

The SADC Multi-Stakeholder Water Dialogue

12-13 October 2010 Maun, Botswana

Watering Development in SADC:
Toward climate resilience
through benefit sharing

November 2010



The SADC Multi-Stakeholder Water Dialogue

On behalf of



Federal Republic of Germany
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UKaid
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International Development



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inWent
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Global Water
Partnership
Southern Africa



WDM
WATER DEMAND MANAGEMENT



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LIST OF ABBREVIATIONS AND ACRONYMS

AMCEN	African Ministerial Conference on the Environment
AMCOW	African Ministers' Council on Water
CCA	Climate Change Adaptation
COP	Conference of the Parties (UNFCCC)
DANIDA	Danish International Development Agency
DFID	Department for International Development
DIS	Directorate of Infrastructure and Services (SADC)
EAC	East African Community
GCMs	Global Climate Models
GTZ	German Technical Cooperation
GWP-SA	Global Water Partnership Southern Africa
ICPs	International Cooperating Partners
ITCZ	Inter-tropical Convergence Zone
IWRM	Integrated Water Resources Management
LHWP	Lesotho Highlands Water Project
MDGs	Millennium Development Goals
OECD	Organisation for Economic Cooperation and Development
PHC	Primary Health Care
RBOs	River Basin Organisations
RCCP	Regional Climate Change Programme
REC	Regional Economic Community
RISDP	Regional Indicative Strategic Development Plan
RSAP	Regional Strategic Action Plan (SADC)
SADC	Southern African Development Community
SADC-DIS	SADC- Directorate of Infrastructure Services
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UN ILC	United Nations International Law Commission
WDM	Water Demand Management
WHO	World Health Organisation
WRTC	Water Resources Technical Committee

EXECUTIVE SUMMARY

The SADC Multi stakeholder Water Dialogue is an annual event organised by the SADC Water Division and brings together water sector practitioners to dialogue with water using and water influencing sectors. Under the auspices of Watering Development in SADC, the theme of the 2010 SADC Multi-stakeholder Water Dialogue was "*Watering development in SADC: Toward Climate Resilience through Benefit Sharing*" and was held in Maun, Botswana in October 2010.

SADC Water Dialogue over the years has been premised on raising the awareness and understanding of how IWRM can contribute to 'socio-economic development and poverty eradication' by ensuring a water secure region. The 2010 SADC Dialogue was aimed at examining and discussing how the region could become more climate resilient. One such approach discussed was better transboundary water resources management that considers benefit sharing. The dialogue brought together many different economic sectors (water, agriculture, energy, disaster management and environment) to dialogue on strengthening climate resilience through benefit sharing. The structure of the dialogue entailed preliminary informative sessions and presentations followed by open dialogue with panelists. The 2010 Dialogue was held back to back with the Zambezi Dams Synchronisation Project Advisory Group meeting – which is funded by GTZ. The dialogue received financial support from DANIDA, InWent, RCCP funded by DFID and Sida and the SADC WDM programme. The RCCP also provided technical support to SADC and GWP SA in developing the programme.

The Maun Dialogue had the following **objectives**:

- Unpack the role of water in economic development and related impacts of climate change
- Look at climate resilient development as a means and reason for sharing water benefits
- Improve the understanding of the region's access to climate finance as a means of ensuring a climate resilient development and water secure future.

During the dialogue, stakeholders from the region noted many key issues that need to be taken into account in order to ensure climate resilience.

Stakeholder identified key issues towards **CLIMATE RESILIENCE**:

- Climate change and variability impacts on rainfall and thus on our rivers, lakes, wetlands and groundwater resources and these critical sources are drivers for other sectors;
- There is need to consider these impacts throughout the socio economic lifecycle, at all times asking the '**so what**' question; for example, what is the socio-economic change brought about by the related climate induced change in precipitation?
- With regard to food security, climate impacts on water availability and extreme events (notably droughts and floods) affects **access** at the household level and **production** at the national food security level. Market access and trade barriers are among the key drivers of food insecurity in the Region, resulting in significant vulnerability to climate impacts;

- It was noted that irrigation is an important adaptation measure to be considered in the agricultural sector but a sound understanding and improved efficiency in the utilisation of the water resource and its availability and the related benefits are an important component of the evidence for action;
- With regards to energy security it was noted that in terms of planned development, the region will see an even higher dependence on hydropower, which in turn is dependent on constant levels of water supply to be effective. The water sector needs to engage with the energy sector, in particular the Southern Africa Power Pool in order to increase the understanding of climate change and risk to development;
- There is a need for integrated energy, water and agricultural production planning with the downstream health impacts in mind;
- There is therefore a need to evaluate the water and socio-economic impacts of hydropower development against the same impacts of achieving food security through strengthened water infrastructure. With the need to achieve both food security and energy security to improve socio-economic development and reduce poverty in the region, the issue of tradeoffs becomes critical;
- Achieving *energy security* will therefore need to balance the diversity of available resources and demand-side management mechanisms such as hydropower, renewable energy and energy efficiency;
- Data to support climate change predictions is critical and the region needs to hone its models and simulations which do not always agree with actual data. The challenge is that decision makers require projections in some form. Developing climate change scenarios rather than pursuing detailed climate change modeling approaches (which take time and present uncertainty) in order to develop strategies for resilience, was discussed as a solution. It was noted that some scenario planning tools allow for the incorporation of existing data, research and analysis. This can facilitate an understanding of how climate change could affect development futures in Southern Africa;
- Improved livelihood mapping and development planning at a local level is important in order to strengthen the resilience of vulnerable communities;
- Climate change increases vulnerability and reduces resilience of valuable ecosystems – it is important for the region to ensure that programmes promoting environmental sustainability and securing biophysical resources are instituted;
- Livelihoods in Africa depend on ecosystems – many communities practice wetland agriculture and depend on fisheries. Thus, ***weak ecosystem resilience compromises attainment of the MDGs, at the same time weakening human health and food security;***
- One adaptation strategy is to place a value on ecosystems, goods and services. The science-policy (development planning) dialogue must be strengthened and linked to improving the understanding of the related finance costs with regards to benefits/losses and the relevant institutional and governance requirements;
- Local knowledge and practices are important and there is need to fast track learning to ensure resilience: local knowledge and practice has informed responses to variability for decades and the better practices should inform resilience building, which will have the added benefit of community participation in decision making processes;
- ***Climate change is a health issue*** – for example food insecurity causes malnutrition, impacting on human development indicators and lowering disease immunity; reduced water quality impacts livelihoods and causes epidemics;

- **Pollution** is a key consideration and has an impact on health, tourism and safe water.

With regards to **BENEFIT SHARING** it was noted that:

- Benefit sharing in transboundary water resources is a useful and necessary tool to promote regional development and integration. Climate change and building climate resilience strengthens the argument for benefit sharing in transboundary waters. Climate change impacts extend beyond national boundaries with impact on the entire river basin system. It is therefore important to broaden the basket of benefits;
- Benefits that can be shared include energy security, food security and water security from good water quality and quantity. These in turn lead to improved human health and importantly, human security;
- Benefit sharing and climate resilience should be anchored in existing mechanisms, instruments and institutional arrangements;
- There is need to focus on building multi-stakeholder platforms that bring together energy, defence, peace and security, food, natural resources and human health to ensure that a broad range of benefits are discussed and understood among all the participating sectors.
- Benefit sharing in most parts of the world is still at a conceptual level with relatively few examples of successful implementation. The SADC region is in its infancy when it comes to integrating the concept.
- SADC is, however, well positioned to take a lead because of having an **international voice on taking benefit sharing from concept to reality**.
- Climate resilient development planning is a driver and a tool for holistically identifying and realizing benefits;
- Ensuring climate resilience through benefit sharing requires change management to both facilitate an understanding of climate and development futures and to bring about the mindset change or paradigm shift needed in the region;
- For benefit sharing to be successful at a regional level there is need to harmonise national interests and to integrate national priorities wherever possible;
- There is need to widen the basket of benefits to include market and trade mechanisms, as these promote regional integration and at the same time provide the basis of adaptations to climate change, thus strengthening resilience;
- With water being central to development, poverty alleviation and to human security in this region, the water sector can bring other sectors along: climate impacts on water further necessitate resilience and benefit sharing and thus are important drivers for **multi-sectoral planning that benefits end users**;
- **Political will is a critical success factor:** the science - policy dialogue should change form to ensure our leaders are well informed and well positioned to take the lead.

Messages from the SADC stakeholders to ensure climate resilience as a driver on the road toward benefit sharing:

- There is need to raise awareness on climate resilience and benefit sharing by taking the dialogue to all levels (national, local and multi-sectoral) ;

- Local knowledge and practices should inform decision making processes in order to improve climate resilience;
- There is a need to improve communication and to find commonalities to bring the subject down to the level where everyone can relate to the concept and its impacts. There is also a need to ensure that we work with the media to ensure that the importance of sharing benefits in the region is widely and well understood;
- There is need for information and data to support decision making processes by strengthening the role of hydrological centers, climate information centers, disaster management units and early warning systems;
- Regional integration, poverty alleviation and regional economic growth –these are the SADC Treaty goals that should be the drivers for benefit sharing;
- Engaging with stakeholders in and outside the water sector on climate resilience and benefit sharing is important and more needs to be done at national level to engage outside the water sector taking into consideration the relevant gender and youth issues;
- Research and development on climate resilience and benefit sharing impacts at a regional and local level is needed with the related need to build research capacity in the region and link it to policy making and implementation decisions;
- Capacity development for both humans and institutions is important. Capacity building efforts should focus on improving the understanding of climate resilience and benefit sharing and on building adaptive institutions and strengthening human security;
- Cross-sectoral planning is critical and finance mechanisms are increasingly favoring cross sectoral bids. At the regional level, development plans should be built on a basis of ensuring climate resilience and should consider the possibilities of benefit sharing;
- The emerging international climate finance architecture is one opportunity to ensure regional climate resilience and provides an urgent imperative for the region to improve its climate finance absorptive capacity and to ready itself to be a justifiably frontline recipient of climate funds;
- There is need to raise awareness and to build the requisite capacity to develop innovative and integrated water financing mechanisms;
- The climate finance funds and mechanisms prefer projects that are multi-sectoral. Benefit sharing is a tool that promotes different sectors working together and is therefore a tool in developing projects for climate financing;
- It is important to work with finance and development planning departments to ensure that budgetary systems fully integrate climate resilience and incorporate benefit sharing.

1. INTRODUCTION AND OPENING SESSION

Opening Session

Session Chair: Bogadi Mathangwane, Department of Water Affairs, Botswana

1.1 Welcome remarks by Department of Water Affairs (Maun) Botswana

The session chair opened the session by welcoming the delegates to Botswana and most notably Maun which houses the famous Okavango Delta. She noted the significance of being in Maun which had been flooded and highlighted the importance of good water management. The SADC Multistakeholder Water Dialogue 2010 is the fourth to be held and Botswana felt very proud to be hosting the region in Maun as this presented an opportunity for delegates to see the other side of the country. The theme on climate resilience through benefit sharing was noted as an important one for the regional development and crucial for all countries sharing water resources to start planning together. Delegates were welcomed and encouraged to actively contribute in order to ensure that the region defines an integrated way towards climate resilience and regional development.

1.2 Remarks by the Chief of Maun

Kgosi Pitsoyabosigo Moremi – Chief of Maun Village

The Village of Maun is the gateway to the only inland delta of its kind in the world. The Chief noted that delegates coming to the Maun dialogue as water and water related experts is a boost and a recognition to the village. Water supplies in Maun are a hindrance to tourism which could do better if reliability is improved. The focus of the dialogue was noted as being relevant to the recent happenings in Maun – where Lake Ngami and the Delta had been flooded which brought some negative impacts on livelihoods. The dialogue outcomes and deliberations could assist the village in solving some of these unfortunate incidences which lead to loss of life.

For full text of speech see Appendix A1

1.3 Remarks by SADC Secretariat

Phera Ramoeli, Senior Programme Officer, SADC DIS

The dialogue has been for the past few years a platform for SADC to engage with other sectors in chartering a way forward for water resources management and development. As committed by SADC, the region continues to respond to recommendations from stakeholders and report back on the progress.

This focus of the 2010 dialogue is a build up of the work that SADC has been doing with RBOs in the region in order to promote an understanding of the concept of benefit sharing. Benefit sharing has been noted as an approach that can be used in sharing water resources targeted at ensuring regional development. However, more needs to be done to build a common understanding of the concept. With climate change impacts already being felt through droughts and floods in different areas of the region, the need to work together to share benefits and ensure regional integration becomes more important. The 2010 dialogue which aims to look at climate resilient development therefore becomes important in looking at how the water sector and other sectors where benefits from water are derived, can work together.

This year's dialogue brings together a number of partners in organising and supporting engagement of stakeholders. As suggested in the previous meetings the WRTC meeting will be

held after the dialogue in order to ensure that suggestions from this meeting are taken up for implementation and follow up.

For full text of speech see Appendix A2

1.4 Opening address and official opening Department of Water Affairs (Botswana)

Obolokile Obakeng, Director of Water Affairs, Botswana

To be a Motswana is to know the value of water. Neither the diamonds in the ground nor the livestock grazing above it are more precious to us. As with minerals, Government is obliged to act as a steward of this country's limited water resources not only for the citizenry of today but also those of tomorrow. Botswana notes the importance of water in achieving the MDGs and the Vision 2016 statement on water states that "*Botswana must develop a national water development and distribution strategy that will make water affordable and accessible to all, including those who live in small and remote settlements*".

Botswana is working at improving the way it manages its water resources and this has led to institutional reforms, development of a water policy and establishing a regulator for the sector. Water resources development is also a key focus area and the government is proceeding with the construction of more dams to ease the water stress.

Botswana notes the importance of water from the environment and the fact that all that makes up the environment, needs water to survive. The Okavango Delta for example is home to numerous species both small and large, and is one such sensitive ecosystem that depends on good water quality and quantity. Botswana adopts the integrated water resources management (IWRM) approach as an appropriate response tool to the challenges faced in effective and equitable water management. This provides knowledge sharing and dialogue aimed at promoting and linking IWRM initiatives at all levels. An IWRM/WE Plan is being developed in the country in order to realise and implement this approach while lessons will be documented in order to share with the region.

Botswana shares all her river basins with neighboring countries and is signatory to the SADC Protocol, which encourages the establishment of "shared watercourse institutions" and "joint management mechanisms" of shared watercourses. Botswana is also signatory to a number of international conventions, these cover both general obligations such as in the case of Agenda 21, the CBD - Convention on Biological Diversity, Ramsar Convention on Wetlands of International Importance, CITES - Convention on International Trade in Endangered Species and UNCCD - Convention to Combat Desertification and Drought, and the UNFCCC - United Nations Framework Convention on Climate Change. These Agreements have provided a platform to negotiate, share ideas and collectively make decisions on the developments and management of our shared resources.

The threat of climate change is a looming one for the region and the world as a whole, especially for semi-arid countries that are prone to extended drought periods, and low rainfall patterns, such as Botswana. Rainfall and weather patterns are changing, bringing erratic temperatures, as well as uncertainty about sustainable livelihood.

