall strategy. Various studies on "Climate Smart/Proof ENSAP Projects" has been launched as a follow-up to the "Approach Paper" with a focus on how to achieve climate change proofing within each of the ENSAP projects that are managed by ENTRO. ENTRO succeeded in carrying out policy relevant studies on the impact of climate change on irrigation water requirements in the Eastern Nile basin, capacity building requirements for regional climate modeling, options to reduce the carbon footprint of watershed project activities, likely scenarios of rainfall and river flows in the Eastern Nile basin, addressing regional climate system changes in regional water resources planning and assessing the impact of the new Eastern Nile regional energy market on clean energy sources. ENTRO developed final proffing plans for Baro-Akobo-Sobat, Eastern Nile Climate Change Response Financing Support Project, Eastern Nile Climate Change Detection and Advisory Services at Watershed Level, Eastern Nile Adaptation to Climate Change, Improving Irrigation Water Productivity Using an Irrigation Information Management System and Eastern Nile Regional Climate Projection and Hydrological Impact Assessment. We collaborate with various regional and global stakeholders and are in the process of soliciting funds for the implementation of the proofing plans and building of institutional capacity for enhanced impact.
- The contribution of Africa to the climate change problem is negligible (less than 4% of global GHGs emissions). Yet, African countries are the most vulnerable and least adaptive to the global climate change problem. However, African countries need to adapt to the inevitable impacts of climate change and even pursue low-carbon development paths.

NATIONAL POLICY AND INSTITUTIONAL RESPONSES: MAINSTREAMING CLIMATE CHANGE IN WATER AND ENERGY POLICIES IN ETHIOPIA

Fekahmed Negash
Ministry of Water and Energy (MoWE)

Ato Fekahmed in his presentation attempted to address: 1) water security and its developmental implications, 2) water, energy and climate change linkages, 3) policy, strategy and institutional issues, 4) Ethiopia's Climate Resilient Green Growth and its link to water and security, and 5) conclusion and way forward.

1. Water Security and Developmental Implications

As per Ato Fekahmed water security implies "*sustainable access on a watershed basis to adequate quantities of water, of acceptable quality, to ensure human and ecosystem health"*. It is the capacity of a population to ensure that they continue to have access to potable water. A water secure world is where every person has enough safe, affordable water to lead a clean, healthy and productive life. A water secure world harnesses water's productive power and minimizes its destructive force. However, uncertainties and risk associated with water are expanding under climate change, while demand for energy and food are growing as economies and populations grows. On the other hand, there is similarity between water scarcity and security which has wider developmental implications and impacts. Water insecurity can arise from physical scarcity (resulting either from climatic or geographical factors and unsustainable consumption or overexploitation), economic factors (with poor infrastructure or capacity preventing access to the water resources available), or it may occur where pollution or natural contamination renders water resources inaccessible. In this regard, the security concerns as a result of water scarcity are those related to conflict resulting from competition over scarce resources and water wars.

2. Water, Energy and Climate Change

According to the presenter water, energy and climate change are intricately related and hence need to be addressed holistically. Both water and energy are essential to every aspect of life: social equity, ecosystem integrity and economic sustainability. Water is used to generate energy and energy is used to provide water. Both water and energy are used to produce crops, and crops in turn can be used to generate energy. Climate change affects water availability and hence supplies and demands of energy. Both development and use of water and energy impact the environment. Climate change affects both the availability and use of water and energy. Given the increasing global demand for water resources, technology, innovation, a sense of responsibility and political will are believed to bring real solution.

3. Policy, Strategy and Institutional Issues

According to Ato Fekahmed, there should be strong link between water, energy and climate change policies and strategies. Policy need to be long term and flexible to allow for the use of the most appropriate approach, depending on local conditions. Tradeoffs between water, energy and climate policies need to be identified explicitly and decisions taken accordingly. In this regard, the key challenge for successful climate change

adaptation is the development of institutions that can respond more effectively to an uncertain climate future. Because water is the main medium through which we are likely to experience climate change, institutions that play a role in water resources management have a particular need to become more adaptive in their operations and interactions. To manage climate change and to sustain water resources and ecosystems, institutional settings must promote integrated approaches to optimizing outcomes in different sectors, including for water, biodiversity, climate, and energy. According to him, the key policy directions are the necessity to provide reliable climate change risk data, models and analysis tools, to integrate water and energy efficiency in measurement tools and policy, to ensure institutional capacities can deliver common management practice, education and awareness raising, valuing ecosystem services into transboundary decision making and to encouraging best practice through innovation, appropriate solutions and community engagement

