



SADC POLICY PAPER ON CLIMATE CHANGE:
ASSESSING THE POLICY OPTIONS FOR SADC
MEMBER STATES

by David Lesolle (University of Botswana)



SADC Policy Analysis and Dialogue Programme

The SADC Secretariat is the executive arm of the Southern African Development Community (SADC) with the responsibility of, among other things, undertaking strategy development, planning and monitoring of regional cooperation and integration agenda.

The function of strategic development must be based on quality research and policy analysis on key areas of regional cooperation and integration, most notably on (1) Politics, Defence and Security; (2) Trade and Economic Integration; (3) Infrastructure Development; (4) Food Security, Natural Resources and Environment; (4) Social and Human Developments and (5) Cross-Cutting areas like Gender, HIV/Aids and Environment.

In the current framework of the strategic review of the “Regional Indicative Strategic Development Plan” (RISDP) the SADC Secretariat has prioritized the above mentioned functions and commenced on a Policy Analysis and Dialogue Programme. The programme is intended to promote regional policy dialogue and debate on key regional integration issues aiming at guiding development of regional policy processes.

During this first year of the programme the SADC Secretariat, with support of the German Development Cooperation (GIZ), will therefore organize diverse Think-Tank workshops, symposia and other regional events to foster the dialogue between researchers and the Secretariat and commission policy papers on key priority issues.



This Policy paper was drafted by David Lesolle with input from Emma Archer and Susanne Wallenoeffer and the cross-cutting SADC working-group on climate change. Afterwards it was reviewed by researchers from all over SADC region during the Think Tank workshop on climate change (March 2012).

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List of Acronyms

CBDR	Common But Differentiated Responsibilities
CCAS	Climate Change Adaptation Strategy
CDM	Clean Development Mechanism
CO ₂	Carbon dioxide
COP	Conference of the Parties
COP15	15th Sessions of the Conference of the Parties
COP16	16th Sessions of the Conference of the Parties
COP17	17th Sessions of the Conference of the Parties
DBSA	Development Bank of Southern Africa
ENSO	El Niño Southern Oscillation
ETS	Emissions Trading Scheme
EU	European Union
FANR	Food, Agriculture and Natural Resources
GCM	Global Circulation Model
Gg	Gigagram
GHG	Greenhouse Gas
HIV/AIDS	Human Immune Virus / Acquired Immune Deficiency Syndrome
IPCC	Inter-governmental Panel on Climate Change
IPP	Independent Power Producer
LIMCOM	Limpopo Watercourse Commission
MDG	Millennium Development Goals
NGOs	Non Governmental Organisations
OKACOM	Okavango Basin River Water Commission
ORASECOM	Orange-Senqu River Commission
RCM	Regional Climate Model
REDD+	Reducing Emissions from Deforestation and land Degradation
RSAP	Regional Strategy and Action Plan
SADC	Southern African Development Community
SIDA	Swedish International Development Cooperation Agency
UN	United Nations
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
WDM	Water Demand Management
WMO	World Meteorological Organisation
WRI	World Resources Institute
ZAMCOM	Zambezi Watercourse Commission

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SADC ISSUE PAPER ON CLIMATE CHANGE: ASSESSING THE POLICY OPTIONS FOR SADC MEMBER STATES

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Abstract:

The paper provides a summary of the observed and expected climate change in SADC countries. The observed impacts of global warming and climate change on sectors and the challenges for climate change adaptation and mitigation are discussed to provide a background to the growing need of the SADC region to develop policy strategies in response to climate change. Possible adaptation and mitigation options in different sectors are argued. While adaptation remains a priority for SADC, it is also clear the voluntary mitigation activities can provide benefits to promote regional integration and socio-economic development in the SADC region.

Executive Summary:

a) SADC, Global Warming and Climate Change:

The SADC region has a number of climate sensitive sectors critical for economy and livelihoods and is, as a result, highly vulnerable to climate variability and change. A number of reports have documented the possible impacts of climate change on the SADC Member States individually and, further, at a regional level. The scientific community agrees that emission of so-called 'greenhouse gases' such as carbon dioxide, contribute to global warming, thus causing the 'greenhouse effect', and associated climate change. The SADC region, at 1.3 %, is a minor contributor to global emissions, yet stands to be significantly impacted by increased temperatures and resulting changes in climate including changes to the rainfall.

Relative to the RISDP and in order to fast track the implementation of the integration agenda,

SADC must prioritise mainstreaming climate change considerations in development planning. The SADC region may therefore adopt the following Vision – Addressing the impacts of climate change in the region through successful implementation of adaptation and mitigation actions to enhance regional economic and social resilience.

SADC needs to develop a common climate change and development agenda, supported by the science and technology planning described in the SADC Science, Technology and Innovation Climate Change Response Framework. With this agenda, the region could attract development partners and investment and resources to address the adverse impacts of climate change.

b) The Way Forward: As soon as the SADC Member States had signed and ratified the Climate Change Convention (UNFCCC) and the Kyoto Protocol, it became clear that the implementation of the Convention and Protocol would prove to be a complex process involving a wide range of policy options and varied engagement by multiple levels of governance systems.

c) Breaking the silos: The SADC approach to climate change must be a cross-sectoral one, around the vision and core values of SADC, with all sectors participating and accountable. Furthermore, implementation of any policies require good governance measures that ensure that all sectors participate and accountable. Two key aspects to the future SADC climate change programme; (a) to establish an implementation strategy and (b) to develop an action plan. This is broken down into 3 key steps as follows:

Step 1: Establish a Permanent Commission on Climate Change at SADC Secretariat:

The climate change debate and dialogue needs to be driven at the highest level, without being limited to a single sector. At national level the agenda needs to be integrated into national planning processes while at SADC Secretariat it should be driven at Executive Secretary / Deputy Executive Secretary level. In this way, we acknowledge that climate change has moved from a set of scientific questions to a developmental issue.

SADC must therefore consider a three tier approach: at level I, the SADC Council / Summit; at level II, the SADC Executive Commission on Climate Change and the level III at SADC Technical Commission on Climate Change. At the SADC Secretariat, a Permanent Commission will be established (Level II) to report to the Council of Ministers and the Summit (Level I) on climate change objectives, policy and performance that would have been determined by the Council of Ministers and approved by the Summit.

Step 2: Defining the term of reference for the SADC Commissions on Climate Change.

Since climate change, and the responses to climate change, will have important economic consequences, the issue will inevitably become entwined with other international economic issues including: a) international financial flows, b) trade policy and c) development assistance.

The Permanent Commission established under Step 1 will therefore deal with the more complex issues at the interface among governance, financing, equity (including gender equity) and the questions around poverty, livelihoods, the economic and root causes of environmental degradation. In this respect, the Permanent Commission will ensure that the SADC policy objectives are adhered to, periodically reviewed and re- aligned and to

ensure the objectives adhere to the mission and vision of SADC. The composition of the Permanent Commission is proposed to be made up of the executive and also with representation of “technical experts”.

Step 3: Refining the regional strategic action plan on climate change:

The parameters of the strategic policy framework will vary according to particular emphasis and priority determination. However, it should include specification of:

- The SADC regional overall perspective on climate change;
- The regional objectives with respect to mitigation and adaptation;
- Bodies responsible for making and implementing climate change policy and the regional strategic action plan;
- Main policy approaches, regulatory framework and instruments, that will be necessary and funding mechanisms for the implementation of the strategic action plan;
- Expectations of other societal actors (Member States, business, civil society, individual citizens);
- The approach to international cooperation around climate change and how SADC can influence the international policy and strategies on climate change.

The strategy will be guided by the commissions and approved with guidance by the commissions. It is therefore important that an inception of the regional strategy and action plan identify timeline and milestones envisaged in the implementation of the plan, as well as a monitoring and evaluation framework.

1. Climate change and causes of climate change

Human activities since the start of the industrial era (about 1750), have contributed to changes in Earth's atmosphere in the amounts of greenhouse gases, dust and aerosols (small particles). The increase in concentrations of atmospheric gases (carbon dioxide, and other gases) lead to a change in the energy balance of the atmosphere as the gases and aerosols trap some of the outgoing energy, retaining heat somewhat like the glass panels of a greenhouse. As a result these gases are therefore known as greenhouse gases (GHGs). The largest known contribution comes from the burning of fossil fuels, which releases carbon dioxide gas to the atmosphere. Changing land use patterns contribute, too. Trees and other plants use carbon dioxide and give off oxygen. When trees are cut down for development, agriculture, and other purposes, they are no longer available to take carbon dioxide out of the air, and actually release carbon dioxide as they decay or burn.

Human activities resulting in increased GHG concentrations in the atmosphere have led to increases in average global temperatures. The current human impact greatly exceeds that due to known changes in natural processes, such as solar changes and volcanic eruptions. The global increase in temperatures, also known as 'global warming' causes climates to change. In its 2007 report to the United Nations, the Intergovernmental Panel on Climate Change (IPCC) concluded that it

is more than 90 percent likely that the accelerated warming of the past 50-60 years is due to human contributions.

2. GHG emissions of SADC:

There are historical differences in the scale of contributions to the GHG emissions. Developed countries have contributed most of the GHG found in the atmosphere today (see Figure 1 below).

GHG emissions from SADC countries have remained very small over the years, especially given that GHG emissions are largely associated with energy production and level of economic development. Even with the recent level of development, in 2010, the SADC region collectively contributed less than 1.3% of the total global emissions¹. This means any GHG mitigation in the SADC region will be insignificant for global emission reduction goals.

Recently, some of the developing countries' GHG emissions have been on the increase² and in some cases exceed the emissions of the developed countries. In a majority of countries, economic growth, measured as increases in GDP per capita, has the strongest influence on emissions levels, usually putting upward pressure on emissions. The top 25 countries with the largest GHG emissions account for approximately 83 percent of global emissions. The largest emitter is the United States, with 21 percent of global emissions, followed by China; 15 percent (see Table 1 right).

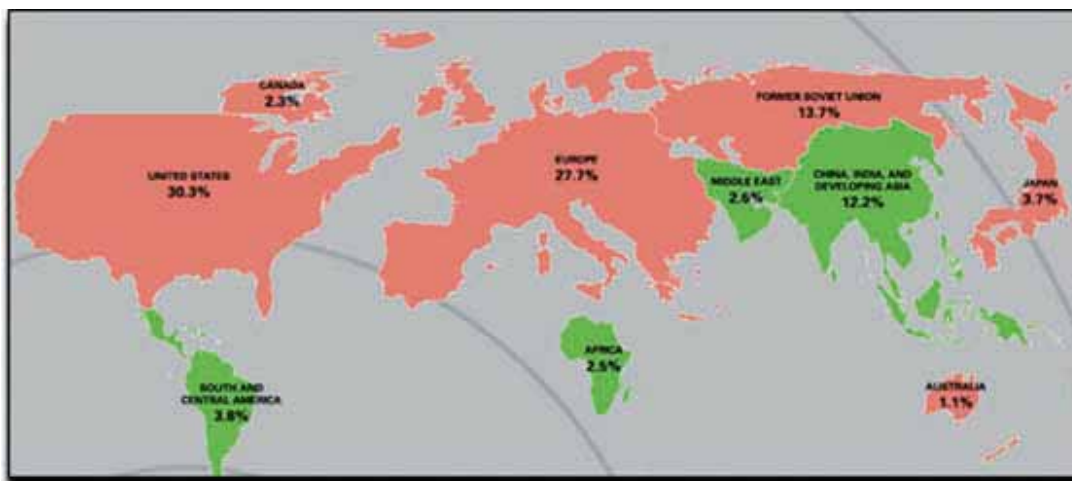


Figure 1: Industrialized countries have emitted the most anthropogenic CO₂ (area proportional to historical CO₂ emissions from fossil fuel combustion, 1900-1999). Source: WRI

1. Global emissions in 2010 = 29381 MtCO₂. Source: www.iea.org

2. This is mostly true for the "emerging economies" in China, India, Brazil, etc.

Table 1 Top GHG Emitting Countries (all GHGs: CO₂, CH₄, N₂O, HFCs, PFCs, SF₆)

#	Country	MtCO ₂ equivalent	% of World GHGs
1	United States	6928	20.6
2	China	4938	14.7
3	EU-25	4725	14.0
4	Russia	1915	5.7
5	India	1884	5.6
6	Japan	1317	3.9
7	Germany	1009	3.0
8	Brazil	851	2.5
9	Canada	680	2.0
10	United Kingdom	654	1.9
11	Italy	531	1.6
12	South Korea	521	1.5
13	France	513	1.5
14	Mexico	512	1.5
15	Indonesia	503	1.5
16	Australia	491	1.5
17	Ukraine	482	1.4
18	Iran	480	1.4
19	South Africa	417	1.2
20	Spain	381	1.1
21	Poland	381	1.1
22	Turkey	355	1.1
23	Saudi Arabia	341	1.0
24	Argentina	289	0.9
25	Pakistan	285	0.8
Top 25	27915	83	
Rest of World	5751	17	
Developed	17355	52	
Developing	16310	48	

Notes: data is for 2000. Totals exclude emissions from international bunker fuels and land use change and forestry.



3. The United Nations approach to Global Warming and Climate Change and SADC:

All SADC Member States joined an international treaty, the United Nations Framework Convention on Climate Change (UNFCCC) whose main objective is to stabilize GHG concentrations in the atmosphere. In 1995 and realizing that the emission reductions provisions in the Convention were inadequate, a process was launched to strengthen the global response to climate change, and, two years later, adopted the Kyoto Protocol (KP). The Kyoto Protocol legally binds developed countries ("Annex 1 countries") to emission reduction targets. The Protocol's first commitment period started in 2008 and ends in 2012.

Climate change mitigation considerations are anchored on Article 3 of the United Nations Framework Convention on Climate Change (UNFCCC) i.e. the principle of equity and of "common but differentiated responsibilities and respective capabilities" (CBDR, UNFCCC, 1992).

For SADC Member States, the priority is on reducing the impacts of global warming and climate change on development and also on adapting and coping with the increased climate variability and climate change. The most pressing reality for the SADC region is the vulnerability of Member States to climate change taking cognizance of differences in their respective economic and technical capacity to tackle adaptation. It is for these reasons that SADC Member States have signed onto the UNFCCC and its Kyoto Protocol.

4. Observed Climate change in Southern Africa

The increase in global concentrations of GHGs in the atmosphere has led to changes in climate in the SADC region. Temperature and rainfall are two main climate elements that are used in detecting global warming and changes in climate.

Instrumental observations from a number of SADC countries show an increase in temperatures, especially the minimum temperatures. Between 1950 and 2000, Namibia experienced warming at a rate of 0.023oC per year (Government of Namibia, 2002); similarly Botswana received warming at a rate of 0.017oC per year (see Figure 2 above).

The increase in temperatures is expected to continue even if the GHG emissions were to be stopped today and the temperatures in the region are expected to warm by between 1.0 and 3.0oC by 2080.