Botswana has felt the wrath of climate variability and acknowledges that water is not just a sector but the primary medium through which climate change will impact the earth ecosystems and therefore people's livelihoods. Therefore managing water in and between countries will be a critical component for the success of any efforts to adapt to the impact of climate change. This might require rethinking the current water practices and develop new concepts and approaches for sustainable water management.

For the full text of the speech see Appendix A3

1.5 Keynote presentation on theme

Reginald Tekateka – AMCOW TAC Chair

Water was noted as a catalyst for regional cooperation and the progress made in the 15 river basins of SADC countries in promoting regional cooperation in the management of water resources by the implementation of the Shared Watercourses Protocol is evidence to this. This is very much the spirit that lay behind the establishment of the African Minister's Council on Water (AMCOW) in 2002 aimed at providing political leadership and strategic guidance in the shared management of Africa's 63 shared river basins. This was founded on a firm recognition of the role that water can play in fostering economic and political integration of the continent. The Sharma el Sheikh Declaration signed by the African Heads of State in 2008 identifies climate change as a critical threat to water resources in Africa with a high potential to reverse development strides already achieved. It calls for the development of appropriate strategies to address this threat. Africa's regions are encouraged to develop responses that address their specific vulnerabilities.

Climate change increases the need for regional cooperation as the problems of the global economy are interconnected and cannot be solved by one country. Examples can be seen in the increase of food prices and oil prices which led to protests in different parts of the world. Therefore, climate change has an impact on development and there is need to focus on ensuring climate resilient development. The water, climate change and development nexus is clear in an analysis of the impacts of climate on the MDGs five years before 2015. The continent is way behind in meeting the MDGs, and climate change and variability threaten to undo the progress that has been made and roll back the gains in the fight against poverty. Water is central to achieving the MDGs and in the SADC region water is a shared resource. Therefore, the link between managing the resource in the context of climate resilient regional development cannot be ignored. Climate change adaptation is therefore essentially development in a **hostile climate**. Climate change will have an impact on the GDP of countries and already the SADC region is one of the poorest in the world. A mere 1% loss in GDP will equate to a loss of 2.1bn USD in GDP in the region – something the SADC region can ill afford – and a number that will worsen life expectancy, malnutrition, infant mortality and a number of development indicators. Impact from climate is not just a future concern, although the scale of possible future climate change could dwarf these losses.

Some Response areas for SADC in order to ensure climate resilient regional development:

- develop better policies and information on climate risk
- Promote water security within the water/food/energy/trade/economic development nexus.
- Identify opportunities for building regional cooperation.
- Encourage the inclusion of water on regional economic integration agendas
- Ensure climate resilient development
- Reinforce IWRM as a climate resilience building adaptation strategy
- Catalyse multi-sectoral platforms on development challenges and their solutions.
- Ensure gender issues are considered in the development of adaptation strategies
- Nurture shared visions of the future that can serve as a basis for cooperation.
- Improve climate finance absorptive capacity

Full text of speech is in Appendix A4

2. SADC REGION'S RESPONSES TO PREVIOUS OUTCOMES

2.1 Background of the SADC Multi-stakeholder Water Dialogues

Ruth Beukman, GWP SA

The SADC Multi-stakeholder Water Dialogues have been implemented for the last three years under the SADC RSAP II's Creation of Awareness for Integrated Water Resources Management (IWRM) component, which was supported by DANIDA. Aimed at ensuring that decision makers and policy makers from IWRM related ministries are exposed to key discussions in IWRM, the dialogue brought together water related sectors. The overall objectives of the SADC Multi-stakeholder dialogues have been to:

- mobilise different stakeholders to share experiences in IWRM
- highlight IWRM activities by different organisations demonstrating how IWRM approaches can address key aspects of socio-economic development and poverty eradication in Southern Africa
- improve awareness of IWRM initiatives and promote collaboration between partners in the region

Three dialogues have been held under the banner Watering Development in SADC:

1. Moving IWRM beyond concepts and the converted – held in Maputo, 2007
2. Rising above the climate change threat towards security – held in Maseru, 2008
3. Surfacing of the hidden resource – groundwater – held in Boksburg, 2009.

So what have we learnt from the SADC Multi-stakeholder dialogues?

- The notion that "*water is everybody's business*" is true – the water dialogues showed the importance of the water sector to "dialogue" with water using and water impacting sectors
- The dialogues helped expose the "*centrality of water to growth and development*" and the need for a *collective effort* to secure the resource
- The dialogues provided the water sector with an *opportunity to raise awareness* of initiatives in the sector to *other sectors*
- The need to raise awareness widely through *different media* is important to keep water high on the agenda – the Climate Change Panel Discussion was aired more than 10 times due to public interest; the Groundwater Panel Discussion has also been aired several times already
- Dialogue stakeholder outcomes have the potential of *giving direction* to initiatives in the region e.g. Maseru Outcomes and follow up CCA initiatives
- Future dialogues should ensure that outcomes are continuously followed up – *actions and progress reported back* to stakeholders
- SADC WRTC meetings should be held *after* the Dialogue so as to *make recommendations for follow up and implementation* (water)
- We need to have focused priority themes (fewer topics – better)

- There is a need to establish relevant and meaningful focused linkages, coordination and partnerships with other regional programmes – value added
- It is worth noting that the Dialogue is still mainly attended by the water sector and there is need to establish mechanisms for meaningful engagement with the other sectors at national level
- More engagement with more regional 'sector' groups e.g. other SADC directorates
- We need to mind our language – we still speak the 'water language' and use water technical language. This is a challenge that the 2010 presenters were posed with as the participants are from different sectors.

2.2 2010 Dialogue objectives

Werani Zabula, SADC Secretariat

An overview of the 2010 Dialogue was presented. The SADC 2010 Dialogue would address:

- Responses to stakeholder recommendations from previous Dialogues
- The Role of water and related impacts of climate change
- The Impact of climate change- across sectors

The Objectives of the SADC 2010 Dialogue were to address:

- Climate resilient development as a means and reason for sharing water benefits
- The Region's access to climate finance as a means of ensuring a climate resilient development and water secure future.

This year's dialogue brought in media as a critical stakeholder with support from IPS to increase coverage of the outcomes. 14 Journalists covered the issues emanating from the dialogue. A documentary shot by the OneWorld Team and will be disseminated widely through national television stations.

2.3 Regional responses to the 2009 dialogue (groundwater)

Philip Beetlestone, SADC Groundwater and Drought Management Project

The 3rd SADC Multistakeholder Dialogue was held in Boksburg, South Africa with the theme "Watering Development in SADC: Surfacing of the Hidden Resource – Groundwater". The objective of the dialogue was to examine and discuss how to improve water resources management using an IWRM approach by bringing different sectors to use, develop and manage groundwater resources in a sustainable manner. The dialogue sought to:

- Unpack groundwater in a multi-sectoral environment
- Discuss why groundwater is a contested and threatened resource?
- Consider sectoral responses to improving groundwater management and use.

The following are some of the main recommendations from the 2009 Groundwater Dialogue:

1. Generate greater groundwater awareness to ensure that stakeholders understand its benefits and potential.

2. Increase groundwater use to address MDGs, water supply, food production, drought proofing and climate change adaptation.
3. Improve visibility of groundwater's strategic role in development among policy makers, decision makers and in other sectors outside water
4. More information on groundwater was needed and more should be captured and presented in formats targeting decision makers, policy makers, and politicians.
5. Compile best practices, create knowledge tools and disseminate.
6. Develop tools to better communicate the benefits and value of groundwater resources and ensure that groundwater is better integrated into national development strategies
7. Better understand the "value" of groundwater and communicate this to other sectors that are using and impacting on the resource
8. Finance and economic planning departments must be engaged to ensure that adequate resources are allocated to groundwater Management.
9. Investments in exploration, development and management of groundwater are critical
10. Carry out feasibility studies to understand the nature and size of the resource.
11. Invest in groundwater monitoring.
12. Issues of sanitation should be integrated into groundwater management
13. Involve communities in the decision making processes regarding groundwater use and management
14. Cognisance of groundwater dependant ecosystems and ensure that these are protected and are not affected by over-abstraction or heavy pollution.
15. Climate Change/Variability will add pressure on both surface and groundwater resources, so it is necessary to:
 - ensure that adaption strategies are put in place
 - understand how climate change effects groundwater at a local scale
 - Develop public – private partnerships to build to manage, regulate and protect groundwater resources in a sustainable manner.
 - Target capacity building - not only at tertiary education level but at all levels, with a view to support water reforms
 - Conclude the development of a regional (SADC) Groundwater Protocol based on UNILC Draft Articles.

Way Forward (immediate)

1. Human resources development and retention
2. Development and management of aquifer systems
3. Installation and maintenance of monitoring systems
4. Research and development leading to better understanding of the resources
5. Encourage the development of national groundwater strategies
6. Raise the profile of groundwater in IWRM

SADC Activities/ Responses include:

1. Completion of a regional hydro geologic map

2. Completion of "Guidelines for the Groundwater Development in The SADC Region"
3. Final stages in establishing a regional Center of Groundwater excellence
4. Review of Member State water acts with a view on groundwater management
5. Development of updated statistics on regional ground water use
6. Development of methodologies for groundwater valuation
7. Development methodologies for Groundwater Dependant Ecosystem classification/mapping and regional Map of GDEs
8. Testing of community based groundwater management with a view towards drought management
9. Development of a regional groundwater reference monitoring network
10. Development of a Phase II GEF Groundwater Project
11. Ongoing awareness raising of groundwater

2.4 Feedback on the Transboundary Water Analysis

Arthur Chapman, RCCP

At the 2009 Dialogue stakeholders were presented with a study that was about to start on transboundary water resources and climate change adaptation. Stakeholders commented on the approach to be used and also gave input as to which basins should be analysed. The purpose of the Transboundary Water Analysis carried out by the RCCP was to:

- Assess the impacts of climate change on water resources across the SADC region
- Develop insights for necessary adaptation strategies and measures

The approach used took cognisance of the trouble posed by Global Climate Models (GCMs) and the divergent views derived from these – with this in mind a scenarios approach was used noting that with temperature increases it will get either dryer or wetter. It is therefore logical to say that all adaptations that work across all scenario outcomes are the correct adaptations strategies. The transboundary analysis looked at the socio-economic development in three transboundary river basins namely Okavango, Limpopo and Zambezi. The development context is important as climate change impacts cannot be assessed without considering the future socio-economic growth context.

Looking at the interactions between population increase, economic growth and the increase in demand in energy, water and food, the analysis also looked at the climate drivers – in this regard the position of the Inter-tropical Convergence Zone (ITCZ) influenced by the El Nino Southern Oscillation (ENSO), oceanic temperature – pressure anomalies and constantly increasing temperatures. A climate variability lens with regards to the increasing frequency and intensity of extreme weather manifesting as floods and droughts was also key in the analysis.

Okavango Story

- The Cuito and Cubango hydrology (timing, duration) is different and this has an effect on development futures
- Marginal areas of Okavango may be affected by climate change
- Development in Angola and Namibia plays a more important role in water security than climate change.

Zambezi Story

- Future position of ITCZ has a major influence
- Increased variability of rainfall
- **Irrigation – hydropower** interactions. What will be the impact of irrigation on hydropower and what are the tradeoffs that are needed to ensure that both demands are satisfied.
- Major drought will create system stress and competition between sectors (irrigation – hydropower story)
- Higher temperatures drive irrigation demand

Limpopo Story

- Fierce competition for water
- Agriculture is most severely affected by climate change
- No irrigation expansion (in South Africa)
- Water directed to industry and mines
- Major drought will create major stress throughout the system
- Environment is significantly affected

Key Take Home Messages

- Climate variability will increase
- Climate change will significantly affect development trajectories
- Development / climate change interactions in the upper basin affect downstream countries
- Infrastructural and institutional capacity is key to increasing climate resilience
- Climate change is only one dimension of future changes
- Regional integration and leveraging of comparative advantage are key in adaptation
- Improved cooperation of riparian states is a critical adaptive response
- Establishment of agreements in transboundary basins is critical
- Design agreements or treaties need to be flexible especially with regards to water allocations.-
- Develop frameworks for climate-water adaptation

For water related climate adaptations, adaptive water institutions with clear strategic directions, decentralised institutional responsibilities, organisational flexibility, organisational learning and response are needed. Flexible water allocation regimes, system infrastructure, appropriate finance mechanisms, a coherent groundwater strategy to manage climate and monitoring systems are all important strategies that need to be considered.

2.5 SADC climate change response programmes

It has been noted that water resources management is a climate change adaptation strategy, therefore, the SADC region in implementing its RSAP – IWRM, is responding to climate change issues. At the dialogue three such projects were presented which are currently being implemented in the region.

2.5.1 Water Demand Management (WDM)

Bekithemba Gumbo, SADC WDM

Water demand management is defined as “the adaptation and implementation of a strategy by a water institution or consumer to influence the water demand and usage of water in order to meet any of the following objectives: economic efficiency, social development, social equity, environmental protection, sustainability of water supply and services, and political acceptability”. In this regard water demand management is an adaptation strategy. The SADC Water Demand Management Programme is a pre-investment support to leverage meaningful financing. This initiative is important as there are poor budget allocations for any meaningful WDM in the region and non-revenue water averages 45%. Water tariffs below cost leading to under recovery for operation and maintenance and too much reliance on grant funding for little or no investment in water demand management.

Banks are unaware of WDM opportunities and a lot of work needs to be done to sell these projects as there are perceived to have low financial returns and are promoted by water service providers who are sub-sovereign entities. Banks also need national and external guarantees in order to fund these projects. The SADC WDM project aims at bridging the gap by providing:

- Support services; promoting a favourable environment in which WDM can take place
- Project development services; assistance in converting viable investments into bankable opportunities
- Finance facilitation services; conditional grant funding to secure loans for WDM implementation and minimal partial funding for implementation

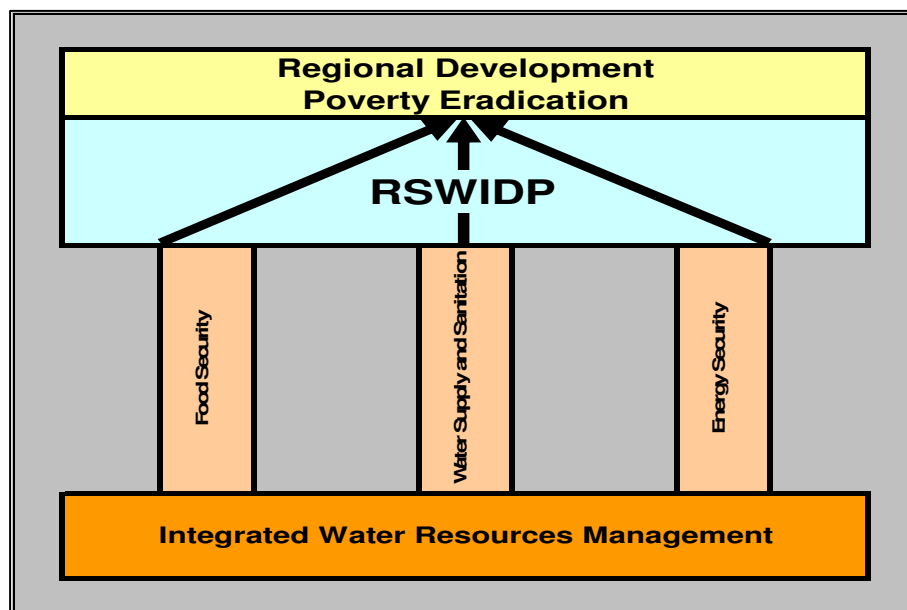
The SADC WDM Programme is encouraging local banks to finance WDM interventions as a way of implementing the Equator III Principles and UN Principles for Responsible Investment. The programme is also establishing on-the-ground ‘honest brokers’ to negotiate with finance institutions and water service providers (WSPs). For the WSPs to be attractive - institutional reforms, financial viability and credit worthiness are key areas to be tackled. WSPs should also consider affermage contracts (where in the ‘management contract’ - the private operator takes responsibility for operations and maintenance functions) in order to improve efficiencies.

