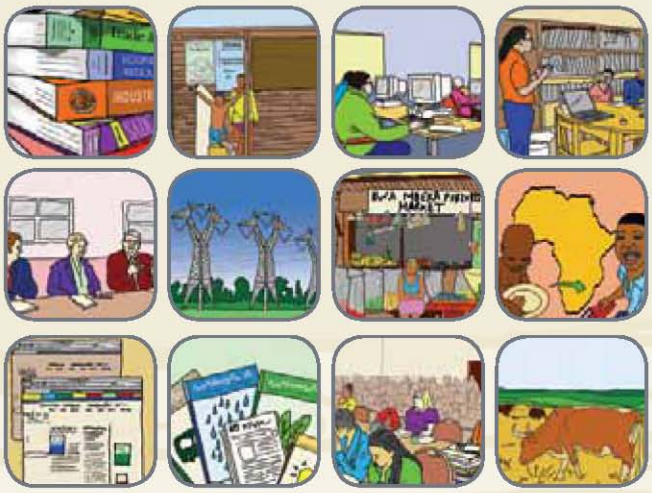
TRADE & INDUSTRIAL POLICY STRATEGIES



Working Paper Series 2010-01

Trade and Climate Change: The Environment from Developmental and Economic Perspective in Southern African Development Community (SADC)

G.L. Jonas Capôco

January 2010

Australian Government
AusAID

indigenous **growth**

Trade and Climate Change: The Environment from Developmental and Economic Perspective in Southern African Development Community (SADC)

December 2009

Prepared for:

Trade & Industrial Policy Strategies (TIPS)

G.L. Jonas Capôco
Asca Investment (Pty) Ltd
Consulting Services /Project Sponsors / Strategic Investment
Tel: +264-61-272203
Fax: + 264-61-271007
E-mail: asca@mweb.com.na
Windhoek, Namibia

Table of Contents

TABLES

FIGURES

BOX

ACRONYMS

APF	Adaptation Policy Framework
CCS	Carbon capture and storage
CDM	Clean Development Mechanism
CER	Certified emission reduction
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
CO_2	Carbon dioxide
COP	Conference of Parties (to the UNFCCC)
EGTT	Expert Group on Technology Transfer
GDP	Gross domestic product
GEF	Global Environment Facility
GHG	Greenhouse gas
Gt	Gigatons, 1 billion tons
HDR	Human Development Report
I & FF	Investment and Financial Flows
IPCC	Intergovernmental Panel on Climate Change
LDCF	Least Developed Countries Fund
M	Millions
MDG	Millenium Development Goals
MW	Megawatts, 106 Watt, a million watt
NAI	non-Annex 1 Parties (Parties not included in Annex 1 to the Convention, mostly developing countries)
NAPAs	National Adaptation Programme of Action
NGO	Non-Governmental Organization
ODA	Overseas Develoment Assistance
R&D	Research and Development
REDD	Reducing Emissions from Deforestation in Developing Countries
SADC	Southern African Development Community
SAPP	Southern African power Pool
SBI	Subsidiary Body for Implementation
SCCF	Special Climate Change Fund
SIDS	Small Island Developing States
SME	Small and Medium Enterprise
SNC	Second National Communication
SPA	Strategic Priority for Adaptation
TIPS	Trade and Industrial Policy Strategies
UN	United Nations
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
U$	United States Dollar

EXECUTIVE SUMMARY

There is an increased recognition that actions to address climate change and the environment are intimately linked to economic growth and sustainable development goals and needs. Actions to promote increased resilience to climate change impacts and a lower-greenhouse gas (GHG) emission economy in Southern African Development Community (SADC) fall across a variety of sectors, such as energy, agriculture, health, water resources and infrastructure. The achievement of a number of Millennium Development Goals (MDG) targets, most notably in poverty reduction, will be compromised by five climates change-induced human development tipping points, including reduction on agricultural productivity, heighten water insecurity, exposure to extreme events, collapse of ecosystems, and increased health risks.

To obtain effective answers to how to address climate change and the environment from trade as well as developmental and economic perspective in SADC, it is crucial to engage a variety of government stakeholders in SADC such as ministries of finance, planning, energy, health, etc as well as other relevant stakeholders, such as the private sector, NGOs, and civil society. Thus, the paper take cognisance the fact that the SADC countries together with the rest of the world that are signatory to the Kyoto Protocol ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1995 and became legally obligated[1] to adopt and implement policies and measures designed to mitigate the effects of climate change and to adapt to such changes. As a result of this paper, both the technical understanding of key climate change issues and their economic and policy implications within the context of the Convention will be enhanced and the integration of climate issues into national development and economic planning in SADC will be enabled.

The global climate is changing and so is the SADC`s climate: the impacts associated with the accumulation of greenhouse gases in the atmosphere from human activities–changes in mean temperature, shifts in seasons and an increasing intensity of extreme weather events–are already occurring and will worsen in the future. Millions of people, particularly in developing countries including SADC, face shortages of water and food and greater risks to health. Adaptation measures that reduce vulnerability to climate change are critical, especially in many countries where the risks are here and now. Successful adaptation strategies in the SADC backyard require action at different levels: community, national, regional and/or international. There is growing scientific, economic, political and social consensus that these adaptation measures will require long-term thinking and explicit consideration of climate change risks at the regional (cross-national), national, sub-national, and local levels. They require a combination of many components, such as an assessment of vulnerabilities to climate change, appropriate technologies, capacity assessment, local coping practices and government actions.

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

[1] SADC countries having ratified the UNFCCC are legally obligated and they have submitted their Initial National Communication (INC) to the UNFCCC and they are now in the process to prepare and submit their Second National Communication (SNC) to be submitted to the UNFCCC.

experienced impacts and threats and/or predicted changes. Planned adaptation requires careful thinking by all stakeholders in SADC about how systems will function in the short, medium and long term. Adaptation is closely linked with development and this linkage is critical to reducing vulnerability to climate change. Economic growth is essential for SADC countries to improve the health, economic livelihood and quality of life of their citizens. It is also essential to increase the capacity of SADC countries to adapt to the negative impacts of climate change. However, development in line with 'business-as-usual' is often not sufficient to adapt to climate change. Indeed, some dimensions of development can impede the adaptation process, focusing on growth at the cost of higher exposure and sensitivity to climate change. There is also a risk that development efforts will be misaligned with future changes in climate, leading to maladaptation, i.e., a process that initially looks like a response to a hazard but ultimately exacerbates vulnerability to the hazard.

It is important for the policymakers in SADC to understand adaptation as a process and think carefully about how it is implemented. In particular, thinking about adaptation as a process explains why measures to adapt now may need to be adjusted in the future in response to changes, including environmental, social, political and financial. Framing adaptation in this way also explains why adaptation is not a tangible outcome that can be measured exhaustively at any given time, but an evolving objective.

The UNFCCC commits developed countries to assist developing countries in meeting costs of adaptation to the adverse effects of climate change. This assistance is operationalized primarily through the financial mechanism of the Convention, which is currently operated by the Global Environment Facility (GEF). A large part of investments come from the private sector, and the amount of money that needs to flow in order to address adaptation strategies surpasses the capacities of governments. Governments in SADC therefore need to devise policies, incentives and regulation to turn private initiative toward strengthening adaptation. Moreover, adaptation, rather than being concentrated in one sector, will essentially be dispersed across all socio-economic sectors including water, health, agriculture and infrastructure, each of which presents its own challenges, and will involve stakeholders in different if overlapping groups. Policy makers in SADC need to ensure that new forms of adaptation do not heighten inequality but rather contribute to a reduction in poverty.

Financial support to developing countries is currently being addressed in two negotiating processes. One is the fourth review of the financial mechanism in the form of replenishment of the GEF and long term co-operative action. The Conference of Parties (COP) has adopted objectives and methodology for the review of the financial mechanism. The fourth review will inform the fifth replenishment of the GEF. The second process is the Ad Hoc Working Group on Long Term Co-operative Action established by the Bali Action Plan. Its mandate includes enhanced action on the provision of financial resources and investment to support action on mitigation and adaptation and technology co-operation. SADC governments can assist in shifting investment and financial flows made by private and public investors into more climate-friendly alternatives and optimize the use of available funds by spreading the risk across private and public investors. This paper shows that the financial component of the Bali Action Plan for developing countries will consider, inter alia:

- Improved access to adequate, predictable and sustainable financial resources and the provision of new and additional funding for developing country Parties;
- Positive incentives for developing country Parties for the enhanced implementation of national mitigation strategies and adaptation action;

- Innovative means of funding to assist developing country Parties particularly vulnerable to the adverse impacts of climate change to meet the cost of adaptation;
- Incentives to implement adaptation actions on the basis of sustainable development policies;
- Mobilization of public- and private-sector funding and investment; and
- Financial and technical support for capacity-building in developing countries.

SECTION 1: INTRODUCTION

1.1 PREAMBLE

There is an increased recognition that actions to address climate change and the protection of the environment are intimately linked to economic growth and sustainable development goals and needs. Actions to promote increased resilience to climate change impacts and a lower-greenhouse gas (GHG) emission economy in the Southern African Development Community (SADC) fall across a variety of sectors, such as;

- Energy
- Agriculture
- Health
- Water resources, and
- Infrastructure

Indeed, it is, as recent, documented that, ''the achievement of a number of Millennium Development Goals (MDG) targets, most notably in poverty reduction, will be compromised by five climate change-induced human development tipping points, including;

1) Reduction on agricultural productivity
2) Heighten water insecurity
3) Exposure to extreme events
4) Collapse of ecosystems, and
5) Increased health risks.

To obtain effective answers to how to address climate change and the environment from trade as well as developmental and economic perspective in SADC, it is crucial to engage a variety of government stakeholders in SADC such as ministries of finance, planning, energy, health, etc. , as well as other relevant stakeholders, such as the private sector, NGOs, and civil society.

Against this background, this paper provides contemporary views on trade and climate change or the environment into the research pertaining to;

- ❖ Adaptation to Climate Change: The new challenge for development in the developing world as in the case of SADC, and

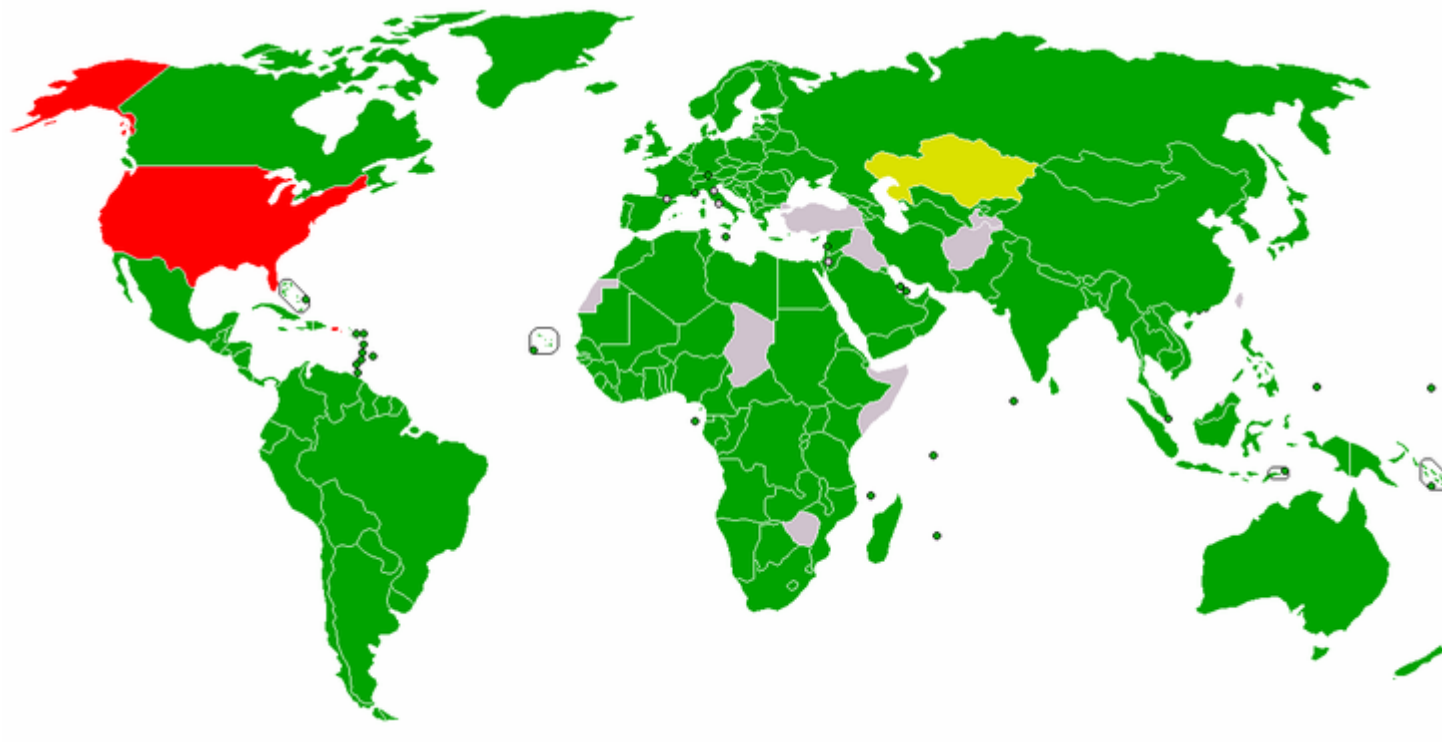
- ❖ Additional Investment and Financial Flows (I&FF) to address Climate Change in developing countries as in the case of SADC.