This means the SADC region will in the future and under climate change, continue to experience warmer temperatures as a result of which we are likely to see more pests, more diseases and malaria in places where malaria is not endemic. A warmer temperature also means more heat stress to natural ecosystems and agricultural crops, likely to negatively impact on the productivity of both the rangeland, grazing and food production. Global warming is bringing to the SADC region greater challenges for the agriculture, water, health and other key socio-economic sectors. Rainfall in southern Africa (SADC region) is generally determined by three air mass characteristics (see

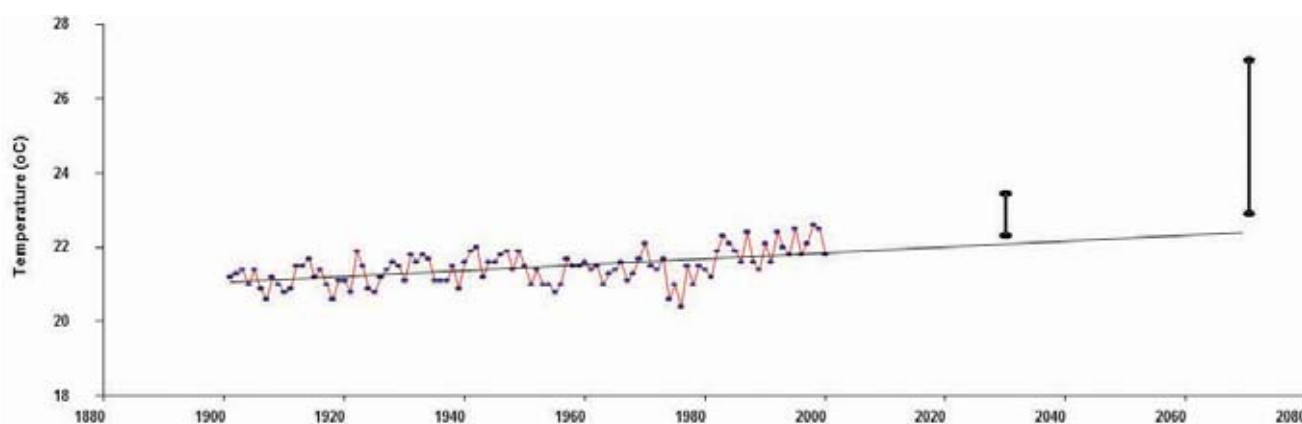


Figure 2: Changes in minimum temperature for Gaborone, Botswana (red line represents actual data for 1910 to 2000 and projection based on the IS92a climate change scenarios for the period up to 2080. Source: computed by author based on meteorological data

Figure 3 below): In each of the regions A, B and C, the rainfall producing systems are susceptible to climate change. Region C in particular has been known to be largely under the influence of the El Niño Southern Oscillation (ENSO) phenomenon,

itself triggered by the changes in the sea surface temperatures. ENSO can manifest itself as either El Niño or La Niña associated with warm and cool seas surface temperatures respectively in the tropical Pacific.

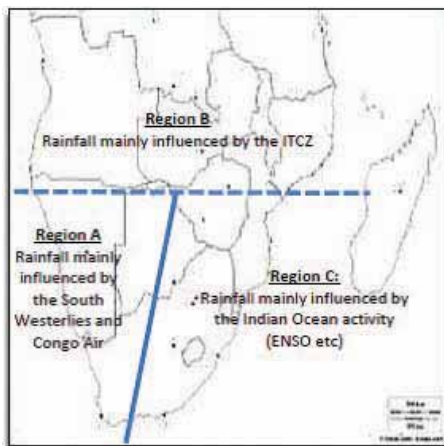


Figure 3: Rainfall determining systems for the SADC region.

The links between ENSO and the prevalent atmospheric circulation over southern Africa are relatively well understood. During an El Niño, Region C is likely to receive below average rainfall. A La Niña event is very likely to result in the opposite impacts, when the region would receive significant amount of rainfall.

There are observed changes in the rainfall characteristics (see Figure 4 and Table 2). The changes in rainfall are best expressed as changes in intensity and extreme rainfall events (storms) and changes in the rainfall season (onset, cessation and length).

Overall, since 1950, the region has also witnessed a downward trend in rainfall. Many reports including the IPCC Fourth Assessment Report (IPCC 2007) indicate that below-normal rainfall years are becoming more and more frequent.

One other rainfall characteristic that is observable is the increase in the number of cyclone activity in the South West Indian Ocean region. The tropical cyclone season for the SADC region is from November through April, the highest frequency of occurrence being expected in January and February.

The presence of cyclones in the region leads to extensive flooding, resulting in economic losses and destruction of infrastructure, crops and livelihoods in the countries on the eastern side of the SADC region. The future is most likely to be the same as observed data shows an increase in the cyclone activity.

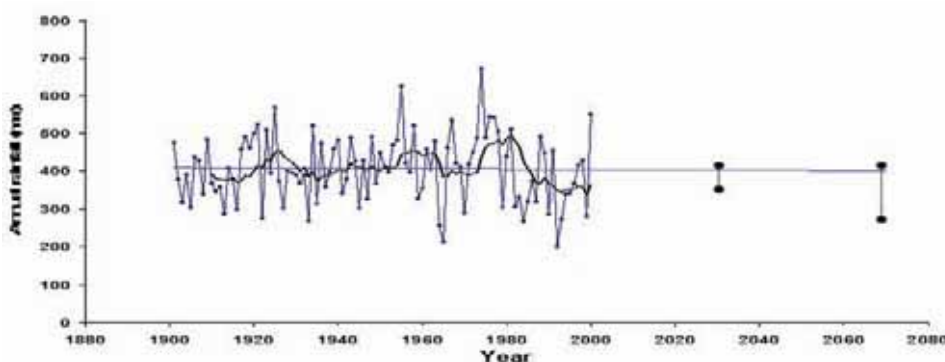


Figure 4: Actual and predicted future rainfall. Gaborone, Botswana. (Actual data for 1910 to 2000 and projection based on the IS92a climate change scenarios for the period up to 2080. Source: computed by author based on meteorological data)

Period				
Basin	1975–1989		1990–2004	
South West Indian	Number	Percentage	Number	Percentage
	23	18	50	34

Table 2: Changes in the number and percentage of cyclones in categories 4 and 5 for the 15-year periods 1975–1989 and 1990–2004 for the South West Indian Ocean Basin³. (Alternative source: www.wmo.int)

3. Changes in Tropical Cyclone Number, Duration, and Intensity in a Warming Environment. Webster, P. J. et al. 2005. Science Magazine: Vol. 309 no. 5742 pp. 1844-1846

5. What climate change means for the SADC region:

The SADC region is vulnerable to climate variability and climate change. SADC's vulnerability to climate change is not only caused by climate change but is a combination of social, economic and other environmental factors that interact with climate change. Furthermore, within the southern Africa region, the adaptive capacities are not uniform and therefore it is difficult to have a uniform assessment of the impacts of climate on the sub-continent. The region's adaptive capacity is influenced by a range of factors such as the level of economic development, education, access to credit and adoption of technology. Even just a 2oC increase can have impacts on biodiversity, agriculture, and on socio-economic sectors including water, tourism, mining, energy. Rising sea levels are already affecting many small islands. Below is an overview of the impacts of climate change on various sectors in the SADC region, identifying some of the most pressing adaptation needs in the SADC region.

5.1. Climate change impacts on Society: impacts on health and human security.

Global warming and climate change will have impacts on several sectors including health and human security. The SADC region is perceived to be overly vulnerable to climate change impacts mainly in the agricultural and water sectors that directly or indirectly impact on health. As a result of crop and pasture failure, many people in countries such as Botswana are abandoning crop production and moving either to cities or bigger settlements in search of economic opportunities.

summarised the urban problem in the SADC region as follows: "Rapid urbanization has led to urban sprawls and physical infrastructure deficiencies as well as depletion of natural resources." Assessments of water availability, including water stress and drainage, show that there is a possible heightened stress on some river basins as discharge of unprocessed wastes in the environment contributing to severe health problems.

5.1.1. Climate change and health:

The SADC region has a heavy disease burden largely caused by vector-borne diseases that are influenced by climatic elements (see Figure 5). Though there are few studies on climate change and health specific to the SADC region⁴.

While more emphasis is on malaria and HIV/AIDS, there is a growing interest by various research groups on the links between climate change and direct impacts between climate change and socio-economic disruptions and their impact on the health sector (Dube 2009).

Food security, already a major human security issue of concern, frequently turns into a humanitarian crisis in the region. This is likely to be further aggravated by climate variability and change, aggravated by HIV/AIDS and poor adaptation.

To ensure the SADC region can cope with global warming and climate change borne challenges, more work needs to be undertaken to establish and document linkages between climate change and health including for example on transmission dynamics. The SADC region needs to strengthen disease surveillance at regional, national and local level.

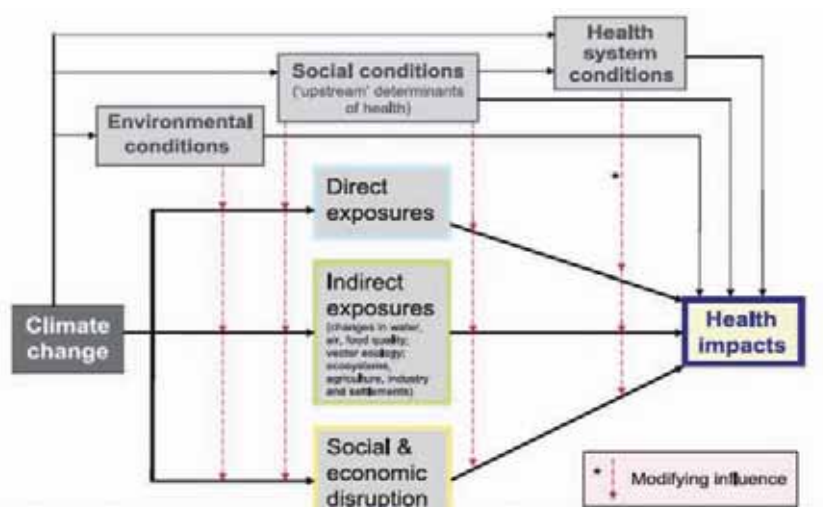


Figure 5: How climate change may impact on health. (IPCC Fourth Assessment Report, 2007: www.ipcc.ch)

5.1.2. Climate change challenges to human security:

SADC's growing populations, urbanization, land degradation, drought and desertification, unsustainable consumption and waste and the threat by climate change will contribute to human stress on the region's ability to meet food security, energy security, economic security and other forms of human security.

The SADC region needs to identify response strategies for climate change adaptation and these strategies must address and improve the region's ability to cope with additional pressure from climate change.

The human security issues related to climate change include: water stress, land use and food security, natural disasters and environmental migration.

5.1.2.1. Conflict over resources:

The impacts of global warming and climate change on rainfall patterns are already visible: a number of countries in the SADC region are observing changes in the length of growing season. This has led to a drop in agricultural productivity. The number of countries in the SADC region reporting depressed crop yield is increasing and persistent. This has led to, or worsens, food-insecurity and an unsustainable increase in food prices across the board. Reduction of arable land, widespread shortage of water, diminishing food and fish stocks, increased flooding and prolonged droughts are already happening.

The impact is already culminating in conflict over resources such as the conflict over the fishing in the Zambezi, water along the main river basins and land within some SADC countries.

5.1.2.2. Economic damage and risk to coastal cities and critical infrastructure

Unexpectedly heavy floods displaced more than a million people in southern Africa in 2007. In response, the SADC has established the SADC Regional Platform for Disaster Risk Reduction.

Sea-level rise and the increase in the frequency and intensity of natural disasters such as cyclones, pose a serious threat to the economies of coastal cities and infrastructure. An increase in disasters and humanitarian crises will lead to immense pressure on the resources of donor countries, including capacities for emergency relief operations

Some SADC Member States are already reporting the impact of sea-level rise: Seychelles, a member of SADC, has described that climate change has left the island in danger of losing its protective reef barrier and a sea-level rise could threaten its survival. Very few studies examine the economic impact of climate change and sea level rise on coastal settlements within the SADC region and it is urgent that the Regional Platform for Disaster Reduction oversee the assessment soon.

5.1.2.3. Environmentally-induced migration

The impact of global warming and climate change on the SADC region already contributes to inside-country migration. With more crop failure associated with recurrence of droughts, more and more people, especially the subsistence farmers abandon their land and migrate into towns and cities to seek alternative income generating opportunities.

Climate change is expected to exacerbate the environmentally induced migration patterns. The challenge for the SADC Member States is to identify the appropriate policy options to address the phenomenon. SADC may consider developing policy responses to assist those Member States most vulnerable and also taking into account the most pressing needs of the island Member States.

4. Research on Climate Change and Health in SADC region M.J.Chimbari and O.P. Dube: 2009

5.2. Economy (agriculture, trade, tourism)

In the SADC region, agriculture, trade in agricultural commodities and tourism play a critical role in the formal and informal economy, in sustaining rural livelihoods and in food security. The region is highly vulnerable to climate change because of the heavy reliance on rain-fed agriculture. As global warming and climate change alter the natural environment and quality of rangeland deteriorates, this then leads to a negative impact on wildlife as the basic resource for tourism in SADC.

The contributions by the tourism sector to the SADC economies continue to grow, making it one of the important categories of international trade. Tourism therefore has shown to be a strong contributor to the balance of payments for SADC Member States individually. The total international tourist arrivals

into the SADC region are 21 million in 2008 and 19 million in 2009. The tourism brought in receipts of 13 billion in each of the two years. (see Table in Annex III).⁶

About 70% of the region's population depends on agriculture for food, income and employment. Agriculture is a major social and economic sector in the SADC region, contributing between 4% and 27% of GDP and approximately 13% of overall export earnings⁷. Similarly, tourism in SADC Member States is predominantly wildlife based and this renders the sector even more vulnerable to climate change, particularly that the climate change is already impacting on the populations of key wildlife species. (see Figure 6 below)

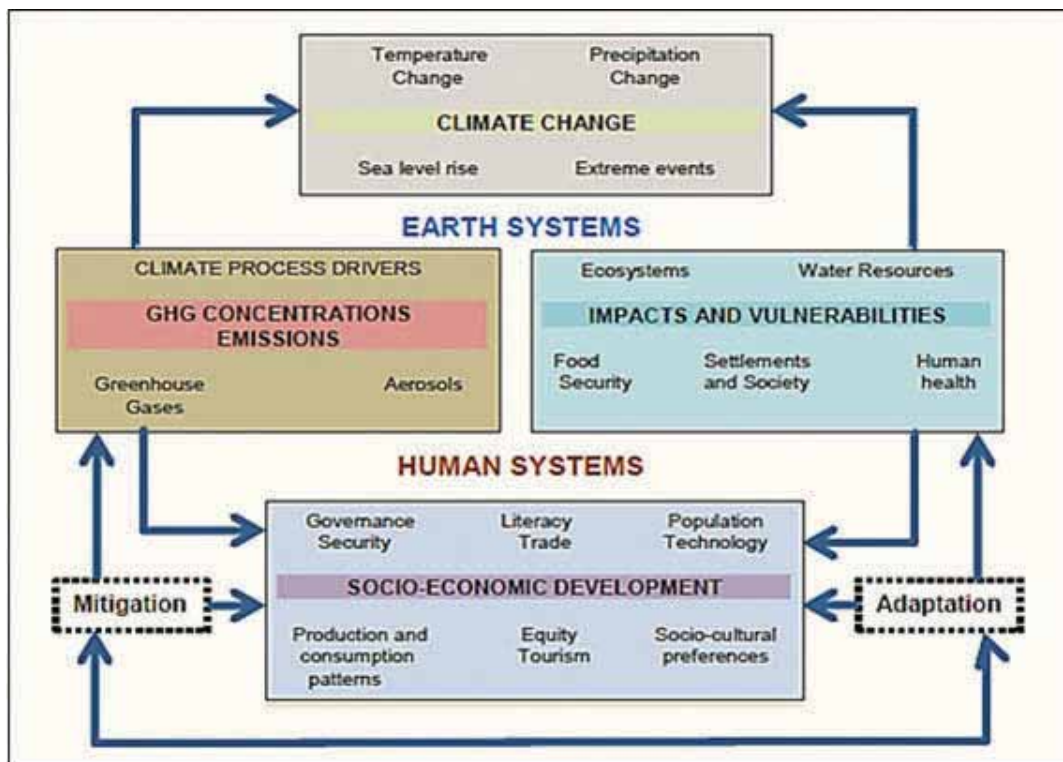


Figure 6: Links between climate change impacts and vulnerabilities, food security and tourism as socio-economic development activities

6. www.unwto.org visited 11th March 2012

7. Climate Risk and Vulnerability. A handbook for southern Africa. CSIR. 2011. Editor: Claire Davis

5.2.1. Climate change impacts on agriculture, trade and tourism:

The climate change impacts on the agricultural sector are driven by higher temperatures, causing heat stress on crops and livestock; as well as by providing a more conducive habitat for pests and pathogens.