In line with this, Ato Fekahmed discussed the Ethiopian Water Resources Management Policy of 1999 which he said was pprepared well before climate change and variability became apparent international agenda and has not yet been revised since its issuance some 13 years back. The policy has four pillars: Integrated Water Resources Management, Water Supply and Sanitation, Irrigation and Drainage, and Hydropower Development. The overall goal of the policy is to enhance and promote all national efforts towards the efficient, equitable and optimum utilization of the available Water Resources of Ethiopia for significant socio-economic development on sustainable basis. The policy has important provisions including the promotion of sustainable development and regional equities and responsibilities, the creation of conducive environment for the enhancement of linkages and partnership between the Federal and Regional states on the basis of the constitution for the realization of efficient, sustainable and equitable water resources management, the pursue of integrated approach (IWRM), and the principle of subsidiary or (functional) decentralization.

According to the presenter, the fact that water and energy are institutionally integrated under MoWE is commendable. In this regard, three types of water resources management institutions are developed: Regulators or Standard setters who are mainly functioning at national level and are meant to discharge constitutional functions, resource managers dealing mainly with water resource management at basin and sub-basin level and deals with organizational functions within the boundaries set by the regulator, and the operator or service provider who is directly responsible for provision of water for domestic use, irrigation, hydropower, industry and other uses and is undertaking operational functions. However, ffurther fine tuning of the policy and institutions may be required with respect to qualifying mainstreaming of climate change into water and energy management. He also mentioned the need to strengthening the institutional capacity with respect to analytical capacity including forecast and prediction, the use of modern tools such as GIS/Remote Sensing, preparedness etc need to be incorporated in the policy instruments.

According to Fekahmed, climate change impacts are predicted to create huge challenges to transboundary water resource management. In this connection, he mentioned key policy directions such as the need to make climate change and transbaundary issues

public issues, the need to create public awareness about the nature and consequences of climate change and transboundary water sharing, planning and mainstreaming of climate change into water and energy management, preparation of the public for climate change and transboundary water (shared resources) responsibly, and devising basin wide mechanism for cooperation, information exchange particularly disaster preparedness and early warning.

4. Ethiopia's CRGE and its Link to Water and Energy Security

Recently Ethiopia has issued its CRGE strategy whose mission is to support the achievement of the country's ambition to build a middle income carbon neutral economy which was set forth in the Growth and Transformation Plan (GTP). According to the presenter, if Ethiopia were to pursue a conventional economic development path, the resulting negative environmental impact would follow (more than double green house gas emission) and that path could face resource and financial constraint. Hence, building climate resilient economy will facilitate adaptation to climate change to minimize the potential damage and to capture the potential benefits. The CRGE has the objectives of fostering economic development and growth, ensuring abatement and avoidance of future emissions, and improving resilience to climate change.

The presenter outlined the four pillars in the Ethiopian CRGE strategy. These relate to Agriculture: improving crop and livestock production practices for higher food security and farmers income while reducing emission, Forestry: protecting and re-establishing forests for their economic and ecosystem services including as carbon sink, Power: expanding electricity generation form renewable energy for domestic and regional market, and Transport, industrial sectors and building: leapfrogging to modern and energy efficient technology. In terms of water and energy security, the agriculture pillar contains such important components like irrigation, livestock and other related activities requiring water for development, the forestry pillar requires water for survival, and forests serve as important intervention against extreme events and watershed degradation, in terms of power most of Ethiopia's energy source is hydropower, and the transport, industrial sectors and building needs water. In short, there is no life, sector that does not require water for survival, growth, development and management

5. Conclusion and way forward

According to Ato Fekahmed, climate change is a reality and we have to live with it. In this regard, ensuring water and energy security in the face of climate change is a responsibility we have to discharge. Policies, strategies and institutions have to competently respond to the impact of climate change at all levels: local, national, basin and international. On the Ethiopian side, the launching and proper implementation of the Climate Resilient Green Economy Strategy is a smart way to minimize the impact and exploit the opportunities associated with climate change. For the realization of the vision and objectives of the strategy, full involvement of all stakeholders' particularly local communities and political commitment at the top level is critical for the implementation of the strategy.

Discussion: Question and answers

Questions: Following the presentation on "National Policy and institutional responses: mainstreaming climate change in Water and Energy policies in Ethiopia", the following questions were raised to the presenter Fekahmed Negash.

- Are the risks of climate change well integrated in the water and energy policies and strategies of Ethiopia?
- What can be done to develop an integrated and climate smart water and energy policy in Ethiopia? What is the MoWE doing in this regard?
- What are the developments to use Ethiopia's huge untapped water resources for both hydropower generation and irrigation agriculture?
- As an expert in the MoWE, What do you suggest to improve cooperation for the development and greening of water infrastructure in the Nile Basin countries?

Answers:

In reply to the above questions, Ato Fekahmed provided the following responses.