2.5.2 Regional Strategic Water Infrastructure Programme

Enoch Dlamini, SADC Secretariat

Climate change has impacts on water resources and this has been alluded to in the 4th IPCC Report of 2007. Water infrastructure can play a vital role in cushioning the impacts of climate change on water resources. Infrastructure such as dams can **store** water for use in **drought** periods and act as a retention structure in times of floods. We need to note that water is a catalyst for economic growth. Droughts and floods result in economic loss through the destruction of economic assets, loss of life and environmental degradation. The UN World Water Assessment Report No. 3 of 2009 notes that countries in sub-Saharan Africa store only about 4% of their annual renewable flows, compared with 70%-90% in many developed countries, yet water storage is essential to ensure reliable sources of water for **irrigation, water supply** and **hydropower** and to provide a buffer for **flood** management.

The SADC Regional Strategic Water Infrastructure Development Program which is a program with the SADC RSAP – IWRM II, responds to the SADC RISDP. The framework for the program is shown in the diagram below:



As noted by the UN Economic Commission for Africa (UNECA) Report (2008), “.. with a very large number of small economies, 6 landlocked countries and 15 shared river basins, SADC’s infrastructure needs have to be addressed in a **regional manner** ... to reap the benefits of economies of scale ...”. The EAC/OECD report further emphasises the need to accelerate the development of **cross-border** initiatives, and in particular, enhance the roles and capacity of the RECs and other regional technical bodies responsible for the development of regional projects. Regional development and integration as stated by the SADC Treaty are vital in ensuring the region prospers and is climate resilient.

Benefit sharing is an approach to regional integration and climate resilience – transboundary water projects in the region have been taking place as exemplified in the table below.

Project	Implementing Institution	Participating Countries
Kariba Dam Project	Zambezi River Authority (ZRA)	Zambia, Zimbabwe
Kunene Water Project	Permanent Joint Technical Commission (PJTC)	Angola, Namibia
Lesotho Highlands Water Project	Lesotho Highland Development Authority (LHDA)	Lesotho, South Africa
Komati Basin Development Project	Komati Basin Water Authority (KOBWA)	South Africa, Swaziland

2.5.3 Zambezi Dams Synchronisation Programme

Michael Tumbare, Team Leader

The main outcome of the Zambezi Dams Synchronisation Project is the comprehensive response to the question: “How can dams & measures of water management in the whole Zambezi River Basin contribute to safeguarding lives, livelihoods and nature while giving room for further sustainable development with due regard for the costs?”

Project Objectives

- Improved flood and drought impact management
- Introduction of E-flows for the environment and ecosystem users
- Coordinated energy production
- Improved dam safety
- Optimised water infrastructure investments and operations for multi-purpose use & improved livelihoods

Current findings from the study

On temperature and evaporation available studies predict that:

1. The Zambezi River Basin's temperatures will increase in the range of +0,3°C to +0,6°C per decade;
2. Summer temperatures will increase by a maximum of +0,8°C per decade; and
3. Evaporation is estimated to increase by 10% to 25% by 2050

Rainfall and evaporation available studies predict that:

1. The Zambezi River Basin will become overly drier;
2. Rainfall pattern changes over the whole Zambezi River Basin will occur;
3. Rainfall over the whole Zambezi River Basin will overly decrease by 10% to 15% by 2050;
4. Runoff will significantly decrease in the Zambezi River Basin in the range of 26% to 40% by 2050;
5. There will be drier droughts and wetter wet years; and
6. A shift in the wet season is also expected.

On dam management

- Existing dam operating rules in the Zambezi River Basin consider one year rule curves. A shift to a longer operating window, which is desirable, brings major challenges to Dam Operators because of the expected higher weather variability
- The low storage/MAR ratios of all current dams in the Zambezi River Basin, except for Kariba, suggests that these dams cannot store major floods
- Due to high weather variability, perceptions regarding dam operations are that there will be incremental, unpredictable increases in flow discharges resulting in flooding with losses of lives, livelihoods, etc

Recommendations to address forecasting issues

- Flow gauge coverage in most parts of the Zambezi River Basin is generally adequate for flow forecasting purposes.
- Deficiencies in flow gauge coverage for flow forecasting purposes are in;
 - The portion of the Zambezi River Basin in Angola
 - The upper part of the Luangwa sub-basin
 - Some tributaries of the lower Zambezi

- Sustainability of automatic flow gauges in the Zambezi River Basin is currently a significant challenge due to;
 - Ageing equipment/Lack of spares
 - Loss of trained staff/Brain drain
- Forecasting systems' funding, correct selection of equipment, political & institutional support is essential for sustainability/resilience.
- Use of remote sensing technologies as case studies indicate a high correlation between remotely sensed and ground based output data.
- Resuscitate, update, improve and maintain the Zambezi Water Information System (ZAMWIS).
- Rehabilitate, extend and complete the SADC HYCOS Project and link to ZAMWIS.
- Establish effective early warning systems for both droughts and flood event planning/preparedness

Current adaptation recommendations

- Encourage & improve operation of existing water infrastructure to a take longer term view e.g. through construction of new water infrastructure
- Institute policies/legislation that allow people "to live with floods"
- Promote research that leads to better understanding/adaptation to floods and droughts
- Negotiate and put in place an effective MoU between Dam Operators of the Zambezi River Basin for data/information sharing, conjunctive and synchronised dam operations and management.

Current resilience recommendations

For water Infrastructure Investments

- Build new dams on the tributaries of the Zambezi River to minimize the local impacts of floods & droughts
- Build new Large dams with high storage/MAR ratios to mitigate floods and droughts at river basin level
- Prioritise construction of small/medium sized dams for livelihood enhancement and population relocations
- Provide facilities/buildings for flood/drought emergency population relocation.
- Inter-basin water transfer schemes need to be promoted and implemented to distribute water within the Zambezi River Basin and the SADC Region.

3. UNPACKING CLIMATE RESILIENCE AND SHARING WATER BENEFITS FOR A SECURE FUTURE IN SADC

Session Chair: Refiloe Moloi-Owoyomi, Department of Water Affairs, South Africa

3.1 Update: SADC CCA Strategy for the Water Sector (Kenneth Msibi)

The presentation was focused on the development of the SADC climate change strategy for the water sector. The strategy is based on regional experiences and takes into account indigenous knowledge. It further recognises the IWRM approach and is anchored in SADC instruments. It also adheres to principles of communication. The strategy will be used for resource mobilization and accountability by all Member States. The process of developing the strategy dates back to 2008 and 2009 water dialogues and the 2009 SADC workshops. The conceptualization process, which included literature reviews and expert workshops was concluded in May 2010. Consultations are ongoing and these have included conducting studies in Member States and coming up with indicators on indigenous knowledge. This dialogue and the coming regional partners meeting will also contribute to the strategy. This stage will end in December 2010. The final draft of the strategy should be ready for approval in June 2011. He stressed that the priority is to implement the CCA immediately. The CCA highlights interventions to be taken at the regional, river basin and the local (country) levels. All levels of intervention should consider three stages of disaster occurrence namely preparation (before), response (during) and recovery (after). Furthermore, interventions are to consider areas of governance, development and water management. Water governance interventions include, among other issues capacity development (individual, organisation, institution), stakeholder participation, political mobilisation, resource mobilisation and funding mechanisms, data and information sharing and management (database). Interventions in the area of water management include water quality management, rainwater harvesting, research and climate forecasting, early warning systems and monitoring of response measures among other issues. Infrastructure development interventions include inter and intra basin transfers, desalination, boreholes development and artificial aquifer recharge, strengthening of hydro-meteorological monitoring network and improving food security through efficient irrigation systems and drought resistant crops among others.

3.2 Sharing water benefits - what does it mean for SADC? (David Phillips)

The presentation gave a background and rationale for benefit sharing. The concept was introduced in transboundary water literature about a decade ago by the World Bank. This was because the Bank felt that riparian states always struggled to agree on volumetric allocations. Its primary reason is the zero-sum dilemma given competition and power play within a shared basin; reallocation cannot be attained as the more powerful party will not agree to any significant diminution of its available water resource. Benefit sharing was proposed as an alternative to the allocation of flows, in the hope that this would encourage riparian states to reach agreements that would promote economic development. The concept was adopted by several parties, but remained 'soft' and ill-defined for some years. However, even today, benefit sharing is understood very differently by distinct parties. In the context of transboundary watercourses, benefit sharing may be defined as, *the process where riparian states cooperate in optimising and equitably dividing the goods, products and services connected directly or indirectly to the watercourse, or arising from the use of the waters.*

Benefit sharing is premised on cooperation between riparian states, which can generate multiple distinct and interlinked benefits namely: (i) benefits to the river through reduced pollution; (ii) benefits from the river through increased food and energy production; (iii) reduced costs because of the river through navigation; and (iv) benefits beyond the river through economic integration and peace. Benefits therefore range from physical, trade,

hydrological, economic, social, environmental and political. However, in realising these benefits, dis-benefits also exist in the form of major population displacement (80,000 from 700 villages), adverse environmental impacts (pollution; aquatic weeds), agricultural and fisheries productivity decrease over time, adverse health impacts (bilharzia, malaria, HIV-AIDS) and hydrological/geological effects as in the case of the Akosombo Dam on the Volta River. Within the region, the Kariba and Cahorra Bassa Dams on the Zambezi River can be cited as some examples of benefit sharing. Kariba is owned by Zambia and Zimbabwe and generates 1,266MW of shared hydropower. It is linked to the SAPP and is important for fisheries and tourism, plus the Kavango-Zambezi TFCA. The Zambezi Valley Development Fund is central to attempts to 'trickle down' the benefits to the population. On the other hand, the Cahorra Bassa, although Portuguese/ Mozambican owned generates 2,000MW which is exported to other countries in the region. It is linked to the SAPP. It impacts on fisheries (mainly shrimp) and tourism and also important for flood attenuation. The LHWP in the Orange/Senqu Basin, the Okavango Delta and the Maguga and Driekoppies Dams in the Inkomati/Maputo Basins illustrate the point further.

Successful benefit sharing requires understanding that the 'water resources are not finite', and that the status quo in relation to water availability can be changed; the broadening of the 'basket of benefits'; and the attainment of Positive-Sum Outcomes in which all riparians benefit simultaneously. However, it is important to note that just as in the sharing (allocation) of water itself, the riparian states will seek for an equitable and reasonable agreement. In the face of climate change, benefit sharing will go a long way in alleviating almost all the negative effects of climate change that will be articulated through water. Even though the initial results of benefit sharing are exciting, riparian states must change their mind-sets if this new approach is to succeed.

3.3 Understanding climate resilient development (Belynda Petrie, RCCP-OneWorld)

The presentation gave an update on the Regional Climate Change Programme and gave the programme's conceptual, strategic and delivery frameworks. The programme was started in 2007 and is funded by DFID and Sida. The conceptual framework is based on impacts modelling while the strategic framework is output based. In the strategic framework, 30% is dedicated to integrated scientific analysis to improve adaptive management, 15% to ensure local knowledge and practice is captured, validated and available to decision makers, 15% to viable, stakeholder-led, transboundary-relevant adaptation strategies to improve climate finance absorptive capacity while 40% is for Transboundary relationships for responding to CC and influencing climate policy and to strengthen this. It is hoped that these will enable transboundary adaptation to climate change, with equitable access to climate funding. Through strengthening climate science - policy - governance - finance dialogue, taking and translating research into action will play a central role. The strategic framework is guided by the following principles (i)strengthening regional science-policy-governance-finance dialogue; (ii) Thought leadership based on effective listening; (iii) strengthen partner integration and build real regional capacity through the right partnerships; (iv)explain concepts and outputs clearly and succinctly and ensure scale (once and repeat); and (v) Build regional climate champions (issues based). These, it can be argued, are based on the need for the region to have a voice and be heard.

The delivery framework focuses on building the evidence base by linking critical issues like health, food security and the MDGs with climate change. Innovative dissemination that demonstrates a movement from evidence to action will be critical. The region has been marked using the hotspot analysis that shows risk and exposure to climate change. Central Tanzania, most of Mozambique going into Swaziland, southern Madagascar, Zimbabwe and south west Angola have been identified as hotspots. These also include the most arable parts of Malawi, South Africa, Swaziland and Lesotho. Strengthening the regional voice needs

strategic regional dialogue and cohesion. Strategic partnerships have been made with GWP-SA, FANRPAN; sub regional nodes have been created in Tanzania, Mozambique and Zambia to date and building capacity of the media in readiness for COP 17 has been one of the activities. The delivery goals and impacts of the programme are:

- Funded and 'fundable' climate change response strategies that are transboundary relevant with clear institutional arrangements that will result in minimising loss to GDP;
- Strong regional voice on climate change – internationally and domestically that is able to influence outcomes and direction;
- Increased regional climate finance absorptive capacity to be able to co-finance climate resilient development; and
- A high quality 'evidence base' relevant to the regional development context that informs voice and finance.

In order to understand climate resilient development, the programme argues that the distinction between adaptation and development is artificial and has important implications for regional governments and their ability to implement effective adaptation programs. The situation is that climate change is impacting the region's ability to achieve the MDGs. This is because external financing needed for "climate resilient" MDGs is more than 40% that is needed for achieving the MDGs alone. This translated into \$100 billion/year for next decade, compared with \$72 billion/ year for MDGs alone. Thus, there is a cost to adaptation as well as to 'climate proofing' the MDGs. A 3-5 degree rise in temperature will impact on livelihoods, population and demographics, human security, industry, macro economy and governance (see Figure 1). There is therefore need to balance competing demands on water between water for energy, water for production and water and energy for industry. This already presents a growing challenge in promoting resilience and security and necessitates strengthening information management and evaluating climate risks. Benefit sharing can be seen as one of the responses. Climate resilient development will require the region to mainstream climate change in knowledge management, institutional issues, governance issues, infrastructure and resilient natural systems. This is because the climate burden lowers when risks are managed by climate resilient development pathways rather than incremental adaptation actions.

