



Southern Africa Sub- Regional Framework of Climate Change Programmes

**Adaptation and Mitigation Actions, Supported by Enabling
Measures of Implementation**

June 2010



This is a stocktaking and gap analysis report of decisions, programmes, projects and initiatives on climate change *adaptation* and *mitigation* actions, including enabling and supporting measures for implementation in Southern Africa. It is contributing to the comprehensive framework of climate change programmes in Africa facilitated by the African Ministerial Conference on Environment (AMCEN).

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Abbreviations and Acronyms

AFOLU	Agriculture, Forestry and Other Land Uses
AMCEN	African Ministerial Conference on Environment
CDIAC	Carbon Dioxide Information Analysis Centre
COMESA	Common Market for Eastern and Southern Africa
DRC	Democratic Republic of Congo
DRR	Disaster Reduction and Risk Management
ENSO	El Nino-Southern Oscillation
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross Domestic Product
GNI	Gross National Income
HDI	Human Development Index
IPCC	Inter-governmental Panel on Climate Change
ISS	Institute for Security Studies
LULUCF	Land Use, Land-Use Change and Forests
MDG	Millennium Development Goals
NAPA	National Adaptation Programme of Action
NCAR	National Centre for Atmospheric Research
REDD	Reduced Emissions from Deforestation and Forest Degradation
SADC	Southern Africa Development Community
SARCOF	Southern Africa Regional Climate Outlook Forum
UNFCCC	United Nations Framework Convention on Climate Change
USEPA	United States Environmental Protection Agency
WRI	World Resources Institute

EXECUTIVE SUMMARY

Southern Africa has been experiencing a warming trend over the last few decades. Temperatures in the region have risen by over 0.5°C over the last 100 years. The Indian Ocean, for instance, has warmed more than 1°C since 1950. The same period has also seen a downward trend in rainfall. Below-normal rainfall years are becoming more frequent. For example, between 1988 and 1992 the sub-region experienced recurrent drought events. There has also been an increase in the frequency and intensity of El Niño episodes. The early 1980s marked the beginning of a series of strong El Niño events.

These extreme climatic events have increased the sub-region's vulnerability. This is because it is pre-dominantly dependent on climate-sensitive sectors, such as such as agriculture, water, infrastructure and transport, coastal zones, health, energy, urban planning and management, tourism, biodiversity and ecosystems, forests, fisheries, environment, and land and desertification. It therefore follows that programmatic emphasis should be placed on adaptation actions to address the impacts of climate change on these sectors. This was indeed recognized by the SADC Experts Group when they met in Nairobi from the 27th to the 29th of March 2010.

Because the sub-region's contribution to GHG global emissions is minimal in comparison to emissions from developed countries, it would give a *prima facie* suggestion that climate mitigation actions should not be a priority. However certain mitigation actions such as improving energy efficiency, enhanced use of alternative renewable sources of energy, adoption of cleaner production technologies, enhancing carbon sequestration and reduced emissions from deforestation and forest degradation, and through sustainable land use practices, are not only important for mitigation, but also enhance the resilience for local communities and other stakeholders for adaptation actions.

The review established the fact that for these actions to be successfully implemented, there is need to up scale the use of supporting measures. Most critical amongst these is the need to ensure synergies between the SADC secretariat, as the coordinating body, and national governments. There is also need to mainstream the work being done by non-State actors such as NGOs, research institutions etc with SADC and national government efforts. This will

result in the comprehensive programme of implementation for adaptation and mitigation actions. Furthermore, there is need to strengthen national government institutions and the SADC secretariat through various capacity building interventions that include training to acquire requisite technical skills, policy review to inculcate climate change issues as an emerging phenomenon in sectoral policies, and the accessing and using appropriate technologies. The review also noted that the implementation of adaptation and mitigation actions will not be possible without adequate funding. It will therefore be critical to have a specific funding mechanism for these actions that will be coordinated by SADC for the benefit of SADC Member States.

1. INTRODUCTION

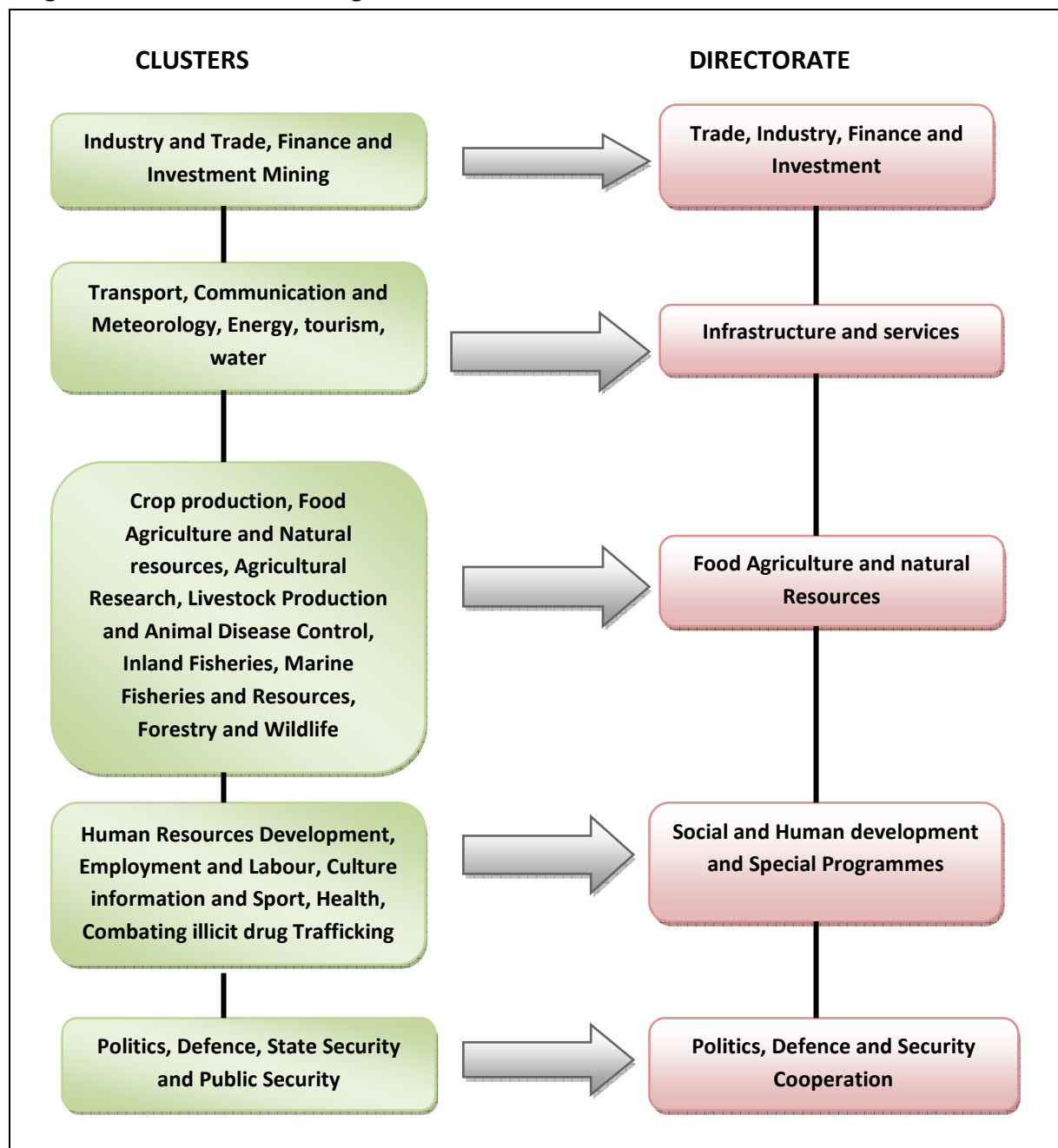
1.1 Background to the SADC Sub-region

The Southern Africa sub-region, for purposes of this paper, is defined as the total geographical area occupied by the 15 member States of the Southern Africa Development Community (SADC). These member States include Angola, Botswana, the Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. SADC was established in 1980 as the Southern Africa Development Co-ordination Committee (SADCC). In 1992, it transformed to become the Southern Africa Development Community (SADC) through the SADC Treaty. The Treaty came into force in 1993 after the requisite two-thirds of the member States ratified.

SADC is an inter-governmental economic and political body which aims to achieve development and economic growth, alleviate poverty, enhance the standard and quality of life of the people of southern Africa and support the socially disadvantaged through regional integration. These objectives are to be achieved through harmonisation of political and socio-economic policies and plans of member states, mobilisation of the peoples of the region and their institutions to take initiatives to develop economic, political and cultural ties across the region and the creation of appropriate institutions and mechanisms for mobilisation of requisite resources for the implementation of programmes and operations of SADC and its institutions. In addition SADC develops policies aimed at the progressive elimination of obstacles to free movement of capital and labour, goods and services and the people of the region, promote development of human resources, development, transfer of technology and improvement of economic management and performance through regional cooperation. Lastly it promotes coordination and harmonisation of international relations of member states and secures internal understanding and mobilisation of inflows of public and private resources into the region.

SADC has clear regional cooperation and integration framework as portrayed by diagram 1 below.

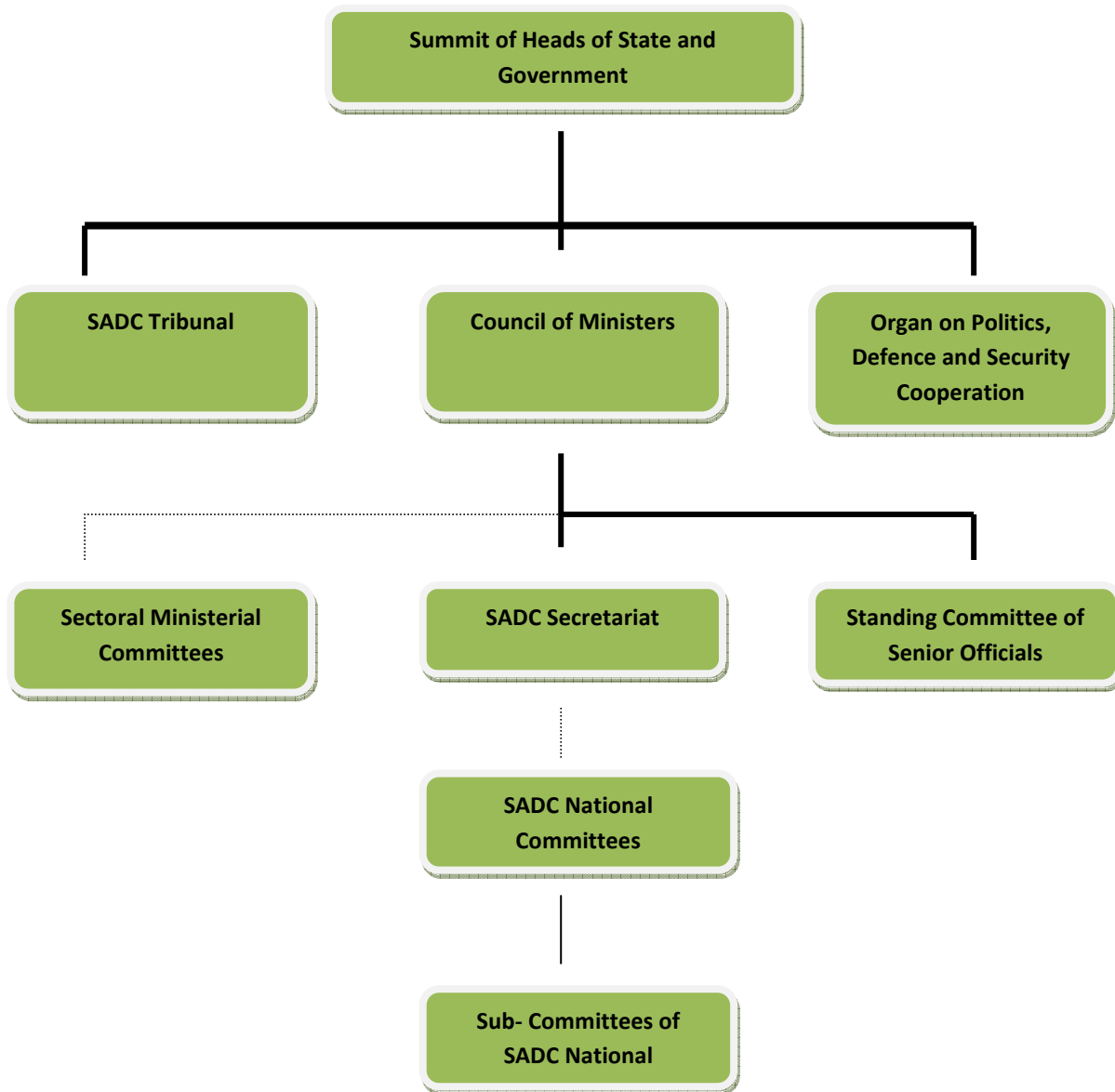
Diagram 1: SADC Secretariat Programmatic Structure



Source: SADC (2009)

The SADC institutional framework consists of the Summit of Heads of State and Government, the Tribunal, Council of Ministers, Organ on Politics, Defence and Security Cooperation, Sectoral Ministerial Committees, the Secretariat, Standing Committee of Senior Officials, the National Committees and Sub-committees of the National Committees.

Diagram 2: SADC Institutional Framework



Source: SADC (2009)

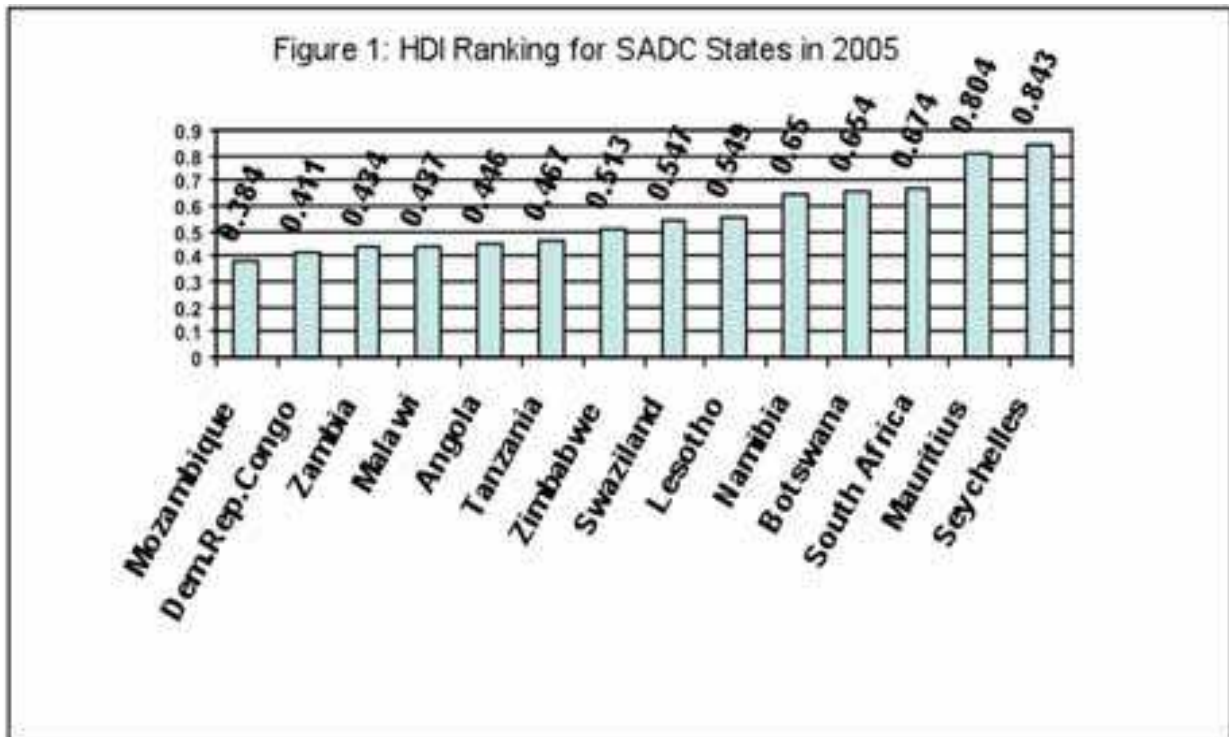
The Southern Africa sub-region covers a total area of almost 10 million sq km, of which 25% is arable land (SADC, 2000). The region has a combined population of over 228 million people, having grown from a population of 136 million in 1994 (SADC, 2004). This is an average natural annual population growth rate of 3%. The population expansion was also caused by the addition of new SADC members after 1994, namely Mauritius in 1995, the Democratic Republic of Congo (DRC) and Seychelles in 1997 and Madagascar in 2005 (SARDC, 2008).

In general, SADC is marked by enormous economic regional imbalances, suffering from small and little-diversified economies, pronounced inequalities and poverty. According to the SADC Regional Strategy Paper and Regional Indication Plan report of March 2010, it is one of the poorest regions in the world - nearly 45% of the total population in SADC lives on USD 1 a day. SADC has the highest HIV prevalence in the world (1/3 of the world's total population living with HIV/AIDS is in SADC) with catastrophic economic and social implications in the region, affecting GNI growth, the labour supply, income inequality, human development and the attainment of the Millennium Development Goals (MDGs) in general. As regards primary school completion rate, SADC countries are amongst those with the lowest rates in the world. The region is also faced with challenges in the area of food and water security as well as democracy, peace and security, which often provoke mass movement of people within SADC. Major challenges remain also on issues related to women's economic empowerment, participation in decision-making and human and legal rights. Civil society in the region is characterised as rather weak, fragmented and with a retroactive approach in its relations with the governments and regional organisations.

The SADC region has an aggregate GDP of USD 374.2 billion (SADC 2006). Its GDP is equivalent to more than half of the aggregate GDP of sub-Saharan Africa (ISS, 2006). However despite its relatively high aggregate GDP, individual countries' social and economic growth and development vary considerably. Some countries are achieving high growth rates, while the growth of others is low. For instance, the national economic development status of the sub-region is a combination of advanced developing countries like South Africa, developing countries like Zimbabwe, and least developed countries like Malawi. That notwithstanding, the general characteristics of the sub-region's aggregate economy is that of a developing sub-region where large shares of GDP come from primary sectors of production such as agriculture and mining, whose total contribution is, on average over 50% of total GDP (SADC, 2003). Statistics on SADC show that only Mauritius and South Africa have sizeable manufacturing sectors that account for approximately 25% of national GDP. The rest of the Member States have relatively small manufacturing sectors. They depend on services, agriculture or mining. South Africa and Zimbabwe have significant mineral-resource based manufacturing industries. The national economic status variation among SADC countries is also illustrated by the inconsistencies in national per capita income. While

the sub-region's average level of per capita income, as measured by Gross National Income (GNI), is USD 1,563 (SADC, 2003), this figure does not give an accurate depiction of the national per capita income. For instance, whereas Seychelles has a GNI per capita of US \$6,530, Mauritius (US \$3,830), Botswana (US \$3,100), and South Africa (US \$2,820); other countries have GNI per capita of less than USD 500. Such countries include DRC (US \$80), Malawi US \$160), Mozambique (US 210), Tanzania (US \$270), Zambia (US \$320) and Zimbabwe (US \$480) (ISS, 2004).

National variations also exist in the levels and rates of growth of human development (measured by the Human Development Index [HDI]). The HDI aggregates different components of human development into a composite measure. The specific indicators making up the composite HDI are life expectancy at birth, knowledge (comprising adult literacy and gross enrolment ratios combined for primary, secondary and tertiary educational levels), and standard of living (indicated by Gross Domestic Product (GDP) per capita and Purchasing Power Parity (PPP)). HDI is calculated at five-yearly intervals. The HDI scores range from 0 to 1. Values closest to 1 indicate the highest HDI status whereas scores closest to 0, the lowest. The United Nations Development Programme classifies countries according to this index into High, Medium and Low Human Development. Countries classified as having Low Human Development (with values ranging from 0.499–0.336) are Mozambique, the Democratic Republic of Congo, Zambia, Malawi, Angola and Tanzania. Those with a Middle HDI status (with values ranging from 0.798-0.502) are Zimbabwe, Swaziland, Lesotho, Namibia, Botswana and South Africa. Only Mauritius and the Seychelles have a High HDI status (with values ranging between 0.968 and 0.800). The SADC countries with the highest HDI scores in 2005 are the Seychelles, Mauritius and South Africa. Just under half of the SADC countries showed an improvement in their HDI status from 1970 to 2005.



Source: Adapted from Policy Brief 52 by the Centre for Policy Studies

According to the 2000 SADC Regional Human Development Report, the average HDI for the SADC region in 1998 was 0.538 in comparison to 0.568 in 1995.

Although the socio-economic indicators vary considerably between SADC countries, the only phenomenon that is somewhat constant and found in all SADC countries is poverty. The SADC region is one of the poorest regions in the world despite being endowed in natural resources. Approximately 45% of the total population lives on 1 US\$ per day. Malnutrition is on average around 36.1% with a range of 44% to 72% across the region. Life expectancy has been declining over the years from about 60 years to slightly below 40 years at present. Infant mortality rates remain for most countries in the SADC region above 50 per 1000 births (SADC, 2008). The above figures reflect the gravity of the poverty situation in the region. Poverty is complex and takes a variety of forms, it is characterised by lack of income, lack of access to means of production and livelihood systems and general deprivation and exclusion arising from socio-political and socio-cultural circumstances.

Poverty is the sub-region's major development challenge. Recent statistics from the African Development Bank (2007) indicate that about 70% of the population in the region lives

below the international poverty line of US\$2 per day. The World Bank (2007) also noted that about 80% of the population in some Member States such as Mozambique and Zambia are estimated to be living in extreme poverty. However, the extent of human poverty varies among SADC countries. The levels range from the highest figure of about 54.7% of the population affected by human poverty to the lowest index of 11.6%. A few Member States such as Mozambique, Malawi, and Zambia are worst affected as they have a human poverty index of above the regional figure of 31.5% (ISS, 2004). About half of Member States have an index just slightly below the regional average.

The problem of poverty as reflected in poor access to water and malnutrition has been exacerbated by climate variability that has resulted in re-current droughts, floods and other natural disasters in the sub-region (SADC, 2008). This has caused a series of food shortages, thereby exposing the sub-region to serious food insecurity. When droughts occur for example, approximately 14 million people are threatened with starvation in the sub-region (SADC, 2008). This manifestation of poverty is particularly acute among vulnerable groups such as households headed by old people and child-headed households that are on the increase due to the impact of HIV and AIDS.