- The Government of Ethiopia recognizes climate change is a major development challenge that needs to be addressed as a cross-cutting policy and development issue. Ethiopia has a number of environmentally-oriented policies and programs addressing climate change. The country has developed its NAPA in 2006, NAMAs in 2010 and a CRGE strategy for building green economy is issued recently. We have separate water and energy policies developed way before climate change became a global priority development agenda. Hence, the need to revise the policy instruments and mainstreaming climate change issues in them. In this connection, it is important to bear in mind that Ethiopia is a major international player in the UNFCCC process. Through the leadership of its Prime Minister, Ethiopia is taking a leading role in both the regional and global response to climate change. As a clear sign of its international commitment to fighting climate change, the Government has initiated a Climate-Resilient Green Economy (CRGE) initiative to build a green economy that will help the country to realize its ambition of achieving a middle income status by 2025.
- Institutionally, the GoE brought together water and energy under one ministry which is commendable and a step in the right direction. Institutionally, there is still need to revise and integrate the separate water and energy policies as one policy document and making it climate smart. As Ethiopia is revolutionizing and aggressively embarking on developing its huge and untapped water resources, the MoWE as the mandated Federal institution is spearheading this national process.
- Ethiopia is pursuing an integrated water management strategy. The aim is to harness the untapped water resource potential for multiple uses. Since energy poverty is a major development challenge, recent efforts are focusing on mobilizing citizens for the development of the Renaissance dam.
- Ethiopia has entered into its new millennium with high hopes of renaissance and a better life for all of its citizens in the coming decades. One of the challenges the country will have to face to make this dream a reality is climate change and its consequences on the country's natural resource base. Cognizant of this fact, the government of Ethiopia has been exerting maximum efforts to properly manage its water resources at both national and trans-boundary levels. At national level, adaptation to climate change has been made part of a National Water Strategy. At the trans-boundary level, the Water Policy,

Sector Strategy and the Development Programme all promote trans-boundary cooperation, including joint development and management of the shared resource. With regard to the institutional arrangements, Ethiopia has a Boundary and Trans-boundary Rivers Affairs Directorate, in the Ministry of Water Resources, now the Ministry of Water and Energy, which is dedicated to promoting inter-riparian cooperation. Ethiopia's Water Resources Management Policy incorporates fostering regional cooperation on trans-boundary waters, based on the principle of equitable and reasonable utilization. The Ethiopian Water Sector Strategy also gives particular attention to ascertaining Ethiopia's entitlement and use of trans-boundary waters and promoting fair regional cooperation. Sustainable and low-carbon water infrastructural development requites trust and genuine cooperation among riparian countries for the equitable utilization of the Commons.

WHAT ROLES CAN CSOs PLAY TO ENHANCE CLIMATE RESILIENCE IN THE ENERGY AND WATER SECTOR? A CASE IN THE CENTRAL ETHIOPIAN HIGHLANDS

Habtemariam Abate
Executive Director, SLUF

Dr. Habtemarim in his presentation attempted to address: 1.Geography of Central Ethiopian Highlands and geographic hotspots in terms of energy, 2 Threats (to economic sectors and rural livelihoods), 3) root causes of threats, 4) effects of climate change to communities in Central Ethiopian Highlands, and 5) role of CSOs in environmental adaptation (Case of some CSO experiences).

1. The Central Ethiopian Highlands and Geographic Hotspots in terms of Energy
According to Dr. Habtemariam Ethiopia's highland topography is rugged and complex. The central part of the country is mostly high plateau, at least 1500 m above sea level with peaks rising to more than 4000 m.a.s.l. The Ethiopian Highlands form the largest continuous area of its altitude in the whole continent, and the country is sometimes called the Roof of Africa for its height and large area. The Ethiopian highlands are divided into northwestern and southeastern portions by the main Ethiopian Rift Valley. The northwestern portion, which covers the Tigray and Amhara Regions, includes the Semien Mountain. Its highest peak, Ras Dashen (4550 m), is the highest peak in Ethiopia. Lake Tana, the source of the Blue Nile, also lies in the northwestern portion of the Ethiopian Highlands. The Central Highlands which comprises of Ambalage (Tigray Region), Guna (Amhara Region), Mekdela (Amhara Region), Choke (Amhara Region) and Megezez (Amhara Region) mountains is a geographic hotspot in terms of the production of energy. Watershed management and environmental rehabilitation intervention in these mountains areas is very important for the sustainability of hydropower dams along the Abbay River.