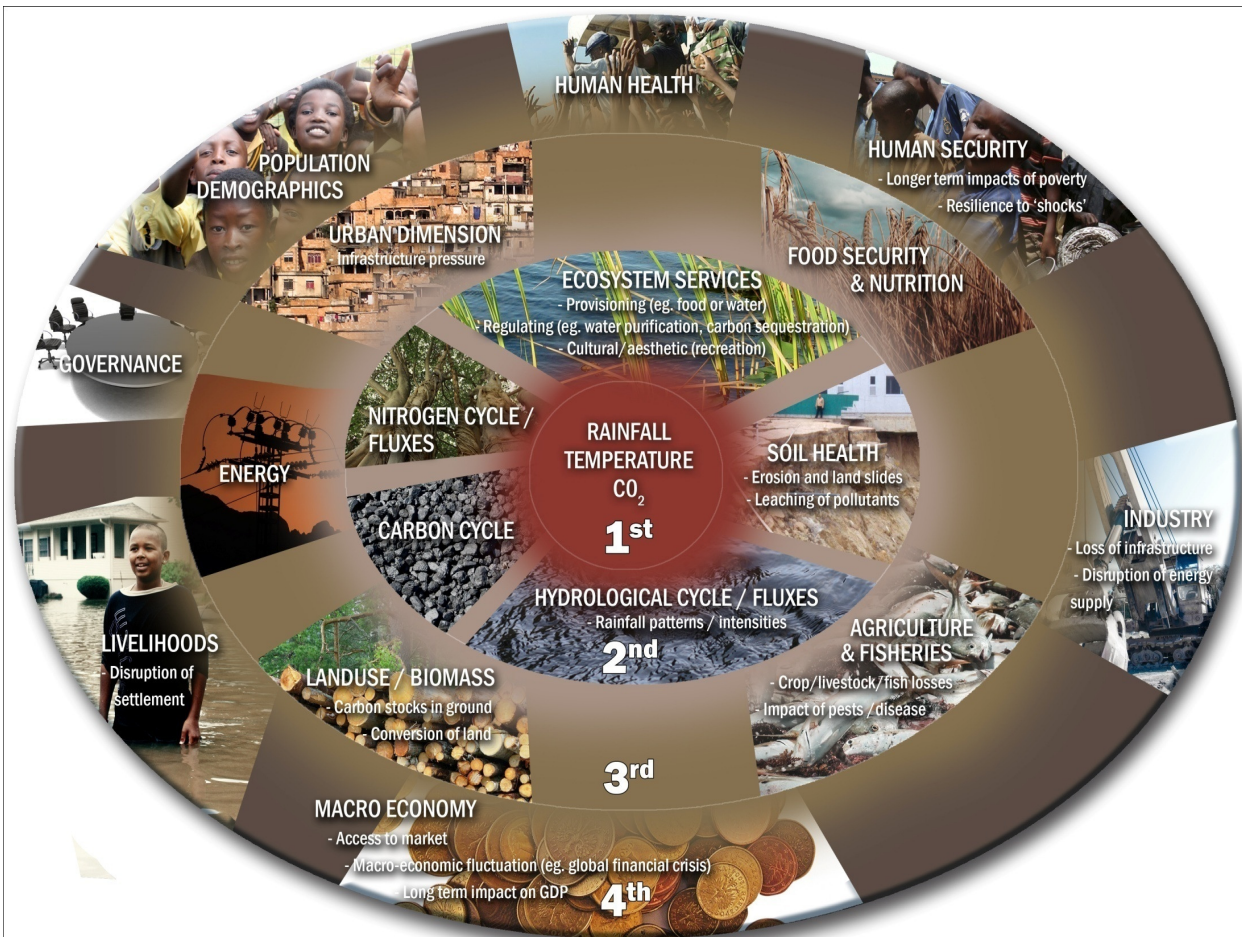


Figure 1: 1st to 4th Order Impacts

Interventions in climate resilient development should focus on using known and proven interventions where need and urgency increases because of climate change: new interventions at country level for instance improving forecasting and monitoring systems; and encouraging regional global goods for instance transboundary ecosystem management. Financing climate resilient development would require the region to build evidence through presenting coherent arguments, sound knowledge management that helps to influence international outcomes; strengthening governance and institutions by meeting standards, putting the right institutions in place and building their confidence and capacity; and finally competing globally by thinking big, starting small and scaling fast. Political will is of utmost importance to achieve this.

4. OPEN DIALOGUE WITH PANELLISTS

Discussion session moderator: Hastings Chikoko (IUCN ESARO/ GWPSA RTEC, South Africa)

Panellists

Michael Tumbare	University Of Zimbabwe/ SWRSD Zambezi Joint Venture Consultants
Ebenizario Chonguica	OKACOM
Ruth Beukman	GWP-SA
Kenneth Msibi	SADC Water Division
Brad Garanganga	SADC Climate Services Centre

Moderator question 1: With reference to regional cooperation; are we moving in the right direction for benefit sharing to be talking or relating it to climate change?

The political will is there. In other words the instruments show that the leaders are committed, however, translating the instruments into action is the problem. Therefore, there is need to think of how to implement strategies that reflect on the river basin i.e. benefit sharing? The question that arose was, 'what is the national mindset and is there need for national mindset in benefit sharing?' It was highlighted that issues of national sovereignty tend to drive countries to protect their own issues, however, the vision in SADC of regional integration should therefore be the driving force for benefit sharing. Benefit sharing therefore requires change management - as a paradigm shift is needed in the way countries and sectors will cooperate.

With regards to regional cooperation in climate change issues, it was noted that human civilisation has been plagued by extreme events (droughts/ floods/famine) from time to time and people have managed to survive. During extreme events communities do not regard any political boundaries and impacts are felt basin wide. Regional responses should be aimed at building a resilience system bearing in mind the communities in the region and the nature of water resources, which don't regard political boundaries. Resilience is a system put in place to be able to cope with change (in this case - in climate) so one can look at communities that have been able to sustain themselves given the predicted effects of climate change. It was noted that water presentations are all about water as a resource but not focusing also on the users e.g. agriculture. End users need to define measures to be taken, hence there needed to be more focus on the end users.

Living in a multi-sectoral world, it is important to take into account the added value of each sector. There is need for sectors to talk to each other and to come up with a point of compromise which accommodates different positions.

At the national level it was noted that the backbone of water sharing is the civil servants in the countries. There is need for an integrated scientist that advises government on what to do and hence advising the politicians. Research done has to be translated into political action - therefore a science-policy link is important for any country to inform decisions. Politicians make local (sometimes regional) decisions which might pose a challenge to the river basin in terms of extent, and interaction with scientists provide them with an evidence base.

Moderator question 2 to panel: Are we doing enough to engage the politicians?

While there has been some reaching out, not enough has been done. The right messages are not being sent out i.e. packaging of information is a problem. There is need for specific

messages that excite politicians to take action. Different stakeholders should internalize the need to take messages to the politicians.

However, the region is putting in effort to bring politicians on board. The meeting that was held in Victoria Falls, in June 2010, brought together Members of Parliament from portfolio committees on water in SADC countries.

General comments:

- Presentations should focus more on SADC i.e. examples should reflect what is happening in this region
- It is important to understand what we are talking about i.e. put IWRM in context of everything being discussed.
- Dam synchronisation - dams on the Zambezi are built for specific purposes by the countries that built them, however, effects of how they are operated are felt downstream. There is need for them to be operated in a synchronised manner as this benefits both upstream and downstream countries. Dam synchronisation can be done. Regional and basin instruments also provide for this.

5. IMPLEMENTATION OF SHARING BENEFITS AND CLIMATE RESILIENCE DEVELOPMENT- SECTORAL RESPONSE

Session Chair: Abel Fonseca, Department of Water Affairs, Angola

This session was aimed at looking at how other sectors, where benefits from water resources are derived, are responding at looking at the issue of climate resilient development. The aim of the presentations was to provoke a dialogue on some of the trade-off issues the region needs to consider for development.

5.1 Sharing water benefits and climate resilience – overview of food security in the SADC Region (Stephanie Midgley, RCCP)

Food availability in the region depends on production, imports and stocks. The stability of food supplies and access is influenced by the variability of production, price fluctuations, incomes and markets. Access to food is directly linked to poverty, purchasing power, market integration and access to markets in the region. The nutritional status is affected by household food access, eating practices, health and sanitation.

With regards to food security in the region rainfall has a direct impact - as 80% of food produced in the region is through rain fed agriculture. Food security therefore relies on the availability of water resources in the region. In most communities, farmers depend on rivers (perennial/ ephemeral surface water) and wetlands. So in times of floods and droughts, recession in agriculture is experienced. Seasonal wetland agriculture (in dambos, oshanas) is also prevalent in the region and provides a huge source of food for communities in the region. Inland fisheries and aquaculture also play a role in ensuring protein is provided from the fish. A lot of water is also used for livestock watering.

In SADC the food insecurity at the household and individual level affects the very poor and female and child headed households. Also the sick and subsistence farmers with no income or assets, the unemployed in urban areas and people in the peri-urban slums are affected at the household level.

National food insecurity varies between countries and is influenced by production. Almost 84% of undernourished people in SADC are found in only five countries, between 2004-2006 DRC (43.9 million), Tanzania (13.6 million), Mozambique (7.5 million), Angola (7.1 million) and Madagascar (6.6 million); a further 15% are found in Zambia, Zimbabwe and Malawi and 1.5% in the rest of SADC. However, the rate of increase has slowed significantly over the last 10 years.

The drivers of food insecurity in SADC are climatic hazards, yield variability, diseases incl. HIV/AIDS, political instability, high population growth rates, high levels of reliance on degrading land resources, lack of investment, failure of agricultural policies, global financial/economic crisis and rising food prices.

For food security to increase substantially – irrigation is a necessary tool and has the potential to support more than 10% of crop production in the medium term. Irrigation has high potential in some basins, on some soils, not in others. Water resources are impacted by climate change through altering the flows and water available for crop production. This has an impact on irrigation and thus crop production. Water is a finite resource and it is therefore key to balance end users.

Shared benefits can be derived through markets and trade for example the region can take advantage of:

- areas of productive good agricultural potential and water supply – use water where plentiful for food production
- the region is prone to high levels of variability and disasters – but not everywhere at the same time
- too many barriers to regional food trade – regulations, taxes etc. Regional trade agreements - policies and incentives for effective regional food trade should be developed.
- stimulate production hand in hand with developing markets and market linkages, and infrastructure
- favourable terms for farmers, exporting country, importing country
- food self-sufficiency in every country – feasible under climate change?

In an analysis of agricultural, food security policies, and climate change policies for 9 SADC countries carried out by the Regional Climate Change Programme it was noted that most countries lack integration – and this was probably similar for water policies (and energy, health, infrastructure). There are low levels of cross-referencing in the policies and there is also a need for harmonisation of policies for all sectors relating to water at national and regional level. At the regional level, integrated planning is required with regards to the SADC Water Protocol, SADC Regional Agriculture Policy and NEPAD CAADP. The SADC Water Dialogue is a platform that could be used to raise issues for negotiating shared use benefits.

Key messages

- Lack of sufficient water at the right time is **only one of very many drivers of food insecurity** BUT:
- **Reduced access to water** for productive purposes (abstractions upstream, climate change, demand from other sectors, etc.) would have serious impacts
- **Improving access to water** for production has the potential to substantially reduce food insecurity both locally, nationally and regionally

- This must be **planned at a regional level** to optimise water use in the areas of highest resource availability and production potential
- **Other riparian states to benefit** through favourable regional trade terms and food price stabilization.

5.2 Sharing water benefits and climate resilience - working towards energy security (Catherine Fedorsky, Energy Research Centre, University of Cape Town)

The presentation recognised that even though we talk about water as an important energy source, 80% of the population in the region does not use electricity or modern energy methods. There is need to modernise traditional energy types for the rural and peri-urban poor as a strategic approach to reducing poverty. Middle income households in urban areas and those of the upper income strata in both rural and urban areas use electricity for most of their energy needs. However, there is need to modify the mix of energy types for efficiency and environmental reasons.

As at 2005, most countries in the region depended on hydroelectric energy with Botswana and the Seychelles being the only ones that wholly relied on fossil fuels. South Africa and Mauritius also to a larger extent depended on fossil fuels. This negatively affects the countries' carbon footprint. Hydropower generation is largely dependent on water availability. However, looking at the Zambezi River Basin for instance, there was already a general decrease in water availability as a result of population growth at the turn of the century. This observation was made without factoring in climate change and other factors, other than population growth, that may influence water demand. Of the eight riparian states, four (Botswana, Tanzania, Malawi and Zimbabwe) had reached a threshold of 1700 m³/year per capita which is commonly regarded as a threshold for water scarcity.

The Southern African Power Pool (SAPP) is slightly weighted towards coal. There is an interconnection of a grid system. It is envisaged that there will be major constraints in power supply until at least 2013 with a 22% increase of planned capacity expansion until 2015. However, there is need to consider whether climate is being considered in these plans, and whether the impact of future development on water availability is being considered. There is an increased demand for hydropower. Rainfall is of great importance in meeting that demand. Climate change affects hydropower generation. Whether it gets wetter or drier, climate change could result in drastic changes in the region. There is therefore, need to integrate climate change into development planning. However, variability may be a bigger challenge than change in mean annual rainfall when thinking of hydropower generation. Most important drivers might be economic development (irrigation) rather than climate drivers. There is need for coordinated planning between power generation and irrigation for instance. As a result, there is need to translate changes in water for hydropower to changes in financial returns for investors (and changes in electricity prices).

Hydropower has previously been negatively affected by extreme events. For example, during the 1991-1992 drought period, declines in upstream precipitation led to 30% decline in hydropower production at Kariba. This resulted in \$102 million loss to GDP and \$36 million loss in foreign exchange. Furthermore, hydropower output fell to 50% in 2005 and to 30% in 2006 due to prolonged drought in Tanzania.

Ongoing research in the Zambezi Basin shows that as a result of foreseen moderate drying and large increase in irrigation demand within the Basin, there exists a potential for dramatic decrease in power production. Looking at new Zambezi Basin investments, analysis of Batoka Gorge on the Zambezi by University of Edinburgh shows that a 10% decrease in run off leads to 60% reduction in Net Present Value of investment. In addition, competition with irrigation could be important.

A. Tilmant et al., in their "Optimal Water Allocation in the Zambezi Basin" argue that "the analysis of simulation results reveal that most of the planned irrigation schemes in Zambia, Zimbabwe, Namibia, Angola and Botswana are not economically sound if the power stations that are in an advanced planning phase are implemented."

In mapping the way forward, the region has to be mindful of

- Impacts of long term changes in climate in key countries – we need a scenario approach
- The main challenge is a lack of necessary models and data to integrate climate projections, hydrology, and socio-economic development
- The need to understand how climate change and development risks are being considered in SAPP planning process and individual utility investments (regional)
- Improved zoning and development planning (local)
- Possible SEA-type approach (Strategic sustainable Environmental Assessment) – greater integration & wider scope
- Greater use of universities and research institutes to help better understand the following:
 - Role of hydro vs. renewable energy vs. energy efficiency to help meet the energy demands of the region and climate change goals
 - Electricity vs. Energy services
 - Loss due to transmission of electricity

5.3 Sharing water benefits and climate resilience an overview- impacts, challenges and solutions for ecosystem resilience (Michael Mutale, GWPSA Regional Technical Committee, Lusaka, Zambia)

The presentation recognised that there is confusion between climate change and variability. For the sake of the presentation, climate change is associated with global warming and is a long-term change with its origins in natural factors and, as is now accepted, human activities. On the other hand, climate variability has always been part of the Earth's climate system, although it has so far received surprisingly little attention from the water sector. It affects water resources by way of floods, droughts, waterborne disease, etc. and is not just the extremes of climate variability that are of concern to the water sector. Increasing and extreme variability in the hydrological cycle and climate systems together with the dynamic processes that lie behind it affect water and MDGs.