Thus, the paper take cognisance the fact that the SADC[2] countries together with the rest of the world that are signatory to the Kyoto Protocol ratified the United Nations Framework Convention on Climate

[2] TIPS/AusAID Southern African Trade Database includes data from the following countries: Botswana, Lesotho, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zimbabwe and Zambia.

Change (UNFCCC) in 1995 and became legally obligated to adopt and implement policies and measures designed to mitigate the effects of climate change and to adapt to such changes, see map below. The UNFCCC adopted in 1992 evolved as key international effort to combat global warming. The UNFCCC`s ultimate objective is the stabilization of greenhouse gas (GHG) concentrations in the atmosphere at a level that will prevent dangerous anthropogenic (man-made) interference with the climate system. Of note in this regard is the policy guidance of the financial mechanisms of the Convention for the timely financial support to non-Annex 1 Parties as well as setting the role of developed countries to facilitate the implementation of the Convention through their commitments relating to financial resources and transfer of technologies through investment and / or trade.

Figure 1: Kyoto Protocol Participating Map 2005



Signed and ratified.

Signed, ratification pending.

Signed, ratification declined.

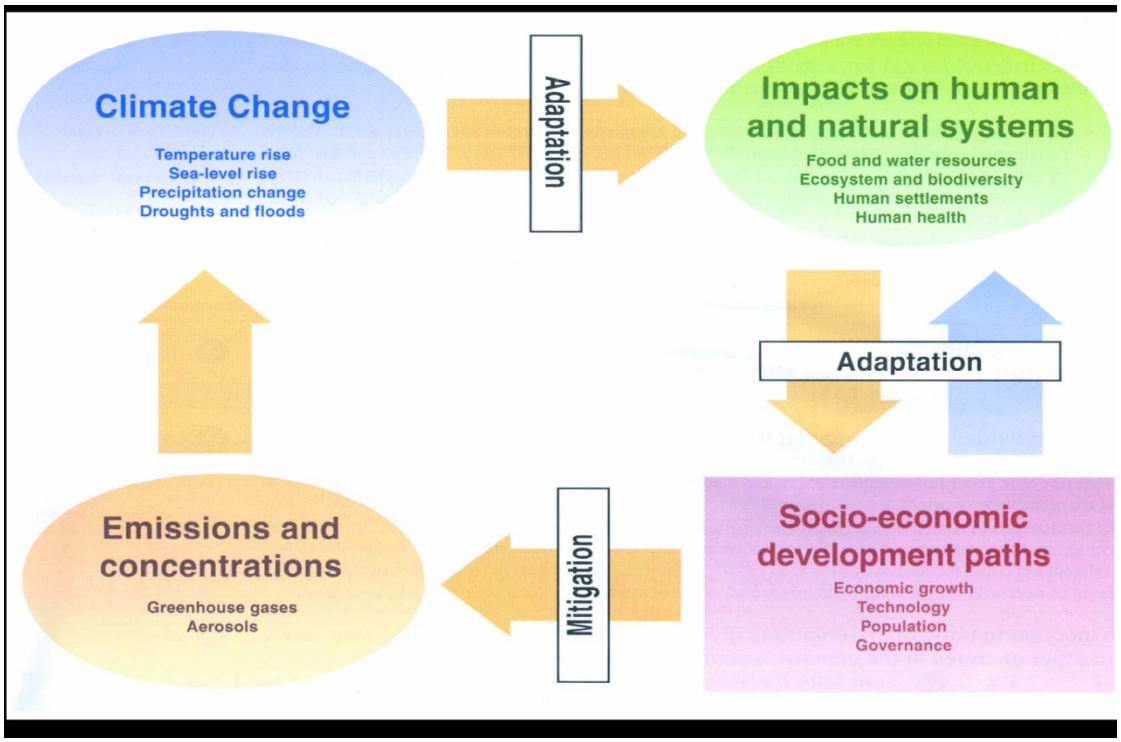
No position.

Source: *http://commons.wikimedia.org/wiki/File:Kyoto_Protocol_participation_map_2005.png*

Many SADC countries (except South Africa) have a relatively small economies with few options for economic development and the Clean Development Mechanism (CDM) proposed under article 12 of the Kyoto Protocol as one example is an important potential instrument to promote investment in GHG emission reduction options while simultaneously addressing the issue of sustainable development.

From the viewpoint of integrated assessment framework for considering anthropogenic climate change as per Figure 2 on the following page and in the light of the trends outlined above which are associated with anthropogenic climate change, trade vis-a-vis climate change /the environment must be a high priority for SADC`s programmes for mitigating climate change.

Figure 2: Integrated assessment framework for considering anthropogenic climate change



Source: *Third Assessment Report, Integovermental Panel on Climate Change (IPCC)*

1.2 METHODOLOGY

OBJECTIVE OF THE RESEARCH

This research is commissioned by Trade & Industrial Policy Strategies (TIPS) to produce evidence-based research paper and in particular the paper must have a quantitative element, using trade data sourced from the SADC Trade Database, or alternative sources such as UN Comtrade, the ITC, etc.

SPECIFIC OBJECTIVE

The objective of this paper is to assess the investment and financial flows available as well as required to address climate change in the area of impacts, vulnerabilities, and adaptation. The paper will support these goals by expanding the knowledge base on climate change issues available to developing country policy makers, technical experts, and other key stakeholders (private sector) and broadening access to this knowledge base so that, through TIPS, a wide range of sectoral policy makers can share experiences at the national, sub-regional, regional and global level. As a result of this paper, both the technical understanding of key climate change issues and their economic and policy implications within the context of the Convention will be enhanced and the integration of climate issues into national development and economic planning will be enabled.

LITERATURE REVIEW

Various research methodologies were used to gather information for this paper. This includes;

- Desk study on available publications /information and documentation from similar interventions, i.e.
    - UNFCCC literatures on Climate Change
    - Clean Development Mechanism (CDM) literatures
    - UNDP literatures on Climate Change Projects

SECTION 2: ADAPTATION TO CLIMATE CHANGE: THE NEW CHALLENGE FOR DEVELOPMENT IN THE DEVELOPING WORLD AS IN THE CASE OF SADC

2.1 CONTEXT AND FRAMEWORK OF THE ASSESSMENT

The global climate is changing and so is the SADC`s climate: the impacts associated with the accumulation of greenhouse gases in the atmosphere from human activities–changes in mean temperature, shifts in seasons and an increasing intensity of extreme weather events–are already occurring and will worsen in the future. Millions of people, particularly in developing countries including SADC, face shortages of water and food and greater risks to health. Adaptation measures that reduce vulnerability to climate change are critical, especially in many countries where the risks are here and now.

The Intergovernmental Panel on Climate Change (IPCC) predicts serious effects of climate change across sectors and scales. By 2020, up to 250 million people in Africa could be exposed to greater risk of water stress. Other impacts include an increased risk of floods as glaciers retreat, sea level rise inundating coasts worldwide and completely inundating some small island States in the SADC region, and an increased severity and frequency of tropical cyclones. In 2007, the IPCC concluded that the unavoidable impacts and changes resulting from climate change will go beyond current coping capacity, and society and ecosystems will have to implement adaptation measures.

The approximate costs of adaptation varies by all estimates**.** The UN Climate Change secretariat has estimated that by 2030 developing countries will require US$ 28 – 67 billion to enable adaptation to climate change. This corresponds to 0.2 – 0.8% of global investment flows, or just 0.06 – 0.21% of projected global GDP in 2030. Incremental costs to adapt to projected climate change in developing countries are likely to be of the order of US$ 10 – 40bn per year (World Bank 2006). In addition, the Stern Review on the Economics of Climate Change estimates that if no action is taken to mitigate climate change, overall damage costs will be equivalent to losing at least 5% of global GDP each year, with higher losses in most developing countries (Stern, 2007). Current global funding for adaptation is a fraction of the amount needed. Adaptation to climate change is a complex and multi-faceted topic that presents a number of challenges, particularly for the developing world and in this case the SADC countries.

Climate change impacts are already affecting developing countries, particularly the poor and most vulnerable, because they have fewer social, technological and financial resources for adaptation. Climate change also affects the sustainable development of countries, as well as their abilities to achieve the United Nations Millennium Development Goals (MDG) by 2015. The 2007/8 Human Development Report (HDR) warned that the achievements of a number of MDG targets, most notably in poverty reduction, will be compromised by five climate change induced human development tipping points: reductions in agricultural productivity; heightened water insecurity; exposure to extreme events; collapse of ecosystems; and increased health risks.

Successful adaptation strategies in the SADC backyard require action at different levels: community, national, regional and/or international. There is growing scientific, economic, political and social

consensus these adaptation measures will require long-term thinking and explicit consideration of climate change risks at the regional (cross-national), national, sub-national, and local levels. They require a combination of many components, such as an assessment of vulnerabilities to climate change, appropriate technologies, capacity assessment, local coping practices and government actions.

The many aspects of adaptation cannot be addressed in a single document. This paper will therefore limit its scope to the key aspects of these issues and provide policymakers in SADC countries with a starting point, including background information and questions for further reflection.

The Section focuses on:

- The contours of the adaptation issue, as well as its relationship to other important issues;
- The consideration of adaptation within the current international negotiations under the United Nations Framework Convention on Climate Change (UNFCCC), including the issues relating to adaptation finance and in so far these framework influence trade and climate change / the environment in SADC countries;
- The challenge of approaching adaptation at every level in SADC: community, local, regional, sectoral and national.

2.2 DEFINING ADAPTATION

Within the context of trade and climate change / the environment, adaptation involves a process of sustainable and permanent adjustment in response to new and changing environmental circumstances. Although humanity has constantly adapted to their surroundings, planned anticipatory adaptation has only recently emerged as a response to the impacts of anthropogenic climate change around the world. Policy makers in SADC have to an extent accepted that the world is facing a real and immediate threat and adapting to the change is necessary. Adaptation has been identified as an appropriate response because it is associated with supporting development processes and can facilitate the continuation and improvement of existing livelihoods in SADC countries

Climate change will affect every aspect of society in SADC, environment and economy. This means adjusting behavior, livelihoods, infrastructure, laws and policies and institutions in response to experienced or expected climatic events. These adjustments can include increasing flexibility of institutions and management systems to deal with uncertain future changes, or they can be based on experienced impacts and threats and/or predicted changes. Planned adaptation requires careful thinking by all stakeholders in SADC about how systems will function in the short, medium and long term.

In the following table, a global overview of climate change impacts and vulnerability is articulated on and poses a challenge for the SADC region if not mitigated on by SADC member countries and stakeholders. This is on the backdrop that the consequences of climate change will become disproportionately more damaging with increased warming. With higher temperatures in the SADC region, the chances to face abrupt and large-scale changes will be harder and this will lead to possible regional disruption, migration and conflict.

Table 1: Overview of climate change impact and vulnerability: Global Perspective

Climate Change scenarios	Impact and Vulnerability
Ecosystems and biodiversity	▪ Climate change is already transforming ecological systems. With an increase of up to 2.5°C between 20 to 30% of species of the earth could disappear. ▪ Marine ecosystems are suffering due to the accumulation of carbon dioxide, which will impact fish stocks, especially upon the main coastal cities and also small island states in SADC. This will have an impact over biodiversity and ecosystem goods and services such as water and food security.
Agriculture and Food Security	▪ The African region is threatened by declining crop yields, which affects food security of a population that already suffers of malnutrition, and threatens the dependence on agriculture activity for food security. ▪ Precipitation, temperature and water availability for agricultural purposes will be affected by climate change. Sub-Saharan Africa will be mostly affected and food security threatened, but also other regions of the world like Latin America and certain parts of Asia. By 2080 it is projected that approximately 600 million could suffer from malnourishment.
Sea level rise and exposure to meteorological disaster	▪ Sea level could increase rapidly due to accelerated ice sheet disintegration. Global temperature rise of 3 to 4 °C could cause the permanent or transitory displacement of 330 million people due to flooding and threaten approximately 4 million km_2 of land, where 5% of the world's population is located. This will affect millions of people from developing countries including the SADC region

	and from large coastal cities of the developed countries. ▪ During wet seasons floods will become more intense due to the melting glaciers, putting in risk water availability of one-sixth of the world's population, especially the South American Andean region, certain parts of China and the Indian sub-continent.
Human health	▪ The main impacts over health conditions will be felt especially on developing countries due to poverty conditions and limited capacity to have access to adequate public health systems. ▪ It is estimated that 200 to 400 million people could suffer malaria, which already kills around 1 million people per year. It is already possible to find cases of dengue at unusual high altitudes in Latin America and certain parts of Asia. Climate change could worsen this situation.
Industry, settlements and society	▪ Those industries, settlements and societies located in coastal and river flood plains, or in areas where extreme weather event occur, and whose economies are dependent on climate-sensitive resources, are the most vulnerable to climate change.