With a 2°C increase in temperature and a 10% reduction in rainfall the maize yield for South Africa, for example, is expected to experience a reduction of 0.5 t/ha (Schulze, 2007).

appropriate seeds and strains. Data from national Meteorological Services indicates there are changes in the length of a cropping season. This leads to changes in the calendar (see Figure 7 above and Table 3 below). A delay in the rainfall season triggers a need to adapt; adaptation means the subsistence farmer has to adjust to and change with the timing of rainfall.

Rangeland and grasses on which livestock depends is delayed; the food security and balance within the household is compromised. The impacts of climate change on the wildlife-based tourism are similar to

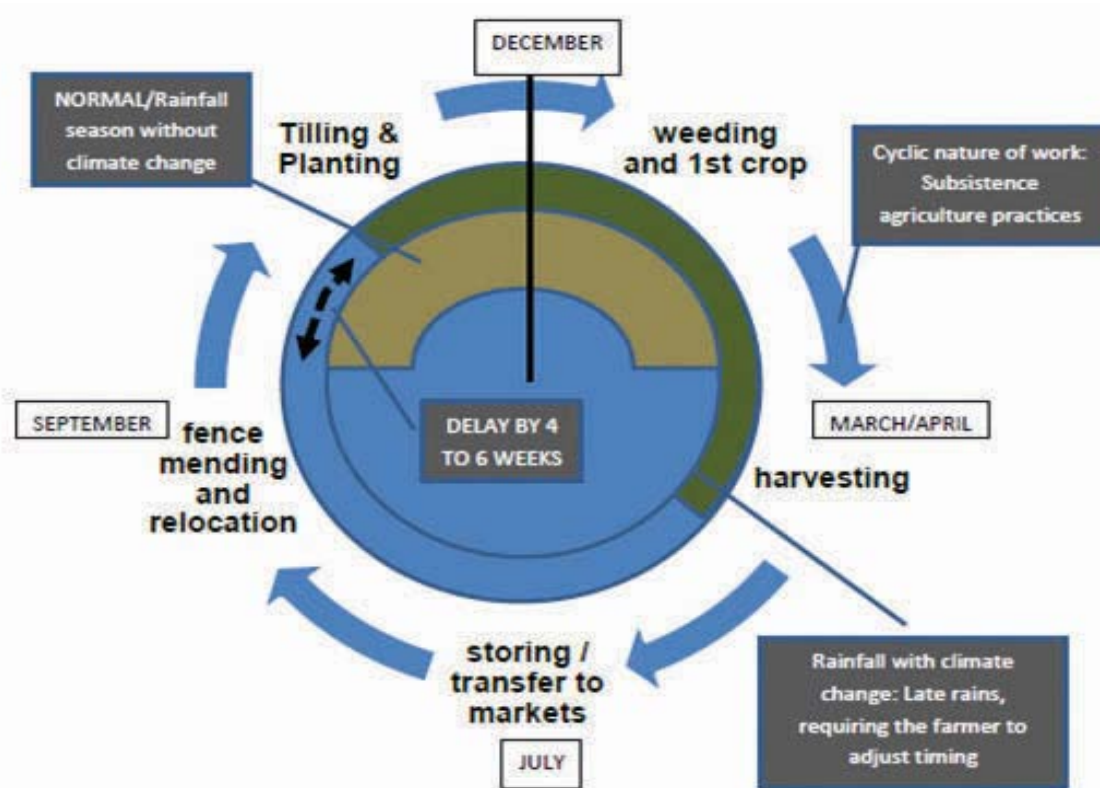


Figure 7: Climate change impact on subsistence farming expressed as the change in length and timing of the cropping season,

Agricultural production and access to food is projected to be severely compromised by changes in the timing and duration of precipitation events, daily temperatures, and levels of soil moisture.

The crop cultivar and livestock selection and breeding are dictated by climate and the choices and adaptation options have to follow a cropping calendar. For this to be effective, the farmer must be informed and enabled through and by appropriate technologies for information dissemination,

those of the livestock sector. The natural herbivores also depend on the timing and variability of rainfall. Pest and diseases impact the wildlife populations, the productivity of the wildlife and their ability to reproduce are all linked to the climate calendar.

Table 3: Impacts of projected climate change on crop and livestock production (Climate Risk and Vulnerability: A handbook for southern Africa. CSIR. 2011. Editor: Claire Davis)

Crop production	Direct impacts	<p>Even small increases in mean temperature of between 1° and 2°C are projected to lead to a decrease in crop productivity</p> <ul style="list-style-type: none"> • Changes in temperature regimes could affect growing locations, the length of the growing season, crop yields, planting and harvest dates • Increased need for irrigation in a region where existing water supply and quality is already negatively affected by other stressors
	Indirect impacts	<ul style="list-style-type: none"> • Predicted higher temperatures are likely to negatively impact organic matter, thereby reducing soil nutrients • Higher temperatures may favour the spread of significant pests and pathogens to a range of agricultural systems
Livestock	Direct impacts	<ul style="list-style-type: none"> • Changes in forage quality and quantity (including the availability of fodder crops) • Changes in water quality and quantity • Reduction in livestock productivity by increasingly exceeding the temperature thresholds above the thermal comfort zone of livestock, which could lead to behavioural and metabolic changes (including altering growth rate, reproduction and ultimately mortality) • Increased prevalence of 'new animal diseases' • Increases in temperature during the winter months could reduce the cold stress experienced by livestock, and warmer weather could reduce • the energy requirements of feeding and the housing of animals in heated facilities
	Indirect impacts	<ul style="list-style-type: none"> • Increased frequency of disturbances, such as wild fires • Changes in biodiversity and vegetation structure
Socio-economic/ livelihood impacts		<ul style="list-style-type: none"> • Changes in incomes derived from crop and livestock production • Shifts in land use (including consequences of land reform) • Overall changes in food production and security



5.2.2. Climate change challenges to the agriculture, trade and tourism sectors:

The SADC Member States continue to face challenge of food security. Data indicate that food production in the SADC Region has hardly kept pace with the growth of population over the long term. Between 1990 and 2006, for example, whereas population increased from 152 million to 249 million, food production increased by a smaller factor from 22.06 million tonnes to 23.61 million tonnes. The challenge is to make domestic production keep pace with the growth of demand for food, and ensure agricultural productivity is not adversely affected by climate change.

To address this challenge, the SADC Agriculture and Food Security Ministers, in 2009 acknowledged that climate change affects food security. The impact of climate change on precipitation, temperature, and increased frequency of drought and floods were considered detrimental to the agricultural sector. Ministers further recognised the important role of research in adaptation to climate change, and the initiatives taken by their counterparts dealing with climate change.

The SADC Secretariat through the Food, Agriculture and Natural Resources (FANR) Directorate is working on the following key areas of food security: increasing food availability; improving access to safe food; improving nutritional value of food consumed; reducing disaster-induced emergencies; and strengthening the institutional framework and capacity for implementing food security. In addition, the FANR in collaboration with FAO is undertaking a study aimed at enhancing agricultural productivity of the region by identifying areas of greatest productive potential for various critical agricultural farming systems. The aim of this study is to support direct investments and resources as well as assessing the resilience of the agricultural sector to climate change.

Further studies are also needed to identify the challenges for the tourism sector and the possible impact on the financial receipts consequent to global warming and climate change.

SADC needs to put in place strategies to attract technical and financial resources necessary to support development of policies, strategies, projects and programmes for urgent adaptation needs to enable the region to cope with climate change and address issues such as food insecurity which are likely to be exacerbated by the impacts of climate change.

5.3. Water in the SADC region.

Water is the primary medium through which climate change impacts the earth's ecosystem and people. Climate change is the fundamental driver of change in the world's water resources and this places water at the epicentre of the climate change impact which has been characterised by extremely devastating events in the form of floods and droughts leading to food insecurity, poor health conditions (for example malaria and diarrhoea outbreaks), loss of dependable shelter and even loss of life.

An understanding of the impacts of climate change on water must be based on the principle of managing the full water cycle. Projected increases in global temperatures are associated with changes in the hydrologic cycle, including increased atmospheric water vapour, changes in precipitation patterns (frequency and intensity), as well as changes in groundwater and soil moisture. It is important therefore, not only to balance water for food and nature, but also to manage water so as to unlock paths to sustainable development by ensuring water is timely and adequately available to all other sector.

Water availability in Southern Africa is variable in both time and spatially wherein some parts of the region are experiencing scarcity and other parts abundance. Water scarcity is therefore a reality and a growing concern. Population growth and associated demands for domestic, agricultural, and industrial use are increasing stress on limited water resources. Water use in the SADC member states varies widely and a majority of the region's approximately 200 million people lack access to basic safe water

The pressure on this sector, exerted by the demand to improve standard of living, health, productivity across socio-economic sectors (mining, transport, energy, and agriculture), has seen the sector become a major sector for the region.

As such, besides a regional policy and strategy, the SADC region has also put in place river commissions to coordinate the uptake, consumption and use of water from the river basins⁸ and there are several other programmes in the SADC region active on water issues: for example the Regional Strategic Action Plan on Integrated Water Resources Management (RSAP)⁹, now in its third phase. There are other partner programmes contributing to

studies on climate change and water in the SADC region including for example the Water Demand Management (WDM)¹⁰ programme and civil society institutions – for example the WATERneT Trust.¹¹

The amount of water use by socio-economic sector is given in Figure 8 below: most countries in SADC reported in 2009 less than 40% water withdrawn by the domestic sector. At the same time a varying share of the water is used in agriculture. The figure points to areas of possible intervention, especially with an increasing uncertainty under climate change scenarios.

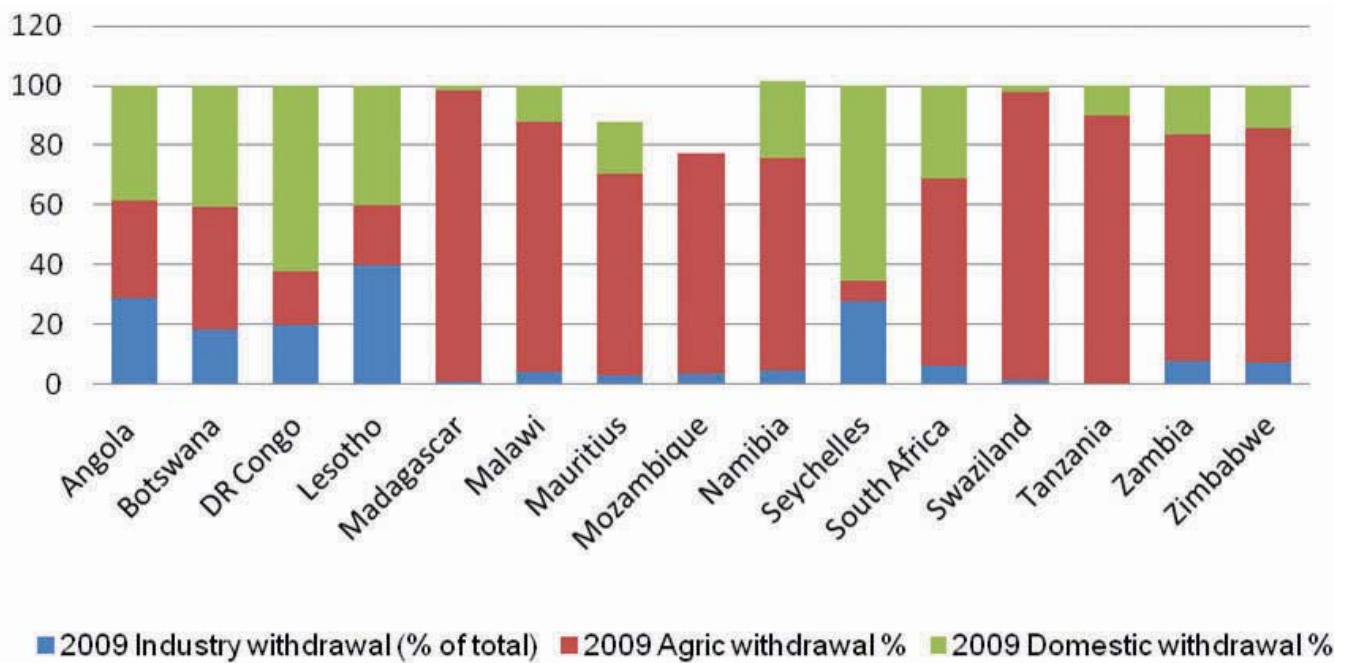


Figure 8: Share of the water use (% of the total freshwater) used in agriculture, domestic and industry sectors in SADC in 2009 (Source www.worldbank.org)

8. For example, the OKACOM; ZAMCOM; ORASECOM; LIMCOM
 9. The goal of RSAP III (2011 to 2015) is to strengthen the enabling environment for regional water resources governance, management and development through the application of integrated water resources management at the regional, river basin, Member State and community levels.
 10. WDM in SADC: A SADC region programme implemented by DBSA and funded by SIDA
<http://www.wdm-in-sadc.net/>
 11. www.waternetonline.org

5.3.1. Climate change challenges for the water sector in the SADC region

The projected changes in mean summer (DJF), autumn (MAM), winter (JJA) and spring (SON)¹² rainfall by 2036 to 2065 relative to 1961 to 2000, expressed in change in millimetres and based on the median of 10 statistically downscaled GCMs shows

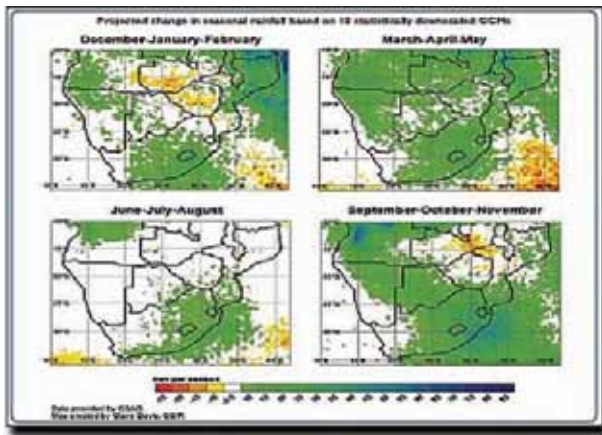


Figure 9: Projected changes in the seasonal rainfall based on 10 GCMs. Changes to the hydrologic cycle and timing of the rainfall season. Source: Climate Risk and Vulnerability. A handbook for Southern Africa, Ed. Claire Davis, 2011)

a change in the rainfall season. The autumn (March to May) months are projected to have significant increases in rainfall while the summer (December to February) shows a change in the rainfall amounts. (see Figure 9 below)

This means that any water management must consider the fact that there has been a shift in the months when heavy or significant rainfall would occur and other resulting changes brought about by climate change.