Major hydro power stations in Central Ethiopian Highlands

Name	**Region**	**Capacity (MW)**
Tekeze	Tigrai/Amhara	300
Tana Beles	Amhara/ Benishangul Gumuz	450
GG1-3	Oromiya/SNNPR	210-1800
GRD	Amhara/Benishangul Gumuz	6000

2. Threats (to Economic Sectors and Rural Livelihoods)
Dr. Habtemariam outlined siltation, water scarcity (low infiltration) and loss of livelihood system as the major climate change related threats to community and local ecosystems in the Central Ethiopian Highlands. Water, energy and rural livelihoods are the most affected sectors by these problems. Unless community based and participatory climate change adaptation, watershed management and biological conservation structures are done, climate change may worsen environmental degradation, ecosystem decline and livelihood insecurity in the Central Ethiopian Highlands.

3. Root Causes of Environmental Degradation and Livelihood and Energy Insecurity

The presenter mentioned Traditional and inappropriate farming practices, land use and land cover change, the lack of land use plan and climate change as the most critical causes of environmental degradation, and rural shaky livelihoods and energy insecurity in the Central Ethiopian Highlands.

Siltation (left) and land degradation in the Central Ethiopian Highlands

4. Specific effects of Climate Change on Rural Communities and Ecosystems in the Central Ethiopian Highlands

According to Dr. Habtemariam **i**ntensifying climate change is affecting the lives and livelihoods of rural communities and the environment in which they depend through intensifying the loss of biodiversity, the spread of plant and animal diseases, changes in agricultural calendar, length of growing period, and causing conflict of interest (local Viz. central priorities and interests). He said that because poor communities in the Central Ethiopian Highlands are heavily dependent on natural resources for their livelihoods and day-to-day survival. They are more vulnerable to climate change because they tend to be located in geographically vulnerable areas. Vulnerability also has social and economic dimensions which influence how climate change affects different groups and environments.

5. Role of CSOs (Case of SLUF Consortium Member CSOs)

According to Dr. Habtemariam poor communities in the Central Ethiopian Highlands already struggle to cope with the existing challenges of poverty and climate shocks. They need capacity building, awareness raising and practical environmental management and climate change adaptation and mitigation support from government, CSOs and other development partners. He said that in the Central Ethiopian Highlands, CSOs can play vital role in building community and ecosystem resilience to climate change-induced risks. He specifically discussed the experience of SLUF consortium members (ORDA and REST in Tekeze, EWNRA in Gilgel Gibe area) who operate in the Central Ethiopian Highlands and run projects implementing various community based climate change adaptation, environmental rehabilitation, capacity building and constructive policy

dialogue (organizing workshops, office visits, exhibitions, film show and exchange visits).

Discussion: Question and answers

Questions: Following the presentation on "What Roles can CSOs play to Enhance Climate Resilience in the Energy and Water Sector? A case in the Central Ethiopian Highlands", the following questions were raised to the presenter Dr. Habtemariam Abate.

- You have succulently discussed the experience of SLUF consortium members in environmental adaptation in the Central Ethiopian Highlands (Choke Mountains). How about the role and contribution of other CSOs/NGOs?
- The watershed management and climate change adaptation challenges in Ethiopia are huge. How can state and non-state actors work together for maximum impact?
- How about the role of governmental institutions and local communities in the management of water resources and the prevention of siltation and other land use and land cover change related risks in the water sector?
- Can you explain your comments on inappropriate farming methods and land management on accelerating land degradation and exposing communities and ecosystems to climate risks?
- How are you planning to disseminate/popularize the information your organization documented in the 20-minute documentary film?

Answers:

In reply to the above questions, Dr. Habtemariam Abate provided the following responses.

- The climate change challenge is huge in Ethiopia. It is a cross-cutting issue affecting all economic sectors and groups of people. Hence, it requires concerted and coordinated efforts by all development partners in Ethiopia, including governmental institutions, CSOs/NGOs, vulnerable communities, donors, media houses and the private sector. All adaptation is local and local agencies, especially CSOs, being closest to the problem are best suited to creating adaptive capacities.
- Ethiopian CSOs can play an important role in raising awareness, mapping vulnerability and empowering local stakeholders and communities. CSOs can play a facilitating and advocacy role in securing an enabling regulatory framework in regard to nature based enterprises of the poor. There are many CSOs in Ethiopia working on environmental awareness, climate change capacity building, and in designing and implementing community based environmental rehabilitation, SLM, watershed management and climate change adaptation/mitigation programs and projects. In my presentation, I only focused on presenting the experiences of few selected SLUF consortium member organizations. But I am fully aware and appreciative of the role of various local and national environmental and development CSOs in climate change adaptation.
- We know that agriculture is one of the major vulnerable sector to climate variability and change. We also know that agriculture is one main source of GHGs emissions. Particularly, land use and land cover changes are one cause of Carbon emissions. Land use and land cover changes may result from inappropriate far management techniques including intensive and un-contoured farming, intensive use of chemical

inputs and deforestation. Contour farming, conservation agriculture, biological conservation structures (using Vetiver grass, for example) are important to improving carrying capacity, productivity and building ecosystem resilience.