An ecosystem is a geographical area of a variable size, where plants, animals, the landscape and the climate all interact together. Resilience is the amount of change any system can undergo without changing state, i.e. a tendency to maintain integrity when subjected to some disturbance. Ecosystem Resilience is the capacity of an ecosystem to tolerate disturbance without collapsing into a qualitatively different state that is controlled by a different set of processes. A resilient ecosystem can withstand shocks and rebuild itself when necessary. Vulnerability is the degree to which a system is susceptible to, and is unable to cope with, adverse effects of climate change, including climate variability and extremes.

The impacts of climate change on ecosystems and development include increased vulnerability and reduced resilience (poorest countries and the poorest people are those most vulnerable to the effects of climate change and variability). Climate changes also impact on biological diversity and thereby limits an ecosystem's ability to deliver goods and services for human well-being. It also impacts on agriculture, in that a warmer climate with changes in patterns of drought and/or increased precipitation affects agricultural production. Irrigated agriculture is

therefore under threat from rising salinity. Rise in temperature will impact fish stocks in both marine and fresh waters, and is expected to have negative consequences for both fisheries and aquaculture (cultivation of plants and animals in water). Reduced precipitation and recurrent and prolonged dry spells would render reduced availability of water to adequately head power generation capacity.

Climate change creates both risks and opportunities worldwide. As such, understanding, planning for, and adapting to a changing climate, is important for individuals and societies in order to reduce risks. Ensuring well-governed societies with diverse, robust, and open economies can inherently be more resilient and adaptable to changing economic, social, or environmental conditions, including those related to climate events. However, weaker ecosystem resilience compromises the attainment of poverty reduction and/or MDG targets. Climate change adaptation is fundamentally a local phenomenon but often with regional implications and poses the challenge to cooperate as the need arises.

Through improving local ecosystem health, using successful initiatives, will increase the ecosystem's ability to handle environmental shocks and stresses such as climate impacts and collectively and ultimately improves the regional coverage and therefore accrue resilience. Economic benefits generally manifest as an increase in household income, either as cash income (from sales of ecosystem products or services, or from employment associated with the initiative) or subsistence income (food, forage, or materials consumed directly to support daily needs). By increasing the resilience of economies to economic and environmental changes, we can better ensure an end to dependence on assistance. Social benefits include personal empowerment and increased social mobility associated with greater income potential and the acquisition of new skills locally and regionally. Therefore, although there is a clear need to learn to adapt to the challenges of climate variability and change, all actions to mitigate the anthropological impacts of this must continue to ensure ecosystem resilience.

5.4 Sharing water benefits and climate resilience an overview – sustainable security: towards multi-sectoral and integrated approaches (Helen E. Purkitt)

The presentation looked at sustainable security, climate change, and inter-sectoral cooperation on water issues in Southern Africa. Sustainable security combines three approaches: national security, human security, or the well-being and safety of people, and collective security, or the shared interests of the entire world. The CNA Military Adviser Report 2007 (National Security and Threat of Climate Change) recognised that climate change will act as a threat multiplier to all US security interests worldwide. Here, water was seen as a key trigger. As at 2009, climate change, national security, and energy dependence were identified as a related set of global challenges. In 2010, the need for a transition to a clean energy technology-based economy was prioritized.

The African continent is seen as being most at risk to suffering adverse effects from climate change. It is foreseen that, by 2020, between 75 and 250 million Africans will be exposed to increased water stress due to climate change; yields in African states that are dependent on rain-fed agriculture could be reduced by up to 50 percent; and agricultural production, including access to food, in many African countries will be compromised leading to more food insecurity and malnutrition. By 2080, the amount of arid and semiarid land is projected to increase by 5 to 8 percent under a range of climate scenarios such that the cost of adaptation could amount to at least 5-10 percent of overall GDP, especially in low-lying countries. As such, the ability of African governments to cope with environmental problems will be key factor in risk and abilities of countries to cope with changes linked to climate change.

The presentation identified scarcity, pollution and inadequate data for effective future monitoring, as some of the water issues affecting the region. There is need to acknowledge problems (even sensitive ones) in order to avoid potential conflicts.

To illustrate the water problems, South Africa was cited as an example where scarcity issues are well known. It was argued that demand will continue to outstrip supply. Furthermore, water is already the single most important resource containing South Africa's development potential. In addition, South Africa's water pollution problems are less well known or studied (the acid mine drainage problem for instance).

There is a need to spread the vision of increased tourism taking into consideration whether transfrontier parks are an option for such a sector, the role of water should also be understood in this context. Differential interests and policies towards land and water usage and water conservation in the Okavango Basin highlight this point. Angola - the upstream source will increasingly use water for commercial agriculture and industrial use, whilst wildlife and tourism developed in Namibia, Botswana (and Zimbabwe), will increasingly demand water of good quality and quantity. As such there is need to consider, how to develop mutually beneficial tourism and how it can be coordinated. There is need for more regional research on tourism: Whether benefits of transfrontier national parks outweigh costs; how best to market tourism (why there were not as many tourism as expected around World Cup to region); who will maintain security; and whether water problems can act as constraints.

With regards to monitoring and evaluation, there is need to: emphasise "bottom up" approaches for data collection and education strategies; enlist volunteers along with professionals to collect data; encourage interdisciplinary advanced education; and use specialized wikis to develop user friendly data bases (media wiki or goggle sites, documents, chat, blog).

5.5 Sharing water benefits and climate resilience an overview - the health question (Anthony Kinghorn, Health and Development Africa, Johannesburg)

The presentation focused on the linkage between health and climate change. As a background, the WHO estimated that 160 000 deaths and \$5,5 million was lost daily in 2000 due to climate change globally. Poor communities were the worst affected. However, there is limited investigation of health impact of climate change in the context of SADC and its member states. Assumptions exist about what may happen; there are changing trends in temperature and precipitation with greater variability in precipitation; more extreme events; and variation in susceptibility and vulnerability across SADC. Thus risk to climate change is not homogenous.

Linkages exist between climate change, water and health in SADC. In other words, most health impacts are related to water, whether it be too much or too little or too variable. Firstly, food security and nutrition – this is the most severe health impact (IPCC 2007). The region relies heavily on rainfall for agriculture, there is high pre-existing vulnerability to malnutrition, and there are quite a number of fishing dependent communities. Secondly, water related disease which may be as a result of poor water quality: surface and ground water causing infectious (diarrhea) and chemical contamination. There are problems with water volume and accessibility which may result in water-washed disease (GIT e.g. typhoid, Hepatitis A; respiratory; skin), water-based and vector related (malaria, yellow fever, bilharzia, dengue, trypanosomiasis). Thirdly, extreme events have direct health effects - will more floods/storms or droughts as a result of climate change result in more epidemics. There is also need to consider the indirect effects of disrupted livelihoods, services, sanitation and other infrastructure. Fourthly, increased displacement, migration and urbanisation due to extreme events, variability or trends in livelihoods have implications for health and water policy and planning. Finally, the region will have to consider unintended health impacts of climate change responses such as dams and other infrastructure that may increase HIV risk in certain areas, and food crop changes. Climate change as a result, will reinforce existing water and livelihoods- related threats to health.

The following issues need to be better understood and addressed in planning:

1. Cross-border and cross-community linkages in water access and quality
2. Health outcomes linked to economic, social and other benefits - to consider in shared benefit assessments
3. Community level risks, resilience and responses
4. Broader development scenarios affecting resilience and demands on services
 - May require coordinated health and water scenario development, and responses
5. Extreme event management and adaptation
6. Sanitation strategies, chemical threats and other technological issues
7. Vector control strategies – local and cross-border issues.

Challenges and lessons from health sector experiences include: HIV and AIDS mainstreaming into policy priorities and action (long term event) but short term priorities took precedence; need for a robust evidence base and advocacy; planning and policy in an environment of uncertainty; and challenges of inter-sectoral collaboration exist. In addition, there is need for a Comprehensive Primary Health Care approach – Alma Ata. This needs shifting and operationalising sector priorities and inter-sectoral coordination.

The region has these key questions to ponder on:

- How do we collaborate to improve information for a “balanced portfolio” of prioritized, evidence-based responses? This has to take into account local vulnerability and hot spots; basin and ground water issues; mediators of vulnerability; development scenarios; actual and effective responses; technological solutions; CC related health trend monitoring among others.
- Secondly, which response strategies should we prioritise? Which ones make sense under current and climate change scenarios? We also have to consider whether climate change can revitalise the inter-sectoral PHC approach.
- Lastly, how do we use potential for health sector support for positive action for health by the water and other sectors, and vice-versa?

5.6 Questions and answers

After each presentation the delegates had an opportunity to dialogue with the presenter.

Questions and comments with reference to energy and climate change

Question: Clarification was sought on a point raised in the presentation on the region having a high dependency on hydropower. Where does that come from given that the region depends on 80% coal and 20% hydropower?

Response: This was said in relation to the increased productivity per unit of water versus the same of coal.

Question: Clarification was sought on this statement in the presentation “Looking at new Zambezi Basin investments, analysis of Batoka Gorge on the Zambezi by University of Edinburgh shows that 10% decrease in run off leads to 60% reduction in Net Present Value of investment. In addition, competition with irrigation could be important.

Response: Response was given from the floor and it was noted that in the designing of the Batoka Hydropower Station - costings have taken into account abstraction upstream for thermal power, in the Kaprivi/Chobe in its economic evaluations and assessments.

Question: The quote from a study by A. Tilmant et al., in their "Optimal Water Allocation in the Zambezi Basin" argue that "The analysis of simulation results reveal that most of the planned irrigation schemes in Zambia, Zimbabwe, Namibia, Angola and Botswana are not economically sound if the power stations that are in an advanced planning phase are implemented" was viewed as misleading by some delegates.

Response: Work is from a study but meant to stir discussions on trade-offs between energy and agriculture – how is the region planning to tackle these issues.

General comment: It was felt that the link between benefit sharing and climate resilience was not clear. This was something that needed further discussion especially with regards to energy and water security.

Questions and comments with reference to ecosystem resilience

Question: How can benefits and costs be shared in order for the region to be more resilient?

Response: There was need to work on valuation i.e. valuating goods and services to find out what it means for development planning. There is a need to link what the goods and services provide in monetary planning. There is also a need to fast track learning to adapt to the challenges of climate variability and change, which would ensure that there is a human face in climate change and variability. There is need for an economic analysis or a cost-benefit analysis to be done before starting any intervention. Market and trade mechanisms in relation to water- there is a fundamental linkage especially with respect to virtual water. The Komati/Maputo has addressed cross-sectoral issues through the PRIMA project. All countries involved want to involve stakeholders in coming up with the agreement. Countries as such, need to find a mechanism that integrates different sectors not just water ministries.

Question: Do we know the relative contributions to climate change caused by man and those that are not caused by man?

Response: There is need to concentrate efforts to address both. As such, mitigation and adaptation should go hand in hand. There is need for appropriate interventions at all levels. It was noted that wealth may play a part in strategies that are to be implemented. As such, looking at resilience, will the same responses/strategies be used in all communities i.e. those that are poor and those that are rich?

Question: Clarification was sought on the statement 'water is not a finite resource'

Water at the basin level may be looked at as not being finite particularly when one thinks of the issue of virtual water and desalination. However, it should be noted that water is a finite resource.

Questions and comments with reference to the health question and climate change

Question: There is need for statistics on waterborne diseases and their occurrence in the region and by country so as to map the way forward. There is also need to check the seasonality of the occurrence of waterborne diseases i.e. high/low flood time. There is further need for an integration of water quality standards that will help in looking at the region or the basin as a whole. What is being done in the region?

Responses: There are broad maps of vulnerability of the region. However, there is need for individual country maps so as to move away from generalisation. Given the existing data on waterborne diseases, there is need to think of ways to work with what is available in order to respond to existing and coming challenges. Given that the region is in a crisis, there is need to

move towards resolutions and not just feasibility studies. In addition, the region is coming up with regional water quality standards and guidelines.

On the issue of water quality standards, it was unrealistic in most cases but there is need to update them. Furthermore, there is need to understand at what point water quality becomes an issue. However, when talking about the health aspects, there is need to emphasis hygiene. It keeps people resilient in any situation-whether water is plenty or little. There is, therefore, need to emphasis primary healthcare before secondary healthcare.

5.7 Sharing water benefits and climate resilience - towards regional cooperation (Belynda Petrie, Regional Climate Change Programme)

The presentation was divided into key messages, opportunities and questions. It was noted that countries do not do cross sectoral planning. Similarly, information sharing was a problem. Despite this, there is general agreement that member states want sustainable returns, stability and security. These are achievable through climate resilient development pathways and broad benefit sharing.

Key messages:

- Climate impacts: rainfall; rivers and wetlands; groundwater are drivers for the involvement of other sectors
- There is need to consider impacts throughout the socio economic lifecycle – the ‘so what’ story
- Food security: climate impacts on water availability and touches on access (household level) and production (national food security). 84% food insecurity in 5 countries
- Regional extremes are worsening but not everywhere at same time
- Irrigation is the most important adaptation measure considered in the agricultural sector, its potential is well studied and highly differentiated – needs to include climate change
- Crops can respond well to warming – but must have water which is often available but not accessible
- There is a high dependence on hydropower – where there is access
- The challenge is mainly on information (data) such that models and simulations do not always agree with actual data. The challenge is that we have to make projections in some form - using scenarios or modelling. The advantage with scenarios is that one can bring in existing data/ research/ analysis
- There is need to find out how SAPP is considering development risk?
- Competition with irrigation could be important
- There is need to clarify the role of hydropower vs Renewable energy vs EE (economic efficiency)?
- Debate on hydropower generation vs irrigation highlighted tension between sectors
- Renewable energy must come on the agenda – solar etc.
- The link between climate change, benefit sharing and other sectors is not clear
- There is need for improved zoning and development planning as a local issue
- There is need for integrated energy and water planning – with health impacts in mind

- Climate change increases vulnerability and reduces resilience of ecosystems- it impacts on agriculture (especially salinity on irrigated agriculture) and on fisheries. These all impact on livelihoods and macro economies, thus weak ecosystem resilience compromises attainment of MDGs. It is therefore a must to adapt to climate change risks and impacts to ensure ecosystem resilience. There is need to value eco-systems goods and services. Link science-policy (development planning)-finance (costs of benefits/losses) and institutional 'dialogue'
- There is need to document local knowledge and practices in order to fast track learning to ensure resilience
- Climate change is a health issue – e.g. food insecurity causes malnutrition that impacts on indicators and lowers disease immunity; water quality impacts; livelihoods (extremes); epidemics
- There is need to anchor benefit sharing and climate resilience in existing mechanisms and instruments and institutional arrangements
- Benefit sharing is a useful and apparently necessary tool, made even more so by climate change. But there is need to broaden the basket of benefits – e.g. human security and health
- It is important to note that institutions take a long time to change
- The Multi-Stakeholder Platform should be broadened – Energy - SAPP, Defence, Peace and Security, Health
- There is need to identify creative ways of obtaining data
- Pollution is a key consideration – health, tourism, safe water etc
- 'Sustainable' Security has been key to this dialogue: national security; human security; collective security (in SADC context – regional). Climate change is global.