There is now ample evidence that increased hydrologic variability and change in climate in the SADC region will continue have a profound impact on the water sector through the hydrologic cycle, water availability, water demand, and water allocation at basin and local levels. SADC economies are at risk of significant episodic shocks and worsened chronic water scarcity and security. This can have direct and severe ramifications on the economy, poverty, public health and ecosystem viability

5.3.2. Key concepts from the SADC Water Strategy on climate change.

Throughout the SADC region water resources management practices should be adapted to become less vulnerable to climate changes. Water management should also be promoted as a tool to improve climate resilience in the region. One tool developed for the consultations on the SADC Water strategy is that of considering water and climate change concerns being a complicated array of layers such as the three-dimensional cubic.

Using the cubic approach – the “Adaptation Cube” proposes a hierarchy of three levels: level of intervention and areas of intervention, both of which must be in synchrony with adaptation strategies. (see Figure 10 below).

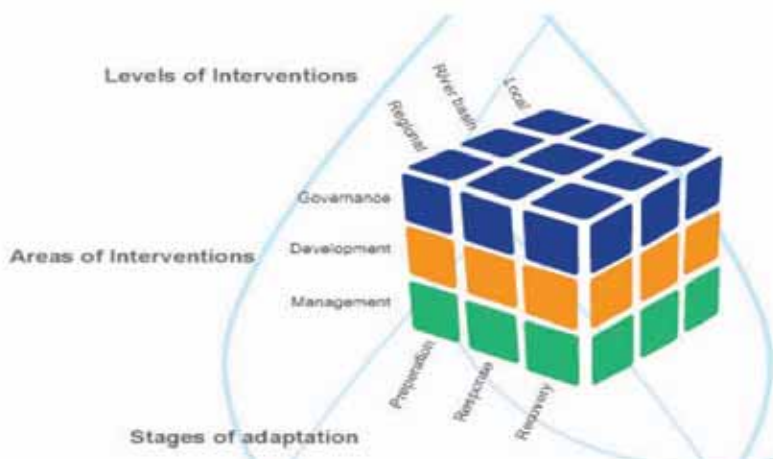


Figure 10: Climate Change Adaptation Strategy (CCAS) framework; the climate change adaption cube (after Kenneth Msibi and Bertrand Meinier, SADC Secretariat. 2011)

12. Summer months = December, January, February (DJF); autumn months = March, April, May (MAM); Winter months = June, July, August (JJA) and spring = months September, October, November (SON).

Overall, the high levels of uncertainty surrounding climate change impacts on the hydrological cycle, namely precipitation and evaporation, underscore the only indicative nature of key issues and associated challenges. Adaptive management in the water sector is a method of coping with the uncertainty inherent in water sector impacts and climate change. The adaptation options, regardless of the scale, are discussed in the Table 4 below.

5.4. Climate change impacts on the forestry sector in the SADC region

Global warming and climate change will impact on the forests in the region. An increase in temperature of about 1 to 2 degrees Celsius above the 1990 levels is expected to result in 40 to 50% loss of plant biodiversity richness. At the same time, an increase of about 2.5 to 3.0 degrees Celsius will mean a decline in the productivity of the savannah mainly caused by drying and an extinction of 10 % of endemic plants.¹³

While the developed countries are responsible for increase in GHGs from fossil fuel use, deforestation in SADC will also contribute to the increase of CO2

concentrations in the atmosphere. When forests are cleared and the trees are either burnt or rot, the stored carbon is released as CO2 into the atmosphere (Houghton, 2005; Stern, 2006). Forests act as major carbon store.

SADC has a wide range of climates that range from the hyperarid to the very humid. Under the international climate change policy debate (within the UNFCCC), a forest conservation instrument REDD+ (Reducing Emissions from Deforestation and forest Degradation) has been recognized.¹⁴ The SADC region and citizens need to 'see trees and not wood' and position themselves to benefit from the varying resources and funding for the implementation of REDD+ within the framework of the UNFCCC climate change treaty.

5.4.1. Deforestation in SADC

Deforestation in the SADC region is a growing concern and one of the priority areas for regional action. When SADC recognises the role of reducing deforestation and land degradation (REDD+) in climate change adaptation and mitigation, the benefits would accrue to other ecosystems

'Hard' versus 'Soft' adaptation investments, and focus on supply-side interventions	Governance issues: Governance issues related to institutional management models and formal and informal market dynamics to addressing issues of water poverty, scarcity and quality issues that increase vulnerability to climate change.
	Technological change: Introduction of new technologies to transform water management (e.g. desalinization, waste water treatment, rainfall generation, etc.
Baselines for adaptation costing	Supply and demand-side financial sustainability:
Adaptation and development synergies	Cross-sectoral water issues: Water resource management is a cross-sectoral issue. Fundamental sectoral linkages between water and health, energy, agriculture, ecosystems and infrastructure
River basins as units of analysis	River basins as key management units: River basins are the basic ecological unit for water resources. There is need for basin-level management of water resources, coupled with adaptive management, to support sustainable development and adaptation strategies. Basin-level approaches maintain the resilience of river ecosystems,
Uncertainty in CC impacts on the hydrological cycle	Investment in observation and monitoring systems: Establishment of meteorological and hydrological monitoring (e.g. metering), flood protection and early warning systems

Table 4: Adaptive management of the water sector under climate change

13. Forestry and Climate Change: A Regional Perspective. Forestry Indaba 2010, October 12-14, Mpumalanga. H.O. Kojwang

14. www.unfccc.int

Table 5: Total forest area in SADC and deforestation rates and changes in forest area. (Source: www.fao.org)

	Total Forest Area (x000 ha)	% area of natural forest	Change in forest area	
			%	deforested Area (x000 ha)
Botswana	12427		-0.9	-111.843
Lesotho	14		n/a	n/a
Malawi	2562		-2.4	-61.488
Mauritius	16		-0.6	-0.096
Mozambique	30601		-0.2	-61.202
Namibia	8040		-0.9	-72.36
South Africa	8917		-0.1	-8.917
Swaziland	523		1.2	6.276
Tanzania	38811		-0.2	-77.622
Zambia	31246		-2.4	-749.904
Zimbabwe	19040		-1.5	-285.6
SADC	152195	98.5		-1422.76

including biodiversity, water through water shed management, tourism as the tourism is largely wildlife-based and for other uses of forests for wood and non-wood products.¹⁵

The SADC region loses about 1.4 million hectares per annum to deforestation. Given that for all SADC Member States natural forest is the major forest type ranging between 70% and 99% (See Table 5 above), deforestation will negatively impact on the natural forest and therefore on the richness of the biodiversity of the region with unpredictable impacts on the balance of ecosystems in the region.

5.4.2. Challenges for the forestry sector towards climate change adaptation:

The observed increase in temperatures resulting from global warming are expected to cause thermal stress on forests and an increased risk of fire.¹⁶ The impact of global warming and climate change on forests and wood and non-wood products is not very well understood. Some of the key issues include the following:

- Changes to tree line and phenology of specific species in response to global warming and climate change. This will impact on livelihoods

particularly rural livelihoods as they rely on the forest for food and incomes and key socio-economic sectors such as tourism and water.

- Forestry management options and options for community engagement and equity in the share of proceeds from forestry trade and forest generated finance including benefits from REDD+. The successful implementation of a REDD+ programme will contribute to sustainable forestry management practices and also improve on fire management and monitoring of the expansion of range of pests, vectors, diseases.
- Deforestation will erode the natural protection of key water towers such as Zambezi, Kunene, Kavango, Cuando River Catchments
- Policy options are necessary to implement an 'ecosystem approach' in the management of transfrontier forest resources.
- How to implement a business model for sustainable management of forests within the context of global warming and climate change.

15. Non wood products include medicinal plants and herbal teas; Beekeeping and production of honey; Thatching grass.

16. AMCEN, 2011: Addressing Climate Change Challenges in Africa; A Practical Guide Towards Sustainable Development.

Climate change therefore might challenge the SADC objective of using forests to promote trade in forest products throughout the region in order to alleviate poverty and generate economic opportunities for the peoples of the Region;¹⁷

5.5. Climate change impacts on the energy sector:

Climate variability and climate change pose a serious threat to energy security across SADC. A number of countries¹⁸ that rely on hydropower are especially vulnerable to changes in rainfall. River-flow rates and water availability are inevitably affected by variations in rainfall, resulting in an unreliable electricity supply. A decrease in rainfall as expected under

climate change will further accelerate deforestation; compounding associated problems. An increase in irrigation will place further pressure on river-flow rates and volumes. During times of low rainfall, reduced river flows reduce the hydropower output, leaving these countries with no alternative but to import a significant proportion to meet their energy needs.

The most common form of fuel for rural communities across the SADC region is wood. This contributes to deforestation, causing severe land degradation and soil erosion, which, in turn, causes river siltation, seriously affecting hydroelectric power generation, and therefore contributing to the burden on the economies of the region.



17. Article 3 of the Southern African Development Community Protocol on forestry

18. For example; Lesotho, Mozambique, Zimbabwe, Zambia



5.5.1. GHG mitigation: Potential for economic growth and development

There is an increased recognition that actions to address climate change and the environment are intimately linked to economic growth and sustainable development goals and needs. Actions to promote increased resilience to climate change impacts are necessary across a variety of sectors as has become obvious from the previous paragraphs. For the SADC region, the impacts of climate change are being felt across various sectors, such as energy, agriculture, health, water resources and infrastructure. The achievement of a number of Millennium Development Goals (MDG) targets, most notably in poverty reduction, will be compromised by five climate change induced human development tipping points, including reduction on agricultural productivity, heightened water insecurity, exposure to extreme events, collapse of ecosystems, and increased health risks.

To ensure the development priorities of SADC are being met in the medium- to long-term, climate change policy responses will have to be inclusive and innovative with a focus on sustainable development. Voluntary mitigation actions in developing countries have been introduced by the UNFCCC COP17 in Durban, putting pressure on developing countries to transition to a low-

carbon economy. Therefore it is crucial that any implementation of GHG mitigation actions must positively contribute to sustainable development of the SADC region. The SADC region has extensive energy resources including coal, solar and vast hydropower potential in Zambia, Mozambique and the Democratic Republic of the Congo. The SADC region is also known to have substantial natural gas reserves.¹⁹

The international climate treaty provides a framework for climate change mitigation and sustainable development. Developed countries have an emission-reduction or emission-limitation commitment under the Kyoto Protocol. To achieve their emission-reduction targets, the Protocol established a Clean Development Mechanism (CDM) that allows developed countries to implement emission-reduction projects in developing countries, where these projects contribute to sustainable development and implementation of clean technologies. This however is only possible when the receiving countries have put in place policies to promote the CDM. The potential for SADC to tap into funding and technology transfer from CDM projects, is substantial.

Based on an analysis by SADC Secretariat, a total of 19,000 MW of generation projects could be commissioned under the CDM in the region.

19. SADC estimated natural gas reserves in billion of cubic meters: Angola – 271.8; Mozambique 127.4; Namibia 62.3; Tanzania 6.5 and South Africa 27-million: <http://www.engineeringnews.co.za/article/sadc-energy-infrastructure-integration-could-lower-end-user-costs-visited> 06th March 2012

However, according to available data, southern Africa has benefited the least among all the regions of the continent from the US\$7 billion annual CDM market.²⁰

SADC needs to position itself well to benefit from funding available for climate change adaptation. SADC recognises that unless these opportunities are identified and exploited, the region runs a risk of climate change leading to reduced economic growth, compromised food security, increased unemployment and social stress in SADC Member States.

Another option for SADC, directly linked to climate change mitigation, is the regional pooling of energy generation and distribution and management. Power trading is already taking place within the

Power trading is already taking place within the Southern African Power Pool and power is being exchanged between the utilities of the region. This makes the energy sector an important target for action on climate change and development as GHG mitigation response measures.

There is strong interest in SADC to fully utilize existing, natural resources such as wood and coal despite these resources being CO₂ intensive and thus adding to the impacts of climate change. A departure from the use of these resources detracts from the SADC region's development priorities.

Using 1994 as the base year, the total (annual) GHG emissions for SADC (for the 15 countries) is almost 500,000 Gg²¹ (about 500 million tons), resulting mostly from energy sector (71%), followed

2012 SADC emissions by category (except Angola)
source: www.iea.org

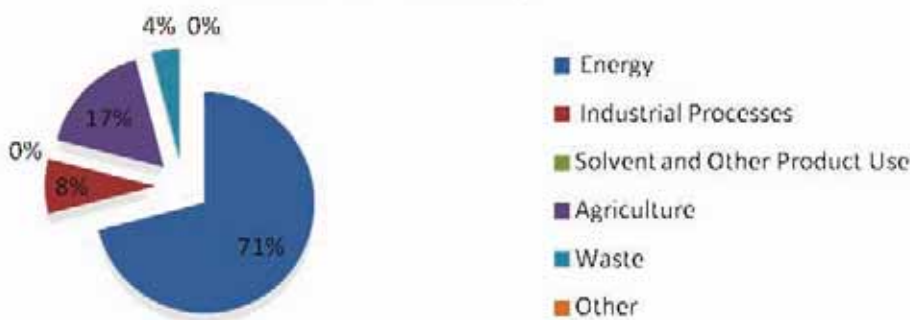


Figure 11: Share of the various sector of the SADC GHG emissions expressed in percent

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by agriculture (17%); industrial processes (8%); and waste (4%) – see Figure 11 above. Though disaggregated data is not readily available for the energy category, the key sectors are usually (in order of significance) energy generation, transport residential, manufacturing among other. This is a reflection of the GHG emission reduction potential, a key consideration in any mitigation.

20. Source: <http://www.sardc.net/editorial/sadctoday/view.asp?vol=730&pubno=v11n3> visited 20th February 2012

21. 1 gigagram = 1 Gg = 1000 tons.

22. The "Cap and Trade" principle would set a "cap", or limit, on the total amount of GHGs that can be emitted by the factories, power plants and other installations in the region. Within this cap, companies receive emission allowances which they can sell to or buy from one another as needed.

5.5.2. Coupling climate change mitigation and development: Greening the SADC region:

Globally, the GHG emissions from the SADC region are comparatively insignificant. (see Table 1 and Figure 12). With the latest developments in the international climate change policy, however, there is increasing pressure on (some) developing countries to take on 'voluntary' GHG emission reduction targets.

market. Overall, such a system also has the potential to attract technology and knowledge transfer from industrialized countries and potentially boost low-carbon development in the SADC region. SADC would then need to develop and agree on an implementation strategy. Such a strategy must also aim to facilitate and encourage new finance, skills and technology investment in the SADC region.