Source: *Human Development Report (UNDP 2007 – 2008)*

2.2.1 ADAPTATION AND DEVELOPMENT

Adaptation is closely linked with development and this linkage is critical to reducing vulnerability to climate change. Economic growth is essential for SADC countries to improve the health, economic livelihood and quality of life of their citizens. It is also essential to increase the capacity of SADC countries to adapt to the negative impacts of climate change. However, development in line with 'business-as-usual' is often not sufficient to adapt to climate change. Indeed, some dimensions of development can impede the adaptation process, focusing on growth at the cost of higher exposure and sensitivity to climate change. There is also a risk that development efforts will be misaligned with future changes in climate, leading to maladaptation, i.e., a process that initially looks like a response to a hazard but ultimately exacerbates vulnerability to the hazard.

One of the pivotal issues underlying the growing popularity of adaptation is the belief that adaptation is fundamentally linked to sustainable development and must be part of the development and planning process. In the SADC countries, efforts to "mainstream" adaptation can be found in national development plans, development projects (by non-governmental organizations (NGOs) and institutes carrying out action research) and in aid agencies. This work is in early stages, with few results on which to assess levels of success. Nevertheless, even in the most climate sensitive countries elsewhere, numerous other priorities remain ranked above climate change, coupled with a general lack of clarity on how to integrate it into planning.

For this reason, another aspect for SADC of mainstreaming adaptation into development must relates to different approaches to adaptation across sectors, where one sector may take an approach that is inconsistent with the approach taken in another sector. For example, if energy managers decide to build new dams for hydropower, while the agriculture managers advocate expanded irrigation downstream, there could be inconsistencies and adverse consequences for the downstream farmers, whose water supply might become more unreliable.

Lastly, it is important for the policymakers in SADC to understand adaptation as a process and think carefully about how it is implemented. In particular, thinking about adaptation as a process explains why measures to adapt now may need to be adjusted in the future in response to changes, including environmental, social, political and financial. Framing adaptation in this way also explains why adaptation is not a tangible outcome that can be measured exhaustively at any given time, but an evolving objective.

2.2.2 ADAPTATION AND DISASTER RISK REDUCTION

It is imperative for SADC countries to have a coordinated strategy regarding climate change and disaster risk reduction. This is on the backdrop that, frequently there are conceptual and practical linkages drawn between adaptation and disaster risk reduction. It may seem obvious that these two approaches function together as part of a repertoire of risk reduction techniques. But on the ground, the two approaches are supported by entirely different sets of institutions, individuals, methodologies and policy frameworks. Further discrepancies range from the intellectual development of the fields to implementation of risk reduction measures, resulting in policy inconsistency, redundant investment, and competing approaches to addressing the same problems, among other things.

This convergence in efforts recognises that neither disaster risk reduction nor climate change adaptation is about disasters or climate change only, but rather about all of the social, physical and economic factors that influence the magnitude of and are affected by the threat. Consequently, the cycle of disaster management must be expanded to incorporate lessons from disaster impacts into planning, placing more focus on making profound changes to reduce risk, rather than focus on reconstructing the same conditions as prior to a disaster, as is often the case when disaster management is limited to humanitarian relief efforts.

2.2.3 ADAPTATION AND CLIMATE DATA

In view of key development priorities in SADC countries, there are many challenges to planning successful adaptation. One of these is the need for information about impacts of climate change and their secondary effects. Climate variability and change add uncertainty to decision making, but the uncertainty in these phenomena add even more complexity to the planned adaptation process.

Uncertainty dominates all of the approaches aimed at understanding the potential impacts of climate. Attempts to overcome these uncertainties mean designing adaptation strategies for the SADC region that would be robust against a range of future climate outcomes. However, it is difficult to imagine an adaptation option that would address extended wetter and drier conditions simultaneously – these would likely need to be addressed by different strategies.

So-called ‘win-win’ or ‘no-regrets’ adaptation measures are those whose benefits outweigh their costs. These often address adaptation, while simultaneously meeting other needs. They are not in conflict with development objectives, nor do they lead to circumstances that will increase vulnerability to climate change in the short and medium term. These could potentially be designed without accurate climate information.

Climate data is not always necessary to warrant adaptation actions. For example, if model projections for the future suggest that an already observed trend will continue, detailed climate data will not be necessary to justify adaptation measures. It is important to recognise that in such cases, lack of climate data should not inhibit action.

2.2.4 ADAPTATION AND FINANCE

Adaptation in SADC region will require substantial funding. As noted earlier, all indicative estimates available suggest that the costs of adapting to climate change in the developing world are in the order of tens of billions. However, there are many difficulties and limitations in estimating the exact costs of adapting under various scenarios, as well as the ability of SADC countries to self-finance adaptation. These include:

- **Differences in adaptive capacity:** Adaptive capacity is a key limitation in estimating the costs of adaptation. Adaptive capacity is essentially the ability to adapt to stresses such as climate change. It does not predict what adaptations will happen, but gives an indication of the differing capacities of societies to adapt on their own to climate change or other stresses.
- **Most adaptation measures need not be implemented solely for the purpose of adapting to climate change:** Most activities that need to be undertaken to adapt to climate change will have benefits even if the climate does not change. For example, improvements in the management of ecosystems to reduce stresses on them or water conservation measures can typically be justified without considering climate change. Climate change provides an additional reason for making such changes because benefits of the adaptations are larger when climate change is considered. Indeed, the need for these adaptations may not depend on specific greenhouse gas concentration levels and thus climate change associated with scenarios. It may well be justified to introduce water use efficiency or reduce harm to coral reefs no matter what scenario is assumed.
- **The uncertainties associated with any readily available methods to estimate adaptation costs:** The majority of methods for estimating adaptation costs contain a number of uncertainties. For example, the existing information for using a complete “bottom-up-approach”, which involves estimating costs of specific adaptations across the world, is far from comprehensive and complete. For other methods, uncertainties can arise because the assumptions that must be made can result in quite different estimates of magnitudes.
- **The existence of an adaptation deficit:** In many places, property design and activities are insufficiently adapted to current climate, including its variability and extremes. Evidence for the existence and size of the adaptation deficit can be seen in the mounting losses from extreme weather events such as floods, droughts and storms. Globally, these losses have been mounting at a rapid rate over the last 50 years. This widespread failure to build enough weather resistance into existing and expanding human settlements is the main reason for the adaptation deficit.

2.3 ADAPTATION IN THE UN CLIMATE NEGOTIATIONS

The UNFCCC, also referred to as the Convention, provides the basis for international action to mitigate climate change and to adapt to its impacts. The UNFCCC entered into force in 1994 and now has 191 Parties (member countries). It commits these Parties to: launch national strategies for adapting to expected impacts including the provision of financial and technological support to developing countries by developed countries and to cooperate in preparing for adaptation to the impacts of climate change. It also refers to adaptation in several of its articles. In addition, the supreme body of the Convention, the Conference of the Parties (COP), has taken several decisions over the years pertaining to adaptation. These decisions relate to support and funding by developed country Parties to assist developing countries with impact, vulnerability and adaptation assessment; capacity-building, training, education and public awareness; implementing concrete adaptation activities; promoting technology transfer; and exchanging experience through regional workshops. Adaptation is also addressed by ongoing work relating to national communications, research and systematic observation, and guidance to the Global Environment Facility (GEF).

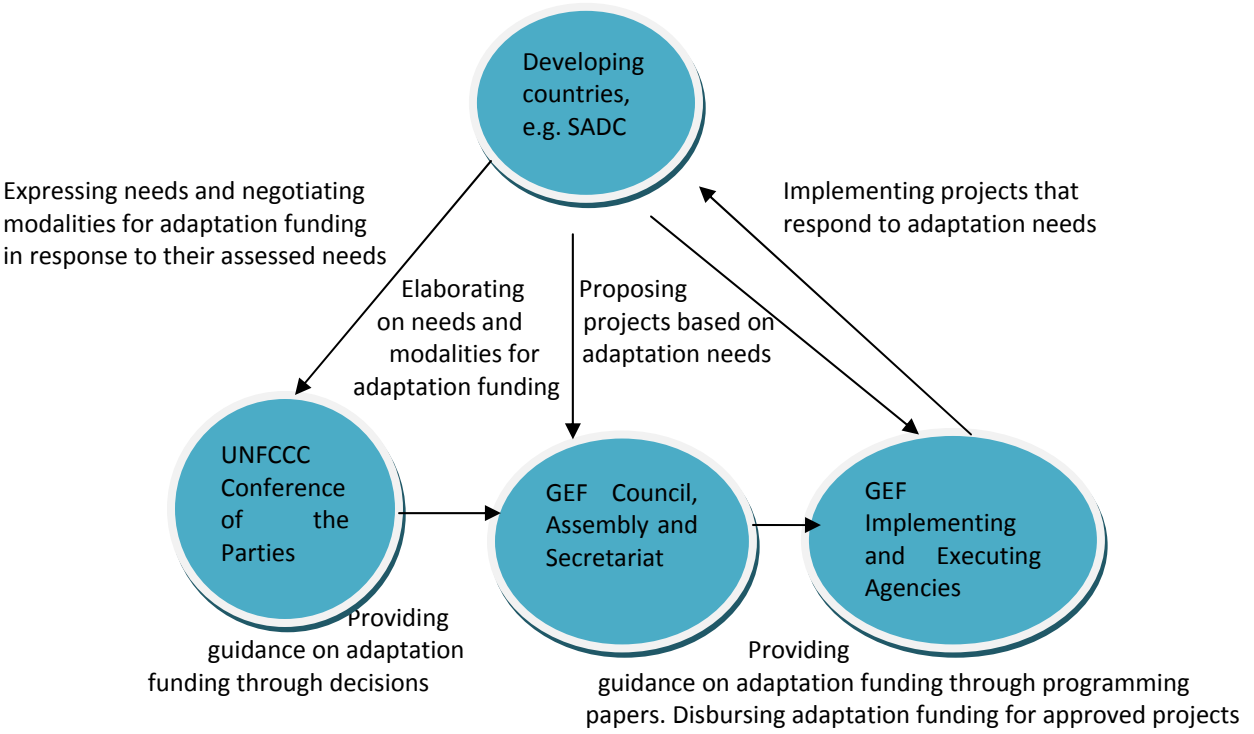
To this end, the UNFCCC commits developed countries to assist developing countries in meeting costs of adaptation to the adverse effects of climate change. This assistance is operationalized primarily through the financial mechanism of the Convention, which is currently operated by the GEF, subject to review every four years. The financial mechanism is guided by, and accountable to, the COP, which decides on its climate change policies, program priorities and eligibility criteria for funding, which is normally adopted based on advice from the Convention's Subsidiary Body for Implementation (SBI).

Since the initial phases of the Convention, it was recognized that developing countries needed financial and technical support to assess their vulnerabilities to impacts of climate change and develop plans to adapt to these impacts during the preparation of their national communications. Parties agreed that adaptation should be implemented in the context of short, medium and long-term strategies, and set up a three-stage approach to adaptation funding in developing countries and consist of;

- ✓ **Stage I and II:** To encompass planning, vulnerability assessments, developing policy options and capacity building for adaptation; and,
- ✓ **Stage III:** To envisions actual measures to facilitate adequate adaptation.

The COP requested the GEF to provide full-cost funding for adaptation activities in the context of formulating national communications as in the case of SADC countries. See Figure 2 below for information on the development of financial instruments for adaptation under the UNFCCC and the GEF.

Figure 2: Information on the development of financial instruments for adaptation under the UNFCCC and the GEF



Source: *Adopted from Möhner and Klein (2007) UNDP*

For the purpose of this paper, funding sources for adaptation under the Convention and the Kyoto Protocol are collated in the following table. Because of its innovative nature as a means of funding, and because the Kyoto Protocol only entered into force in 2005, the Fund was only operationalized in 2007. Since the fund was designed to benefit developing countries, SADC member states are benefiting from the fund through UNDP and the latter has offices in each SADC member country.

Table 2: Funding sources for adaptation under the Convention and the Kyoto Protocol

Funds	Convention/Kyoto Protocol Mandates	Governance	Current level of Funds (U$)
GEF Trust Fund strategic priority for adaptation (SPA)	FCCC Art. 11: Financial Mechanism of the Convention	GEF Council	$50 million (GEF 4, 2007-2010)
Special Climate Change Fund (SCCF)	FCCC Art. 11: Financial Mechanism of the Convention	SCCF Council (under the GEF)	$74 million (until March 2008)
Least Developed Countries Fund (LDCF)	FCC Art. 11: Financial Mechanism of the Convention	LDCF Council (under the GEF)	$173 million pledged (until March 2008)
Adaptation Fund	Kyoto Protocol Art. 12.8: Clean Development Mechanism	Adaptation Fund Board (directly elected by the CMP)	Depending on quantity and price of CERs (until 2012). $80–300M/year

Source: *UNDP/UNFCCC*

The foregoing scenario notwithstanding, all countries recognize that developed countries should fulfil their commitments under the Convention and provide finance, technology and capacity building support

to developing countries, progress on these issues has been slow and unsatisfactory for many developing countries. Many have expressed frustration at the slow progress on the funding mechanisms. Indeed, it took about three years for funds (the SCCF, LDCF) to be made operational following their establishment in Marrakesh in 2001. Many of the countries concerns regarding finance to adaptation relate to:

- The relatively small amount of funds currently available to address adaptation under the Convention and, if the current replenishment trend continues, that these would not sufficiently address their needs;
- The experiences of developing countries in accessing and receiving support through existing funds, owing both to the complex design of the funds and to problems of implementation of the guidance;
- The recognition that additional financial flows will be needed to cope with adaptation needs.