1.2 Sub-regional Climate Outlook

The climatic condition of the Southern Africa sub-region varies spatially from arid in the west through semi-arid and temperate areas in central zones to semi-arid in the east, with a few sub-humid areas in the central regions. However, closer to the equator in Angola, DRC and coastal Tanzania, the climate is largely humid (SARDC, 2008). The climate of the sub-region is influenced by air masses of different origins (SARCOF, 2008). Three prevailing wind systems have a strong influence on the region's climate, and these are the sub-tropical eastern continental moist maritime (with regular occurrence of cyclones); the south-easterly wind systems that brings rainfall from the Indian Ocean (including Mauritius); and the Inter-Tropical Convergence Zone (ITCZ).

The sub-region's climate over the last century has been characterized by oscillating wet and dry decades. Droughts have occurred during the periods: 1910; 1921-1930; 1947-48; 1967-73; 1981-82; 1991-92; 1994-95; 2001-03 and 2004-05 (SARDC, 2008).

The sub-region has been experiencing a warming trend over the past few decades. This is consistent with the global trend of temperature rise in the 1970s, 1980s and the 1990s. According to the IPCC, temperatures in the sub-region have risen by over 0.5°C over the last 100 years. Between 1950 and 2000 Namibia for example, experienced warming at a rate of 0.023°C per year (Government of Namibia, 2002). The Indian Ocean has also warmed more than 1°C since 1950. During this period, the region has also experienced a downward trend in rainfall (NCAR, 2005). This has been characterized by below-normal rainfalls and frequent droughts. For example, between 1988 and 1992 the sub-region experienced recurrent drought events. There has also been an increase in the frequency and intensity of El Nino episodes. For instance, prior to the 1980s, strong El Nino events occurred every 10 to 20 years on average (UNEP & ICRAF, 2006). However after 1980, particularly 1982 and 1983; 1991 and 1992; 1994 and 1995; and 1997 and 1998, strong El Nino occurrences have been more frequent (Glantz *et al.*, 1997).

It is widely accepted, based on future climate modelling findings, that the sub-region's climate will be hotter and drier in the future than it is today. Ragab and Prudhomme (2002) observed that by 2050, the sub-region's average annual temperature is expected to increase by between 1.5 and 2.5°C for countries in the southern end of the sub-region and by between 2.5 and 3.0° C for countries in the northern end of the sub-region if compared to the 1961-1990 average. Such temperature rises are expected to be greater in the summer than in winter season. Furthermore, more recent climate modelling findings from the National Centre for Atmospheric Research (NCAR) and the National Oceanic and Atmospheric Administration (NOAA) of the United States revealed '*very clear and dramatic warming of the Indian Ocean into the future, which means more and more drought for southern Africa*' (NCAR, 2005)¹. The study showed that monsoons across Southern Africa could be 10 to 20 percent drier than the 1950-1999 average. Annual regional precipitation is expected to reduce by 10 percent, with greater reductions in the northern part of the sub-region than in the southern part (Ragab and Prudhomme, 2002). The third assessment report of the Intergovernmental Panel on Climate Change (IPCC), indicated that climate

¹ Cited in Kanji *et al* (2006)

change may increase the frequency of El Nino-Sothern Oscillation (ENSO) warm phases by increasing the warm pool in the tropical western Pacific or by reducing the efficiency of heat loss.

Table 1: Ecosystem and eco-zones in the SADC sub-region

Ecosystem	Ecozone	Habitat Type	Distribution
Terrestrial	Central and South Eastern Miombo Woodlands	Tropical and Sutropical Grasslands Savannas Shrublands	Angola, Botswana, Democratic Republic of Congo, Malawi, Mozambique, Namibia, Tanzania, Zambia, Zimbabwe
	Zambezeian Flooded Savannas	Flooded grasslands and Savannas	Angola, Botswana, Democratic Republic of Congo, Malawi, Mozambique, Namibia, Tanzania, Zambia
	Southern Rift Montane Woodlands	Montane Grasslands and Shrublands	Malawi, Mozambique, Tanzania, Zambia
	Drakensberg Montane Shrub lands and Woodlands	Montane Grasslands and Shrublands	Lesotho, South Africa, Swaziland
	Fynbos	Mediterranean Forests; Woodland and Scrub	South Africa
	Namib-Karoo-Kaokeveld Deserts	Desert and Xeric Shrub lands	Angola, Namibia, South Africa
	South East African Mangroves	Mangroves	Mozambique, Tanzania
Freshwater	Rift Valley Lakes	Large Lakes	Democratic Republic of Congo, Malawi, Mozambique, Tanzania, Zambia
	Cape Rivers and Streams	Small Rivers	South Africa
Marine	South Temperate Atlantic/Benguela Current	Temperate Upwelling	Namibia, South Africa

Ecosystem	Ecozone	Habitat Type	Distribution
	South Temperate Indo-Pacific /Agulhas Current	Temperate Upwelling	Mozambique, South Africa
	South East African Marine	Tropical Coral	Mozambique, Tanzania

Source: WWF (2002). Global 2000, Emergency conservation measures for a critically endangered Global 2000 ecoregion: Major Ecozones and Habitat Types of Southern Africa

1.2.1 Sub-region's Contribution to GHG Emissions

The main emitters of CO₂ in Southern Africa are fossil fuel burning (liquid fuels and especially coal in the thermal power stations of South Africa), deforestation and land degradation, which includes loss of carbon from the soil. Deforestation is the second largest emitter globally of carbon emissions, after the consumption of fossil fuels. Cement making is also an emitter of CO₂ (~ 220 kg C per tonne of cement), contributing about 2.5% of total CO₂ emissions globally (Ragad and Prudhomme, 2002). Of special concern to Southern African sub-region are GHG emissions from the degradation of forests and removal of other vegetation types. The carbon storage, or pool, in tropical forests is highly variable and can range from 50—570 Mg/ha (50—570 t/ha) while subtropical savannas and grasslands hold less at 70—130 Mg/ha (70—130 t/ha). These figures include soil carbon, which can be a significant proportion of the total quantum (Kanji *et al*, 2006).

Globally, the main carbon sinks are the absorption of CO₂ by the oceans and the uptake of carbon in plants through photosynthesis. In southern Africa CO₂ fertilisation, that is caused by the increased concentration of atmospheric CO₂, is adding to the stored carbon in undisturbed areas, but the increasing deforestation in most countries is reducing total stored carbon (Kanji *et al*, 2006). A reversal of the impacts of deforestation, land disturbance and degradation is required to increase the quantity of stored carbon. Higher values of stored carbon is an indicator of healthy ecosystems.

Table 2: Per Capita GHG emissions of SADC Countries

Country	Emissions without Land Use Change (Year 2000, Tonnes of CO ₂ e ² /capita)	Emissions with Land Use Change (Year 2000, Tonnes of CO ₂ e/capita)
Angola	5.4	6.7
Botswana	6.5	17.8
DRC	1.0	7.4
Lesotho	1.5	1.5
Madagascar	2.3	6.0
Malawi	0.6	3.0
Mauritius	3.2	3.2
Mozambique	1.1	1.6
Namibia	5.1	6.3
Seychelles	7.4	7.4
South Africa	9.5	9.5
Swaziland	3.2	1.5
Tanzania	1.9	2.4
Zambia	2.6	24.6
Zimbabwe	2.7	6.5

Source: Adapted from WRI, CDIAC and USEPA

1.3 Sub-regional Vulnerability to Climate Change

The extreme climatic events that the sub-region has been experiencing, especially the El Nino related droughts, are negatively impacting the inhabitants and economies of the southern Africa sub-region. For instance, El Nino events that occurred between 1965 and 1997 resulted in significant decreases in agricultural production, thereby accentuating the food insecurity situation in the sub-region. Furthermore, the warming of the Pacific ocean in 1991 and 1992 caused one of the worst droughts the sub-region has ever experienced in the last century (Glantz et al., 1997). These events resulted in crop losses and death of cattle herds that subsequently led to widespread food shortages. Since 2001, consecutive dry spells in some areas of the sub-region also led to food shortages. For example, in 2001 and 2002 six countries, namely Lesotho, Malawi, Mozambique, Swaziland, Zambia and Zimbabwe, faced a food deficit of about 1.2 million tonnes of cereals and non-food requirements. These were estimated to cost US\$611 million (SADC, 2002). The 2002 and 2003 drought resulted in a food deficit of 3.3 million tonnes, with an estimated 14.4 million people in need of assistance (Kanji et al, 2006). For small island developing states like

² CO₂e refers to CO₂ equivalence

Mauritius extreme climatic events have resulted in mean sea level rise of 1.2mm during the past decade. It is expected that sea level rise will lead to saline intrusion, contaminating freshwater coastal aquifers along the coasts. Additionally, much of the prime agricultural land is located on the coastal plains which are threatened by the sea-level rise. It is forecasted that sea level rise will inundate certain low lying coastal areas thereby affecting coastal wetlands and mangrove areas which are important nursery grounds for fish and other marine species (Government of Mauritius, 2009).

Climate variability can also have severe macroeconomic consequences. In this regard, droughts and floods are important factors determining the economic growth of the Southern African countries. For instance, the GDP for Zimbabwe dropped by 3 percent and 11 percent after the 1983 and 1992 droughts, respectively (Kanji *et al*, 2006). In South Africa, the 1992 drought was estimated to have reduced the agricultural GDP by about R1.2 billion and caused a 0.4-1.0 percent loss in economic growth (Glantz *et al.*, 1997). The same drought cost the Zambian government US\$300 million, which caused a US\$1.7 billion deficit in 1992 and translated into a 39% drop in agricultural output and a 2.8 percent decline in the country's GDP (Government of Zambia, 1996).

It is also argued that the prevalence of El Nino in the region is likely to scare off potential foreign investors who would not want to risk business ventures in an 'unfriendly' environment (Kanji *et al*, 2006). For example, the months preceding the 1991 and 1992 El Nino were characterised by a downward trend in the Zimbabwe stock exchange. During the drought, the country's stock market declined by 62%. Other sectors such as desertification and the conservation of forest and wildlife resources, are impacted by pressures and conflicts created by demographic change as a result of climate variability.

1.3.1 Impact of Climate Change on MDGs Realization in the Sub-region

In southern Africa, an additional warming of the globe can adversely influence attainment of the Millennium Development Goals (MDGs). These can be illustrated by, amongst other things, reduction in soil moisture and water runoff to rivers caused by a warmer and drier climate that is triggered by increased frequency and intensity of El Nino events (Kanji *et al*, 2006). This may affect crop production, which is critical in ensuring food security and

poverty reduction (Goal 1 of MDGs). Loss of biological diversity, land degradation and desertification can also occur as a result of increased aridity (Kanji *et al*, 2006). This could impact on environmental sustainability (Goal 7 of the MDGs). The realization of Goal 6 of the MDGs may be affected through the increase in water and vector-borne diseases as a result of long term rise in temperatures and occasional flooding caused by El Nino events (Kanji *et al*, 2006). Increased frequency of climatic disasters can force children out of school due to increased poverty, food shortage, remoteness and isolation, and child abandonment. This may affect the achievement of Goal 2 of the MDGs. Anthropology studies have revealed that when anticipated climate-induced disasters occur, women often get a disproportionate share of the burden because they have less opportunities than men. This may undermine their education and development and affect their welfare and that of children, thereby affecting the realization of MDG goals 3, 4, 5 (Kanji *et al*, 2006). Most of the economies in the sub-region depend on agriculture and natural resources. Therefore, intense and frequent droughts will impact on the critical sectors of the national economies. The consequences of a collapsed economy together with costs associated disaster response operations may reduce the ability of governments to invest in important socio-economic sectors. This may hinder the achievement of MDG goals 1-7 (Kanji *et al*, 2006).

1.4 The UNFCCC Process

The UN Framework Convention on Climate Change came into force in 1994. To date, all the countries in the southern Africa sub-region have ratified both the UNFCCC and the Kyoto Protocol, although the dates of ratification vary considerably (see Table 1). All SADC countries except for Angola, have submitted their Initial National Communications (INCs). The least developed countries in the sub-region that have National Adaptation Programmes of Action (NAPAs) in place are DRC, Lesotho, Madagascar, Malawi, Mozambique, Tanzania and Zambia.

Table 3: UNFCCC and Kyoto Protocol Ratification Status for SADC countries

Country	Date of Signing UNFCCC	Date of Ratifying UNFCCC	Date of Ratifying Kyoto Protocol
Angola	14 June 1992	17 May 2000	8 May 2007
Botswana	12 June 1992	27 January 1994	8 August 2003
DRC	11 June 1992	9 January 1995	23 March 2005
Lesotho	11 June 1992	7 February 1995	6 September 2000
Madagascar	10 June 1992	2 June 1999	24 September 2003
Malawi	10 June 1992	21 April 1994	26 October 2001
Mauritius	10 June 1992	4 September 1992	9 May 2001
Mozambique	12 June 1992	25 August 1995	18 January 2005
Namibia	12 June 1992	16 May 1995	4 September 2003
Seychelles	10 June 1992	22 September 1992	22 July 2002
South Africa	15 June 1993	29 August 1997	31 July 2002
Swaziland	12 June 1992	7 October 1996	13 January 2006
Tanzania	12 June 1992	17 April 1996	26 August 2002
Zambia	11 June 1992	28 May 1993	7 July 2006
Zimbabwe	12 June 1992	3 November 1992	28 September 2009

1.5 The AMCEN Process

The 12th Ministerial Session of the African Ministerial Conference on Environment (AMCEN), recognized the need to integrate Africa's existing and new climate change programmes under a consolidated framework. The framework is intended to ensure coherence and efficient coordination of all climate change programmes, projects and initiatives on the continent. To assist with this effort, AMCEN's African Group of Experts developed an indicative outline for the framework of programmes that will serve as a tool for future programming work especially with regards to filling gaps on areas that require future attention. The core features of the indicative outline closely follows the four pillars of the Bali Action Plan. They include (a) adaptation and (b) mitigation as the two implementation areas. It also includes (c) supporting measures such as technology transfer, capacity building and finance, as components that support programme implementation.

With regards to adaptation, the indicative outline identified the following key areas: disaster reduction and risk management; sectoral planning and implementation; and building economic and social resilience. On mitigation, the indicative outline identified the energy sector; reduced emissions from deforestation and forest degradation (REDD); land use, land use change and

forests (LULUCF); and international carbon markets, as critical areas of implementation. Under supporting measures, the indicative outline identified finance, capacity building and technology transfer, as crucial issues that can enhance and facilitate the implementation of the programmes.

2. METHODOLOGY

The methodology adopted was based on the terms of reference for the study. It entailed collecting, collating and reviewing existing and new decisions, initiatives and programmes on climate change under (i) adaptation (ii) mitigation and (iii) supporting and enabling measures as suggested in the conceptual framework adopted by the 12th session of AMCEN and further endorsed by the its 3rd Special Session meeting held in Nairobi in May 2009.

Guided by the suggestions of the Southern Africa Experts Group that met in Nairobi from the 27th to the 29th of March 2010, the methodology adopted embraced the following sectors as being highly vulnerable to the impacts of climate change in the sub-region: (i) Agriculture, mainly crop production and livestock development and production; (ii) Water Resources; (iii) Coastal Zones; (iii) Health; (iv) Infrastructure and Transport; (v) Energy; (vi) Urban Planning and Management; (vii) Tourism; (viii) Biodiversity and Ecosystems; (ix) Forests; (x) Fisheries; (xi) Wildlife; (xii) Environment and (xiii) Land & Desertification.

The methodology made use of various tools for data collection. These included (i) web-based databases (ii) personal and telephone interviews and (iii) questionnaires.

2.1 Inventory

A questionnaire was developed to obtain an inventory of existing and new decisions, policies, programmes and other initiatives in Southern Africa under two broad areas of work, namely *adaptation* and *mitigation*. Existing and required enabling measures were considered as supporting elements under each of these two broad areas of work. The inventory is attached as Annex 1.

2.1.1 Adaptation

Adaptation actions are highlighted in Annex 1 under three categories, namely (i) Disaster Risk Reduction and Management; (ii) Sectoral Planning and Implementation and (iii) Building Economic and Social Resilience.

(i) Disaster Risk Reduction and Management – The inventory contains policies, programmes, and projects on Early Warning Systems; Preparedness; Emergency Response; and Post Disaster Recovery

(ii) Sectoral Planning and Implementation – The inventory contains adaptation actions as provided in policies, programmes, and projects in the following sectors: Water; Coastal Zones; Land and Desertification; Health; Infrastructure; Biodiversity and Ecosystems; Forests; Energy; Urban Management; Tourism; Fisheries; Environment; Wildlife; Transport; Research and Observation; and Development Plans

(iii) Building Economic and Social Resilience – The inventory contains policies, programmes, and projects that focus on reducing dependence on climate-sensitive sectors through diversification of economies; use of indigenous knowledge and practices; strengthening of community based organizations; mainstreaming of gender issues; and stakeholder participation

2.1.2 Mitigation

Mitigation actions are highlighted under four categories, namely (i) Energy; (ii) Reduced Emissions from Deforestation and Forest Degradation (REDD/REDD+); (iii) Land Use, Land Use Change and Forestry; and (iv) International Carbon Markets.

(i) Energy sector – The inventory contains policies, programmes, and projects aimed to: scale up investments to provide access to affordable and cleaner energy sources for rural communities; develop appropriate alternative energy sources; increase energy efficiency; apply the precautionary approach to the development of alternative renewable energy sources such as bio fuels; develop appropriate transport plans to enhance mitigation efforts; develop standards and regulations to engender mitigation such as taxes etc; and promote cleaner production and infrastructural development.

(ii) REDD/REDD+ - The inventory contains policies, programmes, and projects focusing on the development of market based mechanisms that provide an incentive for forest

conservation or the avoidance of deforestation and promotes sustainable forest management and practices.

(iii) Land Use, Land Use Change and Forestry – The inventory contains policies, programmes, and projects supporting work on best practices to enhance carbon sequestration and reduced emissions in agriculture sector, enhances fire management practices; and improves desertification control

(iv) International Carbon Market – The inventory contains policies, programmes, and projects that focus on reforming rules of market mechanisms such as the clean development mechanism (CDM) to increase access by Southern African countries. Other actions include strengthening of relevant institutions and the building of capacity to gain access to the available financial mechanisms under CDM and other financiers.

2.1.3 Supporting and Enabling Measures/ Means of Implementation

The review is based on the two major elements highlighted above, namely *adaptation* and *mitigation* actions. These two elements are supported by specific measures that are required to enhance implementation. These are (i) financing, (ii) technology development and transfer and (iii) capacity building.

(i) Financing

Financial support is critical for the implementation of both adaptation and mitigation actions. The sources of financing include the following (i) national or domestic investment (ii) multilateral funding such as grants and loans (iii) bilateral investments and donor funding (iv) insurance and other risk management instruments (v) private sector instruments (vi) market-based instruments such as carbon markets (vii)

(ii) Technology Development and Transfer

The development, transfer and use of appropriate technology is vital for the effective implementation of adaptation and mitigation actions. Some of the fundamental aspects in the field of technology include: enhancing the development and transfer of hard technologies such as drip irrigation, water harvesting, drought resistant crop varieties, renewable energy technologies etc. It also includes soft technologies such as knowledge systems, procedures and best practices; addressing technology transfer barriers including

rules of trade tariffs, intellectual property right-barriers and technical trade barriers; enhancing and supporting research and development capacity in Southern African countries to enhance the development appropriate technological solutions for the sub-region; and enhancing technological cooperation between Southern African countries and other partners, including the Africa-European Union Joint Strategy, Africa-China Cooperation etc.

(iii) Capacity Building

Capacity building measures include: human resource development through focused training, mentoring and learning-by-doing approaches etc; empowerment of relevant institutions at various levels; enhancing observation, research and knowledge management; strengthening communication, education and awareness-raising at all levels, especially at local levels; strengthening and using regional networks of information and knowledge sharing; encouraging and strengthening participatory and integrated approaches in planning a decision making; sharing experiences, information and best practices of African countries; development of tools, methods and technologies and support their application; and assessing, strengthening and mobilizing the capacities of existing relevant facilities and institutions in Southern Africa.

2.2 Activities Carried Out

- a) Collected, collated and reviewed existing and planned SADC and national government decisions, policies, programmes and projects on climate change under the headings (i) adaptation and (ii) mitigation. Enabling measures were reviewed in the context of supporting implementation under the two headings.
- b) Interviews with relevant organizations including key programme personnel from the SADC secretariat who are leading the formulation and implementation of adaptation and mitigation actions
- c) Reviewed and Identified gaps in the coverage of existing and planned adaptation and mitigation policies, initiative, programmes and projects, and provided a list of indicative recommendations for filling such gaps
- d) Developed a conceptual framework of Southern African climate change programmes

2.3 Limitations

The study inevitably resulted in several limitations. These included:

- Limited feedback by national governments on the questionnaire circulated
- Inadequate interaction with national actors at country level, since there were no country visits, hence the study relied heavily on the questionnaire responses and (primary and secondary sources of) literature for national adaptation and mitigation actions
- The multi-disciplinary nature of climate change and variability, as well as disjointed sector-based interventions, made it difficult to target specific government departments or programs dealing with adaptation and mitigation actions

3. SITUATIONAL ANALYSIS

This section gives examples of some of the salient adaptation and mitigation actions that are on-going or planned in the Southern Africa sub-region. The examples are based on the information outlined in the inventory attached as Annex 1.

3.1 IDENTIFYING AND FILLING GAPS

3.1.1 Adaptation

Annex 1 provides an anthology of adaptation actions that are on-going and those that are planned for the sub-region. It includes examples of specific actions by the SADC secretariat, national governments and non-governmental organizations. These adaptation actions exist either as a direct and deliberate response to adapt to the impacts of climate change or are a component of developmental interventions whose scope also involves adaptation activities.

3.1.1.1 Adaptation in Practice in Southern Africa

Adaptation can be defined as an ongoing process that is inherent in natural and social systems. In the context of climate change, it can be defined as adjustments in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities (Smit *et al.* 1999; 2000 and IPCC 2001). Therefore it relates to the tendency to change the way things are done in response to

changing circumstances for human and environmental survival and/or to benefit from the new conditions. Various types of adaptation actions can be distinguished. These include anticipatory, autonomous and planned adaptation actions. Anticipatory adaptation takes place before impacts of climate change are observed. This is also referred to as proactive adaptation. Autonomous adaptation does not constitute a conscious response to climatic stimuli but is triggered by ecological changes in natural systems and by market or welfare changes in human systems. This is also referred to as spontaneous adaptation. Planned adaptation is the result of a deliberate policy decision, based on an awareness that conditions have changed or are about to change and that action is required to return to, maintain, or achieve a desired state.