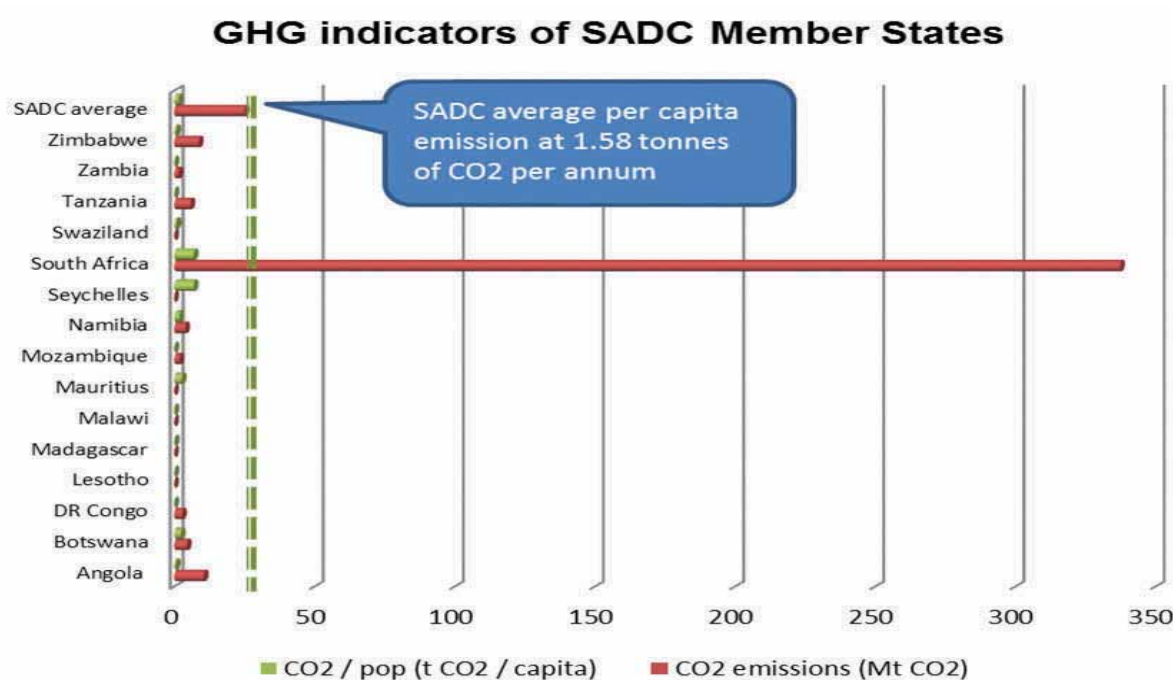


Figure 12: GHG emission indicators for SADC member states: source: www.iea.org 2010 Key World Energy Statistics; visited 20th February 2012

This presents the region with a challenge – how to couple climate change mitigation and development. One such approach is to develop a regional approach to a “Cap and Trade”²² allowable GHG emission target, possibly tagged onto the regional average of 1.58 tons CO₂/capita. A regional “cap and trade” system for GHG emissions would allow South Africa to trade emission reduction certificates with other countries in the region, thus fostering intra-regional trade and economic activities. Most of the other SADC countries would be allowed to increase their emissions further and achieve their development priorities. The flexibility that trading brings ensures that emissions are cut where it costs least to do so. The success of the EU ETS has inspired other countries and regions to launch cap and trade schemes of their own. The EU hopes to link up the ETS with compatible systems around the world to form the backbone of a global carbon

Even with a regional strategy to cap GHG emissions, it will still be necessary to put in place further regulatory frameworks to encourage clean technology flows into the region. Barriers for industrial demand and efficiency include: (a) Lack of financial resources; (b) Lack of awareness on hybrid systems; (c) technology; (d) Strict licensing requirements for small plants; (e) Lack of agreements between utilities and IPPs and (f) Existing subsidies that distort the market.²³

Many policies that are currently being adopted in the SADC Member States, though for other reasons, can also reduce GHG emissions. Key policy instruments include the SADC Treaty; the Regional Indicative Strategic Development Plan, the Forestry Protocol and the decisions from the SADC Extra Ordinary Summit on Poverty and Development (2008).

23. Southern Centre for Energy and Environment: Climate friendly energy technologies investment needs in SADC. Draft report on national consultations on Technologies and investment action. September 2000.

Significant opportunities exist to improve energy efficiency in, and reduce CO2 emissions from the transport sector. Actions to promote increased resilience to climate change impacts and a lower-greenhouse gas (GHG) emission economy in Southern African Development Community (SADC) fall across a variety of sectors, such as energy, agriculture, health, water resources and infrastructure.

Platform for Enhanced Action shall complete its work as early as possible but no later than 2015 in order to adopt this protocol, legal instrument or agreed outcome with legal force at the twenty-first session and for it to come into effect and be implemented from 2020.

<p>SADC TREATY ARTICLE 5: OBJECTIVE to (a) Achieve development and economic growth, alleviate poverty, enhance the standard and quality of life of the people of Southern Africa; (b) Achieve sustainable utilisation of natural resources and effective protection of the environment</p>
<p>SADC EXTRA-ORDINARY SUMMIT ON POVERTY AND DEVELOPMENT, MAURITIUS 2008: recognised the urgent need for the region to address climate change, particularly adaptation in order to safe guard livelihoods</p>
<p>Regional Indicative Strategic Development Plan to: (a) Ensure a coordinated regional position in the negotiations and implementation of MEAs; and other agreements. (b) To ensure maximum benefit for SADC Member States in all MEAs; and (c) to ensure coordination of the development and implementation of national and sub-regional action programmes and resource mobilization</p>
<p>Protocol on Forestry: calling on parties to assist and support each other to address issues of common concern including deforestation, genetic erosion, climate change, forest fires, pests, diseases, invasive alien species, and law enforcement in a manner that makes the best use of the technical, financial and other resources in the Region;</p>

Table 6: Selection of key policy instruments linked to climate change

SADC Member States increasingly recognise that actions to address climate change and the environment are intimately linked to economic growth and sustainable development goals and needs. SADC has policy instruments that are sufficient to encourage GHG mitigation (see Table 6 above)

6. Durban Outcomes and key decisions from UNFCCC COP17

In order to address the challenges of climate change internationally, the Durban climate change conference (UNFCCC COP17) decided on a "Durban Platform for Enhanced Action"²⁴ to launch a process to develop a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties through decisions adopted by the sixteenth, seventeenth and eighteenth sessions of the Conference of the Parties. COP17 also decided that the Durban

So it is only two to three years away when all SADC Member States should 'demonstrate' how they will reduce their emissions. The emissions are comparatively small (see Annex I) ranging from nearly zero to about 340 million tons per annum. SADC member States' total contributes to less than one half of the total emitted by Africa. At the same time and very importantly, South Africa's emissions account for 89.5% of SADC total.

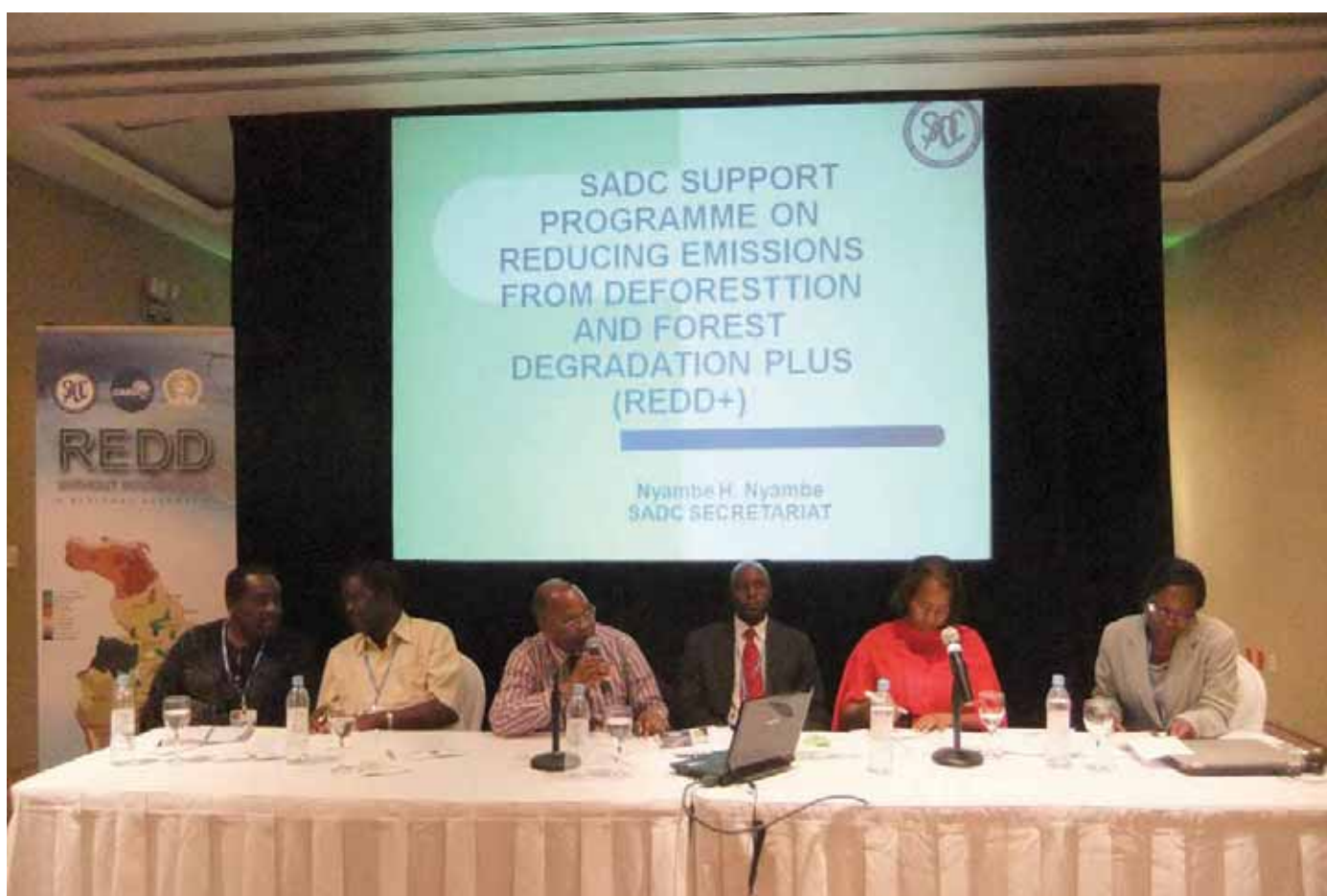
SADC Member States may among themselves decide to identify possible implications of the Durban Platform; for example:

- Given that the developed countries will implement more stringent measures to curb their emissions and that such measures will have a consequences on the SADC region; for example the EU airline 'carbon tax'. The global trade will impact on the economies of the individual Member States, big and small.

24. unfccc.int/.../decisions/application/pdf/cop17_durbanplatform.pdf

- The SADC Member States are endowed with forest resources (carbon sink under REDD), that if accounted for could be used by the region to offset carbon emissions internally to SADC.
- Even very small emitting Member States, who may consider mitigation as unimportant, could benefit from a regional approach to technology transfer, capacity building and new finance.
- There is an 'understandable' trade imbalance between the SADC Member States and that the carbon offsetting could be used, once decided, to balance payment between the SADC Member States.
- The Member States may collectively position itself to improve on sustainability of regional key sectors such as tourism, water, agriculture, to implement climate change adaptation programmes.

These are just some of the possible implications of the Durban Platform decided at COP17.



7. SADC participation in the UNFCCC process

SADC as a region continues to take part in the dialogue for an international policy framework on climate change. All SADC Member States actively take part; all have taken turns in steering and guiding the international climate change negotiations: at the international (UNFCCC and Kyoto Protocol); the regional (the Africa Group) and at the SADC level.

Activity / Year	COP15 (2009)	COP16 (2010)	COP17 (2011)
Delegation	SADC Secretariat attended COP15	SADC Secretariat attended COP16 (3 delegates from SADC Secretariat)	SADC Secretariat attended COP17 (10+ delegates from SADC Secretariat, including senior management)
Events during COP	SADC Secretariat organised a side-event	<p>SADC Secretariat organised a side-event</p> <p>SADC Secretariat organised daily briefing meetings for the delegations of the SADC Member States</p> <p>SADC Secretariat organised a Ministerial meeting during COP17</p>	<p>SADC Secretariat organised three side-events</p> <p>SADC Secretariat organised daily briefing meetings for the delegations of the SADC Member States</p>
Capacity Building and Information Sharing		<p>SADC organised trainings for negotiators and created an informal network</p> <p>SADC Secretariat facilitated a common position on REDD+</p>	<p>SADC organised trainings and positioning workshops for negotiators and developed the network of climate change negotiators further</p> <p>SADC Secretariat developed and refined a common position as well as key messages on climate change</p>
Publicity and Outreach		SADC provided information materials during COP17	<p>SADC increased the information materials available</p> <p>SADC organised and hosted an exhibition booth during the entire period of COP17</p> <p>SADC Secretariat participated in various activities organised by partners such as AU, GIZ, and others</p>

Table 7: Overview of SADC level of participation and activities during UNFCCC Conferences.

The SADC Secretariat has also increased its level of participation over the last years (see Table 7 above). Since the 2009 Copenhagen Climate Change Conferences (COP15), SADC has continued to provide a forum and also facilitate the regional approach to addressing climate change.

The SADC Secretariat has provided several capacity building workshops for chief negotiators and climate change national focal points of Member States. Over the two years 2010 and 2011, more than 200 SADC personnel from civil society, government and private sector have taken part in the coaching sessions on the science and policy aspects of climate change, in training negotiators on how to negotiate for a fair outcome and also on how to develop a regional negotiating strategy on key agenda items.

In 2010 at Cancun (COP16), SADC Secretariat showcased innovation by introducing a concept for 'An ecosystem approach' to implementing REDD+. At the recent Durban Conference in 2011 (COP17), SADC Secretariat provided an exhibition booth and also widened its portfolio by having several directorates and sectors taking part and launching programmes, sharing experiences and lessons learnt on the impacts of global warming on SADC's REDD+ and Water programmes through technical discussions at side events.

8. A way forward for SADC

As soon as the SADC Member States had signed and ratified the Climate Change Convention (UNFCCC) and the Kyoto Protocol, it became clear that the implementation of the Convention and Protocol would prove to be a complex process involving a wide range of policy options and varied engagement by multiple levels of governance systems.

Level I	Decision making and further guidance on policy
Level II	Regular reporting to Level I on climate change objectives, policy and performance.
Level III	Increased understanding of climate change and the transmission of sound scientific advice are essential for good governance.

8.1. Breaking the silos:

The SADC approach to climate change therefore must not be a one-by-one sector approach for climate change adaptation and mitigation. In the prior years, the focus has been on implementation of some complimentary thematic directions, principally in climate change adaptation. The new approach must break the silos and grow to coalesce around the vision and core values of SADC. Furthermore, implementation of any policies require good governance measures that ensure that all sectors participate and accountable. Two key aspects to the future SADC climate change programme; (a) to establish an implementation strategy (Steps 1 and 2 below) and (b) to develop an action plan (Step 3).