- There are very many good lessons and new/best experiences in community based watershed management and climate change adaptation that we can disseminate to wider audience and popularize for wider and better impact and sustainability of future interventions. We are trying to create effective collaboration and partnership with an array of stakeholders to document best practices and share the lessons through various print and electronic media.

After the presentations of the Four papers and the 20-minite documentary film on climate change and water and energy security issues in Ethiopia and the possible implications for downstream countries, forum participants discussed at some length on the presentations and the role of the EthNDF, other CSOs and governmental institutions, NBI/ENSAP project managers and coordinators, NDF members including LDFs, donors and media houses and forwarded general comments, insights and recommendations on the way forward. The following presents a summary of the comments and recommendations forwarded during the general discussion on the way forward.

General comments and suggestions

- Water is the critical medium for climate change vulnerabilities and adaptation and mitigation responses. It is through its impact on water that climate change impacts other sectors including energy, agriculture, health and biodiversity. Hence, it is important to emphasize on and critically investigate the nexus between climate change, water and energy resources. The research-policy-practice nexus will be an important variable for green and sustainable water infrastructure development.
- It is important to develop the water infrastructure in the Ethiopian highlands for tapping the huge hydropower potential and meeting the unmet and growing needs for energy of the rural and urban communities and sectors
- The role of integrated water resource management and use and development of pro-poor energy is critical for Ethiopia if the country is to achieve its GTP and ambition of a middle income green Ethiopia in the coming decades
- Increasing water use efficiency through minimization of losses and wastages everywhere is a critical factor that needs to be considered in water and energy infrastructure development and policy and institutional arrangements

- Climate change is a global problem. It is a development challenge for all riparian countries in the Nile Region. As the Nile Basin countries are mainly agrarian with less developed rural infrastructure and extremely climate-sensitive livelihoods, agriculture, water and energy are common issues that the countries to work with in order to combat the effects of climate change and embark on sustainable development.
- There is need for wider dissemination of the documentary film on the experience of SLUF consortium members in community based watershed management and climate change adaptation to the general public. It is also important to document best and new experiences of other local and national CSOs/NGOs in Ethiopia.
- The need for harmonized and climate smart regional policy and effective institutional framework is also emphasized by paper presenters, forum moderators and commentators from the forum participants.
- The need for water, energy and climate change professionals and experts in Ethiopia to work hard and work in partnership to understand the critical linkages between water and energy security and the possible implication of this link on downstream countries is emphasized. This will help policy makers to make informed decisions for the development of green water infrastructure for equitable and sustainable use among riparian countries.

Recommendations on the way forward

- Need to engage more local community representatives. local and regional CSOs, and women professionals in EthNDF activities
- Need to focus on researches that focus on practical experiences, challenges and opportunities of communities, governmental and non-governmental stakeholders in the design and execution of climate change adaptation programs and projects
- Need for EthNDF to engage in national and international collaboration, networking and partnership for wider visibility, credibility and impact.
- Need to document, and promote good and new climate change adaptation practices of Ethiopian regional and national CSOs/NGOs
- The need for enhancing sectoral and inter-sectoral cooperation and collaboration among institutions working in climate change, water and energy sectors
- Effective mainstreaming of climate change issues in all water and energy policies and other national and regional development policy frameworks
- Need to explore ways of disseminating and popularizing best practices in the water and energy sector to wider audience (through better use of art, website blogging, public television, exchange visits, community festivals across riparian countries, etc)
- Building institutional capacity (forecasting, modeling, technical and operational)
- Enhancing the role of research and education for awareness raising, capacity building and informed policy making.

CLOSING REMARK

Mengesha Workneh
Chairperson, EthNDF

At the closing session of the one day multi stakeholder EthNDF, Ato Mengesha Workneh, the Chairperson of EthNDF delivered a very brief closing remark. In his closing remark, Mr. Mengesha reiterated EthNDF's commitment to raising awareness and building capacity about the critical linkages between climate change, water and energy resources and on the need to have effective regional cooperation in the management and development of transboundary water resources in the Nile Basin. He said that this 4th Multi-stakeholder forum succeeded in bringing together various stakeholders from key government ministries, professional associations, academic and research institutions, CSOs/NGOs, donors, private sector actors, regional and sub-regional initiatives, members of Parliament, media houses and women and youth groups.