There are several policies, programmes, projects and other initiatives focusing on adaptation activities under the identified three categories, namely (a) Disaster Risk Reduction and Management; (b) Sectoral Planning and Implementation and (c) Building economic and social resilience, in Southern Africa. This section outlines these adaptation actions at sub-regional and national levels. It also identifies some of the inherent gaps and provides an insight into some of the necessary supporting measures required to address these gaps.

Sub-regional Disaster Risk Reduction and Management Actions

In the past, SADC activities on Disaster Risk Reduction (DRR) were fragmented, with different Directorates coordinating aspects relevant to their areas. Furthermore, the approach adopted in the past was more on disaster management, whose focus was on responding to emergencies, especially environmental disasters. However, efforts are being made to streamline DRR-related programmes under a Unit in the Organ of Politics, Defence and Security Cooperation. The role of this newly established Unit is to coordinate DRR activities in liaison with other Directorates such as the Food, Agriculture and Natural Resources (FANR), Infrastructure and Services, and Social, Human Development and Special Programmes. The approach of this new Unit will not only focus on disaster response, but also on awareness raising in order to avoid disasters.

SADC has a programme on Early Warning Systems. While member States have their own national early warning systems, the role of SADC in this instance is to coordinate national government actions, through information sharing etc. Having said this, there are some challenges that are being faced. The first is that information sharing, especially among riparian States in the case of flooding, and the generation and sharing of weather and climatic information is currently poor. Without information input from national governments, SADC's role in coordinating and facilitating the sharing of information among Member States is greatly hampered. Secondly, the weather and climate related research that is being carried out is yielding different results and models. This hampers SADC's role of providing accurate information. There is no region-wide system or institutional framework that validates climate data and models, to ensure that the correct information is disseminated. These challenges are currently affecting the proper functioning of early warning systems and disaster response efforts, because they are dependent on following weather patterns and forecasts.

SADC also has a programme on preparedness that focuses on preventing and mitigating the impacts of droughts and floods. It has adopted a new approach in this area, that is more of a 'community-based' approach to preparedness than the usual 'top-down' approach. Instead of giving 'top-down' instructions on how to respond to disasters, the new approach endeavours to understand the needs of communities. This also creates a forum to share experiences and best practices with communities. The significance of this new approach was acknowledged by the World Economic Forum in the statement outlined in table 4 below.

"Many donors prioritize "technological fixes" or "stop-start" emergency aid. But promoting disaster reduction at the local level by supporting community-coping strategies is more effective and yields immediate benefits that stretch beyond tackling climate-driven disasters. Disaster response and management programmes can be strengthened to address growing weather variability and provide longer-term support of people's livelihoods to address the underlying causes of food insecurity. Climate change should be factored directly into development: "good adaptation" makes for "good development". – A Statement from the World Economic Forum (2008,15)

Source: Oxfam GB (2008)

Furthermore, SADC established a task force under its Food Security, Technical and Administrative Unit, specifically to monitor weather conditions. The task force comprises

the SADC's Regional Early Warning Unit, the Regional Remote Sensing Project, the Drought Monitoring Centre and the Famine Early Warning System Project, all based in Harare, Zimbabwe. The early warning unit issues alerts to help member countries prepare for the prospect of drought or flooding and consider ways of adapt to their effects (SADC, 2002).

There are also plans to establish a Regional Drought Fund from which affected member countries can borrow. The Fund is expected to operate like an export-import guarantee scheme and will enable affected countries to borrow and repay within a stipulated time frame (SADC, 2002).

SADC, however, does not have a specific programme on post-disaster recovery. This area is mainly left to non-governmental organizations (NGOs) and other stakeholders at national level. SADC's role in this area is limited to mobilizing support from NGOs and international cooperating partners, and to streamline such support to national governments.

National Disaster Risk Reduction and Management Actions

Almost all countries in southern Africa have now established national Early Warning Systems. A major benefit of these national EWS is that they allow governments and their partners enough lead time to advise the various stakeholders as well as plan for relief operations in the case of a pending disaster (Thompson, 2003). For instance, when the 1997/1998 El Niño was announced, all governments in southern Africa took a number of precautions. In Swaziland, farmers were advised to grow drought resistant crops, reduce and cull livestock and store their current food stocks properly. Botswana, Mozambique, Namibia, South Africa, Zambia and Zimbabwe initiated water saving measures. In Mozambique, vulnerable farmers in the drought-prone provinces were advised to plant their crops on low-lying ground, which retains moisture for longer periods. The Zambian Early Warning Unit encouraged farmers to plant early-maturing and drought-tolerant crops such as sorghum and millet and to improve food storage (SADC, 2002). Although the 1997/1997 did not cause the damage that many anticipated, the southern African countries seemed to be much more prepared to face a crisis than in 1991/1992.

Having said this, and based on the evidence gathered from the review, not all countries in the SADC region have policies on disaster risk reduction and management. Malawi for instance has no stand alone policies for an early warning system, disaster preparedness, emergency response and post recovery. Instead these issues are guided by sectoral policies laws such as the Agriculture and Meteorological policies and laws. This is because DRR work is still in its infancy in the country. The sector has until recently been mandated simply with disaster relief. Now there has been a shift in focus to tackling preparedness and risk reduction. While other countries such as Zambia have these policies in place, they do not have specific programmes to implement the policies.

Other countries, on the other hand have an elaborate network on policies dealing with disaster risk reduction and management. Mozambique, for instance has a policy on early warning systems which also takes into account preparedness, emergency response and recovery i.e. the Master Plan for Prevention and Mitigation of National Disasters. The policy aims to guarantee the expansion and reinforcement of the seismographic centres. It guides the planned implementation of programmes like the establishment of seismographic centres in all provinces and other National Operative Centres for Emergency; and the strengthening of Disaster Risk Management Systems. Furthermore, there are various projects being implemented in this area. These include: the on going construction of nine (9) seismographic centres, of which five (5) are already functioning; RANET (installed in 8 districts that are vulnerable to weather/ climate events), to disseminate meteorological and climate information to rural communities; the recovery and modernization of national meteorological observing networks; the establishment of a National Climatic Centre for Applied Research in Climate Variability and Change; the 'Mozambique Radars' Project; the 'Impact of Climate Change on Disaster Risk and Adaptation' project; the 'Responding to the Climate Change in Mozambique' project; the 'Climatic Information System for the Limpopo Hydro graphic Basin (SICLIMP)' project and the 'Climatic prediction using High resolution numerical models' Project under the Indian Ocean Consortium.

The variance in the status of development of policies and implementation programmes among SADC countries is also mirrored by the differences that exist in programme

implementation. Some countries do not have clear supporting measures, while other have. For instance, Malawi and Zambia reported not to have specific enabling initiatives to support the implementation of their DRR activities. Mozambique, on the other hand has several on-going capacity building initiatives. These include training of rural communities on interpretation and use of climate information. There is also training on automatic weather stations (AWS) assembly, maintenance, and calibration of the instruments; training of staff of national institutions involved in disaster risk reduction and climate adaptation activities; training on the multiple use of radar products and their maintenance; on the job training of experts in specialized centres and strengthening of national capacities for Tsunami Early Warning and Response Systems. The challenge Mozambique faces however is the need to adjust the early warning, preparedness and response systems to address additional risks associated with climate change.

❖ **Gaps and Required Supporting Measures:**

- At the sub-regional level, SADC is facing challenges in obtaining information from national governments in order to fulfil its mandate of information sharing in disaster risk reduction management. This is mainly in the case of weather and climatic information from riparian States that share river basins. This may reflect lack of sectoral coordination at the national level, where policies and government institutions are not synergised.
 - The required supporting measure in this instance will be empowerment of relevant national institutions at various levels (i.e. basin, local, national) on weather and climatic information gathering; strengthening of communication and information sharing among national government institutions in all relevant sectors; and strengthening the use of the SADC network on information and knowledge sharing on weather and climate information under the SADC DRR Unit
- At the sub-regional level as well, SADC is grappling with the challenge of ensuring that authentic information is disseminated to national governments. This is because the weather and climatic data produced is producing different results.

- The required supporting measures for this challenge would be the establishment and/or strengthening of existing institutions to enhance the quality of observation, research and knowledge generation on weather and climatic issues
- At the national level, most countries are facing challenges of lack of appropriate policies and institutional coordination. Some are lacking specific programmes to implement the policies, where they exist.
 - The supporting measures required include: empowerment of relevant institutions to develop policies and programmes; and improved access to financing to fund the implementation of programmes

Sub-regional Sectoral Planning and Implementation Actions

At the sub-regional level, SADC has various adaptation programmes and actions aimed at addressing the impact of climate change in the following sectors: Agriculture (including crop production and livestock development and production); Water Resources; Coastal Zones; Health; Infrastructure and Transport; Energy; Urban Planning and Management; Tourism; Biodiversity and Ecosystems; Forests; Fisheries; Wildlife; Environment and Land & Desertification. This sub-section provides examples of existing and/or planned adaptation actions in some of the sectors.

Agriculture: Examples of adaptation actions in the agriculture sector includes planned programmatic activities on (i) crop production and (ii) livestock development and production. With regards to crop production, this sub-sector is coordinated by the Crop Development Unit of the FANR Directorate, whose role is to coordinate, monitor and facilitate crop development activities. Its mandated to promote the production, protection, processing and storage of all crops in the SADC region. This mandate makes the activities and outputs of the unit relevant to adaptation in the agriculture sector. The policy that guides programmes in this sector is the SADC Agriculture Policy and the Regional Indicative Strategic Development Plan (RISDP).

To fulfil its mandate the unit develops programmes and projects. Some of the issues that these programmes and projects respond to include limited access to new farming technologies and inputs, re-current droughts, lack of information, lack of harmonised policy and strategy and inadequate capacity for coordination. These identified obstacles offer intervention opportunities for the purpose of making the region food secure in the face of the impacts of climate change.

Some of the on-going adaptation initiatives include: the SADC Seed Security Network whose purpose is to improve access and availability of seed. One of its major achievements has been the development of the SADC common systems for variety release, seed certification and sanitary and phytosanitary; the Maximum Residue Levels project that develops technical documents and mobilises resources for capacity building; the establishment of the Regional Food Reserve Facility aimed at mitigating the effects of future food deficits in the sub-region; and the Agricultural Water Management for Food Security Programme that aims to promote irrigation having regard to the fact that droughts and crop failure are a common occurrence in the sub-region.

Regarding livestock development and production, SADC views the livestock-climate change nexus from two perspectives, namely (i) how livestock affects climate change and (ii) how climate change impacts on livestock production. The former is aligned to mitigation actions, while the latter is aligned to adaptation actions.

SADC does not have a fully fledged livestock development and production programme. However, it is currently developing such a programme under the FANR Directorate. The programme will consciously include approaches to address impacts of climate change on livestock production. This is because livestock production is seen as sensitive to climate elements such as temperature rise. For instance, a 2°C rise in temperatures is noted to cause heat stress on livestock, while a 1°C rise will cause a 10% decrease in production. One of the actions that the programme envisages in light of this, is the re-designing of livestock

housing units to reduce heat stress, especially for pigs and poultry in Southern African countries. Other envisaged adaptation actions include decreasing cattle stocking rates in order to conserve grazing land, because the less cattle on the same size of grazing land, the higher the rate of conservation of grazing land. The programme also intends to promote the conservation and utilization of adapted indigenous animal genetic resources.

High temperatures are also noted to be conducive for bacterial and viral animal diseases. They can proliferate diseases and increase the instances of infection. In response to this, the programme intends to strengthen animal disease control through surveillance and risk assessment to determine ways of preventing the spread of diseases. It also intends to promote the rehabilitation of national veterinary services especially institutional capacity to increase vaccinations.

Although the programme has not been officially launched yet, some challenges are envisaged. These include lack of adequate expertise on disease control at the national level; lack of funds to purchase the required vaccines; lack of capacity in existing research institutions that can focus on the identification of new diseases etc. It is noted that the number of existing research institutions is not adequate to address the issues at hand. These include research institutions such as the African Union backed Centre for Tick and Tick Bone Disease (CTTBD) based in Malawi³; the Botswana Vaccine Institute (BVI)⁴; and the Ondersdeboort Veterinary Institute (OVI) based in South Africa⁵.

Health - Another example of sub-regional adaptation responses is SADC's adaptation actions in the health sector. SADC has a Protocol on Health (1999), which is a legal instrument

³ The CCTBD provides training and produces vaccines for the Southern Africa region

⁴ The BVI is the only institution that produces Foot and Mouth Disease (FMD) vaccines in Southern Africa

⁵ The OVI produces vaccines for livestock

aimed to coordinate and harmonize activities related to the health sector in Member States. In 2007, SADC, through its Directorate on Social and Human Development, launched the Implementation Plan for the SADC Protocol on Health for the period 2007-2013. The Plan acts as a guide for Member States to develop National Protocol Implementation Plans. Other sub-regional policies on health include the SADC Health Policy Framework (2000) and the Regional Indicative Strategic Development Plan (RISDP). The SADC Health Programme is also influenced by international policies such as the Millennium Development Goals (MDGs), the Abuja Declaration and the World Health Organization Resolutions.

The plan has four areas of focus, namely disease control (of both communicable and non-communicable diseases), family health, health promotion and education, and health systems. Although the Plan was not driven by the need to adapt to climate change, some of the priority areas, such as disease control, are nonetheless relevant for responding to impacts of climate change in the health sector. It is generally accepted that climate variability, especially changes in temperature and rainfall can either increase or decrease cases of known diseases. For instance, it has been noted that when temperatures go below 15°C parasites in mosquitoes do not thrive. Temperatures of between 25 and 30°C are considered optimal for mosquitoes. If temperatures rise to between 33 and 35°C, Malaria incidences rise. However, if they go beyond 35°C the survival rate of mosquitoes reduces. Therefore if one combines temperatures of between 25 and 33°C and low rainfall, it creates a pre-condition for malaria endemicity. This is generally the same for other communicable and even some non-communicable diseases, such as meningitis transmission which is said to be affected by warming and reduced precipitation (IIED, 2003). Areas where climate change will reduce rainfall levels could become at risk of a meningitis epidemic. Flooding could also cause the pollution of streams, wells and other water sources in rural areas, and this could introduce parasites such as giardia, amoeba and cryptosporidium into these sources (IPCC, 2001). This therefore demonstrates the inextricable link between climate change and what the Plan is trying to address with respect to disease control.

With respect to communicable diseases, the Plan aims to reduce incidence, prevalence and morbidity. On specific diseases the Plan focuses on; reducing the prevalence of HIV/AIDS

among 15-25 year old women by at least 1%; reducing malaria mortality by 20% by 2013 through integrating malaria control in the sub-region; and curing 85% of TB cases by 2013 through developing a framework for TB control and harmonizing TB services. For non-communicable diseases, the Plan aims to implement primary prevention strategies to reduce disease incidents by 2013 through improved surveillance and promotion of healthy lifestyles.

Having said this, there are some glaring gaps that can be noted in as far as adaptation actions to climate change induced diseases are concerned. The first is that the Plan does not acknowledge the fact that there may be new 'unknown' diseases that can emerge as a result of climate change. It focuses on known diseases, and as a result it does not devise measures to address this concern. Furthermore the priority areas adopted seem to gravitate around the need to ensure the 'absence of disease', whereas health can also be defined as the 'mental, physical, psychological, emotional, spiritual and social well-being of an individual'. The latter definition will be relevant to climate change adaptation actions, as it will include psychological, emotional and social impacts of climate caused by disasters like floods and droughts on human beings. For example the high prevalence of HIV and AIDS is likely to decrease capacity of communities to adapt to climate change impacts (Ziervogel and Drimie, 2008). The links between poor health and food security are a key concern in this regard (Chapman, 2007).

The Plan also requires human, technical and financial resources for implementation. Member States are currently expected to contribute staff time and financial resources, while additional support is expected from international cooperating partners.

Forests: SADC's FANR Directorate is currently developing a SADC Forestry Strategy for the period 2010-2020. The Strategy is currently in its draft form. It is meant to implement the SADC Protocol on Forestry. Its purpose is to *'...provide a framework for both regional cooperation and international engagement on forest issues that transcend national boundaries and to encourage concerted action by SADC Member States in the management,*

conservation and sustainable use of their forests.' It focuses, on amongst other things, climate change mitigation and adaptation.

While the strategy is heavily inclined towards mitigation actions, some adaptation actions are proffered. These include the need to increase the awareness of governments to develop and adopt adaptation strategies in the forest sector. This would be done by communicating practical adaptation actions and highlighting vulnerability studies.

Although specific actions such as protection of representative forest ecosystems; control of invasive alien species; special protective attention to catchment forests; empowerment of communities for the conservation of forests through community based forest management programmes, amongst other mechanisms; can be inferred from the strategy, these are not specifically mentioned in relation to climate change adaptation measures in the sector.

The strategy highlights the need for Member States to examine and address their national capacity requirements for implementation. It therefore identifies the need to attract resources to improve capacity (including selected technical skills) through communicating a new sense of urgency and the use of empirical data to demonstrate the value of forests to national economies, as a means of leveraging Member States and international cooperation partners to allocate resources for the enhancement of capacity to implement the strategy. The harmonization of national forest policies and legislation, and technology transfer to improve capacity for research, are also highlighted as important supporting measures. Poverty is also an overarching challenge to any adaptation action in the forest sector.

Biodiversity and Ecosystems: SADC's Directorate of FANR has a biodiversity programme that aims to promote the conservation of biodiversity and fragile ecosystems. Conservation is an important adaptation action in this sector because biodiversity and ecosystems are directly

impacted by temperature rises and changes in precipitation, that are likely to increase extinction rates and reduce species diversity. There is evidence that biodiversity in the region is declining. This is largely due to habitat destruction, fragmentation and loss, mainly as a consequence of land use changes and poor land management. It is estimated that about 22.5 million ha of the regions' indigenous forests were lost during a 10 year period, 1990-2000 (SADC *et al* 2005). The associated disruption of ecosystem integrity and reduction in population of some species alters the conditions necessary for the survival of others similar changes occur in the aquatic ecosystems.

The programme is currently being implemented through national biodiversity strategies and action plans. It gives priority to: (i) limited alternative livelihood opportunities outside agriculture and natural resources by promoting the facilitation, development and implementation of affordable, viable and acceptable alternatives for economic development and human survival; (ii) inadequate biodiversity inventory and monitoring systems, and knowledge on and ability to handle biodiversity information by promoting strategies to develop and implement a comprehensive and simple biodiversity inventory and monitoring of projects covering key species of flora and fauna and skills to handle and package the information, leading to improved knowledge; and (iii) weak institutional and legal framework for carrying out biodiversity initiatives by encouraging the strengthening of legal and institutional frameworks for implementing biodiversity initiatives.

Furthermore, a SADC Protocol on Environment and Sustainable Development and a Strategy on Trans Frontier Conservation Areas (TFCAs) is being mooted. SADC is also coordinating efforts to establish protected areas networks throughout the sub-region, while initiatives such as community based natural resources management for wildlife and forests are exist and are functional.

This sector is however facing challenges such as inadequate sharing of technical knowledge, experience and information through established networks; weak law enforcement and

governance; inadequate funding for biodiversity management programmes at national and sub-regional levels; inadequate coordination of and policy harmonization with other sectors that impact of forests; and lack of comprehensive national and regional data on forest biodiversity.

Water: SADC's Directorate of Infrastructure and Services hosts a programme on Transboundary Water Resources Management. The policies that guide activities in this sector include the Revised SADC Protocol on Shared Watercourses, the SADC Regional Strategic Water Action Plan and the Ground Water Management Plan (GMP). The overall objective of the GMP, for example, is to promote the sustainable development of groundwater resources at a regional level, incorporating research, assessment, exploitation and protection, particularly related to groundwater drought management. This is intended to address the regional need for capacity building of groundwater practitioners, increase awareness on groundwater, develop a repository of groundwater information and data as well as provide support for ground water management.

The GMP has a set of projects under it. One of such projects is the SADC Groundwater and Drought Management Project, funded by The Global Environmental Facility (GEF) as one of ten sub-projects. The project addresses the need for the SADC Member States to develop a strategic regional approach to support and enhance the capacity of the Member States in the definition of groundwater drought management policies, specifically in relation to the role, availability (magnitude and recharge) and supply potential of groundwater resources (as a portion of the overall water resource). This will assist in reconciling the demands for socio-economic development and those of the principal groundwater-dependent ecosystems. This is particularly important in adapting to climate change because the occurrence and availability of freshwater in most SADC countries depends mainly on rainfall, which is naturally vulnerable to climate element such as temperature rise and reduced rainfall.

The GMP also identified the need for an institution to raise the understanding of groundwater management through research, knowledge management, coordination and capacity building. It is envisaged that this institution, will be established as the Groundwater Management Institute of Southern African (GMISA) and will address issues of concern and become a centre of excellence in groundwater in the SADC region and internationally. This institution's intended vision is to *“ensure the equitable and sustainable use and protection of groundwater, as well as being a centre of excellence in the areas of groundwater drought management and management of groundwater dependant ecosystems in the region”*.

At the annual SADC Multi-Stakeholder Water Dialogue in Lesotho, with the theme “Watering development in SADC: Rising above the climate change threat towards security”, the water sector was identified as the key sector for adaptation. This is because of its importance to various other sectors. For instance, water is important for consumptive and non-consumptive use and an essential resource for all sectors of the national economy, including generation of hydropower, commercial and industrial development, sustenance of ecosystems, sanitation and navigation and it is equally essential to basic human needs for drinking, cooking and hygiene. The import of this SADC decision is that the water sector has committed itself to promote the sharing of IWRM strategies, experiences and best practices in climate change adaptation that address local, national and regional socio-economic development and poverty reduction and attainment of the MDGs.

Coastal Zones: The region is faced with coastal degradation including pollution from oil spills and erosion. The coral reefs off the coasts of Mozambique, Tanzania and South Africa are under threat of bleaching due to sea temperature rise resulting from El Nino events and global climate change. The coastal zone is experiencing degradation and marine resources are declining due to increased demand for resources, improved transport networks, and migration of people and industries to the coastal zones. The vulnerability of these areas to extreme environmental changes cannot be over emphasized; they are prone to sea level rises that may cause destruction of infrastructure and loss of productive lands. Increasing

tourism is also a cause of in that if not properly managed, the resources and revenue from tourism will not be sustainable in the medium to long-term.