Climate change also presents opportunities for regional integration. These include:

- SADC could take a lead and have an international voice on taking benefit sharing from concept to reality. Climate resilient development planning is therefore a driver and a tool for holistically identifying benefits
- Change management is an important aspect given very different climate and development futures– mindset change
- There is need to harmonise national interests and understand these to facilitate regional/river basin level benefit sharing – which requires trust
- Political will: science-policy dialogue should change form to ensure our leaders are well informed and on board. There is need to engage politicians as a key stakeholder and to use the SADC Parliamentary Forum in this regard. It is therefore important to find a useful way to frame the problem, for different audiences.
- Cross border and cross community linkages in water access and quality; vector control strategies
- Benefit sharing includes widening the basket to include market and trade mechanisms and policy harmonisation
- The water sector can bring other sectors along. Climate impacts on water. The need for resilience and benefit sharing are drivers for multi-sectoral planning that benefits end users
- IWRM is an opportunity to strengthen climate resilience

- There should be more dialogue on tourism – transfrontier parks
- Data sharing at low/no cost

Given the above, the following questions still remain:

- How do we best coordinate an information base for decision making?
- What are the strategic actions we know will be relevant under CC scenarios?
- How do we collaborate across sectors and recruit support for water and health sectors?
- How do we accelerate the pace of change?

6. REMARKS BY THE SADC PARLIAMENTARY FORUM SECRETARY GENERAL’S

Dr Esau Chiviya, SADC PF

In his speech, the General Secretary emphasised the need to involve politicians in the climate change debate as there was no clear measures to date on how to solicit political will. This is because despite various efforts, the final decision on what is or is not done rests on them. The politicians develop and pass laws and policies and provide oversight on the executive and represent the people. Politicians, he felt, act on issues that are in their interest and to their advantage. As such, there is need to package information in a manner that will make them listen and act. He informed the participants that SADC PF has identified climate change and water management as one of its key programme areas in working towards developing benchmarks for climate change and water management. These benchmarks are to be used by countries in checking themselves by assessing policies at country level and to develop appropriate strategies at country level. This is all in an effort to expose members of parliament to what is happening on the continent. He encouraged collaboration between MPs and other stakeholders in order to make head way.

7. HIGH LEVEL PANEL – FINAL SESSION

Final session Moderator: Hastings Chikoko (IUCN-ESARO/ GWPSA RTEC).

Panellists

Reginald Tekateka	Africa Ministerial Council on Water & GWPSA Chair
David Lesolle	African Carbon Exchange
Nomathemba Neseni	Institute for Water and Sanitation Development
Bekithemba Gumbo	Development Bank of Southern Africa (WDM)
David Phillips	Phillips Robinson and Associates
Belynda Petrie	OneWorld Sustainable Investments
Phera Ramoeli	SADC Secretariat

Moderator question 1 to panellists: How can we build climate resilience through benefit sharing in the region? Discussion points:

- Benefit sharing – moving from a concept to reality
- Benefit sharing as a means towards climate resilience
- Capacity building within the context of climate resilience through benefit sharing

There is need to be blunt about the politics i.e. not many countries are willing to sacrifice their economic benefit for the benefit of others. However, there is need to think of how we can identify opportunities to benefit from benefit sharing - using benefit sharing as a catalyst for cooperation. There are frameworks in place through AMCOW - 53 Ministers of water motivated by Africa's Vision 2025 which uses IWRM in managing Africa's waters. It recognises that IWRM should be implemented at all levels. For a united front, all sectors should be involved. In other words, those using or those that are affected by water should contribute to its management. AMCOW is recognised by the African Union as a primary body for water management on the continent and is part of the AU's arsenal in meeting regional integration where water is recognised as key. The Dialogue is a welcome avenue for interaction and engagement in terms of water related organisations and the SADC PF. The SADC PF is encouraged to work inward and outward to assist governments in making MPs aware and understand the importance of water and the need to mainstream water in development plans and that the budget recognises the role that water plays. However, it is important to note that it is not just about water but also the other sectors that contribute to national development.

Moderator question 2: Is the policy framework right? The policy is what can allow us to say 'yes' to benefit sharing or what would facilitate it?

Yes, the policy is there and the environment is right. SADC recognised the 1995 Protocol on Shared Watercourses which facilitates development of the water sector. The RSAP was developed based on involvement of Member States to realise a better water future. It was necessary to create an enabling environment for this. The Regional Water Policy as a result was also developed consultatively. The Regional Water Strategy, Regional Strategic Action Plans and the Regional Water Policy are the enabling environment for benefit sharing. However, the challenge is to make sure that these documents are effectively implemented and monitored, which needs countries to create proper institutions for water management as platforms for dialoguing on issues of benefit sharing.

Moderator question 3: Is benefit sharing possible in SADC? We hear that climate resilience through benefit sharing is possible but what are the building blocks that can help the region share the benefits?

There is no one size fits all as each river basin is unique. There is a need to come up with a basket of interventions that can assist in achieving sharing. Transboundary basins are water managed sub-optimally which means that there is room for improved performance in the basin.

One of the ways is to look at the basin without administrative borders then optimise water management and then put the borders back on. There is need to ensure that parties have a sufficient vision of what is supposed to happen. In the face of climate change, we can wait and react when it happens or we can prepare for it which includes benefit sharing.

There is need to understand the value of water especially in the agriculture sector where water is not being used wisely to grow crops to feed a growing population.

Moderator question 4: Can we use benefit sharing to build resilience in the region? What are the bottlenecks being faced in implementing regional instruments?

Countries should also look at the comparative advantage in terms of what they have, for instance, land and water. South Africa and Lesotho were given as examples in that the former has land while the latter has water hence how can they then share what they have. There is also need to look at costs i.e. how can countries then share the costs that may cause threats to benefit sharing?

Comments and reactions from the floor

How will the politician be engaged in this debate seeing that everything is so technical?

There is need to develop proper strategies to engage politicians so as to make Member States responsive.

For benefit sharing to be successful we need political buy in otherwise there will be challenges. (Lesotho Highlands Water Project cited as an example).

We need not be too dogmatic or patriotic but there is need to think regionally. Given multiple demands, how do we find a compromise? The benefit sharing concept has been accepted, though it is still technical. Getting political buy in is important although it is not an easy process. There is need to understand that negotiations between countries take time and countries are generally cautious. With respect to the LHWP, there are benefits there. What is important is for counties to be proactive in deciding on what to do.

Moderator question 5: To build climate resilience we need to understand the definitions, models, predictions etc. How can we improve on the understanding of climate resilience across sectors and Member States? How do we build an information base that will help in understanding climate resilience across sectors and countries?

What we know is that extreme events are on the increase in intensity and occurrence i.e. temperature is rising and will continue to rise; rainfall patterns are changing and impacting on crops; and there is convergence on the models around winter drying. We have climate drivers that are unique to SADC but which cannot be made certain. Hence scenario planning and incorporating different dimensions so as to see their effects on different sectors (agriculture, health, economy etc). This is becoming multi-dimensional i.e. one can overlay climate change trend and socio-economic models to be able to come to some conclusions in order to build resilience.

Moderator question 6: Uncertainty is problematic. Uncertainty and politicians do not go well together - politicians lose interest in uncertainty. So how do we package information in such a way that we keep the politicians interested?

Focus should be on showing policymakers that the impacts of climate change caused by hydrological changes are already occurring through droughts and floods. Poor response systems have a huge impact on the GDP and on human lives. It is therefore important to ensure that the cost of not adapting is unpacked and communicated. The cost of no action should be the focus of communication to enable policymakers to see the implications of doing nothing with regards to extreme events.

Moderator question 7: Climate resilience within the SADC region in a multi-sectoral approach - shed light on the linkages between water and other sectors. How is water an effective enabler in other sectors? How then do we minimise competition and move towards climate resilience?

There are sectoral divides, however, it is natural that they talk to each other. In building resilience we need to talk in simple terms and talk about the specific activities that we want to undertake. Then different sectors can work together. For climate change adaptation there is need for capacity building and other policy measures. In order to minimise differences there is need to find commonalities, words that speak across sectors, while removing words that bring out the differences so as to dwell on the common ground. However, the challenge may be that what is ignored - is critical.

Moderator question 8: In understanding community level risk and response, is the water sector able to get across to those that need help?

Talk on climate change is usually on water and agriculture but not climate change and health impacts even though these impacts affect vulnerable groups - women, the elderly, children and the poor. The water sector has to bring in the other sectors to the community in order to, for example, create awareness on public health and hygiene. There is need for more scientific evidence that will help in dealing with existing problems e.g. malaria and diarrhoea, which will be made worse by climate change.

Moving from concept to practice

Moderator question 9: To the floor - what are the mechanisms in countries that are facilitating a multi-sectoral approach to climate change and climate resilience?

Zambia - institutions have been established e.g. the JPTC with Botswana, which involves members. There is a unit established for climate change facilitation in the Ministry of Environment in Zambia, which ensures that climate change issues are embedded in all planning. The country is in the process of developing a national investment brief regarding water and agriculture (a directive from AU). The Zambia Water Partnership (of GWP-SA) assisted in bringing together people from different sectors for the process.

Mozambique - law and policies on the environment which are important for responding to climate change are in place. There is also a policy for energy and a director of calamities and disasters. There is a forum at all levels of government (coordinating council) that coordinates all levels relating to disasters. There is a technical committee composed of directors and national centre of development and disaster management councils at the provincial level. Units and institutions allow discussion on climate change. In the last five years there have been strategies and policies on water where there has been consultation.

Namibia - politicians seem more interested than those in the water sector. This is because Namibia is a water stressed country and they are always prepared.

Botswana - the concepts are fine but lack the specifics in programs that will assist in absorbing the climate change impacts. The energy sector contributes most to climate change however, the dialogue content did address this. The non water sector has not been able to communicate with the water sector.

Zimbabwe - there are NGOs that work in the area of climate resilience that are able to respond quickly i.e. be able to harness resources and get to those that are in need. However, there is need for coordination to avoid duplication. There is need for oversight by the directorate of water. There is also the Health and WASH cluster that meets together though they are still separate.

Moderator : NGO engagement in climate resilience

There are clusters in the region e.g. ANEW and NAWISA. Through collaboration with government especially during disasters they get to where government cannot reach. There is also private sector and NGO participation at the community level. However, report back is usually the main challenge - civil society reporting back to its constituents.

Comments:

We are dealing with uncertainties therefore there is need to look back and see what has been done before. There is need to look at indigenous knowledge. We have to think about what are the technologies that are in research and development. We have to move towards using what we have done i.e. stop the 'throw away' thinking, encourage the use of ICT e.g. text messages (cellular phones) in early warning systems, biotechnology to explore crop varieties.

There is need to engage more with government as climate change threatens food, energy, livelihoods and agriculture for instance. This may require budget shifts as in most cases the budget today does not reflect the threats presented by climate change. Governments have to know what has been discussed at the dialogue in order for them to come up with adaptation strategies. Just like gender, where there has been a shift towards gender budgeting, there may be need for something like climate budgeting which may need heavy investment that will have to be shared by different sectors.

There is therefore need to emphasise preparedness.

Moderator question 10: Bekithemba Gumbo - what is the prerequisite capacity that the region needs and how can we ensure that the region has those skills?

It is important to realise that everything we are talking about has budgetary implications and funding issues. We therefore need to think about where the money will be coming from. What is important is skills development. We have to understand that public finance is limited and therefore we need some assistance from the private sector. The government can mobilise more private financing i.e. a dollar of public finance can result in \$15 of private finance. This is important for infrastructure development. However, the uncertainty of climate change does not help matters. There is therefore need for research to convince banks (financers) to invest in water infrastructure.

Mechanisms on sector involvement

Malawi has experience in bringing together different sectors together. For instance the Malawi Water Partnership (of GWP-SA) was able to bring together 33 Principal Secretaries to talk about IWRM by working with cabinet. There are cross sectoral and multi sectoral platforms to be put in place to facilitate national dialogue and package information.

Comments from the floor

Just like the consumer pays the full cost of water in South Africa for example Randwater and Joburg Water contribute to the LHWP, we may need to look at the consumer to pay for climate resilience.

We need to reflect on the past decade - were outputs of the decade equated to the investment made? There is need to make sure that aspects of climate resilience are embedded in development projects. There is also need for guided prioritisation in raising funds - ministries of finance prioritise without really stating the outputs.

We have to note that lobbying needs evidence to match it, hence countries need to set the agenda. While we are sticking to processes we have to think about the kind of results available in building up climate resilience. This can then be used as motivation to leverage more funds.

In other words, how can we say that what we have done is climate change proof? There is therefore need to unpack incremental results that can justify incremental funding.

Panelists closing remarks

Bekithemba Gumbo - we have to understand the IWRM principle 4 and underline water as an economic and social good. Yes the consumer has to pay in order to payback capital for example. This is the business aspect in water. There are few projects in the water sector that have been developed up to a bankable status. Many grants are available to help make the other projects bankable. Projects should be appraised in such a way that they can attract funding.

David Lesolle - there is more than \$12 billion available for climate change adaptation and mitigation. The region has to be able to mobilise itself in order for it to take up those funds.

David Phillips - benefit sharing is becoming irresistible. However, technocrats need to prepare the politicians.

Noma Neseeni - benefit sharing is a good concept, however, we should not ignore the burdens. We have to be conscious of how the benefits trickle down to the poor.

Belynda Petrie - the region has to set the agenda. SADC has an opportunity in setting the climate finance agenda i.e. how/where climate finance goes. There is need to emphasise cross sectoral planning and projects that are multi sectoral, which will result in double benefits. We have to think about finance and the scale of intervention.

Phera Ramoeli - we have to recognise the specifics in our efforts and drives. We have to think about the implementation of the Regional CC Adaptation Strategy for RSAP3. Indigenous knowledge has to be promoted as climate resilience and benefit sharing go a long way in looking at how people have done things.

Reginald Tekateka - we have to take advantage of the SADC PF and engage with them as allies in lobbying governments to provide more finance to climate change and climate change adaptation in planning. Investment plans have to better target finance in development. Political will exists in that they are willing to work with the evidence. The onus is therefore on us to take what we want to the next level.

Question from the floor: How far has SADC gone in funding its own research?

Promoting regional funding is being encouraged although most SADC work is donor funded e.g. WaterNet and WARFSA are funded by donor partners. Countries have to internalise these programmes i.e. fund their own students on WaterNet programmes. However, SADC HYCOS project is one where Member States are putting in effort to put in their own resources. There is also other work for example in Mozambique which is self-funded. Furthermore, the idea of scenarios and models is one where data used is from the region. There is, however, need to develop tools that will help in decision-making.