The following box provides an overview of developed and developing countries' positions and views on adaptation. However, there are variations and differences among the countries and groups of countries (SADC included).

Box 1: Overview of developed and developing country positions and views on adaptation

COMMON CONCERNS

- The need for a methodological shift from climate change impacts studies to increased understanding of how to make adaptation happen
- How to examine adaptation needs and identify priorities
- The relative roles of adaptation and mitigation actions
- The lack of clarity on the relationship between climate change adaptation measures and the mainstream of development, particularly in relation to financial assistance
- What institutions and funding mechanisms are used for delivery at international and national level

DEVELOPED COUNTRIES

- The need to meet obligations and provide financial assistance to cover costs of impacts caused by historically accumulated greenhouse gas stocks is generally accepted
- Issues relating to potential climate change impacts have been raised during discussions on support for incountry studies and on engaging developing countries more directly on mitigation
- The financial mechanism should deliver effectively for their taxpayers
- Overseas Development Assistance (ODA) should integrate climate change into its activities
- There should be no proliferation of new funds under the Convention
- There should be minimum conditions for accessing funding

DEVELOPING COUNTRIES

- Equity and justice issues about damage of climate change to vulnerable countries due to emissions from “rich” developed countries are a primary concern
- Developed countries must deliver on their obligations under the Convention on finance, technology and capacity building
- Funding for adaptation should cover the additional costs of climate change and existing ODA commitments should not be diverted (also, no new conditionalities should be added to ODA)
- Governance of financial mechanisms should transparent, include an equitable and balanced representation by all Parties, and operate under the authority of the CMP. It should provide “direct access” to funding and ensure that recipient countries are involved during all stages. “Predictable” sources of funding are needed, not just more funding
- Support should be provided through the UNFCCC instruments rather than through fragmented efforts outside these instruments
- New institutional arrangements should be created, such as an adaptation committee or an expert body like the one covering technology transfer (EGTT) within the Convention

Source: *UNDP/UNFCCC*

2.4 THE ADAPTATION CHALLENGE AT THE NATIONAL LEVEL: SADC PERSPECTIVE

2.4.1 APROACHING ADAPTATION AT NATIONAL LEVEL

Adapting to climate change requires adjustments at every level in a country: community, local, regional, sectoral and national. Even though the choice of adaptation interventions depends on national circumstances and internal and priorities, it should be framed as well as influenced by international negotiations and efforts.

Governmental institutions (ministries, regional governments and agencies), private entities and NGOs, must consider integrating climate change in their planning and budgeting in all levels of decision making, and coordinate their actions among themselves. At a local level, communities can build their resilience by adopting appropriate technologies, making the best use of traditional knowledge and diversifying their livelihoods to deal with climate threats.

Adaptation cannot be treated as a stand-alone issue, since climate change impacts will hinder almost all efforts of development in SADC countries. Synergies among the multiple objectives of sustainable development, poverty reduction, disaster risk reduction and adaptation policies are essential. Local strategies also need to be implemented in synergy with national government interventions. The design of adaptation plans and strategies is then crucial.

This paper argues that climate change impacts do not happen in isolation. Sectors can be affected directly or indirectly by climate change and a change in one sector can offset the effects of climate change in another sector. Adaptation to climate change is essentially a cross-cutting issue and therefore should not by considered on a purely sectoral basis, but in a multi-sectoral and cross-sectoral way. As a first step, however, the simpler way is to analyze vulnerability and adaptation options at a national level in SADC countries, by sector, and then link it to other related issues (i.e., development, poverty and risk reduction). Another approach, which is particularly useful for community-level assessments, is to analyze vulnerability and adaptation options by hazard. However, one single community is sometimes threatened by more than one hazard, so a multi-hazard analysis may be needed.

Adaptation will also require the capacity for both short- and long-term planning. Strategies will be needed to address long-term climate change impacts, such as those predicted by the IPCC. At the same time, strategies for shorter-term adjustments may also be necessary, such as those prepared for shorter-term climate variability.

Regardless the area, sector or institution, some basic issues need to be considered in order to effectively implement adaptation in SADC region. A description of these issues is presented below.

2.4.2 SADC COUNTRIES SHOULD TAKE STOCK OF THE PROGRESS MADE IN THEIR COUNTRY

The SADC countries as parties to the UNFCCC and the Kyoto Protocol, it is very likely that some adaptation efforts are already being implemented in their country with the support in most cases of

international cooperation. Most SADC countries that are a Party to the UNFCCC as in the case of Namibia have already developed their first national communication. As such, some of the SADC countries are already developing their second national communication (SNC) and Namibia is another example again, which, according to the UNFCCC guidelines, will have some information about measures to facilitate adequate adaptation to climate change. Some of this information includes:

- Human systems, sectors and/or areas that are vulnerable (or most critical) to climate change;
- Main limitations of the vulnerability and adaptation assessments, i.e. methodological, technical, institutional and financial limitations;
- Vulnerabilities to current climate variability and future climate changes;
- Difficulties or barriers to adaptation in critical areas or sectors; and
- Opportunities and priorities for adaptation to climate change.

Some countries have developed or are also developing adaptation projects financed by sources such as the Strategic Priority for Adaptation (SPA), the Special Climate Change Fund (SCCF) and other bilateral and multilateral cooperation activities. The UNFCCC or GEF National Focal Points are also a source of information on projects concerning climate change / the environment. Once this basic information are provided or available, SADC countries should identify the key sectors or areas in their domain, and who the main players are or should be. A workshop could be organized in order to have an exchange of experiences, information and perceptions about the importance of climate change adaptation. The workshop should be oriented towards collecting the following information:

- What sectors or areas are most vulnerable to climate change?;
- Who are the key actors and what are they doing regarding adaptation?;
- What has been done and which needs have been already identified?;
- What is being currently implemented? Are there synergies related to what could be done in these sectors/ area?;
- What needs to be done to further facilitate adaptation in these sectors /area?

2.4.3 SADC COUNTRIES TO IDENTIFY ADAPTATION OPTIONS, SET PRIORITIES, DO ADAPTATION PLANNING AND INTRODUCE IT AS PART OF NATIONAL POLICY FRAMEWORK AND PLANNING

Adaptation will need a variety of responses and extensive resources to prevent future damage. It will also need to balance tradeoffs with sustainable development and poverty reduction efforts, as well as disaster risk reduction. A cost benefit analysis of different adaptation measures responding to different threats, among other criteria, should be applied in order to decide which policies and measures to implement or modify.

Unquestionably, poverty, access to resources, health and education and all of the other development objectives that fall under the MDGs influence how vulnerable any individual is to climate change. The following issues should therefore be considered in order to establish adaptation priorities:

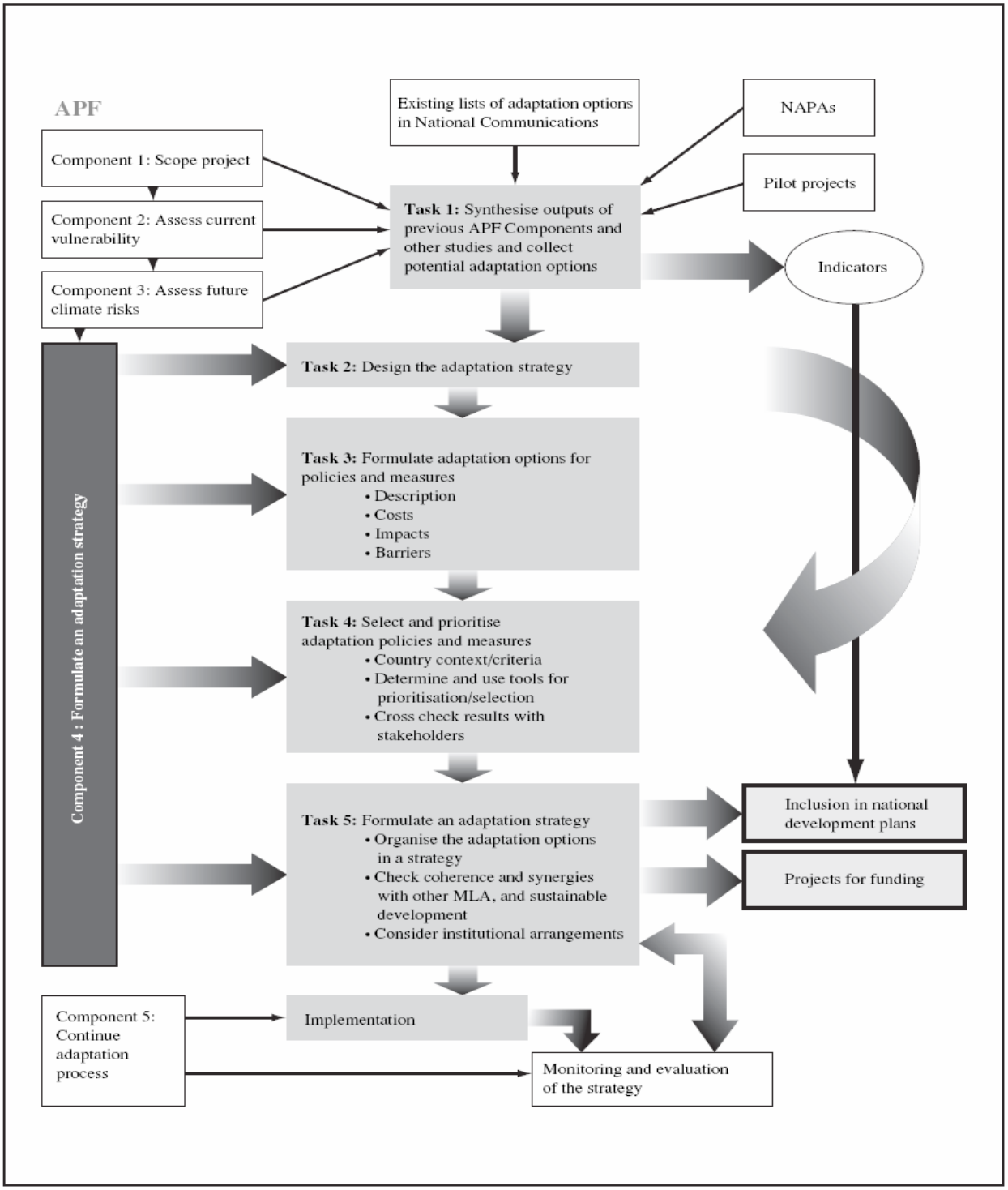
- What is the vulnerability to climate change of national planning instruments and processes? Is compliance of national development objectives in jeopardy due to climate change? How should strategies and plans be realigned to deal with potential climate change impacts?;
- Do national, regional, sectoral and/or local policy frameworks identify climate change as a threat? What policy changes should be made to cope with the current and expected impacts of climate change?

The practical steps needed to carry out the main activities of the adaptation process may vary within each country and community in SADC region. However, there are a number of structured frameworks that countries can use to guide the process. On the other side of the coin, adaptation should be seen as a learning process. In addition, stakeholder involvement is key to achieve mainstreaming of adaptation at different levels. One of the challenges that climate changes poses is the urgent need to design and implement coordinated activities among different stakeholders and levels (international, national, regional, local, communities).

Key aspects for consideration when carrying out the main activities of the adaptation process are captured as follow;

- **Developing vulnerability and adaptation assessments for prioritizing adaptation policies and measures:** The main criteria for consideration is that vulnerability and adaptation assessment are to be aimed at informing the development of policies that reduce the risks associated with climate change, based on tools that combine qualitative and quantitative data. They can range from simple approaches based on household survey data and in-depth interviews with stakeholders, to complex models requiring extensive data input, e.g. vulnerability, current climate risks, future climate risks, and current and changing socio-economic conditions.
- **Identifying adaptation options to deal with vulnerabilities and increase adaptive capacity, and setting priorities:** This process should make use of different sources, i.e. scientific and technical information (IPCC, UNFCCC), country experiences, local expertise, coping strategies and traditional knowledge where possible. Once all options have been identified, a prioritization exercise should be performed (first, in cabinet, then with stakeholder involvement). It will have to be used to determine what current and future problems to solve first (i.e., on a sectoral and/or territorial level) and what adaptation options to use to deal with them. Some examples of criteria are: the level of current and future vulnerability, the percentage of population and/or poor population that will be benefit; technical and institutional feasibility; alignment with national priorities; replicability potential; sustainability; cost benefit; cost effectiveness; and, barriers to overcome.
- **Adaptation planning; formulating an adaptation strategy:** The five different activities involved in formulating and adaption strategy (See Figure 3 below) are; Synthesise assessments and studies; Design the adaptation strategy; Formulate adaptation options for policies and measures; Prioritise and select adaptation policies and measures and Formulate adaptation strategy.
- **Introducing adaptation planning as a part of national policy framework and planning; mainstreaming adaptation into development:** Climate Change adaptation will be cost effective if ‘‘mainstreamed’’ into the development processes and through the following basic steps: **(1)** Defining system boundaries and identifying entry points, this means being specific about the scale and type of intervention **(2)** Describing the socio-economic context and identifying opportunities **(3)** Analysing socio-economic barriers (such as legislation at national level or social institutions at a local level **(4)** Identifying partners and change agents.