SADC efforts are required to forge agreements on technology transfer, capacity building and information sharing, strengthening policy, institutional and regulatory frameworks and enforcement of international rules and regulations. Degradation of coastal fishery resources results in a decline in protein consumed by the local community since fishers may not have access to alternative sources of fish and the community members may not have enough income to purchase fish. Degradation affects their very survival.

National Sectoral Planning and Implementation Actions

There are several adaptation actions that are on-going in SADC Member countries aimed at addressing the impacts of climate change in the following identified sectors: Agriculture, mainly crop production and livestock development and production; Water Resources; Coastal Zones; Health; Infrastructure and Transport; Energy; Urban Planning and Management; Tourism; Biodiversity and Ecosystems; Forests; Fisheries; Wildlife; Environment and Land & Desertification. Adaptation actions in these sectors are guided by sectoral policies. Almost all countries have relevant policies in place. Although most of actions contained therein were not specifically designed to address the impacts of climate change, some of them are nevertheless critical to respond to the climate change impacts. Furthermore, not all countries with policies in place have supporting programmes to ensure implementation of policy objectives.

Malawi, for instance has the following policies: the National Water Policy, National Agricultural Policy, National Biodiversity Strategy and Action Plan, National Forestry Policy, Energy Policy, Fisheries Policies, National Environment Policy and Environment Impact Assessment guidelines. The Government of Malawi also has a specific decision to treat climate change as a development priority. From the evidence gathered from the review, these policies have no implementable programmes or projects, except for the forestry

department and other key governments and civil society organisations involved in afforestation and reforestation programmes for the forestry sector; and the programme to combat malaria incidences arising out of the effects of climate change for the health sector.

The same is true for Zambia, where the identified sectors have policies but without clear programmes being implemented. In most of these cases the gap is filled by non-governmental organizations (NGOs) who have several projects on adaptation in the sectors. For instance, in Malawi, there has been a strong message coming from the NGO community that government needs to take a strong lead on addressing climate change and provide a coherent cross-sectoral plan that can form the basis for collaboration and ensure that activities are complementary with widespread coverage (Oxfam, 2008). Government activities in the country have thus far been exclusively driven by adherence to the UNFCCC reporting requirements, specifically in the form of National Adaptation Plans of Action (NAPA) and National Communications (Oxfam, 2008). For example, the NAPA process was completed in 2006, but since then little has happened to implement the identified priorities, until February of 2008 when the NAPA was launched along with the Human Development Report by the President.

However NGOs are implementing various projects including programmes to support agriculture-based livelihoods and food security (e.g. promoting drought resistant crops, fertilizer, winter cropping and irrigation technologies); awareness raising, information sharing and training on climate change issues with communities, local government, CBOs and traditional authorities (e.g. forming community policy dialogue groups, producing community videos, holding workshops for journalists, using drama groups and preaching in churches as means of spreading information on climate change); reforestation (e.g. to protect from strong winds, provide flood control, reduce soil Erosion); catchment management (e.g. dredging river channels, stabilizing and rehabilitating river banks); developing social protection measures (e.g. government grants for vulnerable sectors of society in the form of pensions, disability and child grants).

There are also cases where there are programmes and projects, but without the supporting and guiding national policy framework. The agriculture sector of Mozambique for instance, has no clear policy guidelines. However, there are various programmes such as the national programme on Livelihood Protection and Promotion (LLP) and other capacity building initiatives to enhance research and knowledge management to empower relevant institutions. This is also the case in the land and desertification sector, where although there is no specific policy, there are on-going projects on Coping with Drought and Climate Change, and the Environmental Mainstreaming and Adaptation to Climate Change projects being undertaken.

Other countries however, have policies and programmes that are on-going in the various sectors. In Mozambique for example, policies guide a number of national programmes, projects. The water sector for instance is guided by the Revised National Water Policy and the National Water Resource Strategy. The National Water Resource Development Programme is currently being developed. Projects which are being implemented under this sector include the Telemetric network which encompasses the Zambezi, Rovuma, Limpopo, Umbeluzi, Incomati and Save Rivers; the Pungue and Prima Projects; and the Save, Buzi, Rovuma are also on going. These projects focus of shared watercourse systems and mainstreaming the principles of integrated water resources management (IWRM). There are also other supporting measures being considered in the implementation of these programmes and projects. For instance there are capacity building initiatives on understanding the Economics of adaptation to climate change and efforts, amongst others.

Another example is the coastal zones sector. The country has a policy on coastal zones which promotes the geological mapping along the Indian Ocean coast and other wetlands and national research on Coastal Integrated Management System. Under this policy, there is a national programme on Strategic and Environmental Assessment of Coastal Zone coordinated by MICOA to elaborate Geological and Environmental Maps in all sensible ecosystems along the coast. This programme is funded by the Government of Mozambique. In the energy sector, the country is implementing a SADC programme for Biomass Energy

Conservation - ProBEC - that focuses on use of energy efficient cooking stoves in the Manica, Sofala and Maputo provinces. There is also a project on PV Electrification in rural areas of Sofala, Manica and Cabo Delgado Provinces. This link between policy, programme and project implementation is the same in the other identified sectors of the country.

The generic challenges being faced by most of the SADC Member States include the need for technical skills to implement some policies, programmes and projects such as biomass energy conservation and the PV electrification in rural areas; monitoring, auditing and assessment of environmental impacts. There is also need for capacity building, technology transfer and finance to implement NAPA Projects.

❖ **Gaps and Required Supporting Measures**

- At the sub-regional level, there are various challenges being experienced in the respective sectors as outlined in the narrative. However some of the general ones include: lack of expertise; lack of institutional capacity; unclear policy guidance on appropriate adaptation actions; lack of data; and inadequate funding for implementation
 - The supporting measures required to address some of these challenges include capacity building interventions such as empowerment of existing regional institutions to undertake research on the link between animal and human disease and climate change; human resource development through training on transboundary animal disease control; strengthening education and awareness raising at all levels, especially sub-regional level on the vulnerability of coastal zones. They also include technology development transfer for drought resistant crop varieties, adapted indigenous animal breeds; and renewable energy technologies. Funding for programmes that are being developed such as the Livestock Development and Production Programme, amongst others.

- At the national level, the main challenges relate to inadequate policy guidance in most of the sectors. In most sectoral policies existing adaptation actions were not motivated by the need to address the impacts of climate change. There is also lack of adequately functioning programmes to implement policies, where they exist. Government commitment to addressing the impacts of climate change lacks in some of the countries.
- The supporting measures required to address some of the challenges include enhanced human resources through training to implement existing and planned programmes and projects; empowerment of relevant government institutions to develop appropriate policies that mainstream climate change as a key driver for adaptation actions; technology transfer, especially for the energy and infrastructure and transport sectors; and access to funding for programme and project implementation

Building Social and Economic Resilience Actions at Sub-regional Level

SADC has various policies and programmes that are relevant for promoting indigenous knowledge and practices, strengthening community based organizations , mainstreaming gender issues in development and encouraging stakeholder participation. Although most of these policies and programmes were not driven by climate change concerns, they are nonetheless relevant for promoting resilience in the face of the impacts of climate change among communities.

SADC has embraced the idea of strengthening community based organizations through recognition of the Community Based Natural Resources Management (CBNRM) concept. This community participation and empowerment model has been tested in the SADC region for the past 15 years. It is reflected in various SADC policies including the SADC Forestry Protocol, where it focuses on Community Based Forest Management; the SADC Protocol on Wildlife and Law and Enforcement, where it focuses of Community Wildlife Management; and the SADC Fisheries Protocol, where it focuses on the Community Fisheries Management. CBNRM, as an adaptation action is an empowering tool that devolves rights

to communities to own, manage and receive benefits from the use of their natural resources. In this sense, the concept capacitates communities to determine how to respond to, and/or even take advantage of some of the opportunities that come with changes in climate.

SADC has also systematically tried to mainstream gender issues in most of its policies, programmes and projects. Although the motivation of such inclusion was more to do with promoting equity, than climate change, they are nonetheless relevant and critical in enhancing social resilience. Some of these include the SADC Protocol on Forestry, where as a principle it requires all projects designs and plans to take into account the role of gender issues and special attention to the participation of women as major resource users and beneficiaries of benefits accruing from forest management. This is important because emerging evidence shows that women and girls will experience greater inequality through the impacts of climate change. It is noted that women suffer disproportionately in nearly all disasters. Consideration and integration of gender issues is therefore important in any assessment of how communities respond to climate change impacts in Southern Africa.

Indigenous knowledge systems (IKS) and practices have been recognized as an important tool in natural resources management (Warren *et al*, 1995). This is because indigenous knowledge is dynamic and evolves over time within a particular culture and as a result local communities possess the capacity to adapt to changing circumstances, including climate change. Some of the SADC Policies recognize the importance IKS. For example, the SADC Protocol on Wildlife Management and Law Enforcement requires Member States '*[adopt] techniques derived from indigenous knowledge systems into national wildlife management and law enforcement policies and procedures*'.

Building Social and Economic Resilience Actions at National Level

Although most countries in the SADC region have recognized the importance of community socio-economic and cultural capital in enhancing community resilience to exogenous factors affecting their livelihoods, including climate change, these are mostly implemented through community level projects without the supporting policy frameworks. This reflects to some

degree the reliance by communities of indigenous knowledge systems. In Mozambique, for example, local communities are aware of the cyclical nature of droughts and big flood events through observations. It has been noted that they change their crop cycles to adapt to the changing rainfall by planting two months earlier (Oxfam, 2008). They also make reference to more frequent and intense cyclone activity based on the occurrence of several category 4 cyclones in less than 3 years (Oxfam, 2008). In Zambia, there is community awareness about floods, their vulnerability to climate stresses and response strategies. In Malawi, communities have been noted to have observed that rains are coming more intensely, with the same volume of rain falling over a shorter time than previously, which is associated with more flood events.

Gender issues are however contained in most national policies, although they are not deliberately mainstreamed to address the impact of climate change. In Malawi, for example, gender issues were assessed in the NAPA process but there is no policy or programmes being implemented. Other countries have clear policies linking climate change and gender. Mozambique, for example has a National Strategy on Climate Change and Gender.

The strengthening of Community Based Organizations is on-going in most SADC countries. However, these are spearheaded mainly by NGOs.

❖ **Gaps and Required Supporting Measures**

- Although SADC acknowledges the importance of using socio-economic and cultural assets for enhancing community resilience, the existing policies at SADC level do not specifically acknowledge the threat or opportunities presented by climate change. While this does not necessarily impinge on the existing policies' usefulness in empowering communities, it may dilute their effectiveness in the context of climate change.

- The required supporting measure to address this challenge is the review of the relevant SADC policies to mainstream climate change concerns

- At the national level, most governments do not have clear policies that recognize the role of socio-economic and cultural capital in enhancing community resilience, although they acknowledge its usefulness. This is probably due to their reluctance to devolve clear and enforceable rights to communities to own, manage and receive benefits from their natural resource assets.

- The required supporting measures include: empowering relevant institutions at community level by recognizing community rights; to strengthen community participation in planning and decision making; and improving access to financing to fund relevant community based programmes and projects

Where are the adaptation actions taking place?

Adaptation occurs at the country level. The inventory shows that adaptation initiatives are centred in the public sector and spearheaded mainly by national governments and NGOs. In some instances some projects are led by customary and traditional institutions like chiefs.

With regards to government spearheaded initiatives, these are located mainly at the central government level. This seems to be the norm in Southern African countries where policy is initiated by central governments and the subsequent implementation decentralised to local authorities under specific sector ministry or department. NGO led projects, on the other hand, are usually implemented simultaneously with government-led programmes. However in most cases with no linkages or synergies between the two. This fragmentation of programme implementation between government led programmes and NGO led projects presents a clear gap that is manifests at times through duplication of activities which may cause conflicts.

3.1.2 Mitigation Actions

Annex 1 provides a compilation of mitigation actions that are on-going and those that are planned for the sub-region. It includes examples of specific actions by the SADC secretariat, national governments and non-governmental organizations. These mitigation actions exist either as a direct and deliberate response to reduce green house gas emissions, or as a component of developmental interventions whose scope also involves mitigation activities.

3.1.2.1 Mitigation in Practice in Southern Africa

Climate change mitigation actions can be defined as actions aimed to reduce greenhouse gas emissions and to enhance sinks aimed at reducing the extent of global warming. There are several policies, programmes, projects and other initiatives focusing on mitigation under the identified four areas of (a) the energy sector; (b) REDD and REDD+ mechanisms, (c) LULUCF and (d) international carbon markets. This section outlines these mitigation actions at sub-regional and national levels. It also identifies some of the inherent gaps and provides an insight into some of the necessary supporting measures required to address these gaps.

Sub-regional Mitigation Actions in the Energy Sector

SADC's energy sector is guided by the SADC Protocol on Energy. The Protocol is administered by the Directorate of Infrastructure and Services, which hosts a project that aims to provide access to affordable and cleaner energy sources by rural communities entitled the Programme for Basic Energy Conservation (ProBEC). The project falls under the Oils and Fuels programme. The project is currently being implemented by the German Technical Cooperation (GTZ) in collaboration with the SADC secretariat. It has two main mitigation actions, namely development of improved cooking technology that uses biomass; and the development of best practices for the development of alternative energy sources such as bio fuels.

With regards to the former, the project aims to stimulate the permanent adoption of efficient wood stoves by communities in SADC Member States. Its key roles in doing so are promotion, accreditation, manufacture, retail, installation of the cooking equipment, ensuring that cooks are trained, that the stoves are maintained, used, repaired and

replaced, and the extent of their actual use and wood savings is efficiently monitored. This approach to energy efficiency will help save wood-fuel. The project also promotes a switch to renewable energy sources through the introduction of biogas, solar cookers, and fuels that can also include crop residues.

On best practices for the development of bio fuels, the project facilitated the development of the SADC Framework for Sustainable Bio fuels, which was approved by the SADC Bio fuels Taskforce on 15 December 2009, and by the SADC Ministers of Energy on 29 April 2010. The Framework was developed in response to a call made by SADC Ministers that urged Member States to *'accelerate their initiatives in developing bio fuels as a source of alternative and cheap environmentally friendly fuel but also for rural development and poverty reduction'*.

The SADC Framework provides a set of basic guidelines for the development of sustainable bio fuel strategies at national level. This was necessitated by international concerns regarding the potential adverse impacts of bio fuels. The guiding principles of the Framework is the development of a bio fuels industry that throughout the value chain promotes: respect for, and inclusion of, SADC citizens in the bio fuels production; the protection and sustainable management of biodiversity and natural resources; and a sustainable economic approach contributing to overall development and social well-being.

National Mitigation Actions in the Energy Sector

Most of the SADC countries do not have clear policies aimed at enhancing access to cleaner sources energy sources for rural communities, sustainable use of bio fuels as an alternative source of renewable energy. While some countries such as Lesotho, Malawi, Tanzania and Zambia, Zimbabwe have projects in this area, these are largely not supported by any clear policies. Other countries such as Mozambique however, have policies and programmes on some of the aspects in this area. Mozambique has a policy that promotes national research and production of minerals such as coal and uranium, amongst others, as alternative sources of energy. This is backed by programmes licensing potential companies in the mining sector. There is also a Rural Electrification, Environmental and sustainable energy sector Programme that aims to ensure that rural communities are availed with cleaner

sources of energy. Specific ongoing projects under these programmes include the coal production in Moatize (Vale) and Benga (Riversdale), Petroleum production in Pande/Temane (Sasol) and the Rehabilitation of Hydro-Power Station in Mavuzi and Chicamba.

South Africa also has policies and programmes in this area. For instance it has a National Climate Change Response Strategy which includes a sustainable energy programme. The strategy has a long-term Mitigation Scenario (LTMS) process that focuses on: strengthening or scaling up existing initiatives (i.e. energy efficiency, renewable energy, the development of “green” industries, on-going research into climate friendly ways of doing business). It also has several projects such as the Renewable Energy Market Transformation (REMT) Project, the Renewable Energy Feed-in Tariff – REFIT project which aims to create an enabling environment for RE generation, including levelling playing field with conventional electricity and supporting the establishment of a self –sustaining environment; the Energy Efficiency Accord which is a public/private partnership aimed at reducing energy usage with a view to meeting energy use reduction target in the various sectors; and the Energy Efficiency Monitoring Project which focuses on measuring energy efficiency consumption rates in various sectors as per the National Energy Efficiency Strategy.

Most SADC Countries however have either policies, regulations or standards that promote cleaner production and infrastructural development. These are mainly in the form of air quality standards and controls for industry aimed at promoting cleaner production and infrastructure development. There are also carbon taxes for vehicle carbon emissions.

The challenge being faced by most SADC countries in this area is the lack of technical skills and appropriate technologies to implement the programmes.

❖ **Gaps and Required Supporting Measures**

- At the sub-regional level, besides the ProBEC project, there is no substantive Programme or Strategy that focuses on clean energy production and alternative

energy sources. Although the Oils and Fuels programme exists, its has been mainly hosting the ProBEC project, whose life ends in 2010.

- The supporting measure required is to strengthen the relevant SADC Unit to develop a programme that focuses on clean energy production and alternative energy sources.
- At the national level, there are no clear policies and programmes on clean energy production and alternative energy sources in most SADC countries. For countries without policies, there are a few 'pilot' projects that are not informed by a policy or programme. Furthermore, there are no technical skills and the appropriate technologies necessary for implementation should the programmes be put in place.
- The supporting measures required include: human resource development through focused training; empowerment of institutions especially in the ministries of energy and science and technology; enhancing development and transfer of clean and renewable energy technologies

Sub-regional Mitigation Actions on REDD/REDD+

SADC's FANR Directorate is currently developing a programme on Reduced Emissions from Deforestation and Degradation (REDD). The programme document is currently in its draft form. Its goal is as follows: *'Sustainable management of the forests of SADC is attained through REDD, and in a manner that also contributes to poverty reduction and sustainable development'*. Its purpose is *'...to improve the capacity of SADC member states to manage and benefit from their national REDD programmes and also pool their resources together to collaborate on REDD issues in which regional approaches make sense and are more cost efficient than those that can be attained purely by individual national actions or programmes'*.

The programme plans to contribute to the development of market based mechanisms for forest conservation through (i) improving the capacities of SADC Member States to establish systems to assess initial carbon stocks in relevant forests, and establishing systems for

carbon and greenhouse gas accounting; and (ii) providing data to be used to estimate historic reference emission levels from deforestation and degradation.

Although the programme is still being developed, some implementation challenges can be gleaned. The major one relates to the lack of technical skills to implement the programme, especially skills on Monitoring, Reporting and Verification (MRV) of changes in carbon stocks; database management; national forest resource assessment; establishment of local certification operations; and inventory skills for local communities, amongst others. The other relates to adequate and stable funding to manage the preparation and implementation.

National Mitigation Actions on REDD/REDD+

Although there is an interest by most SADC countries to undertake REDD and/or REDD+ activities, only three have begun to have these activities in place. These are the Democratic Republic of Congo (DRC), Tanzania and Zambia under the UN-REDD Programme. Zambia, for example has a national programme on REDD+. The programme aims to prepare Zambian stakeholders and institutions for effective future nationwide implementation of REDD+. The programme's objectives are to: build institutional and stakeholder capacity to implement REDD+; develop an enabling policy environment for REDD+; develop REDD+ benefit-sharing models; and develop Monitoring, Reporting and Verification (MRV) systems for REDD+. Some of the actions already undertaken include development of a Forestry Policy Review; Carbon Stock Assessment; and a consultative process in developing the National Joint Programme Document.

Other countries, although not being part of the UN-REDD programme have put in place economic mechanisms to reward forest conservation. Mozambique for example, has a policy that requires the payment of 20% of forestry harvesting tax to surrounding communities for avoiding deforestation. The Forestry and Wildlife Strategy, Act and Regulation also promotes sustainable forestry management.

❖ **Gaps and Required Supporting Measures**

- The draft SADC REDD Programme aims to assist SADC Member States to establish national REDD programmes. However, for it to function it requires significant capacitating and funding.
 - The supporting measures required to have the SADC REDD Programme functional include: empowerment of SADC's FANR Directorate as the host of the programme; enhancing human resources development on specific technical skills through training, mentoring or even learning by doing approaches; accessing national, multilateral funding; and use of carbon markets

- Because the majority of the SADC countries have not started the process of establishing a REDD+ programme, a lot of emphasis and awareness raising on the importance of the programme to national government will be required. Furthermore, the required skills to manage and operationalized the programme will need to be acquired
 - The supporting measures required include: strengthening communication, education and awareness-raising at all levels (i.e. from local to government) on the significance and benefits of REDD+; development of tools, methods and technologies relevant to implementing REDD+ programmes; market based instruments for financing; accessing bilateral and multilateral funding sources

Sub-regional Mitigation Actions on Land Use, Land Use Change and Forestry (LULUCF)

The draft SADC Forestry Strategy contains planned actions that engender best practices to enhance carbon sequestration and reduced emissions. The draft Strategy recognizes the role of forests in regulating climate. It therefore stresses the importance of protecting critical forests such as the Congo Basin forests and the Dry Miombo forests. It also encourages Member States to seek and take advantage of opportunities offered by mechanisms such as REDD and CDM to facilitate sustainable forest management. The scope of the Strategy however does not go beyond the forest sector, to other sectors such as

agriculture that are also potentially critical for enhancing carbon sequestration and reducing emissions.

The SADC Forestry Protocol and its draft Forestry Strategy promote fire management practices and cross-border cooperation in fire management. This is an important mitigation action because fire is a key agent in the emission of carbon dioxide into the atmosphere. The Strategy specifically stresses the deliberate and considered use of fire as an integral part of any forest management scheme in the context of REDD or CDM. In the case of transboundary fires, the Strategy recommends the use of existing cross-border cooperation institutional frameworks such as Trans-boundary Conservation Areas.

In addition to the above policies, SADC is currently developing a Regional Fire Management Programme, which will also be implementing the SADC Protocol on Forestry. The programme's goal is to promote balanced and integrated fire management in the sub-region that involves national governments, local communities, the private sector and other stakeholders. Its purpose is to enhance the knowledge and skills of key stakeholders with regards to integrated fire management (i.e. prevention, information, preparedness, suppression and rehabilitation) and the adoption of new and improved fire management strategies and concepts. The programme will consist of four components, namely Regional Fire Management Coordination Centre; Reform and Harmonization of Policies and Procedures; Community Based Fire Management; and Fire Information.