Ato Mengesha also said that the discussions that followed each of the four papers presented in the Forum were thorough, enlightening and worth listening to. He said "I, on behalf of EthNDF urge all of you to be catalysts and agents of dissemination and popularization of all the important knowledge and insights you gained from the presentations and warm discussions held following each of the presentations and towards the closing of the forum". At EthNDF we encourage and promote knowledge and evidence based dialogue to have shared knowledge and understanding of the critical linkages between climate change, water and energy resources and the possible implications of this inextricable linkage on the sustainable management and wise use of transboundary water resources. I encourage and even urge all of you, forum participants and members, to continue working with us for wider impact and visibility. I thank you again for being with us and for your active participation in the discussions. I look forward to working with all of you and even urge you to support EthNDF financially and in all means you can so that we can achieve our vision of domestically seeing middle income and green Ethiopia and regionally the development of strong and viable regional cooperation among the Nile Basin countries.

One Nile, One Family

Ethiopian Nile Discourse Forum position statement on **Climate change, water and energy security in Ethiopia: implications on cooperation in the Nile basin,** ***March 29, 2012***

The Nile Basin Discourse (NBD) is a regional network of civil society organizations established to facilitate and support civil society engagement in Nile Basin Cooperation and development processes in pursuing our shared vision.

Engagement is facilitated by the regional secretariat based in Uganda and through National Discourse Forums (NDFs) in each of the eleven countries (Burundi, the Democratic Republic of Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, South Sudan, Sudan, Tanzania and Uganda), which currently have a total of over 750 civil society member organizations across the region.

The Ethiopian Nile Discourse Forum organized a multi Stakeholder forum in Addis Ababa, Ethiopia March 29th, 2012 to discuss on the **Climate change, water and energy security in Ethiopia: implications on cooperation in the Nile basin** so as to devise Strategies for enhanced and better collaboration among the various stakeholders at all levels for better addressing the impacts of climate change. Based upon the dialogue and deliberation conducted during the forum the participants of the forum make the following recommendations on the following issues:

- The forum recognizes that water and energy are inextricably linked and hence urged policy makers to design and implement a holistic and climate smart policy and strategy

- The forum appreciates that the Eastern Nile Technical Regional Office (ENTRO's) advice is to have more water storages in the Highlands of Ethiopia if climate change is mitigated and adapted in the Eastern Nile region and ENSAP projects need to be designed to ensure this;

- The forum appreciates ENTRO's climate change proofing planning approach that addresses institutional and project issues focusing on climate change predictions,

adaptation, mitigation, education and capturing opportunities for cooperation in the sub-basin.

- The forum urges water professionals and experts to exert maximum efforts in scientific and institutional capacity building especially analytical, technical and implementation capacity to effectively and optimally manage transboundary water resources particularly so as to better adapt and mitigate the harmful effects of changing climate.

- The form recognizes that rapid population growth and land degradation in the Eastern Nile region is posing additional challenge in the region and urges the respective governments to work hard in this aspect.

- The forum acknowledges that the impacts of climate change on water and energy in Ethiopia has also impacts on downstream countries and urged the riparian countries to work towards efficient management and utilization of transboundary water resources and climate proofing development interventions.

- The forum emphasized the importance of having harmonized regional water and energy policy through realizing the cooperative framework agreement of the NBI

- The forum appreciates that institutionally the placement of water and energy under one ministry (MoWE) is commendable, and yet the forum urges the GoE to have an integrated water and energy policy.

- The forum acknowledges the work of CSOs at the grass root level in designing and implementing community and ecosystem resilience building projects and raising community awareness and building their capacities to better prepare and adapt to the changes in climate.

- The forum appreciates the GoE recognition of the role of CSOs and other non-governmental stakeholders for the successful realization of Ethiopia's water resources development policies and strategies at national and inter-riparian levels, and the government's commitment to work with them in the country's development efforts, particularly in defending Ethiopia's right and genuine position on the development of water infrastructure for the development of clean and sustainable energy and climate change adaptation and mitigation.

ANNEXES

ANNEX I: FORUM PROGRAMME

Ethiopian Nile Discourse Forum/EthNDF
4th National Multi-Stakeholder Forum on Climate Change, Water and Energy Security in Ethiopia: Implications on Cooperation in the Nile Basin
March 29, 2012, Harmony Hotel, Addis Ababa