8. CLOSING REMARKS FOR THE SADC MULTI STAKEHOLDER WATER DIALOGUE

The closing remarks were made by Mr Phera Ramoeli from the SADC Water Division (DIS).

Issues noted in the Dialogue with regards to benefit sharing:

- Need to understand the benefits derived at different levels – benefits are derived at local, national and regional level.

- The region needs to strengthen our information system: Information (both hydrology and climate information) is vital in order to ensure that policymakers can make decisions. The SADC HYCOS is such a system that countries should continue to support.
- Issues of national interest require the involvement of politicians and there is a need to look at regional integration. Regional integration, poverty alleviation and economic growth – the SADC Treaty goals should be the drivers for benefit sharing.
- Need to understand more the link between sectors – the nexus between water and sectors like agriculture, energy, ecosystem and development in general. Need for sectors to talk more to each other.
- Need for the resource keepers to engage with the water users: This should be done at all levels – and this dialogue is one of the ways that SADC Water Division is implementing this to ensure that we work with water using and water impacting sectors.
- Benefit sharing needs to have a political buy-in. We need to create this buy-in by lobbying our politicians and this can be done by working with the SADC Parliamentary Forum to ensure that our political leaders are aware of these issues
- There is a need to link the ecosystems to development planning in terms of valuation, cost and benefit.
- We need to unpack more the issue of costs and benefits
- Benefit sharing takes time but it is important to look at the resource first and find commonalities.

With regards to climate resilience:

- Research is needed in climate change to ensure that the region has science based evidence to support planning and decisions. But while research is needed there is need to use the research that has already been done to inform our plans.
- Climate change is a threat to a number of sectors – this means that the current budget systems do not address the envisaged threat.
- There is need to increase storage capacity – to be more resilient infrastructure - both small and big should be developed in the region.
- Use of scenarios and models – research institutions and universities need to be capacitated so as to improve and develop information with a regional context.
- Climate change has an impact on development - it is therefore important to ensure that we prioritize programmes that ensure climate resilient development.
- Build economic arguments to ensure that we sell the importance of investing in water.
- We need more capacity building, and also focus on institutional development.
- Water efficiency issues need to drive issues of regional integration.
- We need to communicate better – find commonalities and bring the subject down to the level where everyone can relate to the subject and its impacts.

General comments:

- Harmonise national interests and understand these to facilitate regional/river basin level benefit sharing – which requires trust.
- Political will: science - policy dialogue should change form to ensure our leaders are well informed and on board and need to engage politicians as a key stakeholder. Use the SADC Parliamentary Forum; find a useful way to frame the problem – for different audiences.
- Research and development is key: Need to build research capacity in the region and link it to policy making decisions.
- Integrating climate issues into development planning: Climate resilient development planning is a driver and a tool for holistically identifying benefits.
- SADC could take a lead and have an international voice on taking benefit sharing from concept to reality.
- Change management is an important aspect given very different climate and development futures – a mindset change is needed.
- Integrate energy, food security, water planning - with health impacts in mind: the SADC Regional Infrastructure Master Plan.
- Anchor benefit sharing and climate resilience in existing mechanisms and instruments and institutional arrangements.
- Benefit sharing is a useful and apparently necessary tool – made even more so by climate change – but need to broaden the basket of benefits e.g. human security, health.
- Institutions take a long time to change.
- Broaden the Multi-Stakeholder Platform – Energy - SAPP, Defence, Peace and Security, Health.
- Identify creative ways of obtaining data.
- Pollution is a key consideration – health, tourism, safe water etc
- Work with civil society in order to ride on their flexibility and outreach. However, coordination is important in order to improve efficiency.
- How to ready the region to absorb the climate funding to ensure climate resilience.
- The climate finance architecture prefers projects that are cross sectoral – benefit sharing is a tool we can use to target climate finance.

Closing remarks

Cyrille Masamba, Outgoing Chair of SADC WRTC

In his closing remarks, Mr Masamba stated that benefit sharing means implementing a number of programmes that will break barriers between a number of countries so that they feel more the region - SADC. He recognised that water is a factor for regional integration hence the need to encourage all initiatives that go toward regional integration which gives us a common future. He then thanked all present.

APPENDICES

APPENDIX A1: WELCOME NOTE BY KGOSI PITSOYABOSIGO MOREMI , 12TH OCTOBER 2010, 4TH SADC MULTI-STAKEHOLDER WATER DIALOGUE – MAUN LODGE

Director of ceremony,

AMCOW TAC chairperson - Mr Reginald Tekateka, Chair of WRTC, the Under Secretary in the Ministry of Agriculture, Water & Forestry in Namibia – Mr. Abram Nehemia

The SADC representative, Senior Programme Manager – Mr Phera Ramoeli

Representatives of the International Cooperating Partners here present,

Members of the Water Resources Technical Committee (WRTC)

Representatives of the regional and international organizations

The Press

Ladies and gentlemen, I greet you all.

Bagaetsho! I have been given a very simple task of welcoming you into our village Maun and a gateway to the only inland delta of its kind in the world. Your coming here to Maun as water and water related experts is on its own a Nation boost to my village. I was really excited to hear that we will be hosting a multi-stakeholder water dialogue, it really made us proud and happy that the region recognizes my village.

Ladies and gentlemen, let me take this moment to give you some insights into my village: We have received quiet some significant flows this year but I have been reliably informed that Maun water supply has a deficit of about 3500 cubic meters per day, which is amazing and shocking when we have plenty of water surrounding us. I hope you will put your heads together and assist, not only us but Botswana as a whole how to arrest this situation. Maun is our tourist hub. We receive thousands of tourists every year but I think we could be doing much better if we could be having adequate water supply.

I have been informed that your Dialogue will also focus on the impacts of climate change but please put your professionalism into use to see that our Delta and lake Ngami has fewer negative impacts as these are our only livelihood sources. I really loved your theme and look forward to your dialogue outcomes in assisting us in solving these problems.

Director of ceremony as I have earlier informed you of the significant flows which need to be taken care of. I should also inform you that beauty comes with sadness. We have lost about 13 people who drowned in these beautiful flows. So I urge you to be careful not to be part of this sad statistics.

Bagaetsho health should always be part of our lives; I know that when ever people crowd together they get excited and forget about health tips. Let us remember to protect ourselves.

I was tasked with a duty of welcoming you in our beautiful home, feel free and enjoy yourselves.

Re a le amogela bagaetsho.

Tholang le nelwa ke pula.

I thank you.

PULA!!!

PULA!!!

PULA!!!

APPENDIX A2: REMARKS BY SADC

APPENDIX A3: SPEECH BY THE DIRECTOR OF WATER AFFAIRS AT THE 4TH SADC MULTI STAKEHOLDER WATER DIALOGUE, 12TH OCTOBER 2010, MAUN, BOTSWANA

Salutations

I am honored and gratified to be invited to address the 2010 SADC Multistakeholder water dialogue. This is one of the most important fora to share information about what is happening

in the water and water related sectors in the region. We are aware ladies and gentlemen that the region is currently experiencing impacts of climate change and the theme for this year cannot be more fitting as it talks about the region's efforts on mitigating these effects, hence benefit sharing as a tool towards climate resilience.

Ladies and gentlemen, I am quite certain that everyone knows that water is important in our everyday life. Different cultures and traditions influence the way we deal with water; we plan our cities and villages near water, we bathe and play in water, our economies are strongly dependent on the availability of water to name but a few. This makes water to be the centre stage/pivot to our everyday lives.

Ladies and gentlemen, to be a Motswana is to know the value of water. Neither the diamonds in the ground nor the livestock grazing above it are more precious to us. As with minerals, Government is obliged to act as a steward of this country's limited water resources not only for the citizenry of today but also those of tomorrow.

Botswana signed-up to the MDG's in 2000 in recognition of the need to address the global issues of poverty eradication. Without improved access to freshwater and sanitation, the overarching goal of poverty eradication cannot be achieved. This was already in alignment with Botswana's process of planning since most of the activities required to achieve the Goals through its Vision 2016 statement of intent and its National Development Planning (NDP) process were in place.

Ladies and gentlemen, Botswana's vision 2016 on water states that "*Botswana must develop a national water development and distribution strategy that will make water affordable and accessible to all, including those who live in small and remote settlements*", which is testimony to the commitment of the government to treat water as a fundamental basic human right. This requires appropriate management approach which will ensure that programmes are put in place which will ultimately improve on water efficiency and seek to build resilience on the emerging challenges posed by climate change (floods and droughts). Our commitment in this endeavor is emphasized by our NDP 10 goal of achieving 100% national access to clean water, up from the current 65%. For the agriculture sector the aim is at increasing productivity. Schemes to improve arable activities; including fencing, borehole drilling and equipping; small stock and poultry production have been stepped up. The capacity and efficient gains likely to be brought about by **National Agricultural Master Plan for Arable and Dairy** production (NAAMPAD) are great. It is my sincere hope that the deliberations from this dialogue will assist us in identifying appropriate tools for mitigation.

Ladies and gentlemen, Botswana had her review of the National Water Master Plan in 2006. The review recommended that institutional reforms be carried out to meet the challenges facing the supply and overall management of our water resources. As per the recommendations of the review, the water reforms are being implemented. This is done in an effort to improve on water management and service delivery. This has seen Water Utilities Corporation (WUC), which is a parastatal taking over provision of bulk water, water supply and sewerage services throughout the country. The National Water Policy, the Water Resources Council and the Energy & Water Regulator are expected to be in place by 2011 while the Legal & Institutional framework will be in place by 2012.

Ladies and gentleman, we are challenged in Botswana, in that we have limited water sources and most are concentrated in the northern part of the country while most population is in the eastern part. Approximately 80% of our water is derived from groundwater and about 20% from surface sources. The present surface source of water for much of the eastern part of the country is Letsibogo Dam, whose assured yield is becoming stressed. To ease the water shortage for domestic and industrial consumption in the eastern part of the country, the Government, is, therefore, proceeding with the construction of more dams at Dikgatlong, Lotsane, and Thune dams within the Limpopo basin. All three dams are at construction stage and will be completed in 2012 (Dikgatlong and Lotsane dams) and 2013 in the case of Thune

dam. The 3 dams will also support economic diversification by provision of water for irrigable land. The proposed Lotsane and Thuni dams will provide water for over 250-400ha and 300ha of irrigable land respectively.

To increase the water conveyance from the dams in the eastern part of the country, the Government will construct the North South Carrier 2 Pipeline during NDP 10.

Ladies and gentlemen in order to address the water shortage in areas where surface water is not readily available, government continues to develop additional Groundwater Resources in the country and install water treatment plants where applicable.

Through the north-south carrier project, we have improved accessibility to potable water to larger area of the country. The government had to ensure that there is widespread infrastructure and water service points even in the remotest area of this country to improve accessibility to potable water.

Increasing demand for water is exerting severe pressure on our environment. Freshwater ecosystems are in crisis and most of our rivers, dams and aquifers are already facing pollution threats. High levels of discharge of hazardous wastes from industry and agriculture; increased demands for water for development are resulting in increased surface and groundwater contamination and depletion. The decline in the quantity and quality of water resources is causing extinction of freshwater species and a severe loss of biodiversity.

The Okavango Delta for example is home to numerous biodiversity species both small and large. The functioning of this system depends on maintaining a reasonable flow of water in the Okavango River. Reductions in quantity and quality of the flow will have detrimental effects on the health of the ecosystem. Deteriorating Okavango River and delta, ladies and gentlemen will undoubtedly have unpleasant eventualities on the lives of the people of the Okavango and the economic returns that Botswana get from tourism in that area. Therefore we cannot separate water from the environment, all what makes the environment needs water to survive.

Botswana adopts the **integrated water resources management (IWRM) approach as an appropriate response tool to the challenges faced in effective and equitable water management. This provides knowledge sharing and dialogue aimed at promoting and linking IWRM initiatives at all levels.**

The water sector in their pursuit for the goal of efficiency in water utilization and conservation has embarked on a national project to develop water efficiency plans in an integrated manner, through UNDP/GEF funding. The objective of the project is to facilitate the development of national processes, procedures, methods and options for efficient and equitable Integrated Water Resources Planning (IWRM). This will entail the development and implementation of a dynamic IWRM/Water Efficiency Plan for Botswana which will address both national and transboundary water management priorities. The project will also contribute to regional knowledge management process, directly contributing to increase awareness and capacity of national and regional stakeholders to engage in IWRM planning process. Since government is emphasizing on integrated results-based planning and budgeting, the project will demonstrate on the ground the benefits of water conservation practices in selected schools of Botswana. The lessons learnt will further be documented and disseminated across the nation and the region

Some analysts have predicted future conflicts over water, many countries successfully share river basins, inland seas and other water resources, showing that this challenge can also be a powerful catalyst for international cooperation. Southern African and Africa as a whole has over the years found it fit to enter into bilateral and multilateral agreements to facilitate cooperation and joint management of shared watercourses.

Botswana shares all her river basins with neighbouring countries. At international level, these cover both general obligations such as in the case of Agenda 21, the CBD- Convention on

Biological Diversity, Ramsar Convention on Wetlands of International Importance, CITES - Convention on International Trade in Endangered Species and UNCCD – Convention to Combat Desertification and Drought, UNFCCC - United Nations Framework Convention on Climate Change.

I need not to mention ladies and gentlemen, that SADC Protocol, of which we are signatory to encourages the establishment of “shared watercourse institutions” and “joint management mechanisms” of shared watercourses. To this day, between 1994 and 2004, Botswana, together with neighbouring states, have entered into Agreements to establish Water Commissions and Joint Committees. Both aim to act as technical adviser to the Parties on matters relating to the development and utilization of water resources of common interest to the parties.

These Agreements have provided a platform for us to negotiate, share ideas and collectively make decisions on the developments and management of our shared resources.

The threat of climate change is a looming one for the region and the world as a whole, especially for semi-arid countries that are prone to extended drought periods, and low rainfall patterns, such as Botswana. Rain weather patterns are changing, bringing erratic temperatures, as well as uncertainty about sustainable livelihood.

Ladies and gentlemen, notwithstanding the importance of water for improved livelihoods, during the hydrological year 2009/10, the Okavango area experienced floods disaster. The 2009/10 maximum water level was 22cm above that of the previous hydrological year 2008/09. This was the highest peak ever recorded since 1969 and it resulted in floods disaster that affected some villages and settlements within the Okavango delta. The adversity resulted in some infrastructure being submerged such as water treatment plants leaving villages going for several days without potable water; roads and buildings. In addition to this, ladies and gentlemen, 94 households were submerged and many people were evacuated. Currently, levels are now subsiding and some of the flood plains have dried out and are now accessible.

We therefore need to acknowledge that water is not just a sector but the primary medium through which climate change will impact the earth ecosystems and therefore peoples livelihoods and well beings due to predicted change in its quality and quantity. It is through water that changes will be realized first and foremost. It is important therefore ladies and gentlemen that the way that water is managed in and between countries will be a critical component for the success of any efforts to adapt to the impact of climate change.