It should be noted however, that the control and safe use of fire in land management should not be left to the forest sector alone. It should also involve other sectors such agriculture (i.e. crop and livestock production). These sectors should work together to highlight the negative impacts of uncontrolled fire, especially to the communities who have routinely used fire for land management.

National Mitigation Actions on Land Use, Land Use Change and Forestry (LULUCF)

Most countries in the SADC sub-region have policies, laws and strategies on forestry, that are important in promoting forest conservation. Forest conservation is a critical component of carbon sequestration enhancement. Having said this, most of these policies were not

driven by climate change mitigation needs. Instead they were motivated by forest conservation needs. Some of the countries also have national plans that focus on preventing and controlling bush fires, which in most cases is implemented through a national fire management programme.

Most SADC countries do not recognize the role of other sectors such as agriculture in carbon sequestration. As such, their national policies, programmes and projects on agriculture do not mainstream the need for proper land use management for purposes of enhancing carbon sequestration. There is therefore a gap in the agriculture policies, programmes and projects of these countries in that they do not acknowledge the role of land use management, including land use practices such as agriculture in carbon sequestration emission reduction.

❖ **Gaps and Required Supporting Measures**

- At the sub-regional level, there is need for carbon sequestration to be considered in other sectors besides forestry, namely agriculture, land use management and desertification. There is therefore a need to incorporate these aspects in relevant SADC Policies
 - The required measures include: reviewing of relevant SADC sectoral Policies to incorporate the importance of enhancing carbon sequestration and reduced emissions as a mitigation action in those sectors

- At the national level, there is lack of institutional coordination among the various sectors (such as land, forestry, environment, and agriculture) that have a stake in mitigation actions. As such opportunities for enhanced carbon sequestration are lost.
 - The required measures include: empowerment of relevant government institutions with a stake in mitigation activities; reviewing of relevant national sectoral policies to incorporate the importance of the sector's role in enhancing carbon sequestration and reduced emissions

Sub-regional Mitigation Actions on International Carbon Markets

SADC's ProBEC project, described earlier, will be ending in 2010. However as an exit strategy, the project is devising a mechanism for optimizing carbon credits from bio carbon. As such it is creating what is called the Programmatic Clean Development Mechanism (CDM). This will be a collation of individual programmes and projects on CDM in Southern Africa into one SADC administered CDM programme. This will in essence be the SADC Regional Carbon Facility (SRCF). The Facility was recently given support by the SADC Ministers of Energy at their 31st Meeting held in Angola in April 2010.

The development of the SRCF, which is expected to commence in June 2010, is envisaged to be operated by a consortium of non-governmental organizations and private companies with SADC as a board member. The latter half of 2010 will see a handover of ProBEC's information to the appointed company, and a streamlining of operations to fulfil the needs of acquiring credits for saved greenhouse gas emissions. It is envisaged that the SRCF will ensure the sustainability of ProBEC's work, as a donor revenue stream is replaced by carbon credits, thereby continuing the public benefit emphasis of programme's work. In this way, ProBEC hopes to protect its investment and to ensure that SADC reaps the benefit on product and market development in the region.

National Mitigation Actions on International Carbon Markets

With the exception of South Africa, almost none of the SADC countries have benefited from the CDM or the voluntary carbon offsets markets. The reason for this was the scale of the CDM projects in the participating SADC countries, and the rigorous procedures of registration etc. As such most SADC countries have CDM projects that could otherwise qualify for CDM registration, but have not been registered. It is in this light that the draft SADC Forestry Strategy intends to motivate national governments to influence discussions on methodologies to be applied in future CDM compliance in the forestry sector. It is hoped that this will help in reforming the procedures to enable more SADC countries to participate and benefit.

South Africa, on the other hand, has several CDM projects that were approved. The country has a Designated National Authority (DNA) for CDM, which was set up in 2004. It is hosted by the Department of Mineral and Energy (now the Department of Energy), to manage the approval process of Clean Development Mechanism projects, as a non-Annexure 1 (or “developing”) country.

❖ **Gaps and Required Supporting Measures**

- The envisaged SRCF needs to be properly configured and synergies drawn between its objectives and the objectives of the envisaged SADC REDD+ Programme. This is because there is a *Prima facie* possibility of double counting if these two programmes are to operate independent of each other and without linkages. Furthermore, there is need for more information regarding how it will function since it will be an amalgamation of different small CDM projects from Southern Africa.
 - The required measures include: a review of the linkages between the Draft SADC REDD Programme and the SRCF; communication, education and awareness-raising of the functions and benefits of the SRCF at all levels; use of market based financing instruments such as carbon financing

- SADC Member States are not aware of the SRCF and how it links to their CDM projects. There is also limited knowledge and expertise on carbon markets; and lack of capacity to develop appropriate clean technologies in the countries. This will affect the implementation of the SRCF or individual country CDM initiatives.
 - The required measures include: strengthened communication, education and awareness raising of the SRCF among SADC Member States; enhanced human resource development through training on carbon markets; and development and transfer of clean development technologies to SADC countries.

4. Indicative Recommendations

The Southern Africa Experts Group Meeting that was held in Nairobi from the 27th to the 29th of March 2010 resolved, amongst other things, that adaptation actions should be given priority in Southern Africa. This decision is supported by the fact that the sub-region is extremely vulnerable to the impacts of climate change. Mitigation actions, while important ought to be understood and implemented to buttress adaptation activities particularly by taking advantage of the opportunities that come with some of the mitigation actions. Appropriate supporting and enabling measures, on the other hand, should be identified and used to enhance the implementation of *adaptation* and *mitigation* actions.

4.1 What Needs to Be Done?

The situational analysis of adaptation and mitigation actions outlined above highlighted key issues that need to be considered in streamlining existing and planned policies, programmes and projects. The key issues include the need for: institutional synergies; capacity building initiatives; review of policies; and a funding mechanism

4.1.1 Institutional Synergies

There is need to establish and strengthen linkages between institutions involved in *adaptation* and *mitigation* actions vertically and horizontally. Vertical linkages will link SADC Member State government ministries from all relevant sectors (i.e. agriculture, water, infrastructure and transport, coastal zones, health, energy, urban planning and management, tourism, biodiversity and ecosystems, forests, fisheries, environment, and land and desertification) to the SADC Secretariat Directorates of FANR, Infrastructure and Services, Human and Social Development and Politics, Defence and Security; on climate change adaptation and mitigation actions. Horizontal linkages will link relevant government ministries with each other.

There is also need to link the work that is being undertaken by non-State actors such as NGOs, research institutions and community based organizations to national and SADC levels.

4.1.2 Capacity Building Initiatives for Programme Implementation

There is need to create and build human resource technical expertise in government ministries at national level, and at the SADC Secretariat. Technical expertise is required for the implementation of adaptation and mitigation actions. The capacity building requirement also extends to the development and transfer of appropriate technology for adaptation and mitigation actions.

4.1.3 Policy Development and Review

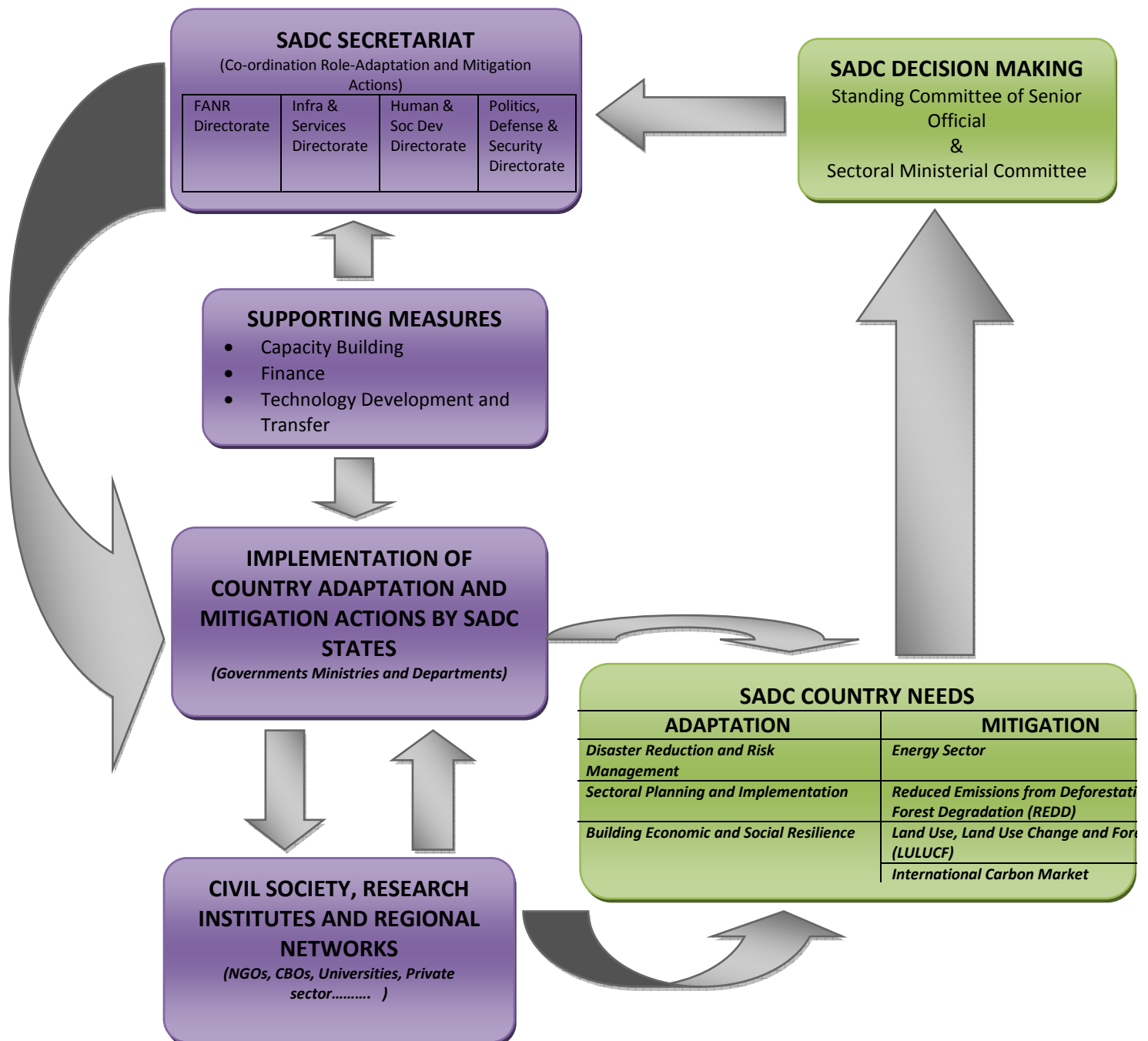
There is need to review SADC policies and national sectoral policies in order to mainstream climate change issues. The reviews will be done to ensure that the role of adaptation and mitigation actions are recognized in the respective sectors.

4.1.4 Funding Mechanism

Funding is a pre-requisite for the functioning of any programme. There is need for the establishment of a SADC Climate Change Adaptation and Mitigation Fund. The fund can leverage funding from bilateral, multilateral funding partners. It can also raise funds from market based instruments, namely from the REDD+ and SRCF Programmes. The funding mechanism will be administered by SADC but benefiting SADC Member States in the implementation of adaptation and mitigation actions.

5. The Conceptual Framework

Diagram 3: The Conceptual Framework for Climate Change Actions in Southern Africa



The conceptual framework outlined in diagram 3 above, provides an indicative description of how climate change work can be coordinated in Southern Africa.

Conclusion

Perhaps, the single critical climate change-related challenge being faced by the sub-region is its vulnerability to extreme climatic events. This is because the sub-region is pre-dominantly dependent on climate-sensitive sectors, such as agriculture, water, infrastructure and transport, coastal zones, health, energy, urban planning and management, tourism, biodiversity and ecosystems, forests, fisheries, environment, and land and desertification. It therefore follows that programmatic emphasis should be placed on adaptation actions to address the impacts of climate change on these sectors.

Because the sub-region's contribution to GHG global emissions is minimal in comparison to emissions from developed countries, it would give a *prima facie* suggestion that climate mitigation actions should not be a priority. However certain mitigation actions such as improving energy efficiency, enhanced use of alternative renewable sources of energy, adoption of cleaner production technologies, enhancing carbon sequestration and reduced emissions from deforestation and forest degradation, and through sustainable land use practices, are not only important for mitigation, but also enhance the resilience for local communities and other stakeholders for adaptation actions.

The review established the fact that for these actions to be successfully implemented, there is need to up scale the use of supporting measures. Most critical amongst these is the need to ensure synergies between the SADC secretariat, as the coordinating body, and national governments. There is also need to mainstream the work being done by non-State actors such as NGOs, research institutions etc with SADC and national government efforts. This will result in the comprehensive programme of implementation for adaptation and mitigation actions. Furthermore, there is need to strengthen national government institutions and the SADC secretariat through various capacity building interventions that include training to acquire requisite technical skills, policy review to inculcate climate change issues as an

emerging phenomenon in sectoral policies, and the accessing and using appropriate technologies. The review also noted that the implementation of adaptation and mitigation actions will not be possible without adequate funding. It will therefore be critical to have a specific funding mechanism for these actions that will be coordinated by SADC for the benefit of SADC Member States.

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- SADC; *The Impact of Climate Change on the Poverty Situation in the SADC Region*
- Proceedings from the SADC International Conference on Poverty and Development 18-20 April 2008, Mauritius (2008)

Country Data Matrix:							
Key Issue Area: Adaptation		Status of Implementation			Enabling Measures		
		Policy	Programme	Projects	Capacity Building	Finance	Technology T
Disaster Risk Reduction and Management							
	Early Warning Systems	No policy in place but the Agriculture Policy and Meteorological Services Act are used	National Committee in place on forecasting and early warning to the public				
	Preparedness		Disaster Management Affairs have a draft Policy and Act on disaster preparedness				
	Emergency Response						
	Post Disaster Recovery		Disaster Management Affairs have a draft Policy and Act on disaster preparedness, and post recovery				
	Other Measures						



Sectoral Planning and Implementation						
	Water	National Water Policy in place				
	Agriculture	National Agriculture Policy in place	Agricultural Development Program in place, and other programs on food security			
	Coastal Zones					
	Land and Desertification	Forestry Department, other key government and civil society organizations doing lots of afforestation and reforestation programmes				
	Health	Programmes in place to combat malaria incidences arising out of effects of climate change				
	Infrastructure					

Biodiversity and Ecosystems	National Biodiversity Strategy & Action Plan in place; National Steering Committee in place; Access & Benefit Sharing in place					
Forests	National Forestry Policy inplace					
Energy	Energy Policy in palce					
Urban Management	Environmental Impact Assessment Guidelines in place					
Tourism	EIA Guidelines on tourism in place					
Fisheries	Fisheries Policy in place					
Environment	National Environment Policy					

	Wildlife						
	Transport						
	Research and Observation						
	Development Plans	Climate Change put as a development priority by the Malawi Government					
	Other Measures						
Building Economic and Social Resilience							
	Diversification of Economies	CARLA Project developed; others by civil society and other players					
	Indigenous Knowledge and Practices	Traditional Chiefs and leaders as well as their subordinates engaged in issues of climate change					
	Strengthening CBOs						

Gender	Gender sector assessed in the Malawi NAPA					
Participation						
Other Measures						

Malawi

Key Issues: Mitigation							
Energy Sector	State of Implementation			Enabling Measures			
	Policy	Programmes	Projects	Capacity Building	Finance	Technology Transfer	
Scaling up Investment							
Affordable Energy Access	Energy Policy in place						

Appropriate alternative energy sources		Energy Policy in place	Promote alternative energy sources to charcoal and firewood	Environment & Energy for Pro-poor Growth		US\$118309, Government & UNDP	Energy-saving stoves; promote increased access to alternative energy sources	
Energy Efficiency								
Biofuels								
Transport								
Standards and Regulations								
Taxes			Duty waived for technologies on renewable energy					
Cleaner Production			Guidelines being developed by the Environmental Affairs Department (CDM DNA for Malawi)					

Certification		Done by Malawi Energy Regulatory Authority			Government		
Infrastructure							
Other Measures							
REDD/ REDD+							
REDD/ REDD+	National Forestry Policy in place				Clinton-Hunter Plan Vivo		
Market based mechanisms		Carbon trading unit in place			Government & UNDP		
Incentives		Selected households receive incentives for planting trees			Government		
Forest Conservation		Sustainable Management of Forests Project in place			European Union		

Avoiding Deforestation		Selected households receive incentives for planting trees			Government and other partners including the EU		
Sustainable Forestry Management		A program in place at the Forestry Department			European Union		
Aforestation		National Tree Planting season in place from November to April (rainy season)			Government		
Other Measures		Tree Planting and Management for Carbon Sequestration and Other Ecosystem Services Program					
Land Use, Land Use Change and Forestry		Agriculture Policy in place					

Agriculture Mitigation		Agricultural Development Program; Conservation Agriculture; Agro-forestry programs in place						
Fire Management								
Desertification								
Other Measures								
International Carbon Market								
CDM		Carbon unit in place at the Department of Forestry						
Institutions		Forestry; Parks & Wildlife; Environmental Affairs Department; Ministry of Finance; UNDP; Universities of Malawi & Mzuzu						

Other Measures			Payment for Environmental Systems Board in place										
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Mozambique Adaptation Actions

	A	B	C	D	E	F	G	H	I	J	K	L	M	
1	Country Data Matrix:					Ministry of Coordination of Environment Affairs - Mozambique								
2														
3	Key Issue Area: Adaptation					Status of Implementation				Enabling Measures				
4						Policy	Programme	Projects	Capacity Building	Finance	Technology Transfer	Gaps		
5	Disaster Risk Reduction and Management													
6	Early Warning Systems		To guarantee the expansion and re-enforcing the Seismographic centres			To implant seismographic centres in all provinces and other areas		On going constructions of 9 seismographic centres, among them 5 are functioning		National and local human resources Training of rural communities on interpretation and use of climate information		Government of Mozambique	The local miners need assistance from National level Technician and these	Human Resources Capacity Building for

			Emergency; Strengthening of Disaster Risk Management Systems (National Programme)	<p>RANET (Installed in 8 districts vulnerable to weather/ climate events, to disseminate meteorological and climate information to rural communities</p> <p>Recovery and modernization of National meteorological observing network</p> <p>Establishment of a National Climatic Center for Applied research in Climate Variability and Change</p> <p>Mozambique Radars Project</p> <p>Impact of Climate Change on Disaster</p>	<p>Training on automatic weather stations (AWS) assembly, maintenance, and calibration of the instruments</p> <p>Training of staff of National institutions involved in disaster risk reduction and climate adaptation activities</p> <p>Training on the multiple use of radar products and their maintenance</p>		from experts of other countries	
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				Risk and Adaptation; Responding to the Climate Change in Mozambique					
7	Preparedness		Strengthening Disaster Risk Reduction and Emergency Preparedness (National Programme)						
8	Emergency Response								
9	Post Disaster Recovery								
10	Other Measures								
11									
12	Sectoral Planning and Implementation				PECODA(Nacional Programme for Environment Dessimination and Conscencialization; Study on the				

					Economics of Adaptation to CC				
13	Water		Programme for Emergency Water Supply for Addressing Climate Change (Maputo and Gaza Provinces)						
14	Agriculture		Livelihood Protection and Promotion (LLP) Programme	Piloting and demonstration	Enable research and Knowledge management Empower relevant institutions; Building Capacity for CDM Projects in Mozambique				
15	Coastal Zones	To promote the Geological Mapping a long the Indian Ocean coast and other wet lands	Strategic and Environmental Assessment of Coastal Zone of Mozambique; (Environment Sector -	On going programme of Geological and Environmental Mapping at the Coastal zone s of Beira in Sofala, Maputo City, Xai-Xai and Bilene in	National and local human resources	Government of Mozambique			

		Research on Coastal Integrated Management System (National)	MICOA) To elaborate Geological and Environmental Maps in all sensible ecosystems along the coast	Gaza. Reducing Impact of Climate Change (coastal erosion) in Beira City, Sofala Province					
16	Land and Desertification			Coping and Drought and Climate Change (Guijá District, Gaza Province); Environmental Mainstreaming and Adaptation to Climate Change (Limpopo Basin and Chicualacuala District, Gaza Province (Environment Sector – MICOA)					
17	Health								
18	Infrastructure								
19	Biodiversity and Ecosystems								

20	Forests	National Plan for Afforestation							
21	Energy	Biomass Policy and Biofuels	Programme for Biomass Energy Conservation (Probec), Cooking Stoves (Manica, Sofala, Maputo)	PV Electification in rural areas (Sofala, Manica, Cabo Delgado Provinces)			Need assistance from South Africa technicians – Council for Geosciences		
22	Urban Management								
23	Tourism			Climate Change Adaptation in Quirimbas Nacional Park (Cabo Delgado Province, QNP)					
24	Fisheries								
25	Environment	Nacional Plan for Prevent and Control Soil Erosion	Monitoring, Auditing and Assessment of Environmental Impacts; Advising the	Regular field work, training artisanal miners in Associations to implement healthy environmental practices in mining	The National level technician need training course and updating in Monitoring, Auditing and Assessment of	Government of Mozambique			

		To undertake the accomplishment of Environmental rules for the Mining Activities in collaboration with other Ministries	leadership at the Ministry of Mineral Resources about the Environmental issues of different companies operating in Mozambique	sector	environmental impacts Regional Clean Development Africa Phase 1 (Ethiopia, Kenya, Mozamb., Zambia); Integrating Vulnerability and Adaptation to CC into Sustain. Develop. Policy Planning and Implement. In East and Southern Africa				
26	Wildlife	National Strategy for Human and Wildlife conflict							
27	Transport								
28	Research and Observation								
29	Development Plans								

30	Other Measures								
31									
32	Building Economic and Social Resilience		Pilot Programme on Climate Resilience-Phase I;						
			Pilot Programme on Climate Resilience-Phase II (National Programmes)-	Climate Change Adaptation(equipment provision for water and flood management					
33	Diversification of Economies								
34	Indigenous Knowledge and Practices								
35	Strengthening CBOs								
36	Gender	Nacional Estrategy of							

		Climate Change and Gender (Environment Sector)							
37	Participation								
38	Other Measures								
39									