Time	Activity	Responsibility	Moderator	Raporteur
08:30-9:00	Registration of participants	*EthNDF*		
09:00-9:10	Welcoming Address	*Mengesha Workneh, Chairperson, EthNDF*	Mekuria Argaw (PhD)	Alebachew Adem
09:10 – :20	Official Opening	*Guest of Honor*		
09:20 –9:50	climate change challenges on water and energy security in Ethiopia & possible implications on the downstream countries	*Semu Ayalew (PhD) Addis Ababa University*		
09:50-0:20	Discussion	*All*		
10:20-10:50	**Group photo and tea break**	***EthNDF***		
10:50: 11:20	Climate change: a challenge or opportunity for cooperation in the ENSAP region?	*Mohamed El-Muntesir (PhD), ENTRO*	Mekuria Argaw (PhD)	Alebachew Adem
11:20-11:50	Discussion	*All*		
11:50-12:20	National Policy and Institutional response: mainstreaming climate change in water and energy policies in Ethiopia	*Fekhamed Negash, MoWE*	Sileshi Bekele (PhD)	
12:20-13:00	Discussion	*All*		
13:00-14:00	**Lunch break**	***NDF Ethiopia***		
14:00-14:30	Roles of CSOs in enhancing communities' awareness and capacities for adaptation to climate change in Ethiopia	*Habtemariam Abate (PhD) Executive Director, SLUF*	Sileshi Bekele (PhD)	Alebachew Adem
14:30-14:50	Discussion	*All*		
14:50-15:30	General discussion on the way forward	*All*		
15:30-16:00	Tea break	*EtHNDF*		
16:00-17:00	Development and adoption of recommendations on the way forward	*Moderator, Raporteur*		
17:00-17:30	Closing remark	*EthNDF Chair*		
17:30-19:00	**Cocktail**	***NDF Ethiopia***		

ANNEX II: LIST OF FORUM PARTICIPANTS

List of Participants of the 4th National Multi-Stakeholder Forum on Climate Change, Water and Energy Security in Ethiopia: Implications on Cooperation in the Nile Basin, March 29, 2012, Harmony Hotel, Addis Ababa, Ethiopia

No	Name	Sex	Organization	Position/Section
1	Zenebech Ayalew	F	ELA	Member
2	Mohaned El-Muntseir	M	ENTRO	Environment
3	Demillie Mollaw	M	Defense College	Lecturer
4	Ailay Gebresellassie	M	Defense College	General Secretary
5	Mengistu Bayissa	M	AEPA	Executive Director
6	Fekahmed Negash	M	MoWE	Director
7	Amare Abebaw	M	Green Ethiopia	Manager
8	Wondiimu Tekle	M	MoWE	State Minister
9	Bezawit D.	F	RRA	Intern
10	Sileshi Bekele	M	UNECA/ACPC	Water Advisor
11	S. Tamiru	M	MoWE	Expert
12	B. Bogale	M	RRA	PR
13	Adane Taddesse	M	Fana Broadcasting	Editor
14	Tesfaye L.	M	MoWYCA	Director
15	Oona Bauhannen	M	University of D.	Researcher
16	Woldemariam M.	M	Assela Consumers Ass.	Member
17	Daniel Tewedros	M	Assela Consumers Ass	Promoter
18	Tewodros Kebede	M	ASDA	Program Officer
19	Metasebia H.	M	Lawyer	Attorney at Law
20	Azmera K.	M	Burie	Dean
21	Mulugeta Demelash	M	EDC-DICAC	Department Head
22	Belay Semane	M	AAU	Ass. Professor
23	Tilahun Tiruneh	M	AFE	Assela
24	Chernet	M	-	-
25	Eyob Alemayehu	M	AAU	Deputy Librarian
26	Tamiru Sebsibie	M	PANE	Unit Leader
27	Yosef Tesfaye	M	NMA	Meteorologist
28	M. Hailu	M	WCDO	-
29	Begashaw Molla	M	CIDA	-
30	H. Gizaw	M	MoA	Expert
31	Gebru Jember	M	CCF-E	Program Officer
32	Beyene	M	Plan Int. Ethiopia	CCIS Project
33	Worku Mulleta	M	SMCO	General Manager
34	Taddesse T.	M	TSLRI	Researcher
35	Yeshalem Mulugeta	F	Bahir Dar Health	Teacher
36	Ibrahim Mohammed	M	Islamic relief	CD
37	Arega Bazezew	M	Bahir Dar University	Lecturer
38	Belete B.	M	Ethiopian Herald	Editor
39	Gebeyehu L.	M	Lem Ethiopia	PD
40	Adamu biy	M	Development Partners	Manager
41	Tilahun S.	M	EECMY-DASSC	PME Officer