This is broken down into 3 key steps as follows:

Step 1: Establish a Permanent Commission on Climate Change at SADC Secretariat:

The climate change debate and dialogue needs to be driven at the highest level, without being limited to a single sector. At national level the agenda needs to be integrated into national planning processes while at SADC Secretariat it should be driven at Executive Secretary / Deputy Executive Secretary level. In this way, we acknowledge that climate change has moved from a set of scientific questions to a developmental issue.

The SADC must therefore consider a three tier approach: at level I, the SADC Council / Summit; at level II, the SADC Executive Commission on Climate Change and the level III at SADC Technical Commission on Climate Change. The responsibilities of each of the tiers are as follows:

The three levels will constitute the driving gears to elevate SADC into a global player on climate change international policy, under the Convention (UNFCCC) and the current and future Protocol (see Figure 13 above).

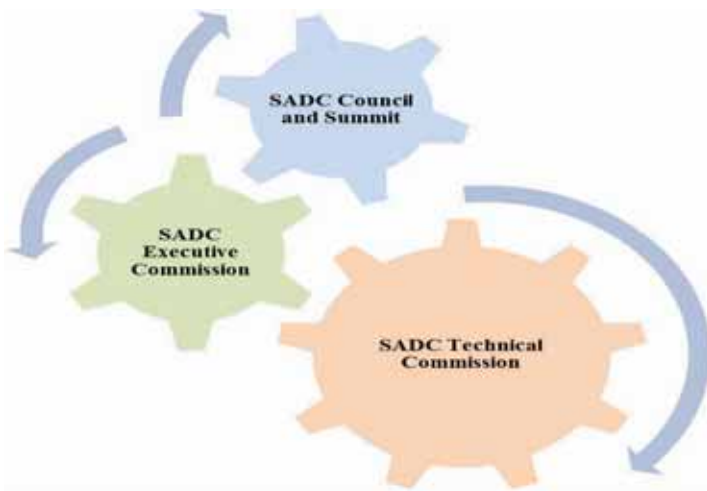


Figure 13: framework for governance of climate change at SADCT

At the SADC Secretariat, a Permanent Commission will be established (Level II) to report to the Council of Ministers and the Summit (Level I) on climate change objectives, policy and performance that would have been determined by the Council of Ministers and approved by the Summit.

The Technical Commission on Climate Change at Level III has responsibility of enhancing and increasing understanding of climate change impacts and vulnerabilities of SADC and the transmission of sound scientific advice are essential to the SADC Permanent Commission on Climate Change at Level II (see Figure 14 below).

Step 2: Defining the term of reference for the SADC Commissions on Climate Change.

Increased understanding of climate change and the transmission of sound scientific advice are essential. The emphasis must be on the application of key SADC policies to address climate change challenges. This approach will require the establishment of climate change roundtables to bring together stakeholders to explore climate implications of

current development paths. Key questions that need to be addressed include:

- establishing a system to provide authoritative advice to the SADC Permanent Commission. This can be organized in a variety of ways including appointment of a chief climate change advisor or establishment of an advisory committee;
- supporting the continuing development of scientific knowledge about the climate system and the potential impacts of climate change, especially on regional dimensions and ecosystem (beyond border) scales;
- ensuring the monitoring of climate and ecosystems across the SADC region;
- developing capacity in economic, policy and social sciences related to climate change, because such knowledge is a crucial support for policy.

SADC needs to develop a common climate change and development agenda, supported by the science

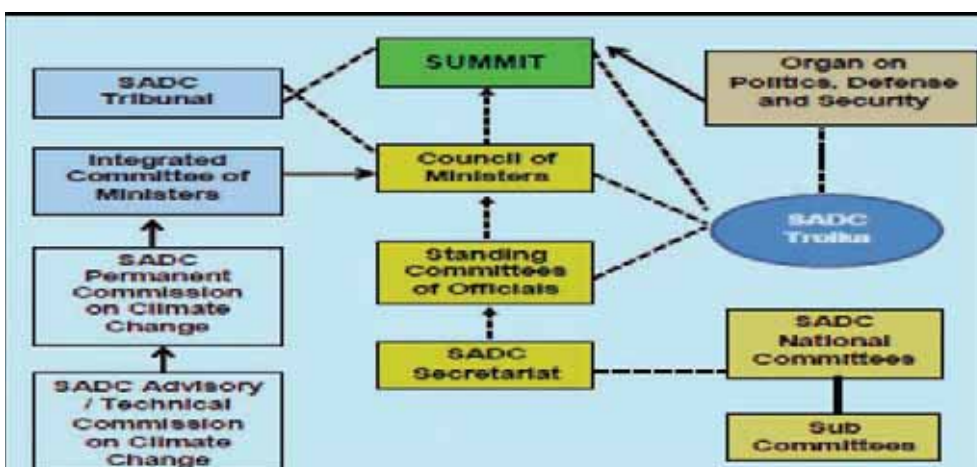


Figure 14: Organogram and reporting structures for the (proposed) climate change commission

and technology planning described in the SADC Science, Technology and Innovation Climate Change Response Framework. With this agenda, the region could attract development partners and investment and resources to address the adverse impacts of climate change.

Since climate change, and the responses to climate change, will have important economic consequences, the issue will inevitably become entwined with other international economic issues including: a) international financial flows, b) trade policy and c) development assistance.

The Permanent Commission will therefore deal with the more complex issues at the interface among governance, financing, equity (including gender equity) and the questions around poverty, livelihoods, the economic and root causes of environmental degradation. In this respect, the permanent commission will ensure that the SADC

policy objectives are adhered to periodically review and re- aligned and to ensure the objectives adhere to the mission and vision of sadc. The composition of the permanent commission is proposed to be made up of the executive and also with representation of "experts" see figure 15 below.



Figure 15: Composition of the SADC permanent commission on climate change

Complementarity between SADC Policy Objectives and Operative focus for the SADC Technical Commission on Climate Change	
<ul style="list-style-type: none"> • Sustainable use of natural resources / protection of the environment 	<ul style="list-style-type: none"> • Environmental Governance, Equity and Rights
<ul style="list-style-type: none"> • Poverty eradication, enhance standard and quality of life through regional integration • ensure that poverty eradication is addressed in all SADC activities and programmes; • combat HIV and AIDS and other deadly or communicable diseases; • mainstream gender in the process of community building 	<ul style="list-style-type: none"> • Sustainable livelihoods and pro-poor conservation
<ul style="list-style-type: none"> • strengthen and consolidate the long-standing historical, social and cultural affinities and links among the people of the Region; 	<ul style="list-style-type: none"> • Culture and Conservation
<ul style="list-style-type: none"> • promote and maximise productive employment and utilisation of the resources of the Region; 	
<ul style="list-style-type: none"> • promote self-sustaining development on the basis of collective self-reliance, and the interdependence of Member States; 	<ul style="list-style-type: none"> • Economics, Markets, Trade and Investment
<ul style="list-style-type: none"> • ensure that poverty eradication is addressed in all SADC activities and programmes; and 	<ul style="list-style-type: none"> • Environment and Security
<ul style="list-style-type: none"> • promote sustainable and equitable economic growth and socio-economic development 	<ul style="list-style-type: none"> • Social and Environmental Accountability of the Private Sector

Table 8: SADC policy objectives and key areas of focus / programme of work

Further to the commissions at SADC, it is important to have a number of fora to allow other stakeholders to take part in the implementation of the climate change regional programme. While academics, government officials, and scientists have been recognized as crucial to the climate change mitigation process, there is similarly a need for grassroots approaches to adaptation measures. The civil society provided a prominent podium in the determination and implementation of the SADC regional climate change programme. It is therefore recommended that a special place be set aside in the SADC permanent commission.

Step 3: The regional strategic action plan on climate change:

The SADC region is embarking on several sectoral policies and some of these policies have been concluded and are being implemented, for example the water sector which is founded on the principles of Integrated Water Resources Management (IWRM).

It is an important consideration that while SADC places priority on climate change adaptation, it is important to recall that adaptation is required because climate change is already underway and further warming from existing emissions is inevitable. Mitigation of greenhouse gases does present opportunities for economic development through and by allowing, through careful planning, technology transfer, foreign direct investments and improved conservation of forests. SADC must also identify opportunities where climate change adaptation will also be coupled with greenhouse gas (GHG) mitigation. Those opportunities do exist. In the water sector, where treatment, pumping and distribution involves GHG emission, new technologies can be employed to reduce, recycle and conserve water.

Climate change considerations will demand a cross sectoral approach given that climate, climate variability and climate change all impact on the various sectors. Therefore the parameters of strategic policy framework will vary according to particular emphasis and priority determination.

However, it should include specification of:

- the SADC regional overall perspective on climate change;
- the regional objectives with respect to mitigation and adaptation;
- the bodies responsible for making and implementing climate change policy and the regional strategic action plan;
- the main policy approaches, regulatory framework and instruments, that will be necessary and funding mechanisms for the implementation of the strategic action plan;
- what is expected from other societal actors (Member States, business, civil society, individual citizens);
- the approach to international cooperation around climate change and how SADC can influence the international policy and strategies on climate change.

The SADC region may therefore adopt the following Vision – Addressing the impacts of climate change in the region through successful implementation of adaptation and mitigation actions to enhance regional economic and social resilience.

SADC Policy Objectives:

- 1) Climate Information for Climate Sensitive Planning:** The majority of SADC countries have poor data collection systems while, where data is available, it is not standard and is incompatible across countries. This constitutes a challenge to development planning. Collection of data and information on climate related disasters in the SADC region must thus be strengthened; including information to improve knowledge on the impacts and vulnerability of the SADC region to climate variability and climate change.

- 2) Climate Resilient Development:** SADC's resilience to climatic disasters constitutes a significant challenge. Even certain infrastructure is fairly new; development infrastructure is often designed based on current climate limits. Such design must be revised in the light of information described in policy objective 1); including the optimization of dam and water management performance, in the light of such information.
- 3) Climate Resilient Agriculture for Regional Food Security:** Climate change, amongst other 'multiple' stressors, challenges the ability of the SADC region to achieve poverty alleviation, poverty reduction and food security. Responding to climate change requires 'climate smart' agriculture, in both cropping and livestock sectors. The Convention (UNFCCC) through various funding mechanisms²⁵ provides resources that SADC needs to draw into to refine regional agriculture strategy.
- 4) Greening of Trade elements such as Agriculture, Transport and Mining:** The SADC region has to meet the growing demand and international pressure for goods and services produced by environmentally friendly means or green production. This calls for production processes with minimum impact on the environment. The SADC region can drive this emerging demand by setting standards and providing guidance for means of production of tradable commodities. The SADC Protocols on Trade and also on Transport, Communications and Meteorology provide platforms for the regional plan of action. This will ensure that the region remains globally competitive and sensitive to emerging issues such as climate change.
- 5) Driving Dry Economies – Programmes to increase water management efficiency:** Water can no longer be considered a free good; requiring pricing that incentivizes increased water use efficiency. Water use further must be directed to economically viable and sustainable uses. Improving Water Conservation: Clear opportunities to improve water use efficiency are evident across the region, including existing water saving technologies. There is need to support investment and development of new water-saving technologies in the region. Water harvesting through small dams and recycling can also be promoted more extensively across the region, with benefits far beyond responding to climate change. Further, the SADC region is a world leader in the management of shared water resources with a number of river basin institutions already established and functional. These on-going initiatives including trans-boundary water resources management need to be strengthened.
- 6) Applying a business model for sustainable forest management:** The region hosts extensive forest and woodland reserves especially in the miombo woodlands. These are essential resources, providing benefits beyond simply responding to climate change, including carbon sinks, maintenance of water catchments, ecosystem health, forest ecosystems and livelihoods. Opportunities in carbon accounting should thus be considered as a priority, building on existing initiatives. SADC therefore needs to strengthen an ecosystems approach to management of trans-boundary forests and account for deforestation. In this way the region would position itself to take part and benefit from the forestry mechanism of the Kyoto Protocol, improve capacity to access REDD funding and establish a carbon trade facility within the SADC region. This could be expanded to include the oceans which are also effective carbon sinks.
- 7) Finance and Resource Mobilisation for Climate and Development:** The region has abundant solar, wind and other renewable resources. In this way and by integrating these into the existing energy delivery system, pressure on forest reserves will be reduced. It is essential that the SADC region promote low carbon economic development pathways through

25. The funding mechanisms include: the Special Climate Change Fund; Least Developed Countries Fund, Adaptation Fund of the Kyoto Protocol and the Green Climate Fund established at the Durban Climate Change Conferences in December 2011 in Durban, South Africa.

institutionalisation of Clean Development Mechanisms (CDM) of the Kyoto Protocol. Furthermore, the region requires additional financial and technical resources mobilisation for the realisation of climate driven conflict and disaster reduction. Implementation of a Climate and Development agenda must lead to flows of additional technical, financial and other resources.

Each of the Policy Objectives above will need to be followed up by developing and determining activities, targets, outputs, performance indicators as well as monitoring and evaluation measures. There is a need to prioritise key sectors within which to act, with a maximum of five (5) priority sectors within which action can be taken recommended. Particular attention needs to be paid to initiatives that have multiple 'benefits', beyond and including responding to climate change.

The strategy will be guided by the commissions and approved with guidance by the commissions. It is therefore important that an inception of the regional strategy and action plan identify timeline and milestones envisaged in the implementation of the plan.

8.2. Development of a SADC Climate Change Strategy

Climate change will affect every aspect of society, environment and economy in SADC. This means adjusting behavior, livelihoods, infrastructure, laws and policies and institutions in response to experienced or expected climatic events. These adjustments can include increasing flexibility of institutions and management systems to deal with uncertain future changes, or they can be based on experienced impacts and threats and/or predicted changes.

The challenges for SADC arising from climate change impacts and the need for adaptation and mitigation are many. A number of key challenges have been outlined in this paper. SADC policy makers and negotiators may wish to consider these challenges when developing and refining their adaptation

policies, as well as their negotiating positions under the international climate change process.

Successfully adapting to climate change at the national level in SADC will likely require a set of conditions and elements at the national level. Some possible elements for a national level strategy could include:

- Adequate institutional arrangements, including systematic planning capacity in a cooperative institutional setting consistent policies and measures and regulatory frameworks;
- Strong coordination of ongoing activities on a sub-national level, which could include activities that are driven by NGOs, research institutions, the private sector and by local and sub-national governments;
- Scientific and technical capacities to understand the problem and its effects at the national and sub-national level, model its long-term impacts, and elaborate responses and adaptive strategies to the level of implementation;
- Program and project preparation capacities;
- Citizen awareness in SADC and participation that sustain and prioritize climate change actions.

8.3. Preparation for COP 18

The 17th Session of the United Nations Climate Change Conference in Durban in December 2011, delivered a breakthrough on the international community's response to climate change. In the second largest meeting of its kind, the negotiations advanced, in a balanced fashion, the implementation of the Convention and the Kyoto Protocol, the Bali Action Plan, and the Cancun Agreements. The outcomes included a decision by Parties to adopt a universal legal agreement on climate change as soon as possible, and no later

than 2015. A number of key decisions were made in Durban, critical among them include the following:

- An agreement called the Durban Platform for Enhanced Action has been reached
- The Durban agreement means governments will now spend four years negotiating how far and how fast each country should cut carbon emissions
- What is significant about Durban is that all UN countries will need the new big emitters such as China and India. This sets the whole world on a course for a low-carbon economy for the first time.
- Launch a work-plan on enhancing mitigation ambition to identify and to explore options for a range of actions that can close the ambition gap with a view to ensuring the highest possible mitigation efforts by all Parties;

For SADC Member States, this means that mitigation and adaptation actions will need to be developed and submitted on time and by 2015, in response to the Durban Platform for Enhanced Action.