Figure 3: Activities involved in formulating an adaptation strategy



Notes: APF – Adaptation Policy Framework, NAPA – National Adaptation Programme of Action

Source: *Adaptation Policy Framework, Technical Paper 8: Formulating an adaptation Strategy, UNDP*

2.4.4 INSTITUTIONAL ARRANGEMENTS NEEDED TO PLAN AND IMPLEMENT ADAPTATION: WHAT ROLES SHOULD THE DIFFERENT STAKEHOLDERS HAVE? HOW WOULD SADC COUNTRIES ENSURE PUBLIC, PRIVATE AND SOCIAL PARTICIPATION?

Due to the cross cutting nature of the issue, there is a need for stakeholder engagement in the development of adaptation plans or strategies. Climate change calls for wide participation, since structural changes and changes in paradigms are likely to be needed.

A wide range of sectors will need to adapt and there are considerable implications for policy development, businesses (trade) and communities. The implementation of adaptation will be carried out mainly at a local level and by public and private sector stakeholders. It is then helpful to define how the roles and responsibilities are currently seen, taking into account that they will change over time as new policies develop or are adjusted (see Table 3). It is vital to ensure wide, continuous and coordinated participation from different stakeholders.

Table 3: Potential roles and responsibilities of stakeholders

INSTITUTION	POTENTIAL ROLES AND RESPONSIBILITIES
National government and its ministries: economy and finance, agriculture, health, education, housing	▪ Leadership regulation, introducing economic instruments and setting performance management frameworks. Appropriate policies, standards, regulations and design guidance, and where necessary, appropriate funding ▪ Guidance on climate proofing to justify additional investment or ensure sustainability of investments
Local governments	▪ Many of the changes that need to be delivered in housing, transport and other issues will depend on local authorities. They bring together economic, social and environmental concerns and they have the potential to link their own actions with others through community strategies.
Private sector	There will be a variety of roles depending on the organization, its size and its purpose. However the key issues concerning climate adaptation that need to be considered by all include: ▪ Awareness raising within the organization ▪ Preparing for the loss and opportunities ▪ Using the available tools to investigate the impacts ▪ Contribute to sustainable Investments and development gaps
Scientific and academic organizations	▪ Provide policy oriented research ▪ Information for decision makers
Investment promotion agencies	▪ Ensure climate proof investments and promote investments to bridge development gaps
Poverty reduction agencies	▪ Address climate change impacts as part of their priority actions
Risk reduction community	▪ Address climate change impacts as part of the risk

Source: *UNDP*

2.4.5 THE NEED TO CATALYZE INVESTMENTS: THE ROLE OF PUBLIC AND PRIVATE ENTITIES

Adaptation has to be mainstreamed in investment planning, whether public or private. Feasibility studies need to include risk assessments that take into account climate change in order to promote the construction of infrastructure strong enough to cope with extreme climate variability and to face climate events such as El Niño. Besides preventing disasters, the development of community-infrastructure can also anticipate future stresses, i.e., it can help gather and store water to help reduce vulnerability and enhance the capacity to face droughts.

There is, therefore, a need to consider what governmental structure is needed to ensure that climate change is mainstreamed into development planning and poverty reduction plans. Would an inter-ministerial committee be useful to give national priority to adaptation and address its international dimension?

A large part of investments come from the private sector, and the amount of money that needs to flow in order to address adaptation strategies surpasses the capacities of governments. Governments therefore need to devise policies, incentives and regulation to turn private initiative toward strengthening adaptation. A combination of markets and public policy could refine risk sharing through: innovative insurance schemes and improved natural resource management; the creation of environmental markets and climate-proofing infrastructure; and, public-private partnerships.

Investment is required in various sectors, where funding from both public and private sources are needed, e.g.

- **In infrastructure:** Developed countries have recognized that preventing disasters is less expensive than investing in reconstruction projects. Hence, it has become an important strategy to encourage governments to invest in infrastructure. Thus, when designing new buildings, climate change considerations should be taken into account to avoid inadequate housing conditions. The development of adequate infrastructure can be an efficient way of improving disaster risk management.
- **In preventing water scarcity:** Irrigation systems need to be technified, and water must be recycled and re-used in houses, offices, cities, businesses and agricultural activities. Water also needs to be preserved. This requires the improvement of water quality standards and the treatment of industrial grey-water before dumping to the sea, lakes and rivers. Moreover, Payment for Environmental Services schemes can be implemented in order to protect and preserve water in the upper watersheds, where reforestation projects could also be developed.
- **In agriculture:** E.g. In countries where agriculture activities are crucial and producers are working in water-stressed rain fed environments, some investment has been made to develop water harvesting systems that enable the conservation of rainfall. Additionally, research on the generation of new crop varieties is in progress in some regions, which in turn promotes improved management practices, new irrigation systems and reduced fertilizer use. Hence, investment in technology transfer is also crucial for adaptation in agriculture.

The insurance sector in SADC countries has a vital role to play in adaptation, since its business requires that it evolve in order to cope with the new varieties of risks that climate change poses. Currently, insurance covers around 4% of losses in the world's poorest countries, mainly because the cost of insurance products is not affordable for poor people or is not designed for covering their needs. Insurance is mainly created to provide relief after losses occur. However, insurance type approaches or credit schemes could also be designed to motivate proactive risk or vulnerability reduction efforts. Innovative risk-sharing mechanisms are needed to respond to the new challenges posed by the adverse effects of climate change, including biodiversity loss and land degradation.

2.4.6 TECHNOLOGY: A MEANS FOR ADAPTATION

Different forms of technology will be often employed, whether "hard" forms, such as new irrigation systems, or "soft" technologies, such as insurance schemes. Or, they could use a combination of hard and soft, as with early warning systems that combine hard measuring devices with soft knowledge and skills that can raise awareness and stimulate appropriate action.

Many of these technologies are already available and widely used. The global climate system has always confronted human societies with extreme weather events. Thus it should be possible to adapt to some extent by modifying or extending existing technologies. Whatever the level of technology, its application is likely to be an iterative process. Although many of these technologies are already available and in place, they often need further investment to make them more effective. Such technology transfer has mostly been for purposes of mitigation, for the energy sector and has typically involved transferring ideas or equipment from developed to developing countries. Unlike mitigation, which is a relatively new approach, adaptation is generally the continuation of an ongoing process for which many of the technologies are already being applied even in some of the LDCs.

Moreover, adaptation, rather than being concentrated in one sector, will essentially be dispersed across all socio-economic sectors including water, health, agriculture and infrastructure, each of which presents its own challenges, and will involve stakeholders in different if overlapping groups.

Adaptation measures are also likely to be less capital intensive and more amenable to small-scale interventions. They should therefore be more flexible and adaptable to local circumstances, which means that in addition to being socially and legally acceptable they can be made reasonably cost-effective. Policymakers in SADC need to ensure that new forms of adaptation do not heighten inequality but rather contribute to a reduction in poverty.

2.4.7 NEW AND STRENGTHENED SCIENTIFIC AND TECHNICAL CAPABILITIES

Information and research is needed in order to take the right decisions. Nonetheless, most countries in SADC lack information. Climate change requires adequate information development and management. And for that, policy oriented research needs to be enhanced. New and strengthened scientific and technical capabilities (hardware, software, know how) will have to be put in place to face adaptation

challenges. Some of the key ones are: systematic climate, hydrological and ocean observation systems; developing climate change scenarios and downscaling them to regional and local areas; performing policy relevant vulnerability and adaptation assessments.

Vulnerability and adaptation assessments should serve as a basis to prioritize adaptation measures and policies. Some of the challenges with vulnerability assessments however are related to the lack of underlying data to identify the impacts of climate change. Generally, a limited number of hydro-meteorological stations are available in SADC countries, and data have in some cases only been collected recently. Mountainous countries like Lesotho have an additional challenge: their topography is such that very little can be said about averaged climate data for an area, since this will include peaks of several thousand metres above sea-level down to low valleys. This means that the strengthening of Systematic Observation systems need to be a priority at a national level and investments should be strengthened to this end. This would not only generate information for better short-term weather forecasts, but would help reduce uncertainties of Global Circulation Models that are used to develop global climate scenarios that are downscaled to national and local scales for vulnerability assessments.

2.4.8 PUBLIC AWARENESS AND PARTICIPATION

Global awareness of the risks posed by climate change is rising rapidly. Nonetheless, there is still much to do, especially in SADC countries, where policy makers, policy takers, and the public in general still need to understand the importance of integrating concerns of climate change into their daily operations, as well as their policies, programming and projects. Nearly all sectors of society – spanning from businesses (trade) to humanitarian aid organizations to schools – have to do their part in it in order to create awareness and make society participate in the whole process leading to adaptation to climate change. In the end, populations and decision-makers in SADC countries need to engage with behavioral change through education, public information campaigns and regulation. NGOs and media, with their experience in generating political incidence and participation and inclusion processes, have a big role to play in this.

SECTION 3: NEGOTIATIONS ON ADDITIONAL INVESTMENT AND FINANCIAL FLOWS TO ADDRESS CLIMATE CHANGE IN DEVELOPING COUNTRIES

3.1 BACKGROUND

The purpose of this Section is to help SADC countries to assess options in negotiations on additional international investment and financial flows to address climate change. This Section covers:

- Estimates of the investment and financial flows needed to address climate change in developing countries;
- Existing funding mechanisms of the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol;
- Options to enhance international investment and financial flows to developing countries;
- Governance of the international investment and financial flows;
- Effective disbursement of the international funds viz-a-viz SADC countries.

Our assessment *viz-a-viz* financial window for SADC countries to address climate change in the region is on the backdrop that the UNFCCC and the Kyoto Protocol foresee financial assistance from developed country Parties to developing country Parties. Developed country Parties (Annex II Parties) committed to provide new and additional financial resources to assist developing country Parties comply with their obligations under the Convention (Article 4.3) and the Kyoto Protocol (Article 11.2). The financial assistance may be provided through a "financial mechanism" established by Article 11 of the Convention or through bilateral, regional or other multilateral channels.

Against this background, the Global Environment Facility (GEF) was designated as an entity entrusted with the operation of the financial mechanism of the Convention on an interim basis in 1995. The financial mechanism is accountable to the Conference of the Parties (COP), which decides on its policies, programme priorities and funding criteria. A memorandum of understanding (MOU) between the COP and the Council of the GEF was concluded in 1996. After its first review of the financial mechanism, the COP decided to grant the GEF its status on an ongoing basis, subject to review every four years. Parties have also established two special funds under the Convention managed by the GEF; the Special Climate Change Fund (SCCF) and Least Developed Countries Fund (LDCF).

The Adaptation Fund under the Kyoto Protocol was established to assist developing country Parties to the Protocol that are particularly vulnerable[3] to the adverse effects of climate change to meet the costs of adaptation. A "share of proceeds" consisting of 2% of the certified emission reductions (CERs) issued for most Clean Development Mechanism (CDM) projects is contributed to the Adaptation Fund. The operating entity of the Fund is the Adaptation Fund Board serviced by a secretariat and a trustee. The GEF and World Bank have been appointed the secretariat and trustee respectively on an interim basis.

[3] Vulnerability is the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of a character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity (IPCC 4AR).

The Board, subject to the guidance and under the authority of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, will develop strategic priorities, policies and guidelines, decide on projects and develop rules of procedure.

Financial support to developing countries is currently being addressed in two negotiating processes. One is the fourth review of the financial mechanism. The COP has adopted objectives and methodology for the review of the financial mechanism. The fourth review will inform the fifth replenishment of the GEF. The second process is the Ad Hoc Working Group on Long Term Cooperative Action established by the Bali Action Plan. Its mandate includes enhanced action on the provision of financial resources and investment to support action on mitigation and adaptation and technology cooperation. The financial component of the Bali Action Plan will consider, inter alia:

- Improved access to adequate, predictable and sustainable financial resources and the provision of new and additional funding for developing country Parties;
- Positive incentives for developing country Parties for the enhanced implementation of national mitigation strategies and adaptation action;
- Innovative means of funding to assist developing country Parties particularly vulnerable to the adverse impacts of climate change to meet the cost of adaptation;
- Incentives to implement adaptation actions on the basis of sustainable development policies;
- Mobilization of public- and private-sector funding and investment; and
- Financial and technical support for capacity building in the assessment of the costs of adaptation in developing countries.