Let me conclude by emphasizing that the country and the region will have to deal with the current water resources development and management problems and realization of our Visions/Policies, which will only be possible if we are to re-think the current water practices and develop new concepts and approaches for sustainable water resources management. It is for this reason, that it is equally important to inform communities that water must be valued, but not necessarily priced to reflect its scarcity. Everyone must participate in water resources planning, development and management. The best way for Botswana to address and implement climate change related concerns is through studies of vulnerable sectors, population groups and identification of mitigation measures with clear indicators. I hope this dialogue will reveal solidly researched information that will better enable us to better understand present and future scenarios and how to address them. On behalf of the GoB, I wish you a very fruitful 2 days of discussions and a most pleasant stay in our country and in particular Maun. PULA!PULA!PULA!

APPENDIX A4: KEYNOTE SPEECH ON ADDRESSING REGIONAL COOPERATION IN THE FACE OF CLIMATE CHANGE – A VIEW FROM THE WATER SECTOR , 12 OCTOBER 2010

by Reginald Tekateka, AMCOW TAC Chair

Water as a catalyst for regional cooperation

With 15 river basins SADC countries have made a lot of progress in promoting regional cooperation in the management of water resources. This can be evidenced by the implementation of the Shared Watercourses Protocol. This is very much the spirit that lay behind the establishment of the African Minister's Council on water (AMCOW) in 2002 aimed at providing political leadership and strategic guidance in the shared management of Africa's 63 shared river basins. This was founded on a firm recognition of the role that water can play in fostering economic and political integration of the continent. The Sharma el Sheikh Declaration signed by the African Heads of State in 2008 identifies climate change as a critical threat to water resources in Africa with a high potential to reverse development strides already

achieved. It calls for the development of appropriate strategies to address this threat. Africa’s regions are encouraged develop responses that address their specific vulnerabilities. **This is also reflected in the words of Kofi Annan at the WSSD in 2002**

"but the water problems of our world need not be only a cause of tension; they can also be a catalyst for cooperation...If we work together, a secure and sustainable water future can be ours... »

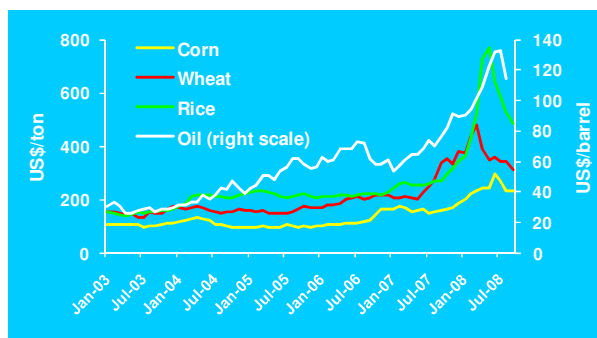
This dialogue focuses on moving towards climate resilient development through sharing water benefits. It assumes that increasing benefits beyond the river addresses the challenge of regional fragmentation. According to Sadoff and Grey some of these benefits could include:

- Integration of regional infrastructure,
- Integration of markets and trade
- Improved climate variability and climate change response management
- Regional integration

Ensuring the sustainability of these benefits has to be seen as a shared responsibility among states.

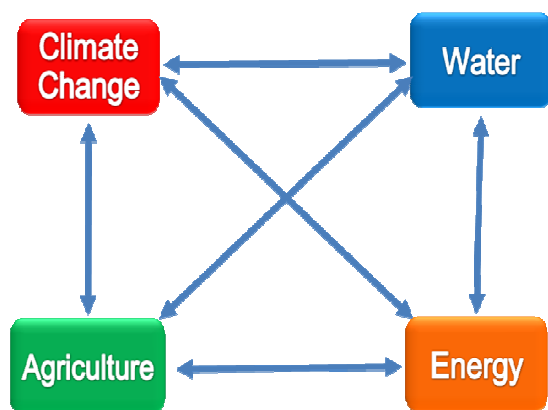
Why Climate Change increases the need for Regional Cooperation?

The problems of the global economy are interconnected and cannot be solved by one country. The link between the increase in food prices in 2008 and the rise in oil prices clearly show that no one country can solve these problems alone.



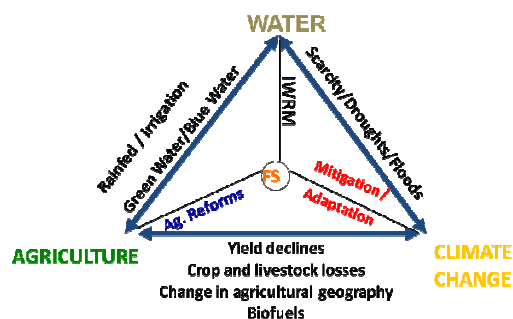
Adapted from Mahomed Ait-Khadi, GWP 2010

The water-food-energy and climate nexus exemplifies the complexity and the interconnectivity of the problems.



A closer look at the Agriculture-Water-Climate Change Nexus:

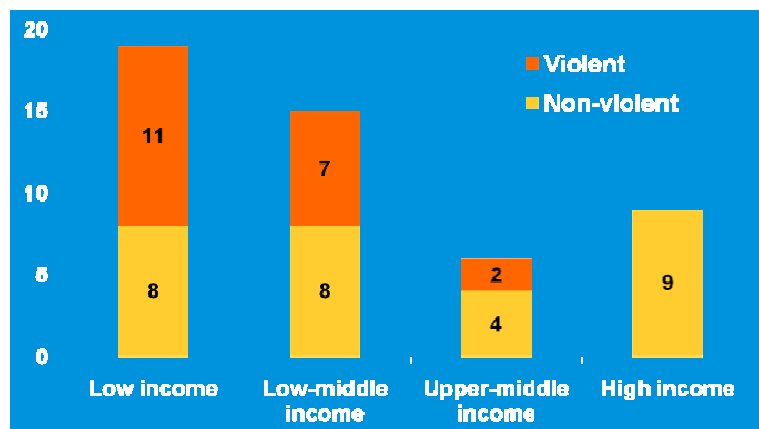
In southern Africa, a significant African region with a diverse resource base, that is home to around 250 million people, agriculture accounts for around 70 percent of employment, most of it in small-scale and marginal farming. But the region’s agriculture depends on rainfall for much of its water supply, and even a small dip in precipitation can put millions of people’s food security at risk. Over dependence on rain-fed agriculture increases the vulnerability our economies and communities to a changing climate. This in turn means the livelihoods of millions of our people are held hostage by nature. Increasing the water storage capacity for food production is therefore a key priority for sub-Saharan Africa. In a drought year, as much as a third of the region’s food grain production may be lost, with severe impact on the small-scale farmers– most of whom have no reserves to see them through lean years. Climate change could worsen these losses significantly within a generation. For example, scenario analyses and modelling conducted (by the Regional Climate Change Programme and regional research institutions) suggest droughts that historically have occurred once every 20-25 years might now take place as frequently as every 5-8 years.



Adapted from Mahomed Ait-Khadi, GWP 2010

The increasing food insecurity has implications on the demand for water resources this in turn also drives people to migrate to areas of high economic activity and this is usually in the urban areas. Urbanisation puts pressure on supplying water to cities and this can impact on human security.

The volatility in food prices in 2008 should be treated as a warning sign of what is to come – the recent food riots in a number of developing countries are a clear indication of how food insecurity can cause civil unrest. These riots tend to be more frequent and violent in low-income countries.



Adapted from Mahomed Ait-Khadi, GWP 2010

The SADC Dar es Salaam Declaration on Food Security signed by the Heads of States in 2004 is an important commitment for the SADC region which needs to be supported by water sector.

Water-energy-climate change nexus

The water, energy and climate change nexus is also important to understand. Whilst the key message from the body of international science is that energy is the focus for mitigation, and water is the focus for adaptation, water is needed for sustained energy production. In much of Africa, constant water supply is specifically needed for hydropower production and expansion. Water is used in cooling in energy production. A lot of energy is also used in water treatment plants and pumping stations. A perhaps less direct but no less important energy, water and climate change issue is evident in the region's biodiversity and broader environmental management: deforestation is disturbing the equilibrium of many of the region's natural systems, affecting natural resources as well as many of the region's livelihoods that are so dependent on available eco-system goods and services. Providing an alternative source of energy supply is one of the few options in effectively regaining control over often-rampant deforestation.

Water-climate-development nexus as a driver of regional water cooperation

Among the various drivers of regional cooperation I wish to focus on **resource endowment; variability and climate change.**

Like many other vulnerable parts of the world, the SADC region already has a major existing climate adaptation challenge, which is likely to be exacerbated by climate change. And as with many other regions, SADC's adaptation challenge is inextricably linked with its development challenge. This region's prospects for growth and prosperity are clearly affected by climate change. But if people are informed, have access to good basic services and can fall back on effective response systems in times of crisis they will be much less vulnerable to climate change.

The water, climate change and development nexus becomes particularly clear in an analysis of the impacts of climate on the MDGs five years before 2015. The continent is way behind in meeting the MDGs, and climate change and variability threaten to undo the progress that has been made and roll back the gains in the fight against poverty

This is why I describe climate change adaptation as essentially development in a **hostile climate.**

This perspective is a key distinguishing feature of this year's Dialogue: 'Toward Climate Resilient Development through Benefit Sharing'. This approach assesses "total climate risk", from the existing climate as well as from a range of future climate change scenarios, and it assesses that risk in the context of existing development challenges such as food security, human health and energy security.

For example recent floods in Pakistan are evidence of this increased risk. Recent research shows that rainfall during these floods was as high on the India side of the Indus River but forest degradation in Pakistan was much worse, aggravating devastation. This raises the importance of protecting and/or rehabilitating our natural ecosystems

It is important for us as a region to start thinking of how we can plan to reduce these risks, respond during times of extreme events and after the event has happened. Developing strategies at the regional, basin and country level is therefore important to ensure that development in the region is climate resilient.

What are the key implications for SADC?

Key Implications for SADC: Cost of climate change to the region

Regional studies for SADC have produced some striking findings, which will help leaders, regional and international institutions and practitioners reframe adaptation as climate-resilient development. The studies show that poor adaptation to current climate variations already destroys considerable economic value in this region estimated at a loss of between 5 and 10 percent of the GDP annually according to the Stern Report. With a collective GDP of US\$ 424.1 Billion as noted in the World Development Report, 2007, this implies a potential loss of between 10.6bn USD (at 5%) and 21.2bn (at 10%) noting that Sir Nicholas Stern estimated that the world's poorest countries would experience at least a 10% loss of GDP should they adopt a business as usual approach to climate change.

The SADC region is documented as being one of the poorest regions in the world with approximately 45% of the total population living on 1 US\$ per day. Malnutrition, which is directly affected by climate, is on average around 36.1% with a range of 44% to 72% across the region (SADC poverty report, 2006). For those concerned with the uncertainty of the climate projections, it is noteworthy that even a mere 1% loss in GDP will equate to a loss of 2.1bn USD in GDP – something the SADC region can ill afford – and a number that will worsen life expectancy, malnutrition, infant mortality and a number of development indicators. Impact from climate is not just a future concern, although the scale of possible future climate change could dwarf these losses.

We have also seen that economies are potentially more adaptable than one might think. In some locations studied, between 40 and nearly 100 percent of the expected losses by 2030 – under high climate change scenarios – can be averted through cost-effective adaptation measures scaled at regional or sub regional levels that are already known and tested. Some examples of these will be presented later in today's proceedings.

Country	GDP ¹ (Million of US)	1% GDP	3% GDP	5% GDP	10% GDP
Angola	58,547	586	1756	2927	5855
Botswana	11,781	118	353	589	1178
Congo DR	8,955	90	269	448	896
Lesotho	1,600	16	48	80	160
Madagascar	7,326	73	220	366	733
Malawi	3,552	36	107	178	355
Mauritius	6,363	64	191	318	636
Mozambique	7,752	78	233	388	775
Namibia	6,740	67	202	337	674
South Africa	277,581	2776	8327	13879	27758
Swaziland	2,942	29	88	147	294

Country	GDP ¹ (Million of US)	1% GDP	3% GDP	5% GDP	10% GDP
Tanzania	16,181	162	485	809	1618
Zambia	11,363	114	341	568	1136
Zimbabwe	3,418	34	103	171	342
Total	424,101	4241	12723	21205	42410
Loss due to CC (GBP)	212.1bn	2.1bn	6.3bn	10.6bn	21.2bn

Note: Source of GDP figures is World Development Report, 2007

Output loss scenarios are from the Stern Review Report, 2006.

Some Response areas for SADC

Need to:

- develop better policies and information on climate risk
- Promote water security within the water/food/energy/trade/economic development nexus.
- Identify opportunities for building regional cooperation.
- Encourage the inclusion of water on regional economic integration agendas
- Ensure climate resilient development
- Reinforce IWRM as a climate resilience building adaptation strategy
- Catalyse multi-sectoral platforms on development challenges and their solutions.
- Ensure gender issues are considered in the development of adaptation strategies
- Nurture shared visions of the future that can serve as a basis for cooperation.
- Improve climate finance absorptive capacity

Concluding Remarks

Better policies and information on climate risk could strengthen incentives for an efficient adaptive response by actors across the region's economies through multi-sectoral development. There is need to strengthen our ability to have a better handle on the impacts of climate change on our resources through sound scientific information management practices. We also need to ensure that we develop a more open and proactive approach to information sharing if we are to enhance our ability to jointly plan and execute adaptation and development responses including at the transboundary level.

Climate change, with its impacts on key regional systems and resources, such as energy, food security, water resources, eco-systems and human health – mostly felt through water impacts-is thus a driver for regional cooperation. It is therefore important to promote water security within the water-food-energy-trade-economic development nexus. Countries should endeavour to integrate climate change adaptation in development planning – lessons can be learnt from the Zambian experience where climate change adaptation has been integrated in the 6th National Development Plan. Such practices can then become a foundation for regional climate resilient development based on national priorities.

Bearing in the mind the important role that infrastructure can play in enhancing resilience to climate change the NEPAD driven Programme for Infrastructure Development in Africa (PIDA) offers an opportunity to approach water infrastructure development from this perspective. While the progress achieved by SADC in developing a regional water infrastructure programme is a welcome contribution to the PIDA program it should be designed to support climate resilient development.

Adaptation, however, is not free. Many of the measures identified require substantial upfront investment. This is why a significant increase in funding for adaptation to climate change, over and above resources currently committed to development, should be such an important part of the new global deal. But adaptation can be at least partially self-financing. A balanced portfolio of adaptation measures can have a profound and positive impact on economic development. The challenge posed by climate change might lead to action on development that would in any case have been wise.

The opportunities to better target adaptation funding– and to attract investment for climate-resilient development – are tremendous. We have a window of opportunity today: a chance to put in place workable, cost-effective programs that greatly improve their levels of climate adaptation and in so doing boost sustainable development. In the immediate future, the thinking emerging from this Dialogue, a powerful starting point – should be scaled up dramatically to develop a much more comprehensive picture of adaptation as climate-resilient development and regional integration.

Countries will need to plan for climate resilience and adaptation with much greater rigor, focus, and urgency than has been the case until now – aligning the actions of public, private and NGO stakeholders in concerted effort. Along with this, a greatly increased institutional capacity will be needed in the region.