Mozambique Mitigation Actions

	A	B	CD	E	F	G	H	I	J	K	L	M
1	Country Data Matrix:											
2												
3	Key Issues: Mitigation	State of Implementation					Enabling Measures					
4		Policy	Programmes	Projects	Capacity Building	Finance	Technology Transfer	Gaps				
5	Energy Sector											
6	Scaling up	To promote	Licensing potential	On going	High skills	Confirmed	All the					

	Investment	the research and production of Mineral Coal, Gas; Petroleum and Uranium in a whole Country (Mineral Resours Sector)	companies with relevant skills and financially robustly Energy (Mineral Resours Sector) Programme, Rural Electrification, environmental and financial sustainable, energy sector in Mozambique	Projects for Coal Production in Moatize (Vale) and Benga (Riversdale); Petroleum production in Pande/Temane (Sasol); many others still in the phase of data collection (Mineral Resours Sector) Rehabilitation of Hydro Power Station in Mavuzi and Chicamba (Energy Sector)	and proficiency in the field of mineral coal production, qualified technicians	the financial stability quoted at stock market (private companies)	companies assume the compromise to train national human resources in different areas	
7	Affordable Energy Access							
8	Appropriate alternative energy			Expansion of Renewable Energy Systems for				

	sources			the promotion of rural development (Nacional) – (Energy Sector)				
9	Energy Efficiency							
10	Biofuels						Technical Assistance on Sustainable Use and Production of Biofuels (SADC wide) – (Energy Sector)	
11	Transport							
12	Standards and Regulations							
13	Taxes							
14	Cleaner Production							
15	Certification							

16	Infrastructure							
17	Other Measures							
18								
19	REDD/ REDD+							
20	Market based mechanisms							
21	Incentives	Payment of 20% of Forestry harvesting tax to communities surrounding (Agriculture Sector)						
22	Forest Conservation		Rehabilitation of forestry Reserves; Lúrio Forestry Plantation and Carbon Sequestration (Agriculture Sector)	GFP Facility leaded by CTV				
23	Avoiding Deforestation	1. Measures to reduce number of Simple	Tobacco and tea companies must establish their own	Use of Improved stoves, and				

		license operators 2. Increase Concessionaries	plantation(Agriculture Sector)	other energy sources (Agriculture Sector)				
24	Sustainable Forestry Management	Forestry and Wildlife Strategy, act and regulation (Agriculture Sector)	1. Definition of national Criteria and Indicators, 2. Forestry Certification initiative; South-South REDD (Agriculture Sector)					
25	Aforestation		Implementation of National Action Plan and Strategy					
26	Other Measures							
27								
28	Land Use, Land Use Change and Forestry							
29	Agriculture Mitigation							
30	Flre	Nacional Plan	National Fire					

	Management	for Prevent and Control Bush Fire (Environment Sector)	Management						
31	Desertification								
32	Other Measures		Zonning and land use plan on progress						
33									
34	International Carbon Market								
35	CDM		Nacional Designated Authority (MICOA)	Envirotrade implemented in Gorongosa, Cheringoma (Sofala) and Macomia (Cabo Delgado)	Regional Capacity Building for CDM Project for Sub-Saharan Africa				
36	Institutions								
37	Other Measures								
38									

Zambia Adaptation Actions

Country Data Matrix:				
Key Issue Area: Adaptation				
Status of Implementation				
	Policy	Programme	Projects	Capacity Building
Disaster Risk Reduction and Management				
Early Warning Systems				
Preparedness				
Emergency Response	National Disaster Management Policy	Disast		
Post Disaster Recovery				
Other Measures				
Sectoral Planning and Implementation				
Water	Water Policy			
Agriculture	Agricultural Policy			
Coastal Zones	Not Applicable			
Land and Desertification	National Policy on Environment			
Health	National Policy on Environment			
Infrastructure				
Biodiversity and Ecosystems	National Policy on Environment			
Forests	Forset Policy 1999			
Energy	Energy Policy			
Urban Management	Local Government Policy			
Tourism	Tourism Policy			
Fisheries	Agricultural Policy			



Environment	National Policy on Environment			
Wildlife	Wildlife Policy			
Transport	Transport Policy			
Research and Observation				
Development Plans				
Other Measures	National Policy on Environment			
Building Economic and Social Resilience				
Diversification of Economies				
Indigenous Knowledge and Practices				
Strengthening CBOs				
Gender	Gender Policy			
Participation				
Other Measures				

Zambia Mitigation Actions

Country Data Matrix:

Key Issues: Mitigation	State of Implementation			Capacity B
	Policy	Programmes	Projects	
Energy Sector				
Scaling up Investment	Investment Policy			
Affordable Energy Access			Rural Electrification and Use of Solar lamps	
Appropriate alternative energy sources			Use of improved blazers and Gels for cooking	
Energy Efficiency	Energy Policy		Use of Energy Efficient bulbs	
Biofuels	Energy Policy		Jatropha	
Transport	Transport Policy			

Standards and Regulations				
Taxes	Transport Policy		Carbon Tax	
Cleaner Production				
Certification				
Infrastructure				
Other Measures				
REDD/ REDD+				
Market based mechanisms	Investment Policy			
Incentives	Investment Policy			
Forest Conservation	Forest Policy			
Avoiding Deforestation	Forest Policy			
Sustainable Forestry Management	Forest Policy			
Aforestation	Forest Policy			
Other Measures				
Land Use, Land Use Change and Forestry				
Agriculture Mitigation	Agriculture Policy			
Fire Management	Forest Policy			
Desertification	National Policy on Environment			
Other Measures				
International Carbon Market				
CDM			Lusaka Sustainable Project	
Institutions		DNA		
Other Measures				

ANNEX 2

1. Malawi

Government Driven Initiatives

The Government of Malawi, being a State party to the UNFCCC, has undertaken certain mandatory activities pursuant to its obligations under the Convention. These include Participation in UNFCCC Processes- Initial Communication - GHG Inventories; mitigation and adaptation measures; and the development of National Adaptation Programmes of Action. Furthermore, the Government of Malawi is planning to formulate a national climate change policy and to mainstream climate change issues into MDGs. Specific government initiated programmes on adaptation, mitigation and supporting measures are outlined below. Second National Communication is being prepared

Adaptation	Mitigation	Supporting Measures	Others
<p data-bbox="188 783 427 807"><Risk and Disaster Mgt></p> <ul data-bbox="237 842 723 1018" style="list-style-type: none"> <li data-bbox="237 842 723 922">• Currently implementing the National Framework on Climate Change on Adaptation <li data-bbox="237 930 723 1018">• Planned activities: National Adaptation Programmes of Action- To prepare follow up projects on adaptation 	<p data-bbox="745 783 851 807"><Energy></p> <p data-bbox="745 842 1010 866">Planned activities include:</p> <ul data-bbox="795 874 1348 1078" style="list-style-type: none"> <li data-bbox="795 874 1348 930">• Implementing the National Framework on Climate Change mitigation; <li data-bbox="795 938 1348 994">• Developing and implement projects on Clean Development Mechanism; <li data-bbox="795 1002 1348 1058">• Formulating National Appropriate Mitigation Actions; and <li data-bbox="795 1066 1348 1078">• Alternative sources of energy 	<p data-bbox="1370 783 1590 807"><Capacity Building></p> <p data-bbox="1370 842 1814 922">Planned activities include: capacity building on the implementation of the climate change convention and Kyoto Protocol</p>	<p data-bbox="1841 810 2045 1042">Formulation of a Climate Change Policy; and Main streaming Climate change into the Millennium Development Goals Strategy (MDGS)</p>
<p data-bbox="188 1086 645 1110"><Sectoral Planning and Implementation></p> <ul data-bbox="237 1153 723 1358" style="list-style-type: none"> <li data-bbox="237 1153 723 1233">• Climate Adaptation for Rural Livelihoods and Agriculture- Adaptation activities in agriculture, water, forestry, fisheries, energy <li data-bbox="237 1241 723 1358">• National Framework on Management of Climate Change - Management of future climate change in Malawi in agriculture, forestry, land, water, fisheries, etc <p data-bbox="188 1366 707 1390">Planned activities: To prepare follow up activities on</p>	<p data-bbox="745 1086 842 1110"><REDD></p>	<p data-bbox="1370 1086 1487 1110"><Finance></p>	<p data-bbox="1841 1086 2045 1241">Planned activities: Formulation of National Appropriate Mitigation Actions</p>

sectoral adaptation strategies			
<Building Economic and Social Resilience>	<LULUCF and Carbon Markets> Future activities include: Developing a National Framework on Management of Climate Change - Management of future climate change in Malawi in agriculture, forestry, land, water, fisheries. (Some of this work may include LULUCF related issues) Planned Activities include: Carbon sequestration and trading programmes	<Technology Transfer>	
Civil Society Driven Initiatives			
Adaptation	Mitigation	Supporting Measures	Others
<Risk and Disaster Mgt>	<Energy>	<Capacity Building>	
<Sectoral Planning and Implementation> <i>Climate Change Adaptation in Africa - Linking African Researchers with Adaptation Policy Spaces Project</i> This project aims to build the capacity of researchers to influence policy. Researchers will investigate the complexity of adaptation policy processes in different countries and identify policy spaces; use this knowledge to build policy engagement tools and strategy; develop an analytical framework for investigating climate change adaptation policy processes in Africa; and mentor relationships between participatory action researchers and academic. Donors and Geographical Scope: Funded by International Development Research Centre (IDRC) the project covers Malawi. http://www.ids.ac.uk/ids ; http://www.idrc.ca/en/ev-127587-201_105602-1-IDRC_ADM_INFO.html	<REDD>	<Finance>	
<Building Economic and Social Resilience>	<LULUCF>	<Technology Transfer>	
2.Mauritius			
Government Driven Initiatives			

The Government of Mauritius being a State party to the UNFCCC, has undertaken certain mandatory activities pursuant to its obligations under the Convention. These include Participation in UNFCCC Processes- Initial Communication - GHG Inventories; mitigation and adaptation measures. The Second National Communication is under preparation.

Adaptation	Mitigation	Supporting Measures	Others
<p><Risk and Disaster Mgt></p>	<p><Energy></p> <p>Clean Development Mechanism Projects The Designated National Authority for the CDM, namely, the Ministry of Environment & NDU, has issued letter of approval to two projects, namely a Waste to Energy Project and a biogas and coal fired electric power plant.</p> <p>Implementation of the National Energy Strategy (2009-2025) to increase the current share of renewables in electricity production from 22% to 35% by 2025, and improve energy efficiency in both electricity and transportation sectors.</p> <p>Implementation of projects under the Maurice Ile Durable framework including renewable sources of electricity, energy efficiency, bus modernisation programmes, waste management and economic instruments.</p>	<p><Capacity Building></p> <p>Awareness campaigns are being conducted to sensitize the population about the impacts of global warming. The WED themes for the last few years have been on climate change.</p> <p>Planned activities include:</p> <ul style="list-style-type: none"> • Training in predictive computer modeling and interpretation of models for global climate change scenarios, storm surge run-up, and integrated assessment models which include economic as well as meteorological data • Hardware and training in photovoltaic solar energy (installation, maintenance, trouble-shooting and repair) as well as other appropriate renewable energy technologies 	<p>An inventory of greenhouse gas emissions, including sources and sinks of carbon dioxide, methane, and other minor greenhouse gases is being done.</p>
<p><Sectoral Planning and Implementation></p> <p>Establishment of the multi-sectoral National Climate Committee (NCC) that:</p> <ul style="list-style-type: none"> • monitors progress on the science of climate change • evaluates the possible impacts of climate change on key sectors of the economy • collects all available information and prepare the National Inventory of Greenhouse Gas Emissions for the year 1990 • prepares recommendations for a Climate Change Action Plan <p>Planned activities include: Developing a national and integrated national mitigation policy and an</p>	<p><REDD></p>	<p><Finance></p> <p>Planned activities:</p> <ul style="list-style-type: none"> • Develop a national climate change adaptation programme and assist in the leveraging of funds for its implementation 	

implementation programme			
<Building Economic and Social Resilience>	<LULUCF>	<Technology Transfer> Planned activities include: Development of sophisticated equipment to monitor coastal zone management activities; further research on optimal varieties of sugar cane including development, dissemination and experimentation with root stock to determine which cultivars may be able to withstand the predicted climatic changes; increased usage of geographic information system software and further advanced training so that Mauritius can create layered resource maps in order to help planners update and fine-tune their awareness of vulnerabilities on a periodic basis	
Civil Society Driven Initiatives			
Adaptation	Mitigation	Supporting Measures	Others
<Risk and Disaster Mgt>	<Energy> The United States Country Studies Program (USCSP) for Climate Change	<Capacity Building> The United States Country Studies Program (USCSP) for Climate Change aims to: <ul style="list-style-type: none"> • build up endogenous competence for effective participation in climate change decision-making, • assess potential impacts, • develop strategies for coping and elaborate those schemes into a Climate Change Action Plan 	
<Sectoral Planning and Implementation>	<REDD>	<Finance>	
<Building Economic and Social Resilience> <i>Planned activities include:</i> <ul style="list-style-type: none"> • Climate change case studies (UNEP)- Determination of the economic and development implications of greenhouse gas limitation 	<LULUCF>	<Technology Transfer>	

3. Lesotho			
Government Driven Initiatives			
The Government of Lesotho, being a State party to the UNFCCC, has undertaken certain mandatory activities pursuant to its obligations under the Convention. These include Participation in UNFCCC Processes- Initial Communication - GHG Inventories; mitigation and adaptation measures; and the development of National Adaptation Programmes of Action.			
Adaptation	Mitigation	Supporting Measures	Others
<Risk and Disaster Mgt>	<Energy>	<Capacity Building>	
<Sectoral Planning and Implementation>	<REDD>	<Finance>	
<Building Economic and Social Resilience>	<LULUCF>	<Technology Transfer>	
Civil Society Driven Initiatives			
Adaptation	Mitigation	Supporting Measures	Others
<Risk and Disaster Mgt>	<Energy>	<Capacity Building>	
<Sectoral Planning and Implementation>	<REDD>	<Finance>	

<Building Economic and Social Resilience>	<LULUCF>	<Technology Transfer>	
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4.Namibia

Government Driven Initiatives

The Government of Namibia, being a State party to the UNFCCC, has undertaken certain mandatory activities pursuant to its obligations under the Convention. These include Participation in UNFCCC Processes- Initial Communication - GHG Inventories; mitigation and adaptation measures;

Adaptation	Mitigation	Supporting Measures	Others
<p><Risk and Disaster Mgt></p> <p>Planned activities include: Country study on climate change that provides</p> <ul style="list-style-type: none"> • An overview of the vulnerability of Namibia to climate change, • Climate Change risk assessments e.g. Cuvelai Drainage project 	<p><Energy></p>	<p><Capacity Building></p> <ul style="list-style-type: none"> • Capacity development, research, monitoring, public awareness and technology needs • Identification of financial and technology needs required for adaptation and mitigation actions • Preparation of national awareness products- a booklet and a poster distribution to schools, educational institutions, government offices, private sector agencies, public libraries • Participation National CC awareness raising and capacity development workshop • Development of national capacity to manage and implement the climate change program - Government and University of Namibia officials visited 	<p>Planned activities include: Studies on assessments of the source and sinks of green house gases in Namibia and a preliminary overview of the emissions scenarios and the corrective choices which the country face</p>

		the Center for Scientific and Industrial Research in South Africa to familiarise themselves with some of the processes involved climate change	
<p><Sectoral Planning and Implementation></p> <p>Current activities include designation of the Ministry of Environment and Tourism to co-ordinate climate change activities in Namibia. This entails establishing the Namibia Climate Change Committee (NCCC) which advises government on the policies and strategies it needs to adopt in preparing the country for the predicted and in some cases actual effects of climate change</p> <ul style="list-style-type: none"> • CCA has been included as one of the environment sector priorities under NDP 3; although CCA is not yet fully mainstreamed into NDP 3 • MET Strategic Plan (SP) spells out priority CCA activities, aimed, amongst other at providing opportunity for supporting a national framework of action on CCA and CCA mainstreaming <p>Planned activities include: Scoping study that identifies how the German support to the NR sector in Namibia can mainstream CCA considerations throughout the existing support programme and which CCA priorities of the Government</p>	<REDD>	<Finance>	
<Building Economic and Social Resilience>	<LULUCF and Carbon Markets>	<Technology Transfer>	
Civil Society Driven Initiatives			
Adaptation	Mitigation	Supporting Measures	Others
<p><Risk and Disaster Mgt></p> <ul style="list-style-type: none"> • Implementation of pilot projects on CCA 	<Energy>	<Capacity Building>	

funded by UNDP/GEF SPA: a pilot project in Omusati region that aims at developing and promoting coping mechanism amongst small scale farmers e.g. the establishment and improvement of Early Warning Systems, linking local, regional, national and super-national modern and traditional systems			
<Sectoral Planning and Implementation>	<REDD>	<Finance> CBA: Community-based Adaptation fund under the Small Grants Programme (SGP), which provides small grants to local communities for testing CCA innovations	
<Building Economic and Social Resilience>	<LULUCF and Carbon Markets>	<Technology Transfer> Implementation of pilot projects on CCA funded by UNDP/GEF SPA: that aims at developing and improving indigenous and drought resistant crops and livestock breeds	

5.South Africa

Government Driven Initiatives

The Government of South Africa, being a State party to the UNFCCC, has undertaken certain mandatory activities pursuant to its obligations under the Convention. These include Participation in UNFCCC Processes- Initial Communication - GHG Inventories; mitigation and adaptation measures;

Adaptation	Mitigation	Supporting Measures	Others
<p><Risk and Disaster Mgt></p> <p>Planned activities include Long-term Mitigation Scenario (LTMS) process which focuses on, amongst other things, Vulnerability and Adaptation</p> <p>Risk and Vulnerability Atlas Programme This programme focuses on compiling all vulnerability and adaptation information</p> <p>Monitoring of Climate and Hydrology Programme</p>	<p><Energy></p> <p>Development of a national climate change response strategy which includes a sustainable energy programme</p> <p>Long-term Mitigation Scenario (LTMS) process</p> <ul style="list-style-type: none"> Strengthening or scaling up existing initiatives (energy efficiency, renewable energy, the development of “green” industries, on-going research into climate friendly ways of doing 	<p><Capacity Building></p> <p>Planned activities include: Long-term Mitigation Scenario (LTMS) process that focuses on, amongst other things, participatory, research based scenario building process that focuses on identifying South Africa’s emissions trajectory and formulating a range of potential strategies; and the development of a national climate change response strategy that supports</p>	<p>National policy updated for implementation of international commitments</p> <p>Green Paper published for public comment</p> <p>Final National Climate Change Response Policy</p>