As in the past and when the SADC Secretariat engages the Member States and in the regional consultations, the technical negotiators and the Ministers at their Council meetings, Summit of the Heads of States and Governments will need to be capacitated to respond to the new international obligations. South Africa has developed their long-term mitigation strategy. There is therefore an opportunity to learn from within the SADC region

and from South Africa in particular on how to develop mitigation strategies in compliance with the Durban Climate Change Conference outcome.

In preparation for an effective participation by SADC and Member States at the 18th Conference of the Parties to the UNFCCC and its Kyoto Protocol, a number of activities need to be undertaken including:

- Publication of executive briefs for Ministers and the Heads of States on the strategy for internalising the Durban Outcomes.
- Preparing and overseeing the submission of views, at the invitation of the Presidency of the COP and the UNFCCC Secretariat
- Capacity building of SADC technical directorates and policy formulation bodies on issues relating to climate change adaptation, mitigation and financing of climate change
- Developing forums for dialogue aimed at readying the SADC region to draw down and benefit from technology and skills transfer, financing and building resilience to the impacts of climate change across all (key) sectors.

Core Meeting	Dates
Bonn Climate Change Conference May	14 to 25 May 2012
Second sessional period in 2012	26 Nov to 07 Dec 2012

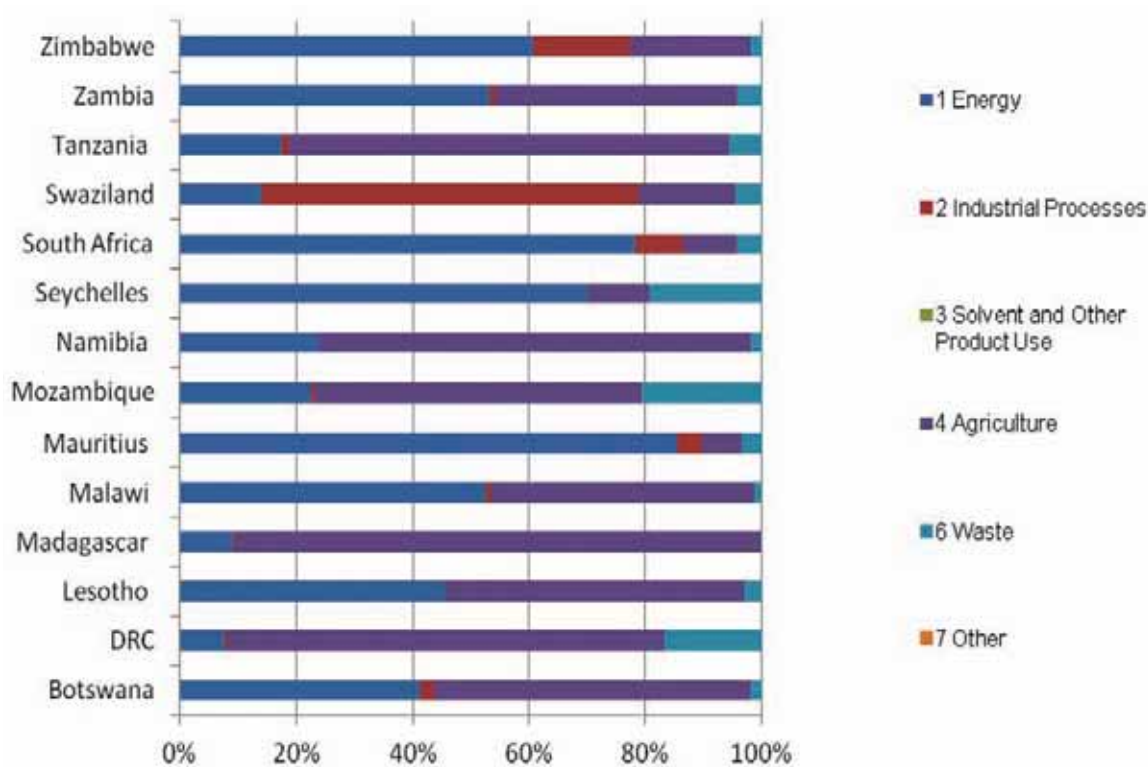
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Annex I: GHG emission data and other key indicators

#		Energy Prod (Mtoe)	CO2 emissions (Mt CO2)	CO2/pop (t CO2 / capita)	CO2 /GDP (kg CO2/2000 USD)
1	Angola	105.84	10.56	0.59	0.43
2	Botswana	1	4.52	2.37	0.53
3	DR Congo	22.66	2.83	0.04	0.45
4	Lesotho			0.1	
5	Madagascar			0.2	
6	Malawi			0.1	
7	Mauritius			2.7	
8	Mozambique	11.46	1.93	0.09	0.24
9	Namibia	0.32	3.93	1.86	0.69
10	Seychelles			7	
11	South Africa	162.95	337.42	6.93	1.84
12	Swaziland	0	0	0.8	
13	Tanzania	17.47	5.79	0.14	0.38
14	Zambia	6.79	1.59	0.13	0.33
15	Zimbabwe	8.53	8.78	0.7	1.86
	SADC average	22.468	25.15667	1.583333	0.73
	World	12.369	29381	4.39	6.75
	Africa	1161	890	0.9	0.45

Annex II: GHG emission by category



Country	International tourist arrivals						International tourism receipts			
	x1000			Change %		Share %	US\$ million			Share %
	2008	2009	2010	09/08	10/09	2010	2008	2009	2010	2010
Angola	294	366	425	24.3	16.2	0.9	285	534	n/a	n/a
Botswana	1500	1553	n/a	3.5	n/a	n/a	553	452	n/a	n/a
DR Congo	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Lesotho	285	320	n/a	12.3	n/a	n/a	24	40	n/a	n/a
Madagascar	375	163	196	-56.6	20.5	0.4	351	308	n/a	n/a
Malawi	742	755	n/a	1.7	n/a	n/a	43	43	n/a	n/a
Mauritius	930	871	935	-6.4	7.3	1.9	1449	1117	1282	4
Mozambique	1815	2224	n/a	22.5	n/a	n/a	190	196	197	0.6
Namibia	931	980	n/a	5.3	n/a	n/a	378	398	438	1.4
Seychelles	159	158	175	-0.9	10.8	0.4	258	209	n/a	n/a
South Africa	9592	7012	8074	n/a	15.1	16.4	7925	7543	9070	28.7
Swaziland	754	909	n/a	20.4	n/a	n/a	26	40	n/a	n/a
Tanzania	750	714	794	-4.8	11.1	1.6	1289	1160	1303	4.1
Zambia	812	710	n/a	-12.6	n/a	n/a	148	98	n/a	n/a
Zimbabwe	1956	2017	2239	3.2	11	4.5	294	523	634	2
SADC Total	20895	18752					13213	12661		

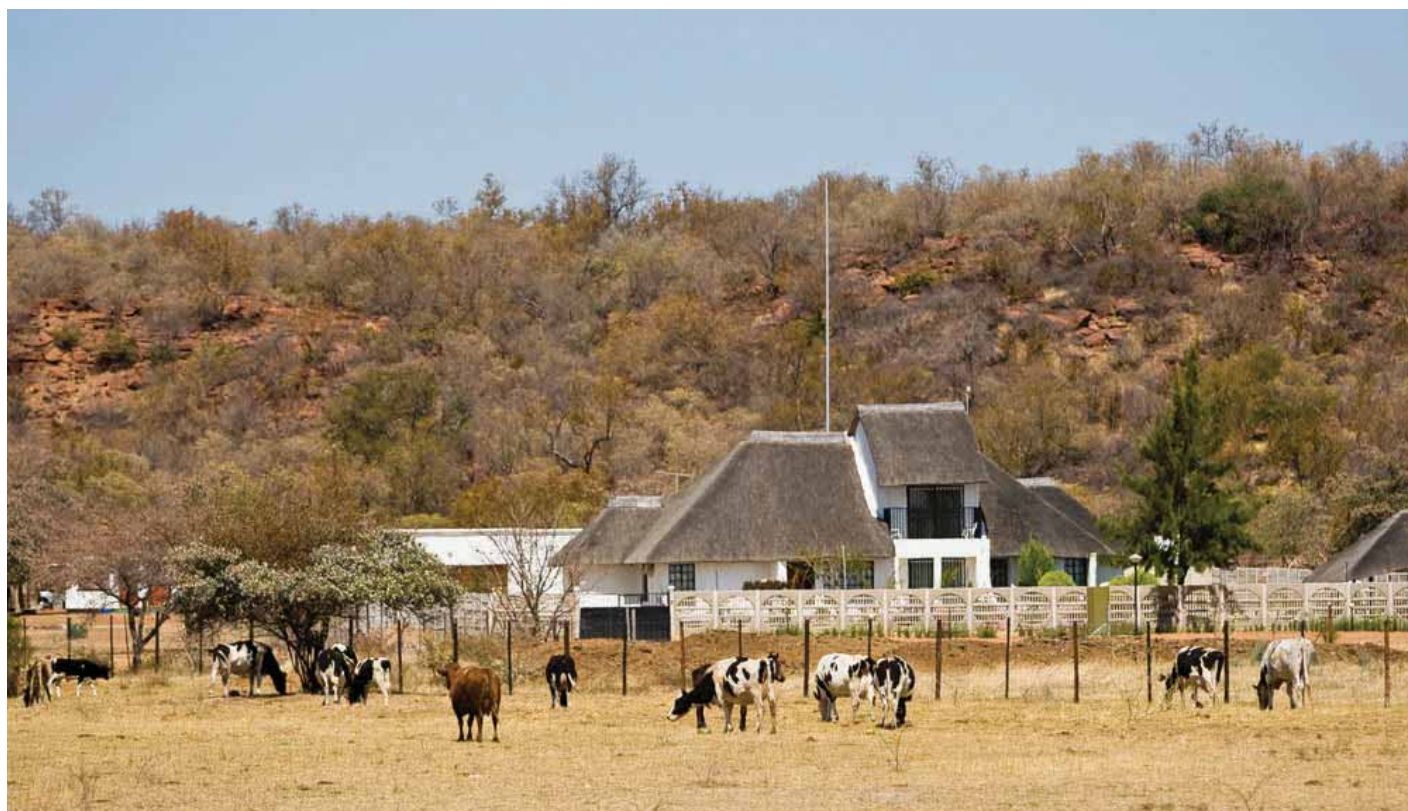
Country	2009 Annual withdrawals of freshwater (% of internal resources)	2008 water source (% of pop with access)	2008 improved water source rural (% of rural pop with access)	2008 improved water source urban (% of urban pop with access)	2009 Industry withdrawal (% of total)	2009 Agric withdrawal %	2009 Domestic withdrawal %
Angola	0.4	50	38	60	28.8	32.8	38.4
Botswana	1.6	95	90	100	18	41.2	40.7
DR Congo		46	28	88	19.8	17.7	62.6
Lesotho	1.7	85	81	97	40	20	40
Madagascar	4.4	41	29	71	0.9	97.5	1.6
Malawi	5.6	80	77	95	4.1	83.6	12.3
Mauritius	26.4	99	99	100	2.8	67.7	17.6
Mozambique	0.3	47	29	77	3.3	73.9	
Namibia	1.7	92	88	99	4.7	71	26
Seychelles					27.7	6.6	65.7
South Africa	25	91	78	98	6	62.7	31.2
Swaziland	23.1	69	61	92	1.2	96.6	2.3
Tanzania	5.4	54	45	80	0.5	89.4	10.2
Zambia	1.7	60	46	87	7.5	75.9	16.7
Zimbabwe	21	82	72	99	7.1	78.9	14

SOUTHERN AFRICAN DEVELOPMENT COMMUNITY

THINK TANK WORKSHOP ON CLIMATE CHANGE SADC SECRETARIAT – CONFERENCE ROOM

APRIL 5TH 2012

FINAL DRAFT – WORKSHOP REPORT



**Prepared by:
Oliver Chapeyama
Enviroplan (Pty) Ltd**

1.0 Background

The idea of Think Tank Workshops is an innovation conceived by the Southern African Development Community (SADC) Directorate of Policy Planning and Resource Mobilization (PPRM) to influence regional policy development processes in the various sectors that SADC is involved in. These workshops are part of the SADC Policy Analysis and Dialogue Programme that PPRM is developing together with the other SADC Directorates and Units.

The Think Tank workshop on Climate Change comes on the heels of the 17th Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP 17) that was held in December 2011 in Durban, South Africa. Cross-sectorial SADC participation at the COP 17 and the two previous conferences was spearheaded by the Food, Agriculture and Natural Resources Directorate (FANR). Deliberations at COP 17 highlighted the reality of climate change and recommended global policy responses to its implications for development processes in various parts of the world. Although Southern Africa's contribution to global greenhouse gas emissions is insignificant, the region is beginning to experience the impacts of increasing global temperatures as evidenced by increased frequency of weather events such as droughts and floods. The coastal zones and small island states in the region are experiencing steady rises in sea which are threatening socio-economic systems associated with these eco-zones. Vector borne diseases such as malaria are steadily extending their range into areas where they were previously non-existent or had been eradicated. Heads of States and Governments from all SADC Member States have agreed that these developments require the formulation of appropriate policy responses if they are to avert the inevitable serious impacts on their populations – issues that were enshrined in their common position presented to COP 17.

The global climate change agenda presents specific opportunities that developing countries can exploit as they participate in addressing the implications of this phenomenon. If left unaddressed, climate change could result in reduced economic growth and reduced food and human security among their already poor populations. Without necessarily adversely impacting on their development programmes, developing countries could adopt a

development path that takes a different trajectory through accessing financial flows, technologies and technical skills from the developed world aimed at advancing the global climate change agenda. The exploitation of these opportunities however requires that developing nations clearly articulate their development trajectory through the development of appropriate policy mechanisms to guide such development.

It is against this background that the PPRM and FANR Directorates decided to collaborate in the process of institutionalising the outcomes of COP 17 into development planning in the SADC region through the development of policy options for the region. To kick start this process the two Directorates organised the Think Tank Workshop on Climate Change aimed at developing appropriate policy responses to the spectre of climate change. The workshop was convened to deliberate on a Policy Paper on Climate Change that was developed by Mr. David Lesolle, a lecturer at the University of Botswana and leading researcher on regional climate change issues for SADC and the Republic of Botswana.

2.0 Record of Workshop Proceedings

2.1 Opening Session

The Workshop was moderated by Dr. Mondlane, the Director - Policy Planning and Resources Mobilization under whose purview SADC regional policy development falls. In his welcome remarks Dr. Mondlane provided the background to the workshop and indicated that this was the first in a series of policy development workshops that are planned across the region and across the various sectors that SADC works in. It was SADC's hope that through the think tank process the region will mobilise available human resource input into the formulation of policies that can promote sustainable social and economic development as espoused in the Regional Indicative Strategic Development Plan (RISDP) and Strategic Indicative Plan for the Organ (SIPO). Due to the cross cutting nature of climate change, SADC expected that the Think Tank on Climate Change convened at the workshop would broaden its scope and network with all sectors of the region's social, political and economic architecture.