3.2 ESTIMATES OF THE INVESTMENT AND FINANCIAL FLOWS NEEDED TO ADDRESS CLIMATE CHANGE: GLOBAL PERSPECTIVE

In 2007, the UNFCCC Secretariat prepared a report on "Investment and Financial Flows to Address Climate Change". The report covers mitigation and adaptation in various sectors over the period to 2030. The report defines an **investment** as the initial (capital) cost of a new physical asset with a life of more than one year, such as the capital cost of a gas-fired generating unit or a water supply system. **A financial flow** is an ongoing expenditure related to climate change mitigation or adaptation that does not involve physical assets, such as research or health care. These investment and financial flows are NOT the same as the cost of addressing climate change; changes to the operating costs of investments are not considered nor are damages due to climate change estimated.

Total investment and relevant financial flows are estimated for both a reference scenario and a mitigation scenario. The scenarios are a composite of several sources covering energy-related emissions, industrial process carbon dioxide (CO_2) emissions, non-CO_2 emissions, and agriculture and forest sinks. A comparison of those scenarios indicates the investment and financial flows needed to address climate change.

Addressing climate change will require significant shifts and an overall net increase in global investment and financial flows. **While the changes appear large in absolute terms, they are small relative to total investment.** Most of the changes and additional investment are likely to be made by corporations and households, although this may require government policies and incentives. But additional public sector investment and financial flows will be required, primarily for adaptation. Approximately half of the shifts and net increases in investment and financial flows needed to address climate change occur in developing countries. Mitigation investments in developing countries are more effective with larger emission reductions per dollar invested. On average developing countries are estimated to suffer more damage as a percentage of their GDP than developed countries. The UNFCCC report and other studies conclude that developing countries, especially the poorest and those most vulnerable to the adverse impacts of climate change, will need international financial support for mitigation and adaptation.

The estimated investment and financial flows are distinct from development needs. The energy sector investment, for example, does not reduce the number of people without access to modern energy services. The UNFCCC analysis does not systematically address individual countries or groups of developing countries. However, the data indicate that official development assistance plays a much larger role in least developed countries (LDCs) than other developing countries.

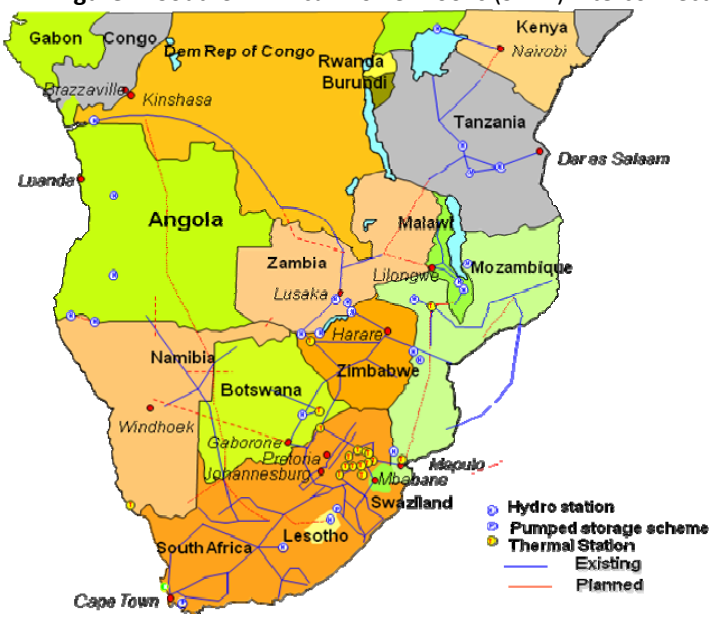
3.2.1 MITIGATION

Mitigation investment and financial flows depend on the scale of the emission reductions. The reference scenario used in the UNFCCC report assumes that global emissions rise from 38.87 Gigatons CO_2-eqivalent ($GtCO_2$-eq) in 2000 to 61.52 $GtCO_2$-eq in 2030; about 1.5% per year. Most of the growth occurs in developing countries. Under the mitigation scenario, global emissions peak in 2015 at 41.81 $GtCO_2$ - eq and then decline to 29.11 $GtCO_2$ - eq in 2030; 25% below 2000 emissions. The lower emissions under the mitigation scenario are due to major changes to energy demand and supply and to shifting forests and agriculture from a source to a sink. Energy demand is estimated to be about 15% lower in 2030 due to aggressive implementation of energy efficiency measures – industry, buildings and

transportation – by energy consumers and electric utilities. Electricity generating capacity is about 10% lower in 2030 and the mix of sources used is less carbon-intensive. Forests shift from an emissions source to a large sink.

The changes to the investment and financial flows in 2030 for climate change mitigation are shown in Table 5 of the following page. The net change to the annual investment and financial flows in 2030 for climate change mitigation is estimated increase of U$ 200 - U$ 210bn globally, of which about U$ 75bn is projected to occur in developing countries, SADC included. As discussed below, the net increase involves reduced investment for fossil fuel supply and large shifts in the investment for electricity generation. In SADC, electricity generation through the Southern African Power Pool (SAPP) as per the diagram below have an interconnected capacity of 53,445 MW. Of this, South Africa has an installed capacity of 44,170 MW, Table 4 below.

Figure 4: Southern African Power Pool`s (SAPP) interconnection



Source: *Regional Electricity Regulators Association*

Table 4: SAPP Installed Capacity

Country	Utility	Installed Capacity MW as at April 2009
Angola	ENE	1,187
Botswana	BPC	132
DRC	SNEL	2,442
Lesotho	LEC	72
Malawi	ESCOM	287
Mozambique	EDM	233
	HCB	2,075
Namibia	NamPower	393
South Africa	Eskom	44,170
Swaziland	SEC	70.6
Tanzania	TANESCO	1008
Zambia	ZESCO	1,812
Zimbabwe	ZESA	2,045
Total SAPP MW		**55,927**
Total interconnected SAPP MW		**53,445**

Source: *Regional Electricity Regulators Association*

Annual investment in **fossil fuel supply** and associated infrastructure in 2030 is almost U$ 60 billion lower due to the increased energy efficiency. However, global fossil fuel consumption is still about 30% higher than in 2000. **Substantial shifts in investment for electricity supply will be needed. Mitigation is projected to reduce investment for fossil-fired generation, transmission and distribution by U$ 156bn in 2030. Almost all of that amount, about U$ 148bn, needs to be shifted to renewables, nuclear and CO_2 capture and storage (CCS).** Currently investment in the power sector is mostly domestic (about 70%), with significant international foreign direct investment and international borrowing in some regions. Shifting domestic investments into more climate friendly alternatives may require national policies and/or financial incentives.

Increased energy efficiency requires additional investment for electrical and fossil fuel equipment in **industry** and **buildings**. Some CCS is also projected for the industrial sector. Improved vehicle efficiency, including hybrid vehicles, increases energy efficiency in the **transportation** sector. Actions to reduce emissions of non-CO_2 gases and from **waste** (landfills and wastewater treatment plants) require small investments. Finally, annual spending on **energy research, development and demonstration** (RDD&D) is projected to double from the current level. Currently, most research is undertaken in a few developed countries; what share of the research will be conducted in developing countries including SADC in 2030 is difficult to predict.

Table 5: Change to the Annual Investment and Financial Flows in 2030 for Climate Change Mitigation

SECTORS	GLOBAL (billions of U$), year 2005 calculate	SHARE OF NAI PARTIES (percentage)
Fossil Fuel Supply	(-) 59	50 to 55%
Electricity Supply	(-) 7	50 to 55%
Fossil-fired generation, transmission and distribution	(-) 156	50 to 55%
Renewable, nuclear and CCS	148	50 to 55%
Industry	36	50 to 55%
Building	51	25 to 30%
Waste	0.9	66 to70%
Transport	88	40 to 45%
Forestry	21	Almost 100%
Agriculture	35	35 to 40%
Energy RD&D	35-45	-
Net Change	**200-210**	**35 to 40%**

Note: NAI Parties: Parties to the UNFCCC that is not included in Annex I, developing countries.
Source: *UNFCCC 2007*

Further to the foregoing assessment, a little over half of the incremental investment for energy supply, electricity generation and industry is projected for developing countries, which reflects the relatively rapid economic growth projected for developing countries worldwide and the cost-effective emission reduction opportunities available. The shares are lower for buildings and transportation because building stocks with heating and/or cooling and vehicle fleets are concentrated in developed countries.

The **agriculture sector** offers opportunities to reduce nitrous oxide emissions from soils (fertilizer use) and manure management as well as methane emissions from animals, manure management and rice cultivation. The annual cost of such measures is estimated at U$ 20bn in 2030, mostly (U$ 13bn) in

developing countries. Agroforestry offers the potential to increase carbon sinks; expanding agroforestry by 19 million ha/year would require an annual investment of about U$ 15bn with virtually all of this potential in developing countries and SADC included.

Deforestation and forest degradation currently lead to emissions of 5.8 $GtCO_2$ per year globally, all from developing countries. Halting those emissions would cost an estimated U$ 12bn per year. In addition forest management – reducing harvest rates and harvest damage – could increase the forest carbon stock in developing countries. The estimated annual cost of such measures is U$ 8 billion per year. The forest carbon stock can also be increased through afforestation and reforestation of cleared land, but the potential is relatively small and the associated annual investment is less than U$ 0.5bn annually.

3.2.2 ADAPTATION

The global cost of adaptation to climate change is difficult to estimate, largely because adaptation measures will be widespread and heterogeneous. More analysis of the costs of adaptation at the sectoral and regional levels is required to support the development of an effective and appropriate international response to the adverse impacts of climate change. Nevertheless it is clear that large new and additional investment and financial flows will be needed to adapt to climate change. Based on the available literature, the UNFCCC Secretariat was able to compile partial estimates of the investment and financials flows for adaptation for agriculture, forestry and fisheries; water supply; human health; coastal protection; and infrastructure. The UNFCCC estimates are partial estimates for a limited number of sectors, so they do not represent the full incremental cost of adaptation.

Since they are drawn from available literature, the UNFCCC estimates of the investment and financial flows for adaptation in 2030 are based on a different scenario for each sector. For water supply and coastal zones, adaptation costs are the capital costs of measures designed for the projected climate over the life of the facility up to 2050 and 2080 respectively.

According to the UNFCCC estimates, the incremental investment and financial flows needed to adapt to climate change in selected sectors are estimated to be U$ 49 - U$ 171bn globally in 2030 with U$ 28 - U$ 67bn of this total being needed in developing countries. Other recent estimates of adaptation costs for developing countries include, e.g. Around U$ 9 – U$ 41bn according to the World Bank, around U$ 2 – U$ 17bn according to Oxford Institute for Energy Studies, greater than U$ 50 billion according to Oxfam, and U$ 86bn according to UNDP. While these estimates differ in terms of their scope and approach, and hence are not directly comparable, they all show that tens of billions of dollars annually will be needed by developing countries to adapt to climate change. The estimated additional investment and financial flows needed for climate change adaptation in year 2030 are shown in Table 6.

Table 6: Change to the Annual Investment and Financial Flows in 2030 for Climate Change Adaptation

SECTOR	GLOBAL (billions U$) year 2005 calculate	Developing countries (percentage)
Agriculture	14	50%
Water supply	11	85%
Human health	5	100%
Coastal protection	11	45%
Infrastructure	8 to 130	25 to 35%
Total	**49 to 171**	**35 to 60%**

Source: *UNFCCC*

The agriculture, forestry and fisheries sector is estimated to need an additional investment of U$ 11bn annually in new capital such as irrigation systems, equipment for new crops and fishing practices, and relocation and modification of processing facilities. An additional U$ 3bn will be needed annually for research and extension activities to facilitate adaptation. About half of the total requirement will be for developing countries.

The capital cost of the **water supply** infrastructure needed to meet the projected population and economic growth to 2030 given the projected climate in 2050 is about U$ 800bn. A little over 25% of this – U$ 225bn – was estimated to be due to climate change. Spreading the capital cost over the 20-year life of the facilities leads to an annual adaptation cost of U$ 11bn. About 85% of the additional investment would be needed in developing countries.

For **human health** the adaptation cost is estimated as the cost of the additional cases of diarrhoeal disease, malnutrition and malaria due to climate change in developing countries. This cost is estimated at U$ 5bn per year for 2030, all in developing countries. The additional investment needed for **coastal protection** was estimated using the dynamic interactive vulnerability analysis (DIVA) model, which analyses adaptation options for more than 12,000 segments of the world's coasts. The model was run with and without sea level rise. It estimates the costs of beach nourishment, the costs of building dykes, land loss costs, number of people flooded, and losses from flooding. Only the costs of beach nourishment and dykes were counted as climate change adaptation costs. The annual investment in 2030 was estimated at U$ 11bn of which U$ 5bn is in developing countries.

Infrastructure, such as buildings and roads, may be damaged due to severe weather events, flooding or other impacts of climate change. New infrastructure can be adapted to the impacts of the projected climate. To estimate the adaptation cost for new infrastructure, the share of infrastructure vulnerable to the adverse impacts of climate was estimated by region based on historical data for damages due to extreme weather events. Adapting the vulnerable new infrastructure to the potential impacts of climate change was estimated to increase the capital cost by 5 - 20%. The adaptation cost for new infrastructure in 2030 is estimated at U$ 8 - U$ 130bn globally, of which U$ 2 - U$ 41bn is in developing countries.