<p>The Directorate of Hydrological Services in the Department of Water and Environmental Affairs is engaged in monitoring of climatic and hydrological impacts in purposefully selected sites across South Africa. A data bank has been developed from the data obtained.</p>	<p>business)</p> <p>Renewable Energy Market Transformation (REMT) Project The project's objective, over a four-year period, is to remove the barriers and reduce implementation costs of renewable energy technologies to help mitigate greenhouse gas (GHG) emissions. The Government's White Paper on Renewable Energy has set a target of 4% of electricity demand (equivalent to 10,000 GWh) from renewable energy sources in 2013. This project aims to assist the government in meeting this target. The project will provide technical assistance and capacity building for (i) renewable-based power generation and (ii) commercial solar water heating</p> <p>Renewable Energy Feed-in Tariff – REFIT (Phase one and two) The objectives for introduction of REFIT include amongst others to create an enabling environment for RE generation, including levelling playing field with conventional electricity, creating a critical mass of RE investment and supporting the establishment of a self –sustaining environment and provide access to grid and an obligation to purchase power</p> <p>Energy Efficiency Accord This is a public/private partnership aimed at reducing energy usage with a view to meeting the following energy use reduction targets: Industry & Mining - 15%; Commercial & Public Building - 15%; Power Generation - 15%; Residential - 10%; and Transport - 9%</p> <p>Energy Efficiency Monitoring Project The project aims at measuring energy efficiency consumption in the industrial, transport, Commercial and Public Buildings and the Residential Sector as per National Energy Efficiency Strategy. The project will also monitor Renewable Energy and CDM targets</p>	<p>national and sustainable development and climate change related education and training, research, development and demonstration</p> <p>The global change grand challenge implementation framework The purpose of the Ten-Year Innovation Plan is to help drive South Africa's transformation towards a knowledge-based economy, in which the production and dissemination of knowledge leads to economic benefits and enriches all fields of human endeavour. The Ten-Year Plan is underpinned by five grand challenges, one of which is called 'Science and Technology for Global Change with an emphasis on climate change' (DST, 2007)</p> <p>Establishment of a South African Centre for Carbon Capture and Storage (CCS) The ultimate goal of the research centre is to demonstrate CCS technology in South Africa by means of a carbon dioxide injection experiment and ultimately a demonstration plant by 2020.</p> <p>Climate Change Research Programmes at Government Agencies and Departments The South African National Biodiversity Institute (SANBI), South African National Parks (SANParks), South African Weather Services (SAWS) and the Water Research Commission (WRC) are agencies of the Department of Water and Environmental Affairs (DWEA) are engaged in climate change-related monitoring and/or research work. SAWS conduct research on the meteorological fundamentals of climate change, SANBI and SANParks focus on the impact of climate change on biodiversity and habitats, whilst the WRC contracts</p>	<p>published</p> <p>Programmes at the science councils The Agriculture Research Council (ARC), Council for Geosciences (CGS), Council for Scientific and Industrial Research (CSIR), and two of the facilities of the National Research Foundation (NRF's) namely the South African Institute of Aquatic Biodiversity (SAIAB) and the South African Environmental Observation Network (SAEON) involved in a work on the detection of climate change, and assessment of its impacts on these diverse ecosystems. It also extends to developing mitigation and adaptation strategies. Their main outputs have been publications in scientific journals, technical reports, collections and data banks.</p> <p>A National Climate Change Response Strategy for South Africa A National Climate Change Response Strategy for South Africa was compiled in 2004, which aimed to address priority issues for dealing with climate change. The focus of the</p>
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	<p>Clean development mechanism (CDM). A Designated National Authority (DNA) was set up in 2004, under the Department of Mineral and Energy (now the Department of Energy), to manage the approval process of Clean Development Mechanism projects, as a non-Annexure 1 (or “developing”) country</p> <p>Renewable Energy Target The Department of Energy is implementing a White Paper on Renewable Energy Policy that aims to contribute 10 000 GWh (0.8 Mtoe) of renewable energy to a final energy consumption by 2013, to be produced mainly from biomass, wind, solar and small-scale hydro. The renewable energy is to be utilized for power generation and non-electric technologies such as solar water heating and bio-fuels.</p> <p>CO2 Geological Storage Atlas South African National Energy Research Institute (SANERI) is finalising the development of Compilation of CO2 Geological Storage Atlas. The atlas is aimed at identifying potential sites for geological storage of carbon dioxide as a mitigation measure for the lowering of greenhouse gas emissions from industrial sources that primarily utilise coal.</p> <p>Working for Energy Programme Department of Energy established the ‘working for energy’ programme to create green jobs in energy efficiency and renewable energy</p> <p>Energy Efficiency Standards The development and implementation of energy efficiency standards for refrigeration, commercial and public buildings, AC electrical motors, boilers and thermal insulation of steam pipes</p> <p>Energy Efficiency Target The Department of Energy is implementing an Energy Efficiency strategy that sets a national target for</p>	<p>institutions to carry out research on impacts of climate change on the hydrological cycle and water resources. The agencies are also involved in investigations of climate change mitigation and adaptation in their respective spheres of operation and influence.</p> <p>The Programme for the Development of a GHG Emission Inventory and Capacity Building for the Agricultural Sector in South Africa Some of the activities under the programme include: literature review, gathering of agricultural statistics, calculation of data and uncertainty values, population of inventory, stakeholder workshops, training and capacity building workshops, production of a training toolkit</p> <p>The Greenhouse Gas Information Management Project This project generates a current and accurate GHG emission inventory for South Africa and, through this, develop and initiate a GHG information management system within the department as a component of the South African Air Quality Information System (SAAQIS).</p> <p>Planned activities include: (a) The development of a detailed Forestry and Agricultural GHG Monitoring Information System that will ensure that the sector greenhouse gas emissions information management system provides measurable, reportable and verifiable information on all significant interventions</p>	<p>strategy is on adapting to climate change; developing a sustainable energy programme; adopting an integrated response by relevant government departments; compiling inventories of greenhouse gases; accessing and managing financial resources; and research, education, and training</p>
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	<p>energy savings, of at least 12% to be achieved by 2015</p> <p>Biofuel Strategy The 2007 National Industrial Biofuels Strategy sets a target of 2% (of the national liquid fuels supply) penetration of biofuels in 2013 (DME 1998; DME 2003; DME 2007)</p> <p>Implementation of Biofuel Strategy The Strategy seeks to stimulate rural development and to reduce poverty by creating sustainable income-earning opportunities. Biofuels plant investment can be a catalyst for the transformation of rural economies and contribute to the government’s Accelerated and Shared Growth Initiative (AsgiSA). Furthermore, biofuels can also contribute towards the achievement of the renewable energy goals; energy security and the reduction of greenhouse gas emissions. The feasibility study underpinning this strategy included an analysis that considered the impact of all these factors.</p> <p>Integrated Energy Planning The Department of Energy is implementing Integrated Energy Planning (IEP) taking into consideration environmental issues- climate change issues as well as increase focus on energy security and ensuring an optimal energy mix for South Africa. This national Integrated Energy Plan is a step in the direction of improving South Africa’s energy mix, by taking a broad view of the energy sector, and while it still saw heavy reliance on coal and nuclear in the next two decades, it also emphasized renewable energy, energy efficiency, diversifying the energy resource base, greater environmental considerations with respect to energy production, consumption, and ensuring more equitable access to energy</p> <p>Energy and Climate Change – Status Quo Analysis and Strategy Roadmap The Department of Energy is finalising the Energy and</p>		
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	<p>Climate Change – Status Quo Analysis and Strategy Roadmap. This Energy and Climate Change – Status Quo Analysis and Strategy Roadmap includes a review of the key legal, regulatory and policy context of relevance to the South African energy sector, and a strategic assessment of energy and climate change issues as they relate to the Department and a roadmap for the development of an appropriate and effective Energy and Climate Change Strategy for the Department of Energy is also provided.</p> <p>Planned activities include:</p> <ul style="list-style-type: none"> • The development of a energy, transport and mining sector greenhouse gas emissions information management system that will provide accurate, up to date and complete information to the South African Air Quality Information System’s National Greenhouse Gas Inventory and will ensure that its greenhouse gas emissions information management system provides measurable, reportable and verifiable information on all significant interventions (i.e. interventions that reduce GHGs by greater than 0.1% of emissions from the sector). • The development of strategies to encourage and support new and/or emerging carbon friendly sources of energy, especially renewable energy • The development of a GHG mitigation strategy for fugitive greenhouse gas emissions from energy industries and the development of any necessary legislative, regulatory and fiscal packages to give effect to the strategy by 2012. • Department of Human Settlement/ Energy 		
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	<p>will develop energy efficiency guidelines to increase the energy efficiency of new residential, commercial buildings and major renovations, with minimum standards to be reviewed and increased periodically</p> <ul style="list-style-type: none"> • Carbon capture and storage (CCS) for coal fired power stations and all coal-to-liquid (CTL) plants will be explored and developed. • 		
<p><Sectoral Planning and Implementation></p> <p>Development of a national climate change response strategy that focuses on</p> <ul style="list-style-type: none"> • Adapting to Climate Change • Integration of climate change response in government • Meeting international obligations and domestic legal obligations <p>Policy development process- Creation of a national Climate Change Response Policy in the form of a White Paper</p> <p>Planned activities include translating policy into legislative, regulatory and fiscal package</p> <p>South African National Biodiversity Institute (SANBI) Climate Change Research Group (CCRG)</p> <p>The programme assesses the impacts of likely changes in atmospheric Composition and climate on the structure, function and biodiversity of southern African ecosystems and endemic species . It also aims to determine the vulnerability of South Africa's botanical diversity to projected climate change and to help plan possible adaptation measures</p> <p>http://www.deat.gov.za/ClimateChange2005/CCRG</p> <p>Climate Change and Agricultural Risk Management</p>	<p><REDD></p>	<p><Finance></p> <p>Development of a national climate change response strategy that focuses on:</p> <ul style="list-style-type: none"> • Accessing and managing financial resources for climate change <p>The Renewable Energy Finance and Subsidy Office (REFSO)</p> <p>Following National Treasury approval of a renewable energy subsidy scheme in September 2005, the DME administered Renewable Energy Finance and Subsidy Office (REFSO) was established in October 2005 to fund the renewable energy projects.</p> <p>Integrated Resource plan (IRP 1)</p> <p>The department of Energy approved the Integrated Resource Plan (IRP1 for implementation as per the requirement of the electricity regulations on new generation capacity. The IRP 1 gives effect to the following policy objectives; 10 000 Gwh (approximately 4% of the energy mix) of Renewable Energy, the implementation of Energy Efficiency and Demand Side Management through financial incentives schemes and installation of one million solar water heaters.</p>	<p>Second National Communication</p> <p>South Africa is currently developing the SNC to the UNFCCC in fulfillment of its commitment and obligations as required by activities 4.1 and 12.1 of the Convention. This SNC is prepared on the basis of guidelines adopted at COP 8(decision 17/CP.8) in 2002.</p>

<p>Programme The programme focuses on (a) Development of climate-resilient crop varieties, (b) Best conservation agricultural practices, for example, implementation of multi-cropping system. (c) Land care programme focuses on land restoration. (d) Early System Programme main focus is to provide climate information in a form of advisories to farmers (e) Plant breeding programme main focus is to develop heat tolerant crops</p> <p>Climate Response Options for Agricultural production (DAFF) The focus areas include: documenting information relating to GHG emission from the agriculture sector; elaborating on climate change and models and management practices that can reduce dependence on irrigation and promote the “crop per drop” approach to farming without reducing crop yields; identifying crop suitability models and input parameters as well as time scales for inputs for these models; a regional/ South African NPP/NEP map; and modeling 1st to 4th order impacts of climate change on the agricultural sector of South Africa</p> <p>Agricultural Position paper on Climate Change The department of Agriculture , forestry and fisheries developed a national and international position on climate change for the agricultural sector</p> <p>Climate Change and Water Programme The programme focuses on (a) Water conservation practices including rainwater harvesting. (b) Water harvesting and optimisation main focus issues are: water storage, water use efficiency and water management. Wetlands programme main focus wetlands conservation, wetlands management</p> <p>Health’s Malaria Control Programme This programme focuses on (a) Potential malaria</p>		<p>Planned activities include:</p> <ul style="list-style-type: none"> • The Central Energy Fund to explore and promote investments in appropriate energy solutions to meet the future energy needs of South Africa including gas, solar energy, low-smoke fuels, biomass, wind and renewable energy sources. • The National Treasury plans to undertake specific incentive and subsidy measures that promote investments in cleaner energy such as renewable electricity and fuels in support of Climate Change and environmental objectives. 	
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<p>outbreaks due to the impacts of Climate Change, (b) Long term human and environmental consequences of the use of DDT.</p> <p>Wetlands Programme (Peat lands) This programme focuses on rehabilitations of peat lands</p> <p>DAFF Climate Change Sector Plan DAFF is currently developing a Climate Change Sector Plan</p> <p>Climate Change Adaptation Sector Plan This programme focus on development of sector plan and strategy for the various adaptation sectors</p> <p>Climate Change Programmes in Local Government On the local government front the City of Cape Town Metropolitan Municipality and the eThekweni Metropolitan Municipality carry out monitoring of changes in the composition of the atmosphere that triggers climate change. It is envisaged that once adequate time series data have been collected, it will be used to compile green house gas emission and dispersion atlases, and to prepare air quality management plans</p> <p>Planned activities include:</p> <ul style="list-style-type: none"> • Strengthening Climate Change Adaptation Scenario Planning • Revitalisation of all irrigation schemes in the country (responsible institution DAFF) • Disaster Risk Reduction (responsible institution, NDMC and Dept of cooperative governance and Traditional Affairs) • The development of a national strategy aimed at incentivising activities that increase protected wetland management by subsidising one farming activity for those farmers that protect and manage wetlands 			
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<p>that fall within and/or border their properties (e.g. water allowances to reduce drainage from wetlands etc.)</p>			
<p><Building Economic and Social Resilience></p> <p>Use of Economic Instruments The Department of Trade and Industry has commissioned a study to provide an overview of the use of economic instruments and develop sectoral plans to mitigate the effects of climate change</p> <p>Planned activities:</p> <ul style="list-style-type: none"> The Department of Trade and Industry will ensure that Climate Change considerations are incorporated in the Industrial policy mechanisms (particularly the NIPF and IPAP) so that it could assist in generating information about specific industries 	<p><LULUCF and Carbon Markets></p> <p>Forestry Programme This programme focuses on (a) Planting a million trees, (b) Sustainable forestry management, (c) Carbon stocks</p> <p>Mkuze Carbon Sink Reforestation Project The project aims at achieving increased sink/sequestration potential from a community reforestation perspective</p> <p>Buffelsdraai Landfill Site Reforestation Project The project aims at reforesting the landfill site as a means of adding to the carbon offsets for the greening of the 2010 soccer world cup</p> <p>LEAP Project Restoring mining areas with indigenous vegetation and building a green economy for miners who have no jobs currently</p> <p>Planned activities include:</p> <ul style="list-style-type: none"> Establishing afforestation programme (responsible institution, DAFF) Greenhouse gas emission reporting by industries to be mandatory 	<p><Technology Transfer></p> <p>Long-term Mitigation Scenario (LTMS) process: Implementing the Business Unusual Call for Action (investments in R+D for electric and hybrid vehicles, new solar technologies, clean coal technologies, carbon capture and storage)</p> <p>Climate Change Technology Needs Assessment Project This project aims to introduce technologies that can improve South Africa's developmental and environmental integrity. The main objective is to identify and assess environmentally sound technologies that have synergy between reducing the impact of climate change and the rate of GHG emissions in South Africa within national development objectives</p> <p>Basa Njengo Magogo (BnM) Programme The BnM technique/art is a top-down method of lighting a fire which reduces particulate emissions by up to 80% in ambient air. Particulate emissions are a significant contributor to the causes of respiratory diseases within households that use coal as a domestic energy source.</p> <p>Demand Side Management Programme Demand Side Management (DSM) is a process implemented by Eskom to</p>	

		<p>encourage consumers to modify patterns of electricity usage, including the timing and level of electricity demand. Eskom's Demand Side Management efforts include the roll-out of CFL (energy efficient) lightbulbs, solar water heaters, and energy efficiency and load management projects.</p> <p>Planned activities:</p> <ul style="list-style-type: none"> • The Department of Science and Technology plans to develop a national solar energy technology roadmap • The Department of Energy together with SABS will finalised the standards on boilers, AC Motors and thermal pipes. All these standards would cover the codes of practices and would also be made mandatory by the Energy Bill and the Air Quality Act. 	
Civil Society Driven Initiatives			
Adaptation	Mitigation	Supporting Measures	Others
<Risk and Disaster Mgt>	<p><Energy></p> <p>South Africa Wind Energy Programme (SAWEP), Phase I SAWEP is a GEF-funded project. Its aim is to reduce GHG emissions generated by thermal power generation in the national inter-connected system. The objective is to install and operate up to 5.2 MW at Darling Wind Farm and prepare the development of 45 MW combined wind farms</p> <p>Cleaner Production Group (CPG) The Cleaner Production Group (CPG) comprises a collection of leading experts from several organisations involved in cleaner production-related activities. It</p>	<p><Capacity Building></p> <p>Climate Change Capacity Development (C3D) project This project addresses capacity needs for climate change through an innovative training and capacity building partnership. Research themes relating to global climate change include: mitigation, greenhouse gas inventories, the impact of potential future allocation schemes on South Africa, Clean Development Mechanism, and capacity building and adaptation to the impacts of climate change Funded by The European Commission</p>	

	<p>covers all aspects of cleaner production - water and energy efficiency, waste reduction and recycling, and sustainable consumption and event greening. It aims at preventing waste and pollution at source, minimizing the use of hazardous raw materials , improving water and energy efficiency, reducing risks to human health and Promoting sustainable development</p> <p>The Institute of Security Studies (ISS) plans to extend its research work to focus on mitigation issues such as agriculturally derived biofuels which are intended to replace the traditional oil derived petroleum. This is important because there is likely to be a major push for such 'clean' fuels in maize and sugarcane rich countries across Southern Africa. However, this could also have a negative impact on food security in the region.</p>	<p>through EuropeAid Co-Operation Office, Irish Aid, Swiss Federal Aid for Environment and DANIDA and implemented by Climate Change Programme of the United Nations Institute for Training and Research (UNITAR) South Africa. (Energy and Research Centre (ERC) - Faculty of Engineering and the Built Environment at the University of Cape Town). http://www.c3d-unitar.org/?q=node/2</p> <p>USAID Programme on Climate Change</p> <p>This programme supports the design, implementation, and evaluation of programs linked to climate change; provides training for decision-makers and stakeholders; disseminates information to local officials; and supports pilot activities using renewable energy technologies</p> <p>Partners in climate change activities in South Africa include: Ecoserv, The Alliance to Save Energy (ASE), The Johannesburg Roads Agency (JRA), The Louis Berger Group, Inc (LBG), The National Energy Efficiency Agency (NEEA), The SAG's Department of Environmental Affairs and Tourism (DEAT), The South African Cities Network (SACN), The South African Government (SAG)'s Department of Provincial and Local Government (dplg)</p> <p>http://www.usaid.gov/our_work/environment/climate/country_nar/safrica.html</p> <p>South African Climate Action Network (SACAN) is a network of like-minded Non-Governmental Organisations (NGOs), Community Based Organisations (CBOs) and individuals working on climate change issues in South Africa. It facilitates local civil society</p>	
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		<p>organisations' participation in responding to climate change at national, regional and international levels. It also coordinates information exchange on national, regional and international climate policies and issues, amongst civil society organisations and with other interested institutions; and formulates national, regional and international policy options and position papers on climate related issues. It further initiates civil society capacity building and public awareness raising to promote government and individual action, to limit human-induced climate change to ecologically sustainable levels and develop capacity to adapt to climate change.</p> <p>www.earthlife.org.za</p> <p>Climate Change Research Programmes at Universities</p> <p>The Universities of Cape Town, Johannesburg, KwaZulu-Natal, Limpopo, Witwatersrand and Pretoria have fully established climate change-related monitoring and research programmes. The foci of their programmes range from the scientific fundamentals of climate change, through the assessments of vulnerability and impacts, to the development of mitigation and adaptation technologies and strategies.</p> <p>Meteorological, Atmospheric and Oceanographic Programmes</p> <p>The Climate and Environment Research and Monitoring (CERM) Unit at SAWS, the Climate Systems Analysis Research Group at UCT, the Hydrology and Water Resources Section at the UKZN, the Climate Research</p>	
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<p><Sectoral Planning and Implementation></p> <p>Managing Climate Risk to Agriculture and Water Resources in South Africa Programme Given the potential overlap between climate change and existing forms of climate variability, this project seeks to integrate the current treatment of seasonal</p>	<p><REDD></p> <p>Change and the Governance of Carbon Trade Initiatives in Africa- Corruption and Governance Programme (Institute Of Social Security Studies) As part of a commitment to stimulate the debate on policy initiatives designed to mitigate the impact of</p>	<p><Finance></p>	

<p>and annual climate variability with decadal forecasts and long-term scenarios (up to 2050) generated by global climate models, also known as general circulation models (GCMs). The project will feature a previously tested model, extensive stakeholder engagement and capacity-building for local scientists. The idea is to enable private and public institutions in the Western Cape and the country to better integrate information on climate change and climate variability into water resources policy, planning and management.</p> <p>Funded by IDRC and covers South Africa (University of the Free State) http://www.idrc.ca; http://www.uovs.ac.za; http://www.idrc.ca/en/ev-113692-201_104150-1-IDRC_ADM_INFO.html</p>	<p>climate change, the Programme is engaged in a multi-country study (Ethiopia, South Africa and Uganda) on the implementation of carbon 'off-set' projects in Africa. Three of the four projects form part of the clean development mechanism under the auspices of the Kyoto Protocol. The research aims to investigate the sustainability of such projects – and understand the opportunities they may create for corrupt behaviour http://www.iss.co.za/index.php?link_id=1&slink_id=159&link_type=13&slink_type=12&tmpl_id=3</p>		
<p><Building Economic and Social Resilience></p>	<p><LULUCF and Carbon Markets></p> <p>Carbon Disclosure Projects The National Business Institute 'is assisting South African companies to address some of the challenges through the Carbon disclosure Projects. The Carbon Disclosure Project (CDP) has challenged the companies to measure and report their carbon emissions, integrating the long-term value and cost of climate change into their assessment of the financial health and future prospects of their business.</p>	<p><Technology Transfer></p>	
<h2>6. Seychelles</h2>			
<p>Government Driven Initiatives</p>			
<p>The Government of Seychelles, being a State party to the UNFCCC, has undertaken certain mandatory activities pursuant to its obligations under the Convention. These include Participation in UNFCCC Processes- Initial Communication - GHG Inventories; mitigation and adaptation measures;</p>			
<p>Adaptation</p>	<p>Mitigation</p>	<p>Supporting Measures</p>	<p>Others</p>
<p><Risk and Disaster Mgt></p>	<p><Energy></p>	<p><Capacity Building></p>	
<p><Sectoral Planning and Implementation></p>	<p><REDD></p>	<p><Finance></p>	

<Building Economic and Social Resilience>	<LULUCF>	<Technology Transfer>	
Civil Society Initiatives			
Adaptation	Mitigation	Supporting Measures	Others
<Risk and Disaster Mgt>	<Energy>	<Capacity Building>	
<Sectoral Planning and Implementation> Marine Conservation Volunteer Program - Global Vision International (GVI) GVI Seychelles uses two methodologies (coral recruitment and coral monitoring) to measure the health and recovery potential of the reefs around shores, in response to the worldwide bleaching events of 1998 and the more localized events of 2002 and 2003. Predicted increases of sea surface temperatures due to climate change may result in more frequent and severe bleaching events in the south-western Indian Ocean. The monitoring program studies provide a record of the magnitude and frequency of these events, and the subsequent recovery or degradation of the reef. Over one hundred people a year from different countries participate in our programs, learning about the potential effects of	<REDD>	<Finance>	

climate change and spreading our concerns worldwide. Funded by Global Vision International (GVI) the volunteer programme covers Seychelles www.gvi.co.uk			
<Building Economic and Social Resilience>	<LULUCF>	<Technology Transfer>	
7. Swaziland			
Government Driven Initiatives			
The Government of Swaziland, being a State party to the UNFCCC, has undertaken certain mandatory activities pursuant to its obligations under the Convention. These include Participation in UNFCCC Processes- Initial Communication - GHG Inventories; mitigation and adaptation measures;			
Adaptation	Mitigation	Supporting Measures	Others
<Risk and Disaster Mgt>	<Energy>	<Capacity Building>	
<Sectoral Planning and Implementation>	<REDD>	<Finance>	
<Building Economic and Social Resilience >	<LULUCF>	<Technology Transfer>	
Civil society initiatives			
Adaptation	Mitigation	Supporting Measures	Others
<Risk and Disaster Mgt>	<Energy>	<Capacity Building>	

<Sectoral planning and implementation>	<REDD>	<Finance>	
<Building Economic and Social Resilience>	<LULUCF>	<Technology Transfer>	
8. Tanzania			
Government Driven Initiatives			
The Government of Tanzania, being a State party to the UNFCCC, has undertaken certain mandatory activities pursuant to its obligations under the Convention. These include Participation in UNFCCC Processes- Initial Communication - GHG Inventories; mitigation and adaptation measures; and the development of National Adaptation Programmes of Action.			
Adaptation	Mitigation	Supporting Measures	Others
<Risk and Disaster Mgt> Development of climate change scenarios- Analysis of rainfall and temperature trends Assessment of Vulnerability and Adaptation to Climate Change in order to: identify areas of potential vulnerability to climate change of natural resources and ecosystems etc; evaluate policy options to reduce vulnerability to impacts of climate change; analyse the feasibility, viability, cost and benefits of the alternative options	<Energy>	<Capacity Building> Programme on Systematic Observations focuses on assessing the capacity of Tanzania Meteorological Agency (TMA) to participate in systematic climate data observation and station networks Programme on awareness for policy makers and the general public on impacts of climate change.	
<Sectoral Planning and Implementation> Development of National Action Plan on Climate Change for Tanzania that takes account of and is complementary to Tanzania's national economic and	<REDD> National REDD Programme aims to <ul style="list-style-type: none"> • adapt forest management systems, • establish financing mechanisms and associated 	<Finance>	