The workshop was officially opened afterwards by Dr. Salomão, the SADC Executive Secretary, who reiterated that climate change had serious implications for SAD Regional Integration agenda which was predicated upon principles of equity, poverty alleviation and the betterment of people's livelihoods as detailed in the RISDP. Dr. Salomão highlighted that Think Tanks were part of the SADC Regional Policy Analysis and Dialogue Programme and were expected to guide the development of effective policies to drive the regional integration process within the framework of the RISDP and SIPO. He went on to highlight the link between climate change and natural disasters such as floods and droughts which had direct implications for food production and human security. He closed his address by imploring the workshop participants to assess the implications of the decisions taken at COP 17 for SADC development and recommend actions that the region of Southern Africa could take to benefit from the opportunities that the global climate change agenda presents for developing countries. Special attention need to be paid to opportunities for resource mobilisation and technology transfer, among others.

2.2 Presentation of Draft Policy on Climate Change; Mr. David Lesolle (University of Botswana)

Mr. Lesolle opened his presentation by confirming that climate change was a reality with anthropogenic factors being responsible for most of the climate change impacts being experienced today across the globe. This fact was confirmed by the Intergovernmental Panel on Climate Change (IPCC) which expressed the view that it was 90 % likely that the accelerated global warming over the past sixty years is due to human activities. Over this period, atmospheric carbon dioxide levels had risen from 0.02% to 0.06%. Although Africa's contribution of greenhouse gas emissions is small (SADC contributed about 1,3% of global outputs by 2010), Africa was set to bear the brunt of climate change more than the source countries due to its low level of development and low adaptive capacity. Evidence of climate change lay in the following recurring incidents: Increasing average temperatures, declining rainfall occurring with increasingly unpredictable timing; changes in the hydrological cycle, and increased occurrence of

extreme events such as floods and droughts. Mr. Lesolle went on to highlight the implications of climate change for various sectors and to propose policy issues for consideration by SADC.

These are summarised below:

2.2.1 Impacts of Climate Change on Human Security, Health and Infrastructure

The adverse conditions introduced by climate change will have impacts on human security, health and destroy infrastructure that has been put in place to father the development process.

2.2.1.1 Policy Issues

Data Collection and Management: A policy issue under this cluster is the need for collecting appropriate and standardised data for use in reporting on and surveillance of disasters. Most countries in Southern Africa have very poor data collection systems while, where data is available, it is not standard and is incompatible across countries. This makes cooperation in managing climate change induced disasters difficult. An additional issue in this regard is restricted access to data across national boundaries with some countries classifying

certain data as “security items” Resource Mobilisation Disaster management at regional scale requires strong financial and human resource mobilisation for the realisation of conflict and disaster reduction Need for Regional Infrastructure Development Standards: Building standards are not uniform across the region due to variable development status of the countries. What is considered a normal weather event in one country could therefore spell disaster in a neighbouring country. This results in induced migration when infrastructure fails.

2.2.2 Impacts of Climate Change on Agriculture, Trade and Tourism

Agriculture and Tourism constitute the region’s primary economic sectors. Climate change is already adversely affecting agricultural production systems through increased variability in rainfall patterns, reduced rainfall and increased frequency of extreme weather events. The spatial ranges of vector borne diseases are increasing while new and “old” disease patterns are becoming increasingly evident. At rural community level the “farmers’ calendar” is increasingly disrupted by changes in seasonal patterns resulting in increased frequency of failed crops.



Tourism is increasingly being adversely affected by changes in weather patterns as well as increased extreme events such as floods and drought. The disruption of the region's biodiversity due to these extreme events is also affecting the tourism industry which is largely dependent upon the region's biodiversity. Intra-regional trade and indeed international trade in Southern Africa are based upon the region's ecological goods and services. Any disruption in the integrity of these goods and services will have serious implications for the region's ability to trade.

2.2.2.1 Policy Issues

Adaptation to Climate Change: The region could access resources that are available through the International Frameworks for Climate Change to adapt to the changes that are being experienced. **Adjusting Existing Policies:** There is potential for adaptation through adjusting already developed policies to make them climate change responsive. **Greening of Agriculture:** There is scope for dealing with impacts of climate change on agriculture through the greening of the sector through processes such as introducing technology and energy neutral agricultural practices. Potential danger with these is the reduction of economies of scale already achieved and the failure by farmers to adjust in time.

2.2.3 Impacts of Climate Change on the Water Sector

Availability of portable water is recognised as a potential determinant of the limits to growth and development. This is increasingly becoming evident in Southern Africa given the extreme temporal and spatial variation in the availability of the resource. Hydrological cycles have been disrupted while groundwater reserves are under threat from over exploitation and pollution. A number of countries in the region have already developed all the potential sources of water within their borders leaving them only with the options of demand management and cooperation with their neighbours in the supply of additional resources. Water scarcity is only going to get worse with climate change especially in a region where water storage infrastructure is poorly developed.

2.2.3.1 Policy Issues

Pricing policies to increase water management efficiency: Water can no longer be considered as a free good and there is need for the introduction of pricing formulae that result in improved water use efficiency across the region. This could be in the form of directing water use from consumptive to non-consumptive uses or to economically viable uses. **Improving Water Conservation:** Water use efficiencies could be improved through various demand management strategies. Water harvesting and recycling can also be promoted more extensively across the region.

Improved water storage: Conventional water storage in the region results in huge losses due to evapotranspiration. Underground storage facilities are a possible additional innovation to improve water storage in the region. Namibia has set the trend in this practice and lessons learnt could be disseminated across the region.

Transboundary Collaboration in Water Resources management: Southern Africa is a world leader in the management of shared water resources with a number of river basin institutions already established and functional. These already on-going initiatives in this regard need to be strengthened further.

2.2.4 Impacts of Climate Change in the Forestry Sector

Climate change will adversely affect biodiversity resulting in species losses and disruption of diversity. Bush encroachment will become more pervasive. These changes will become more evident in situations where population growth is occurring as most of the region's population depends on forestry products for their energy needs. The depletion of forests will also have far reaching implications for land management, availability of water and agricultural productivity.

2.2.4.1 Policy Issues

Develop a business model for sustainable forest management: Southern Africa has huge and unexploited forest and woodland reserves especially in the miombo woodlands that stretch from Angola to Tanzania. These forests could be a source of revenue through accessing international carbon



credit markets if they are managed as carbon sinks. Improve capacity to access REDD funding and establish a carbon trade facility at SADC. This could be expanded to include the oceans which are also effective carbon sinks. Adoption of an ecosystems approach to management of transboundary forests: This would guarantee integrated management of environmental goods and services and promote sustainable development and management of forest resources.

Introduce multi-source energy supply systems: Exploitation of the region's huge renewable energy sources and integrating them into the energy delivery system will reduce pressure on forest reserves. Promote low carbon economies through institutionalisation of Clean Development Mechanisms. The key policy issue for SADC is Adaptation even though there is potential for accessing Foreign Direct Investment, technology transfers and others through Mitigation. The relative small size of the region's industrial sector unfortunately provides limited scope for Mitigation.

Mr Lesolle concluded his presentation with proposing the following actions:

- SADC cannot and should try to do everything. There is a need to prioritize actions and the sectors within which to act. A maximum of five (5) priority sectors within which action can be taken is appropriate.
- SADC needs to develop a common climate change and development agenda. With this agenda the region could attract resources for use in intervening to address the adverse impacts of climate change.
- The climate change debate and dialogue needs to be driven at the highest levels in SADC institutions.
- At national level the agenda needs to be integrated into the national development processes while at SADC Secretariat it should be driven at Executive Secretary / Deputy Executive Secretary level. Climate change is not just a science anymore, it is a development issue.

3.0 Responses by Think Tank Members

Mr. Lesolle's presentation was followed by responses from the following members of the Think Tank on Climate Change: Ms. Saphira Surina Patel, Environmental Specialist, Development Bank of Southern Africa (DBSA), Dr Alex Benkenstein, Senior Researcher Governance of Africa's Resources Programme South African Institute of International Affairs, Mr. Leluma Matoone, Director Climate Change & Biodiversity, Department of Science and Technology South Africa, Dr Emma Archer van Garderen, Principal Climate Change Specialist, Climate Studies, Modeling & Environmental Health, Council for Scientific and Industrial Research (CSIR), Natural Resources & the Environment, Mrs. Wame



Hambira, Lecturer, Department of Environmental Sciences, University of Botswana, Dr Pauline Dube, Lecturer Department of Environmental Sciences University of Botswana and Mr. Bob Liberty Muchabaiwa, Research, Advocacy and Policy Manager, SADC Council of NGOs. The responses were introduced as way of having the members of the Think Tank contribute issues that they felt had not been addressed in the Draft Policy Paper. The following paragraphs summarize the responses from the members.

3.1 Climate Change and Infrastructure

SADC needs to consider the implications of climate change on infrastructure developments, The region needs to promote design standards that promote resilience to climate change induced extreme events; Already existing infrastructure could also be retrofitted to make it climate resilient. In addition there is a need to ensure that the future infrastructure build programme for the SADC region focuses on the greening of infrastructure as a means to promote climate change mitigation and adaptation as well as facilitating the development of infrastructure that is more efficient, effective and sustainable. This is of particular importance as the opportunity to develop infrastructure that is sustainable and resilient should not be missed and we need to ensure that any infrastructure build programmes that we embark on now and in the future do not lock the region into unsustainable resource use.

3.1.1 Impacts of Climate Change

Need to recognize that climate change impacts are diverse hence the need to prioritization of areas on intervention. Principal area of focus for SADC should be adaptation which will facilitate the addressing of the region's diverse development needs. The primary stress in natural ecosystems was due to the intersection of climate change and current practices

of resource use and management. SADC therefore needs to find solutions to these stresses and exploit opportunities that present themselves as "low hanging fruit".

These include:

- Opportunities for intervening in dryland ecology and woodland management under the REDD+ process;
- The use of blue carbon sinks in the region's marine environment;

- Following up and characterising the carbon footprints of certain natural products that region exports;
- Integration of local practices into climate change adaptation strategies-IKS.

3.2 Use of Science and Technology and Research

There is a lot of research that is on-going in the region. This body of knowledge needs to be collected and collated to feed into the Climate Change dialogue. SADC needs to tap into these processes to inform the development of strategies for climate change mitigation and management. Technology transfer needs to be looked at through “an appropriate technology” lens. This will allow for local innovation to address issues of poverty etc. The Policy Paper needs to present Opportunities and Challenges under climate change in a balanced manner.

3.2.1 Use of On-going Initiatives

Policy development needs to use on-going regional initiatives to inform its thinking. The region has on-going initiatives such as SASSCAL, STJ Frameworks as well as National Planning processes which could be used to develop the thinking around the development of a regional climate change policy. Policy development should be informed by identifying clear messages in the climate change projections being bandied around and using these to convince policy makers. Responses need to be based on simple prioritised implementable actions.

3.3 New Development Paradigm for Africa

Vulnerability assessments for Africa need to be informed by a new development paradigm/framework which recognises the continent’s inner strengths. Current assessments are based on western approaches which might not get Africa out of its development impasse. adaptation is not a solution to the problem. It is a way of surviving the seemingly inevitable. A possible approach could be a combination of the current conventional approaches to development and indigenous knowledge

systems and practices. This would result in the creation of appropriate institutions, infrastructure and development pathways which the continent’s people can relate to.

A good example of this is the potential implications of the reintroduction of indigenous knowledge systems in agricultural development.

3.4 Contextual location of Climate Change Dialogue

Climate change dialogue needs to be placed at the highest policy levels within SADC Secretariat and other SADC institutions. There is therefore need to ensure that this important subject is addressed as the RISDP is being reviewed. The debate on climate change also needs to take into account the impacts of the global production and consumptions patterns on Southern Africa. The gender dimensions of climate change and possible implications of climate change for indigenous people were also considered to be missing in the Draft Policy Document. A final element that needs to be included is that of the relationships between employers and labour as production systems are affected by climate change.

The general response to these interventions was that these were useful issues for incorporation into the Draft Policy Document. The regional should develop a common regional strategy on climate change and an implementation programme of action to address climate change as cross-sectorial issue. This would greatly assist with preparations for COP 18 which should ideally be kick-started now. An additional discussion venue was the green economy which is one of the themes of the RIO+20 Summit to be held in June 2012. The programme of action will need to assume and maintain a multi-stakeholder character and be driven by the SADC Secretariat. In this respect there was need for the reinforcement of the working group on Climate Change issues at the SADC Secretariat.

Climate change is no longer just a science. It is at the centre of the development dialogue. SADC Member States need to show commitment to it by contributing resources to the process.



3.5 Outcome of General Panel Discussion

Although there is the acknowledgement that climate change is no longer just a science, the dialogue has not moved forward enough to become people centred. There is therefore a need for SADC Secretariat to take stock of what member states have been doing and use the findings to inform future actions. In addition, all on-going SADC activities and programmes need to be audited from a climate change perspective so that they appropriately inform future regional actions. This will assist the region articulate a clear vision of what it intends to do and want to achieve. Regional actions need to be linked to sub-continental and continental initiatives of the United Nations and the African Union that have climate change dimensions. African Ministerial Committee on the Environment (AMCEN/UNEP), the Common Market for East and Southern Africa/ Economic Commission for Africa (COMESA/ECA) and African Ministers Conference on Water/African Union (AMCOW/AU) are relevant in this regard.

The proposed new development paradigm for Africa was accepted as an important innovation that needed further discussion and input from academia. It was important that this innovation be discussed within the context of other on-going continental initiatives such as the New Partnership for Africa's Development (NEPAD) and the processes leading to the development of Regional Sustainable Development plans which already included aspects of climate change. The Draft Policy Paper should be amended to adequately address the energy sector because of its importance for regional development.

The workshop agreed that there was need for the creation of a climate resilient region by tapping into resources from the climate financing options available. In order for this to happen, there was need for the articulation of simple climate change policy statements which could be easily assimilated by policy makers.

4.0 Closing Summary by PPRM and FANR

In closing the workshop Dr. Mondlane reiterated the issue that regional integration presented a unique opportunity to address development challenges that were faced by the SADC region, including climate change. Recognising that Think Tanks are not a new phenomenon, he proposed that they be institutionalised as overarching mechanisms to assist member states to develop responses to development challenges such as climate change. Similar seminars will be held around the region involving all the other sectors as a way of inputting into the regional development process. Regional stakeholders were also welcome to propose topics for discussion at such fora.

Finally, Mrs. Nyirenda, Director FANR, thanked all researchers and participants from SADC Secretariat to the workshop for making the time to participate and contribute to the discussion. She highlighted a

number of documents that have been developed by the Secretariat on climate change. These include the regional framework of sub-regional climate change programmes developed under the auspices of AMCEN and the regional climate change programme which was being finalised. She indicated that the outcomes of the workshop would provide further input into these and other on-going processes. She concluded by highlighting the need for continued cooperation between researchers and SADC Secretariat in order to enhance the achievement of the common regional goals.

Disclaimer

This “SADC Policy Paper on Climate Change: Assessing The Policy Options for SADC Member States” was written by David Lesolle (University of Botswana). Any views or opinions expressed are solely those of the author and do not necessarily represent those of the SADC Secretariat or other bodies of the Southern African Development Community (SADC).

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SADC MEMBER STATES



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