3.2.3 SOURCES OF INVESTMENT AND FINANCIAL FLOWS

The additional investment and financial flows needed for climate change mitigation and adaptation in 2030 is U$ 249 - U$ 381bn (2005 U$ calculate). While that figure is large in absolute terms, it is only 1.1 - 1.7% of projected global investment in 2030. The sources of future investment and financial flows are not available from the economic models used. The sources of investment in 2000 are shown in Table 7.

Most investments are made by corporations (60%) with the balance being made by households (26%) and governments (14%). **Household** investments are for vehicles, homes, farms, and small businesses and are financed by the owner. **Corporate** investments are financed by foreign direct investment (37%), domestic sources (35%) and foreign loans (28%). **Government** investments are financed mainly from domestic sources (91%) with some foreign loans (8%) and official development assistance (ODA) (1%). Official development assistance for new physical assets provides 30% of the government investment in least developed countries. The significant shares of foreign direct investment (22%) and foreign debt

(18%) of global investment attests to the importance of international capital markets and financial institutions to address climate change.

Table 7: Sources of Investment in 2000

Sector	Sources	Amount (Billions of U$)	Share of Total (Percentage)
Households	Total Investment	1,184	26%
Corporation	Domestic funds	1,429	21%
	Foreign direct investment	1,540	22%
	Foreign debt	1,156	17%
	Total investment	4,125	60%
Government	Domestic funds	850	12%
	Foreign debt	71	1%
	ODA	16	0
	Total investment	937	14%
Total	Domestic funds	4,093	60%
	Foreign direct investment	1,540	22%
	Foreign debt	1,226	18%
	ODA	16	0
	Total investment	6,875	100%

Source: *UNDP/UNFCCC*

Most of the additional investment and financing needed for climate change mitigation and adaptation is expected to be financed by corporations, although this may require government policies and incentives, e.g. electric utilities are usually government-owned or regulated private corporations. Changing the mix of generation types they build may require government policies. Facility owners should make the extra investment for energy efficiency in industry and buildings because it will yield an attractive return, but polices may be needed to address market barriers. Households will bear the higher initial cost of efficient vehicles, but policies are likely to be needed to induce manufacturers to produce more efficiency vehicles.

Governments are likely to play a larger role in providing the additional funds needed for adaptation. While most of the additional investment needed for agriculture, forestry and fisheries will be provided by households and corporations, a substantial part of the additional research and extension activity will be funded by government. Most water supply systems and coastal protection measures are funded by governments. Health care relies on a mix of public and private funding that varies widely across countries. Most infrastructure is privately owned, but government policies may be needed to ensure that new facilities are well suited to the future climate.

3.3 EXISTING FUNDING MECHANISMS OF THE CONVENTION AND THE KYOTO PROTOCOL

3.3.1 BACKGROUND

The Kyoto Protocol created the CDM to assist non-Annex I (NAI) Parties in achieving sustainable development and in contributing to the ultimate objective of the Convention and to assist Annex I Parties in meeting their emissions limitation commitments. The CDM provides financial assistance for mitigation projects in NAI Parties by issuing CERs credits for the emission reductions or removals achieved. A small share (2%) of the CERs issued for most projects is contributed to the Adaptation Fund. The Adaptation Fund will assist developing country Parties that are particularly vulnerable to the adverse impacts of climate change to meet the costs of adaptation.

3.3.2 FINANCIAL MECHANISM UNDER THE CONVENTION

The GEF receives guidance from the COP on policy, programme priorities, and eligibility criteria. The COP has provided general guidance with regard to operation of the financial mechanism, and has also provided specific guidance related to:

- Support to national communications of NAI Parties;
- Capacity-building;
- Public awareness and outreach;
- Development and transfer of technologies;
- Support to adaptation; and
- Support to mitigation.

The GEF is replenished on a four-year cycle. The donors agree on the amount of the replenishment and the contribution of each country is then calculated using a pre-defined "basic" burden share. In anticipation of a replenishment, the COP makes an assessment of the funds needed to assist developing countries to fulfill their commitments under the Convention over the next cycle. The fourth review of the financial mechanism started at COP 13 (December 2007) and will be completed at COP 15 (December 2009). It will provide an input to the fifth replenishment of the GEF.

The funds contributed to the GEF Trust Fund for the pilot phase and the first four replenishments are shown in Table 8. The total is over U$ 3.3bn. The GEF has used these funds to support projects that have provided over U$ 14.3bn of co-financing.

Table 8: GEF Trust Fund Allocations and Co-financing **(millions of U$)**

GEF PHASE	GEF GRANT	CO-FINANCING
Pilot phase (1991 – 1994)	280.60	2,402.89
GEF 1 (1995 – 1998)	507.00	2,322.10
GEF 2 (1999 – 2002)	667.20	3,403.40
GEF 3 (2003 – 2006)	881.80	4,609.69
GEF 4 (2007 – 2010)	990.00	1,651.82
From which in the first half of 2007	76.35	1,651.82
Total	**3,326.60**	**14,389.90**

Source: *UNDP/UNFCCC*

The allocation of GEF resources to climate change activities is shown in Table 9. Most of the resources have been allocated to long-term mitigation projects, including renewable energy, energy efficiency, and low-greenhouse gas emitting technologies. Of note here is that SADC countries have implemented / invested in long-term mitigation projects through UNDP as the GEF implementing partner in SADC countries.

Table 9: Allocation of GEF Resources to Climate Change Activities **(millions of U$)**

CLIMATE CHANGE ACTIVITIES	PILOT PHASE	GEF 1	GEF 2	GEF 3	GEF 4	TOTAL	SHARE
OP 5: Energy Efficiency	70.6	128.6	200.1	286.7	33.8	719.8	29.8%
OP 6: Renewable Energy	108.8	191.3	251.8	299.2	10.0	861.1	35.7%
OP 7: Low-GHG emitting energy technologies	10.1	98.4	98.6	111.1		318.2	13.2%
OP 11: Sustainable Transport			46.4	82.2	32.0	160.6	6.7%
Enabling activities	20.2	46.5	45.3	73.9		185.9	7.7%
Short term response measures	70.8	42.2	25.1	3.7		141.8	5.9%
Strategic pilot approach to adaptation				25.0		25.0	1.0%
Total	**280.5**	**507.0**	**667.3**	**881.8**	**75.8**	**2,412.4**	**100.0%**

Source: *UNDP/UNFCCC*

Additional financial mechanism under the Convention is the **Special Climate Change Fund (SCCF) that** finances activities, programmes and measures relating to climate change that are complementary to those funded by the climate change focal area of the GEF and by bilateral and multilateral funding, in the following areas:

- Adaptation,
- Transfer of technologies,
- Energy, transport, industry, agriculture, forestry and waste management; and,
- Activities to assist developing countries whose economies are highly dependent on income generated from the production, processing and export, and/or on consumption of fossil fuels and associated energy intensive products in diversifying their economies.

3.3.3 THE ADAPTATION FUND

The Adaptation Fund was established under the Kyoto Protocol to finance concrete adaptation projects and programmes in developing country Parties to the Protocol, in particular those that are particularly vulnerable to the adverse effects of climate change. The Adaptation Fund is supervised and managed by the Adaptation Fund Board under the authority and guidance of the CMP. The Adaptation Fund Board is serviced by a secretariat, the GEF, and a trustee, the World Bank – both on an interim basis.

The Adaptation Fund is financed through a share of proceeds from CDM projects and other sources of funding. The share of proceeds is 2% of CERs issued for CDM projects with exemptions for some project types. The revenue received by the Adaptation Fund will depend on the quantity of CERs issued and the price of CERs. Assuming annual sales of 300 - 450 million CERs and a market price of € 17.50 (range of € 10 – 25), the Adaptation Fund would receive U$ 80 – 300 million per year for 2008 to 2012. Post-2012 funding for the Adaptation Fund depends on the continuation of the CDM and the level of demand in

the carbon market. Assuming the same price levels and a share of proceeds for adaptation of 2% continues to apply post-2012, the level of funding could be U$100 – 500m per year in 2030 for low CDM demand (U$ 5 – 25bn representing purchases of 400 – 600 Mt CO_2 equivalent per year (CO_2-eq/yr)) and U$ 1 to U$ 5bn per year for high CDM demand (U$ 100bn with 4,000 – 6,000 Mt CO_2-eq/yr).

In summary, the Adaptation Fund, financed by a levy of 2% of the CERs issued for most CDM projects, is just becoming operational. It could have U$ 80 – 300m per year for adaptation projects and programmes in developing countries during 2008 - 2012. Post-2012 the Adaptation Fund depends on the continuation of the CDM and the level of demand in the carbon market.

3.4 OPTIONS TO ENHANCE INTERNATIONAL INVESTMENT AND FINANCIAL FLOWS TO DEVELOPING COUNTRIES

The UNFCCC report on investment and financial flows to address climate change concluded that to meet the additional investment and financial flows would require a combination of:

- Commitments by Annex II Parties to provide additional financial assistance to developing countries under the Convention;
- Appropriate national policies to encourage private investment and domestic government investment in mitigation and adaptation measures;
- Optimal use of the funds available under the Convention and from other sources to spread the risk across public and private sources;
- Expansion of the carbon market through more stringent commitments by Annex I Parties to increase demand and possible additional mechanisms to increase supply; and
- New sources of predictable funds to provide additional external financial flows to developing countries for adaptation and mitigation.

The UNFCCC is of concern that if the funding available under the financial mechanism of the Convention remains at its current level and continues to rely mainly on voluntary contributions, it will not be sufficient to address the future financial flows estimated to be needed for mitigation and adaptation.

With appropriate policies and/or incentives, a substantial part of the additional investment and financial flows needed could be covered by the currently available sources. Thus, national policies in developed and developing countries can assist in shifting investments and financial flows made by private and public investors into more climate-friendly alternatives and optimize the use of available funds by spreading the risk across private and public investors.

However, improvement in, and an optimal combination of, mechanisms, such as the carbon markets, the financial mechanism of the Convention, ODA, national policies and, in some cases, new and additional resources, will be needed to mobilize the necessary investment and financial flows to address climate change.

The carbon market, which is already playing an important role in shifting private investment flows, would have to be significantly expanded to address needs for additional investment and financial flows for mitigation. New and additional external funding for climate change mitigation and adaptation will be needed, particularly for sectors in developing countries that depend on government investment and financial flows. Several other options for generating additional funds have been suggested. Some of these options, such as auctioning a share of the assigned amount and auctioning allowances for emissions from international bunkers, could generate revenues commensurate with the additional needs.

This section summarizes options that have been proposed to enhance funding. The options are categorized as follows:

- **Increasing the Scale of Existing Mechanisms**
  - The Convention Funds

- The CDM and Other Possible Crediting Mechanisms
- The Adaptation Fund

- **Additional Contributions by Developed Countries**
- New Bilateral and Multilateral Funds
  - ✓ *Cool Earth Initiative*
  - ✓ *International Climate Protection Initiative*
  - ✓ *Clean Investment Funds*
  - ✓ *Global Climate Financing Mechanism*
- Proposals Funded by Defined Contributions from Developed Countries
  - ✓ *Convention Adaptation Fund, Technology Fund and Insurance Mechanism*
  - ✓ *Adaptation Fund and Multilateral Technology Acquisition Fund*
  - ✓ *Mechanism for Meeting Financial Commitments under the Convention*
  - ✓ *Efficiency Penny*
- Proposals Funded by Contributions from Developed and Developing Countries
  - ✓ *World Climate Change Fund*
  - ✓ *Multilateral Adaptation Fund*

- **More Stringent Commitments by Developed Countries**
- Auction of Assigned Amount Units
- Nationally Appropriate Mitigation Actions

- **Other Sources of Funds**
- Extension of the 2% levy on CDM to other Market Mechanisms
- International Air Travel Adaptation Levy
- International Maritime Emission Reduction Scheme
- Auction of Allowances for International Aviation and Marine Emissions
- Funds to Invest Foreign Exchange Reserves
- Access to Renewables Programmes in Developed Countries
- Tobin Tax
- Donated Special Drawing Rights
- Debt-for-clean-energy Swap[4]

[4] All options are proposed options only.

3.5 GOVERNANCE OF INTERNATIONAL INVESTMENT AND FINANCIAL FLOWS

At present the Convention funds are managed by the GEF with guidance from the Conference of the Parties. Operation of the GEF is directed by the GEF Council, which has different representation and rules of procedure than the COP. The Adaptation Fund has its own Board elected by, under the authority of and accountable to the CMP.

Many of the proposals to enhance the financial resources involve the creation of new funds for specific types of mitigation actions, adaptation needs, and technology development and transfer. Establishment of several new funds could create a need for an umbrella mechanism to coordinate the management of all funds under the Convention. Establishment of new bilateral and multilateral funds outside the Convention could lead to fragmentation and inefficient allocation of resources. Some of the proposals for enhanced funding allow voluntary participation and suggest that the fund be managed by the participants.

In short, a significant increase in the financial resources will raise issues relating to the governance of the funds. Governance issues apply both to the funds collected and to the manner in which those funds are disbursed. Governance issues include accountability to the COP, balanced representation of all Parties, transparency, and ease of access to the funding.