<p>environmental policies and plans</p> <p>Programme on Assessment of Vulnerability and Adaptation to Climate Change also focuses on assessing the impact of climate change in economic sectors of national development;</p>	<p>monitoring and verification systems that are attuned to the country needs</p> <ul style="list-style-type: none"> manage forests sustainably while responding to poverty reduction initiatives <p>REDD policy development and inclusion into UNFCCC framework</p>		
<Building Economic and Social Resilience>	<LULUCF>	<Technology Transfer>	
	<p>GHG Mitigation Study- Greenhouse gas emissions mitigation- GHG inventory for five modules (energy, agriculture, waste, LULUCF, and industrial processes</p>		
Civil Society Driven Initiatives			
Adaptation	Mitigation	Supporting Measures	Others
<p><Risk and Disaster Mgt></p> <p>Programme to Support climate change activities linked with the NAPA process in Tanzania</p> <p>The programme focuses on, amongst other things, analysis of climate change trends and its impacts, and support to the prioritization of actions in NAPA</p> <p>Danish Embassy. Tanzania http://amg.um.dk/en/menu/PoliciesAndStrategies/Climate+and+Development/</p>	<p><Energy></p>	<p><Capacity Building></p> <p>Programme to Support climate change activities linked with the NAPA process in Tanzania</p> <p>The programme focuses on, amongst other things, general awareness raising on climate change and potential responses</p>	
<p><Sectoral Planning and Implementation></p> <p>Managing Risk, Reducing Vulnerability and Enhancing Productivity under a Changing Climate Project</p> <p>Opportunities exist to reduce the impact of drought and poverty in the region by capitalizing on the inherent adaptability of small-scale farmers. Using case studies this action-research project seeks to</p>	<p><REDD></p>	<p><Finance></p>	

<p>contribute to the development of adaptive strategies by gathering knowledge on vulnerability to drought within different social, political and economic contexts, and designing decision-making tools to reduce vulnerability</p> <p>Funded by IDRC and covers Tanzania (Sokoine University of Agriculture), http://www.idrc.ca</p>			
<p><Building Economic and Social Resilience></p>	<p><LULUCF></p>	<p><Technology Transfer></p> <p>Greenhouse Gases Mitigation Programme (Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ))</p> <p>The programme focuses on identifying technologies that are associated with GHG emissions for various sectors, together with technical possibilities of minimising of GHG emissions. It also analyzes the technical characteristics of various technologies identified as well as evaluating their reduction potentials</p>	
<p>9. Zambia</p> <p>Government Driven Initiatives</p> <p>The Government of Zambia, being a State party to the UNFCCC, has undertaken certain mandatory activities pursuant to its obligations under the Convention. These include Participation in UNFCCC Processes- Initial Communication - GHG Inventories; mitigation and adaptation measures; and the development of National Adaptation Programmes of Action.</p>			
<p>Adaptation</p>	<p>Mitigation</p>	<p>Supporting Measures</p>	<p>Others</p>
<p><Risk and Disaster Mgt></p>	<p><Energy></p>	<p><Capacity Building></p> <p>Methodological development, National Mitigation Analysis and Institutional Capacity Building Programme</p> <p>This programme aims to:</p> <ul style="list-style-type: none"> • establish and enhance national framework for developing climate change mitigation in Zambia in line with general development objectives. • establish or enhance the national capacity 	<p>Documentation of National Implementation Plans (NIPS)- Management of persistent organic pollutants (POPs) under the Stockholm Convention</p>

		<p>to comply with the requirements of the framework convention on climate change, primarily with regard to mitigation, but including enhancement of greenhouse gas inventories where necessary, and</p> <ul style="list-style-type: none"> • develop and test a methodological framework for sub regional climate change mitigation analysis and strengthen regional awareness and responses to climate change. <p>National capacity self assessment for implementation of Rio Convention. The programme focuses on identification of gaps in national capacity for effective implementation of UNCBD, UNCCD and UNFCCC</p> <p>Comprehensive national climate change awareness program- It aims to ensure national ownership and success of future climate change related efforts</p>	
<p><Sectoral Planning and Implementation></p> <p>NAPA submitted to UNFCC in 2007- Addresses immediate pressing adaptation priorities in the food security and public health sectors</p> <p>Economic impact of climate change in Zambia- Importance of climate change to short, medium and long term development priorities for Zambia as set in the FNDP</p> <p>Clean Development Mechanism- Designation of a national authority to oversee CDM projects</p>	<REDD>	<Finance>	
<Building Economic and Social Resilience>	<LULUCF>	<Technology Transfer>	
Civil Society Driven Initiatives			

Adaptation	Mitigation	Supporting Measures	Others
<Risk and Disaster Mgt> United States Country Study Programme (US CSP). This focuses on, amongst other things, models for predicting adaptation and vulnerability scenarios and capacity building with particular emphasis on modelling.	<Energy> National Studies and Regional Collaboration (DANIDA) programme. It focuses on research on the economy, overview of the institutional set up for national planning related to environment, organisation overview for the existing climate change activities, review of existing studies and plans on climate change, energy supply and demand, and environmental issues in major sectors of the economy and mitigation.	United States Country Study Programme (US CSP). The programme focuses on, amongst other things, capacity building with particular emphasis on modelling.	
<Sectoral Planning and Implementation>	<REDD>	<Finance>	
<Building Economic and Social Resilience>	<LULUCF>	<Technology Transfer>	

10. Zimbabwe

Government Driven Initiatives

The Government of Zimbabwe, being a State party to the UNFCCC, has undertaken certain mandatory activities pursuant to its obligations under the Convention. These include Participation in UNFCCC Processes- Initial Communication - GHG Inventories; mitigation and adaptation measures. The second communication is being prepared

Adaptation	Mitigation	Supporting Measures	Others
<Risk and Disaster Mgt>	<Energy>	<Capacity Building>	
<Sectoral Planning and Implementation> Coping with Drought and climate change Project The project seeks to develop and pilot a range of long-term adaptation measures in the agriculture sector to reduce the vulnerability of small-holder farmers and pastoralists in rural Zimbabwe to current and future climate change related shocks. It also seeks to develop long term policy oriented approaches for adaptation to climate change among rural men and women in agriculture through: developing and implementing a range of viable pilot demonstration measures in	<REDD>	<Finance>	

response to identified climate risks , and developing local capacity to use climate early warning systems to strengthen adaptation/livelihood strategies Funded by UNDP the project covers the Chiredzi district in Zimbabwe. www.undp.org			
<Building Economic and Social Resilience>	<LULUCF>	<Technology Transfer>	
Civil Society Driven Initiatives			
Adaptation	Mitigation	Supporting Measures	Others
<Risk and Disaster Mgt>	<Energy>	<Capacity Building> Coping with Drought and Climate change Project This project focuses on, amongst other things, developing local level capacity to expand the knowledge base on climate change to support effective adaptation in agriculture sector and disseminating project generated lessons and fostering public awareness about potential impacts of climate change Funded by UNDP the project covers the Chiredzi district in Zimbabwe. www.undp.org	UNEP Greenhouse Gas Abatement Costing Studies-Assessment of inventories, options and cost of reducing greenhouse gases. The project was in three phases, which cover GHG inventories and mitigation implementation of options.
<Sectoral Planning and Implementation>	<REDD>	<Finance>	
<Building Economic and Social Resilience>	<LULUCF>	<Technology Transfer>	
11. Angola			

Government Driven Initiatives			
The Government of Angola, being a State party to the UNFCC, has undertaken certain mandatory activities pursuant to its obligations under the Convention. These include Participation in UNFCCC Processes- Initial Communication - GHG Inventories; mitigation and adaptation measures; and the development of National Adaptation Programmes of Action.			
Adaptation	Mitigation	Supporting Measures	Others
<Risk and Disaster Mgt>	<Energy>	<Capacity Building>	
<Sectoral Planning and Implementation>	<REDD>	<Finance>	
<Building Economic and Social Resilience>	<LULUCF>	<Technology Transfer>	
Civil Society Driven Initiatives			
Adaptation	Mitigation	Supporting Measures	Others
<Risk and Disaster Mgt>	<Energy>	<Capacity Building>	
<Sectoral Planning and Implementation>	<REDD>	<Finance>	
<Building Economic and Social Resilience>	<LULUCF>	<Technology Transfer>	
12. Botswana			
Government Driven Initiatives			
The Government of Botswana, being a State party to the UNFCC, has undertaken certain mandatory activities pursuant to its obligations under the Convention. These include Participation in UNFCCC Processes- Initial Communication - GHG Inventories; mitigation and adaptation measures			
Adaptation	Mitigation	Supporting Measures	Others
<Risk and Disaster Mgt>	<Energy>	<Capacity Building>	
<Sectoral Planning and Implementation>	<REDD>	<Finance>	
<Building Economic and Social Resilience>	<LULUCF>	<Technology Transfer>	

Civil Society Driven Initiatives			
Adaptation	Mitigation	Supporting Measures	Others
<Risk and Disaster Mgt>	<Energy>	<Capacity Building>	
<Sectoral Planning and Implementation>	<REDD>	<Finance>	
<Building Economic and Social Resilience>	<LULUCF>	<Technology Transfer>	
13. Democratic Republic of Congo			
Government Driven Initiatives			
The Government of Democratic Republic of Congo, being a State party to the UNFCCC, has undertaken certain mandatory activities pursuant to its obligations under the Convention. These include Participation in UNFCCC Processes- Initial Communication - GHG Inventories; mitigation and adaptation measures; and the development of National Adaptation Programmes of Action.			
Adaptation	Mitigation	Supporting Measures	Others
<Risk and Disaster Mgt>	<Energy>	<Capacity Building>	
<Sectoral Planning and Implementation>	<REDD>	<Finance>	
<Building Economic and Social Resilience>	<LULUCF>	<Technology Transfer>	
Civil Society Driven Initiatives			
Adaptation	Mitigation	Supporting Measures	Others
<Risk and Disaster Mgt>	<Energy>	<Capacity Building>	
<Sectoral Planning and Implementation>	<REDD>	<Finance>	
<Building Economic and Social Resilience>	<LULUCF>	<Technology Transfer>	

14. Mozambique			
Government Driven Initiatives			
The Government of Mozambique, being a State party to the UNFCCC, has undertaken certain mandatory activities pursuant to its obligations under the Convention. These include Participation in UNFCCC Processes- Initial Communication - GHG Inventories; mitigation and adaptation measures			
Adaptation	Mitigation	Supporting Measures	Others
<Risk and Disaster Mgt	<Energy>	<Capacity Building>	
<Sectoral Planning and Implementation>	<REDD>	<Finance>	
<Building Economic and Social Resilience>	<LULUCF>	<Technology Transfer>	
Civil Society Driven Initiatives			
Adaptation	Mitigation	Supporting Measures	Others
<Risk and Disaster Mgt>	<Energy>	<Capacity Building> Danish Action Program – This focuses on: awareness raising about national and local impacts of climate change; capacity building related to climate data and forecasting; interdisciplinary Master’s and PhD training, and case study analysis at provincial level, where climate information, socioeconomic impacts and policy implementation are considered in an integrated way Danish Embassy. Mozambique. http://amg.um.dk/en/menu/PoliciesAndStrategies/Climate+and+Development/	
<Sectoral Planning and Implementation> Development Policy Planning and Implementation in Eastern and Southern Africa (ACCESA) The programme focuses on, amongst other things, promoting the mainstreaming or integration of	<REDD>	<Finance>	

<p>vulnerability and adaptation to climate change into sustainable development plans and planning processes through a pilot project in Mozambique. Community-based fire management in central Mozambique will reduce the area of forests that currently burn on an annual basis, and provide the skills necessary to address the rise in fire outbreaks anticipated as a result of climate change.</p> <p>Funded by the United Nations Environmental Programme Global Environmental Facility (UNEP-GEF) the project covers Mozambique. www.acts.or.ke/</p>			
<p><Building Economic and Social Resilience></p> <p><i>Adaptation to Climate Change in Eastern and Southern Africa (ACCESA)</i></p> <p>This programme aims to, amongst other things, reduce the vulnerability of communities to the impacts of climate change, thereby improving their well-being and protecting their livelihoods. Community based fire management in Central Mozambique. Bush fires are an issue of increasing concern in Mozambique, and their frequency and intensity could rise due to climate change. AMBERO-IP and Deutsche Gesellschaft fuer Technische Zusammenarbeit (GTZ) have responded to this situation by providing training in fire prevention and management at the community level, helping district governments develop and implement policies and processes for monitoring and responding to fire threats and occurrences, and encouraging policy coherence at the national level around fire management.</p> <p>Funded by The Global Environment Facility's Strategic Priority on Adaptation, The Government of the Netherlands and The Government of Norway. Mozambique.</p> <p>www.iisd.org/climate/vulnerability/adaptation.asp</p>	<p><LULUCF and Carbon Markets></p> <p>Community based carbon project in Mozambique Project - IIED</p> <p>The aims of this project was to formulate a programmatic forestry sink project in Zambézia Province, Mozambique which will benefit poor smallholder farmers and be managed locally in line with the national decentralization policy. Drawing from the experience of existing payment for ecosystem services (PES) schemes, including the voluntary carbon market, to design a payment scheme, which will keep to a minimum the costs involved in contracting, monitoring carbon, transferring payments to individual farmers and enforcing contracts.</p> <p>Funded by PROFOR and DANIDA and covers Mozambique's Zambézia Province.</p> <p>http://www.iied.org/natural-resources/key-issues/forestry/community-based-forest-carbon-project-mozambique</p>	<p><Technology Transfer></p>	
<p>15. Madagascar</p>			

Government Driven Initiatives

The Government of Madagascar, being a State party to the UNFCCC, has undertaken certain mandatory activities pursuant to its obligations under the Convention. These include Participation in UNFCCC Processes- Initial Communication - GHG Inventories; mitigation and adaptation measures; and the development of National Adaptation Programmes of Action.

Adaptation	Mitigation	Supporting Measures	Others
<Risk and Disaster Mgt>	<Energy>	<Capacity Building>	
<p><Sectoral Planning and Implementation></p> <p><i>Vulnerability and Adaptation to Climate Change : Agricultural Systems in Madagascar</i></p> <p>This project focuses on facilitating dialogue between decision-makers and researchers at the national, regional and local level; to produce spatial information on the factors affecting vulnerability to climate change on the whole island of Madagascar; to better understand existing and possible adaptation strategies; to explore various intervention strategies under different scenarios; and to reinforce national capacity in analysis of climate change vulnerability and adaptation</p> <p>Funded by IDRC and housed at the Université d'Antananarivo in Madagascar. http://www.idrc.ca/en/ev-113691-201_104143-1-IDRC_ADM_INFO.html; http://www.univ-antananarivo.mg</p>	<REDD>	<Finance>	
<Building Economic and Social Resilience>	<LULUCF>	<Technology Transfer>	
Civil Society Driven Initiatives			
Adaptation	Mitigation	Supporting Measures	Others
<Risk and Disaster Mgt>	<Energy>	<Capacity Building>	

<Sectoral Planning and Implementation>	<REDD>	<Finance>	
<Building Economic and Social Resilience>	<LULUCF>	<Technology Transfe	

1 Sub-regional Intergovernmental Programmes on Climate Change in Southern Africa			
Adaptation	Mitigation	Supporting Measures	Others
<Risk and Disaster Mgt>	<Energy Sector>	<Capacity Building>	
<p>The SADC Drought Monitoring Centre (DMC): The main objective of the SADC DMC is to carry out climate monitoring and prediction for early warning and mitigation of adverse impacts of extreme climatic events on agricultural production, food security, water resources, energy, and health among other socio-economic sectors. The centre has played an important role in providing the sub-region with weather and climate advisories and more importantly, timely early warnings on droughts, floods and other extreme climate related events.</p> <p>Southern Africa Regional Climate Outlook Forum (SARCOF) This forum brings together Climate scientists from SADC National Meteorological and/ or Hydrological Services (NMHSs) and the Drought Monitoring Centre (DMC) to prepare</p>	<p>ProBEC (Programme for Basic Energy and Conservation). This is a SADC project that manages and stimulates the establishment of various projects based on basic energy conservation in 10 member states in SADC. Currently ProBEC is actively involved in Malawi, Lesotho, Mozambique, Tanzania, Swaziland, Zambia, Botswana, Namibia and South Africa</p>	<p>COMESA Climate Change Initiative - The goal of COMESA's Climate Change Initiative is: <i>"Achieving economic prosperity and climate change protection."</i> The overall objective of the Initiative is to address climate change and its impacts in a manner that builds economic and social resilience for present and future generations. The specific objectives are to consolidate a shared vision for Africa on climate change and a common and informed voice for the continent in the Post Kyoto Climate Change negotiations and beyond; foster regional and national cooperation to address climate change and its impacts; promote integration of climate change considerations into regional, national policies, sectoral planning and development and budgeting; enhance human and institutional capacities of COMESA Secretariat, specialized institutions and Member States to effectively address the challenges of climate change; mobilize African and international scientific and technical communities to increase</p>	<p>SADC 24th Plenary Assembly of the SADC Parliamentary Forum Communiqué of the 20th – 27th of November 2008 - Paragraph 6: <i>Noting that, as a result of the Climate change the SADC region is periodically faced with floods and droughts, that the current energy crisis in the SADC region has exacerbated poverty in the region, the Forum acknowledged that there is need for parliamentarians to raise their commitment to fighting poverty, climate change and other regional crises and challenges</i></p>

<p>reports on seasonal climate status and outlook.</p>		<p>knowledge base and its management to support informed decision making processes; promote and enhance collaboration, synergy, partnerships and effective participation of Governments, business community, civil society and other stakeholders in climate change matters; and provide a framework for the establishment of an African BioCarbon Facility that combines market-based offsets, public and private funds.</p>	
<p>SADC Task Force for Monitoring Weather Conditions – This Task Force is found under the Food Security, Technical and Administrative Unit. It is specifically there to monitor weather conditions. The task force comprises the SADC’s Regional Early Warning Unit, the Regional Remote Sensing Project, the Drought Monitoring Centre and the Famine Early Warning System Project, all based in Harare, Zimbabwe. The early warning unit issues alerts to help member countries prepare for the prospect of drought or flooding and consider ways of mitigating their effects</p>		<p>SADC Regional Environmental Programme The purpose of the Regional Environmental Education (EE) Programme is to enable environmental education practitioners in the SADC region to strengthen environmental education processes for equitable and sustainable environmental management choices. This will be achieved through enhanced and strengthened environmental education policy, networking, resource materials, training capacity, and research and evaluation.</p>	<p>SADC Protocol on Forestry - Article 3: <i>To achieve the objectives of this Protocol, State Parties shall co-operate by: (a) assisting and supporting 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</i></p>
<p>SADC Regional Early Warning System This provides advance information on food crop yields and food supplies and requirements. The information alerts Member States and stakeholders of impending food shortages/surpluses early enough for appropriate interventions. National Early Warning</p>			<p>SADC Meeting of Ministers of Environment and Sustainable Development Communiqué of 13th November 2009 – Paragraph 4: <i>Ministers noted the upcoming Fifteenth Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 15</i></p>

<p>Units have been established in all Member States to collect, analyse and disseminate early warning information at country level; AIMS produces regional reports.</p>			<p><i>of UNFCCC) scheduled for Copenhagen, Denmark during December 7 – 18, 2009. Despite the fact that the SADC region has contributed very little to global warming, it is more affected by the impacts of climate change. Ministers resolved that adaptation to climate change remains a top priority for the region. In this regard, Ministers called upon the SADC Member States to support the common position of Africa. On mitigation, Ministers resolved that this be voluntary on the part of the region and other Developing Countries. Ministers called upon Developed Countries who are responsible for most of the green house gas emissions to undertake strict mitigation measures to reduce emissions. With regard to “Reduced Emissions from Deforestation and Forest Degradation” (REDD), Ministers resolved to support the SADC position.</i></p>
<p>SADC Regional Remote Sensing Unit The unit is a centre of technical expertise facilitating training programmes and technical support in the field of Remote Sensing, Agro-meteorology and GIS in support of early warning for food security, natural resources management and disaster management.</p>			<p>SADC Environment and Sustainable Development Programme The overall objective of the Environment and Sustainable Development programme is to ensure the equitable and sustainable use of the environment and land based resources for the benefit of the present and future generations. The economies of SADC Member States are mainly agro based, however the region</p>

			continues to experience high levels of environmental degradation manifested, among other things, by deforestation, loss of biodiversity, pollution, soil erosion, decreasing quality and quantity of water, poor sanitation services and poor urban conditions.
			SADC 29th Heads of State and Government Summit Communiqué of 8 September 2009 – Paragraph 25: <i>The Summit reiterated SADC’s support of the African position on a comprehensive internal climate change regime beyond 2012 to be set within the United Nations Framework Convention on Climate Change to be held in Copenhagen, Denmark in December 2009.</i>
<Sectoral Planning and Implementation >	<REDD>	<Finance>	
SADC Groundwater and Drought Management project - The objective of the project is for SADC member states to develop cooperatively a strategic regional approach to support and enhance the capacity of its		SADC Regional Drought Fund – This has not been launched yet, but it is intended to provide funds to drought affected member countries. Consultations with the World Bank and other donor agencies have already been initiated. The Fund, once established, is expected to operate like an export-import	

<p>member States in the definition of drought management policies, specifically in relation to the role, availability (magnitude and recharge) and supply potential of groundwater resources. This will assist in reconciling the demands for socio-economic development and those of the principal groundwater-dependent ecosystems. Tools will be elaborated for regional cooperative management of transboundary aquifers and to guide sustainable downstream investments in proactive drought mitigation.</p>		<p>guarantee scheme and will enable affected countries to borrow and repay within a stipulated time frame.</p>	
<p>SADC Extra-ordinary Summit on Poverty and Development Communiqué of April 2008</p>		<p>African Bio Carbon Fund The fund is part of the Africa Bio-Carbon Initiative which seeks to advocate for broader eligibility for bio-carbon in the Kyoto and related regional and national frameworks for climate change. This objective will contribute to the overarching goal of increasing the benefits for sustainable agriculture and land-use practices, biodiversity conservation, maintenance of environmental services, successful adaptation to climate change, and improvements in rural livelihoods, in addition to the delivery of cost-effective and verifiable reductions in greenhouse gas emissions in Eastern and Southern Africa and beyond.</p>	
<p><Building Economic and Social Resilience></p>	<p><LULUCF and Carbon Markets></p>	<p><Technology Transfer></p>	

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