42	Teferi Mekonnen	M	Dilla University	Lecturer
43	Tesfa Mengesha	M	-	Executive director
44	Ayenew Dessalegn	M	Arba M. University	Lecturer
45	M. Chanyalew	M	-	General Manager
46	Teferi Mekonnen	M	AAU	Lecturer
47	Biniam Tesfaye	M	Greener Ethiopia	Communication Co.
48	Amanuel G.	M	AAU	-
49	Tariku G.	M	AMEFE	Director
50	Tenaw Hailu	M	SLUF	Executive Po.
51	Yared Girma	M	-	BDS
52	Yibrah Hagos	M	REST	Senior Staff
53	Habtemariam Abate	M	SLUF	Director
54	Haftu Wolde	M	ECO-DICAC	Chief Coordinator
55	Paulos Yoseph	M	NCA	Health Educator
56	Shimata E.	M	Afro Ethiopia	Director
57	Hailemariam M.	M	Panos Ethiopia	E. Coordinator
58	Dereje Jeba	M	ERHA	ED
59	Damit R.	M	Araya Ethiopia	Coordinator
60	Mengesha Workneh	M	-	Lem Ethiopia
61	Birtukan A.	F	Amhara Mass Media	-
62	Muktar Reshid	M	EFP	Consultant
63	Misrak T.	F	Better Health	Coordinator
64	Tagel Wobetu	M	Pastoralist Concern	M & E Officer
65	Kebede Worku	M	-	-
66	Sedet Hailu	F	Ethiopia EDA	Coordinator
67	Abebe E.	M	EEE	Officer
68	Biruk Dereje	M	Ethiopian Barr Ass.	Member
69	Aster Misganaw	F	AMMA	Reporter
70	Tamiru W.	M	Private employee	-
71	Damit Bekele	M	Plan International	Advisor
72	Yohannes Gizaw	M	-	Director
73	Wudalat Gedamu	F	Women Writers	D/Head
74	Mulugeta G.	M	ABUC	Director
75	Tesfaye D.	M	TTO	-
76	Semu Ayalew	M	AAU	Staff
77	Solomon W.	M	-	Coordinator
78	Dessalegn Birru	M	GRIA	Chairperson
79	Koba L.	M	SWEEPEDO	Director
80	Etalemahu K.	F	EETU	Expert
81	Kebede B.	M	ECSU	Director
82	Alebachew A.	M	Private	Rapporter
83	Simegn Arega	F	HoAREC/N	-
84	Gutema G.	M	NCA	Coordinator
85	Getanesh Sintayehu	F	HORC	Director
86	Solomon Dessalegn	M	PFEAM	Director
87	Tsegaye Mekonnen	M	HAPSA	-
88	Mekaria A.	F	AAU/ENSC	Chairperson
89	Maereg G.	-	JLSRI	Researcher
90	Bizuwork Fantaye	M	GICDA	Director

91	Dereje Getachew	M	MOND	Consultant
92	Amare F.	M	OGAA	Project Manager
93	Kifle Tilahun	M	MoFED	Expert
94	Zefekade selassie	M	ETV	Chairperson
95	Derso Zeleke	M	CAAP	E. Director
96	Paulos Semunegus	M	CHWGE	Coordinator
97	Birenesh A.	F	House of P. Representatives	Standing committee
98	Yohannes G.	M	MoWE	Director
99	Abdissa Bekele	M	HOPE 2020	Officer
100	Mengistu Abebe	M	Addis Admas	Editor In-chief
101	Bezawit Eshetu	F	Greener Ethiopia	Fund Raiser
102	Roba Dame	M	M. of Foreign Affairs	Senior Counselor
103	Natie Tadesse	M	Mekelle university	A. Professor
104	Etsegenet Kedir	F	AAU	Attorney
105	Tsedey Girma	F	ELA	Attorney
106	Duria Mekonnen	F	ELA	Attorney
107	Amare Kebede	M	-	CED
108	Zerubabel G.	M	AAU	Researcher
109	Amanuel M.	M	FFE	PS
110	Lakech Haile	F	MoWE	Director
111	Ousman S.	M	Greener Ethiopia	E. Director
112	Hailu Hagos	M	-	MD
113	Tagel Wubete	M	Pastoralist Concern	WASH Coordinator
114	Dereje Getachew	M	National defense	Consultant
MEDIA				
115	Fekadesellasie B.	M	ERTA	Chairperson
116	Bezawit E.	F	ERTA	English reporter
117	Belete B.	M	Ethiopian Herald	Editor
118	Girma Ayalew	M	ETV	Editor
119	Yetbarek W.	M	DW Radio	Reporter
120	Zenebech Ayalew	F	ELA	Member
121	Selamawit Mengistu	F	ELA	Member
122	Selamawit Kassa	F	ERTA	Reporter
123	Elilita Shimelis	F	WIC	Editor
124	Mikias Sebsibe	M	WIC	Editor
125	Mengistu Abebe	M	Addis Admas	Editor
126	Abebe M.	M	WIC	Editor
127	Alemu Kassa	M	Addis Admas	E.A. Editor
128	Hailu Hagos	M	Selamta	MD
129	Menberu Woldemariam	M	ETV	Reporter