Principles proposed for the collection and disbursement of financial resources under the Convention include equity, common but differentiated responsibility, the polluter-pays principle, adequacy, predictability, sustainability, new and additional funding, grant funding, simplified access and priority access for the most vulnerable countries. Agreeing upon and applying principles appropriate to each fund under the Convention will be a challenge.

3.6 EFFECTIVE DISBURSEMENT OF THE INTERNATIONAL FUNDS

Disbursement of substantially larger amounts for mitigation, adaptation and technology co-operation raise important delivery issues, including:

- The share of the available funds to be allocated for mitigation, adaptation and technology co-operation;
- Whether the funds are distributed by country or project type;
- Whether funds are distributed for individual projects (like the GEF) or for "national programmes"; and
- Whether, or under what conditions, funds can be provided through "direct access".

How to allocate the available funds will be a major on-going challenge. Funds will need to be allocated among mitigation, adaptation and technology cooperation. The creation of separate funds with dedicated revenue sources may appear to address this issue. But the assignment of dedicated revenue sources is really an allocation of funds. And if one fund has a persistent surplus while another is continuously insufficient to fund proposed actions, the assignment of revenue sources will need to be reviewed. The allocation of funds among mitigation, adaptation and technology cooperation is ultimately a political decision and will fall to the COP. However, an umbrella mechanism to coordinate the management of all funds under the Convention could provide advice to the COP.

Within a given objective – mitigation, adaptation, technology cooperation – funds will need to be allocated among different purposes. Mitigation spending might need to be divided among CCS, REDD and several other types of mitigation actions. Adaptation spending might need to be divided among provision of health care, support for irrigation systems, coastal protection, reduction of the impacts of extreme weather events, etc. Technology funds may need to be split among cooperative research, demonstration projects, diffusion of available technologies, etc. Every allocation decision will implicitly involve a regional distribution of spending. The regional distribution of projects is a perennial issue for the CDM.

Every allocation decision will implicitly have a temporal dimension as well. Allocating funds for technology research means less money is available for diffusion of available technologies. Possible current mitigation efforts are sacrificed for, hopefully, larger future benefits. Funding measures to reduce the impacts of extreme weather events should yield savings in the future, but it may reduce the money available to deal with immediate health care needs. These implicit choices cannot be avoided.

Fundamentally, the mitigation, adaptation and technology funds can be disbursed by country or by project type, or a combination of the two. To the extent that the funds are disbursed on the basis of the project type, the relevant Convention bodies must establish priorities and so implicitly or explicitly address regional and temporal equity. To the extent that the funds are disbursed by country, regional equity is explicitly addressed and project priorities and their temporal equity are delegated to the national government. Governments routinely face similar decisions. If the population disagreed with the decisions, it may lead to a change of government.

A country allocation may not be appropriate for mitigation and technology cooperation because those

funding decisions have global consequences. A country allocation might be appropriate for adaptation since adaptation needs are local and an integral part of sustainable development. But it requires a basis for determining the country allocations that fairly reflects their needs.

The Bali Action Plan indicates that developing countries that are particularly vulnerable to the adverse effects of climate change, include the LDCs, SIDS and countries in Africa affected by drought, desertification and floods. More specific criteria are likely to be needed for instance some SIDS are quite wealthy whilst some SIDS are quite rich and some relatively poor vulnerable countries would be excluded. The adverse reaction of many developing countries to the "pre-set criteria for country allocation" established through the resource allocation framework by the GEF attests to the difficulty of establishing such criteria.

Regardless of how funds are allocated, disbursement could be on a project basis or a programme basis. A project approach enables each proposed project to be reviewed carefully, but each project takes a long time to process and incurs high administrative costs. A programme approach reduces the administrative costs, but may provide funding for some less cost-effective actions. How available funds are delivered will need to change if the scale of funding increases significantly. At present, mitigation projects, whether through the CDM or Convention funds, are approved on a project-by-project basis. The process is costly and cumbersome, thus provoking calls for changes to administration of the CDM. Changes that would reduce the administrative burden for individual projects and changes, such as sectoral CDM, that would enable much larger reductions to be approved by a single decision.

Adaptation likewise is implemented on a project-by-project basis. The number of projects is still small because the funds are limited and few countries have established their adaptation needs and priorities. If funds are allocated to countries, approval could be based on proposed plans. If funds are disbursed for different purposes, suitable cost-sharing arrangements may be needed. The cost-sharing arrangements are likely to differ for coastal protection, health care, and other purposes. But predictable cost-sharing arrangements would enable national governments and international agencies to prepare and execute implementation plans.

The difficulty with the programme approach is that the implementing agency or the national government must have some basis for establishing priorities for measures to be funded. Some countries have NAPAs, but they identify only "urgent" adaptation actions and do not address sectors/programme needs. Some countries have Technology Needs Assessments, but they do not specify the specific actions or the scale of the actions needed by technology. In short, few if any countries currently have the information needed to support a programme approach to mitigation, adaptation or technology co-operation internationally or on a country basis.

The issue of **direct access** is directly correlated to the issue of a project or programmatic approach as well as capacity for budgetary planning and for budget assistance. Under the GEF projects require an approved implementing agency; a country cannot access funds from the GEF directly. The Adaptation Fund allows developing countries to submit project proposals directly. Direct access to funds under the Convention is an important issue for developing countries.

SADC countries can benchmark from Bangladesh who is proposing the establishment of a multi-donor climate fund to promote climate adaptation and mitigation in Bangladesh. The fund would pool contributions from various donors to support climate mitigation and adaptation activities in the country over a number of years. Priorities would be negotiated between Bangladesh and the fund's contributors.

The fund would promote robust fiduciary management, donor harmonization, lower transaction costs, efficiency and cost effectiveness.

Lastly, SADC coutries should be asked; how are mitigation and adaptation projects approved at the present time?

SECTION 4: CONCLUSION

From the viewpoint of trade and climate change / the environment, the challenges for the Southern African Developing Community (SADC) arising from climate change impacts and the need for adaptation and mitigation are many. A number of key challenges have been outlined in this paper. SADC policy makers and negotiators may wish to consider these challenges when developing and refining their adaptation policies, as well as their negotiating positions under the international climate change process. The following points may also help provide a useful framework for further reflection:

- **Adaptation is not a "stand alone" issue.** It has clear synergies with important issues such as economic development, poverty reduction and disaster management strategies. A sustainable development path is vital for an adaptation process to succeed in SADC.
- **Adaptation will need to be integrated into all development planning.** This includes the national and regional levels. Successful adaptation measures will require long-term thinking and explicit consideration of climate change risks at the regional (cross-national), national, sub-national and local levels in SADC countries.
- **Adaptation will also require the capacity for both short- and long-term planning.** Strategies will be needed to address long-term climate change impacts. At the same time, strategies for shorter-term adjustments may also be necessary, such as those prepared for shorter-term climate variability.
- **Adaptation will require substantial funding.** All indicative estimates available suggest that the costs of adapting to climate change in the developing world are in the order of tens of billions. However, there are many difficulties and limitations in estimating the exact costs of adapting under various scenarios, as well as the ability of countries (SADC) to self-finance adaptation.

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

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

On investment and financial flows to address climate change in the Southern African Development Community as well as ensuring adequate, predictable and sustainable financial resources for mitigation, adaptation and technology co-operation will be an essential component of post-2012 agreement of the Convention. That is likely to require agreement on a mix of investment and financial flows including:

- Increased funding for the financial mechanism of the Convention. The fourth review of the financial mechanism will inform the fifth replenishment of the GEF. Those funds will be disbursed over four years beginning in 2011.
- New sources of funds for mitigation, adaptation and technology co-operation. Several options for new funds on the scale needed are available. They need to be assessed in terms of their political acceptability in SADC and their ability to provide predictable financial and investment flows on a sustained basis in SADC.

In the final analysis, raising substantial additional funds for mitigation, adaptation, and technology co-operation in SADC will give rise to important governance and delivery issues that will need to be addressed if the funds are to be used effectively. In addition, there is a growing volume of grant resources from the Global Environment Fund (GEF) available for appropriate climate change or clean development projects that could be taken advantage of in SADC. While SADC`s contribution to greenhouse gasses (GHG) is negligible, arguably the widespread use of climate change driven projects does not only accrue SADC`s environmental benefits and trade, but also enhance the global environment.

To this end, investment and financial flows significantly influence the aggregate economy of SADC through their effect on prices and the amount that companies and households spend. Since this Report is aimed to encourage domestic government investment in SADC, our assessment approach is framed to capture the contribution of climate change projects to the national economies in the category that;

- Meet sustainable development strategy
- Help reduce poverty,
- Help to provide new jobs, and
- Stimulate a new industry / trade

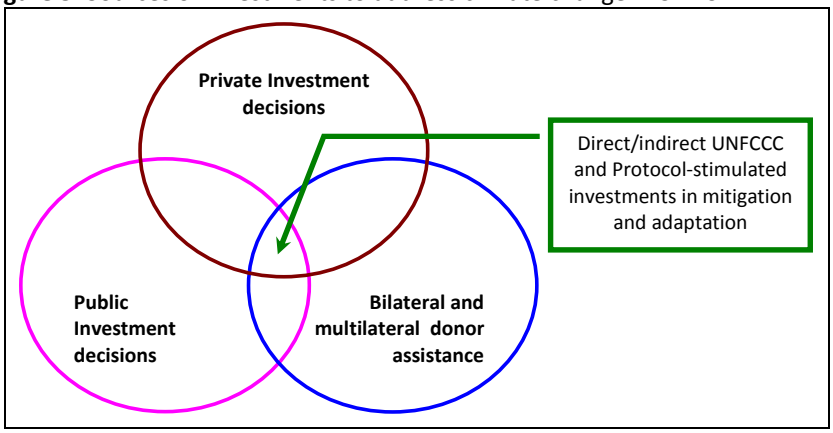
This scenario is simply linked to national plans in SADC that are developed to account for greenhouse gas mitigation consideration. It implies an approach to future investment and financial flows in climate change that reflect national effort to shift to a more sustainable, less carbon-intensive development path. Such a shift will result in future national CO_2 emissions in SADC that are significantly lower than current day emissions levels but dependence on investment decisions and budget availability.

However, the policy-making process in this regard involves complex choices involving many stakeholders. These include the potential regulated industries, suppliers, and producers of complementary products. This bring the analytical to the fact that introducing climate change projects in the SADC is introducing economic instruments albeit institutional feasibility. By introducing economic instruments, which revenues will be recycled in full to businesses, is another contribution to the GDP. Increases in GDP are synonymous with increases in peoples' economic standards of living. Increased GDP – i.e. increased production – is experienced in the form of more jobs, higher wages and reduced economic hardship.

In mitigation, the sources of investment in this scenario varies as illustrated in Figure 1 below, as well as investments for climate change related projects could be financed from multiple sources (or jointly-financed) as captured by the Figure's overlapping circles of investment decisions. In other word, the

Southern African Development Community may also avail itself of financial resources related to the funding for climate change initiatives in their respective countries through bilateral, regional and other multilateral channels.

Figure 5: Sources of investments to address climate change in SADC



Source: *User's Guidebook for the Assessment of Investment & Financial Flows to address Climate Change - UNDP*

Sources of investment funding in this approach entail public/private sources – both domestic and international – as well as detailed categories within those broad categories such as households, corporations, state owned enterprises/parastatals, mining, telecommunication, construction, agronomic, small enterprises (SMEs), suppliers, etc.

Sources of investments notwithstanding, SADC governments can assist in shifting investment and financial flows made by private and public investors into more climate-friendly alternatives and optimize the use of available funds by spreading the risk across private and public investors. In the final analysis, this paper concludes that the financial component of the Bali Action Plan for developing countries will consider, inter alia:

- Improved access to adequate, predictable and sustainable financial resources and the provision of new and additional funding for developing country Parties;
- Positive incentives for developing country Parties for the enhanced implementation of national mitigation strategies and adaptation action;
- Innovative means of funding to assist developing country Parties particularly vulnerable to the adverse impacts of climate change to meet the cost of adaptation;
- Incentives to implement adaptation actions on the basis of sustainable development policies;
- Mobilization of public- and private-sector funding and investment; and
- Financial and technical support for capacity-building in developing countries.

REFERENCES

- *Authors:* United Nations Climate Change Secretariat – *Year:* unspecified, *Title*: Impacts, Vulnerability and Adaptation in Developing World. Document origin: http://unfccc.int/resource/docs/publications/impacts.pdf

- *Authors;* UNDP / UNFCCC. *Year:* 2008. *Title:* Capacity Development for Policy makers. *Document Origin*: Workshop Hand-out

- *Authors:* maria.netto@undp.org *Year:* September 2008. *Title:* User's Guidebook for the Assessment of Investment & Financial Flows to address Climate Change. *Document Origin:* Working document at National Climate Change Awareness-raising and Capacity Development Workshop

- Authors: UNDP/UNOPS Year: September 2008. *Title:* Workshop on National Climate Change Awareness-raising and Capacity Development, Namibia. *Document Origin:* Ms. Maria Netto UNDP New York Office