USAID | SOUTHERN AFRICA
FROM THE AMERICAN PEOPLE

High Level Retreat

Resilience in Southern Africa by 2050

Ivory Tree Lodge
Pilanesburg National Park
South Africa
August 8-9, 2016

Executive Summary

Southern Africa is facing increasing pressures from human population growth where it is predicted that the region's population will more than double from 250 million people today to about 550 million by 2050. It is also estimated that climate change will impact significantly on agriculture and water provision across the region – reducing agricultural productivity in many western areas and causing rivers to have erratic and unpredictable flows with diminished hydropower generation.

Research carried out by USAID's two river basin support programs, the Southern Africa Regional Environmental Program (SAREP) and Resilience in the Limpopo River Basin Program (RESILIM) demonstrates that water, energy and food security will be significantly compromised within the next thirty years, while major ecosystems will become degraded through de-forestation, erosion and pollution. It is essential that the governments of southern Africa realize the seriousness of these looming challenges and potential crises, plan collectively and work collaboratively to mitigate obvious impacts early enough to ensure that its people and environment are not fatally compromised.

SAREP and RESILIM work with the Okavango River Basin Permanent Water Commission (OKACOM) and the Limpopo Watercourse Commission (LIMCOM) respectively to strengthen management systems within the two basins with a view to enhancing social and ecological resilience.

To provide the scientific basis for the dialogue and scenario planning, SAREP commissioned background papers on water security, energy security, food security and the policy options available to decision-makers in the region. Research by one of the region's top experts in the water sector, Dr. Anthony Turton showed current and anticipated water constraints, demonstrating the interdependence that exists between food, energy and water security in the region.

If mitigation measures are not identified, developed and initiated within the coming decade, certain thresholds will be reached by 2030, triggering a cascade of negative effects, which will result in multiple negative processes that will be difficult to impossible to reverse. Should, for example, the region be unable to provide sufficient electricity per capita, it will constrain household and national income levels and gross domestic product (GDP), causing increasing unemployment and social unrest. In addition, millions of people will be forced to resort to using charcoal for cooking and heating, which in turn will trigger large-scale and widespread deforestation that will lead to substantial erosion, reducing biodiversity, degrading ecosystem services, and polluting water bodies which will decrease economic benefits derived from tourism in important natural resource areas.

In the worst case scenarios, competition for scarce resources (water, food, energy, land, etc.) will escalate tension and conflict to stages where the morals and values of communities could be eroded to levels of criminal activity to survive – bribery, corruption, theft, looting and possibly assault and killing. National and local governance

processes will be hard pressed to maintain law and order forcing them to divert scare resources from essential services such as health, education and development.

Based upon the findings from the research, the two programs felt that it was necessary to host a High Level Retreat for selected senior government decision makers of the riparian countries in the two basins to outline the challenges that the region would be facing by the year 2050 and to facilitate the construction of potential scenarios that the sub-continent would experience at that time depending on which development strategies the region chose. Using these potential scenarios the collective countries would be able to understand the challenges and necessary responses and factor these into each country's national planning processes with a matter of urgency. The two day Retreat was held at the Ivory Tree Lodge in Pilanesberg National Park in South Africa from August 8-9, 2016.

The objectives of the High Level Dialogue were 'to create greater awareness and understanding among key decision makers in the riparian states of the Okavango and Limpopo River Basins governments regarding the significant challenges that will be facing the region generally in the decades leading up to 2050 as a result of the doubling of human populations in the region coupled with the impacts of climate change – and to explore opportunities and options to mitigate the negative consequences of these trends.'

Nine senior level government decision makers from Botswana, Lesotho, Mozambique, Namibia and South Africa participated in the retreat. Sectoral specialists and resource people were present to support the process with relevant information and expertise.

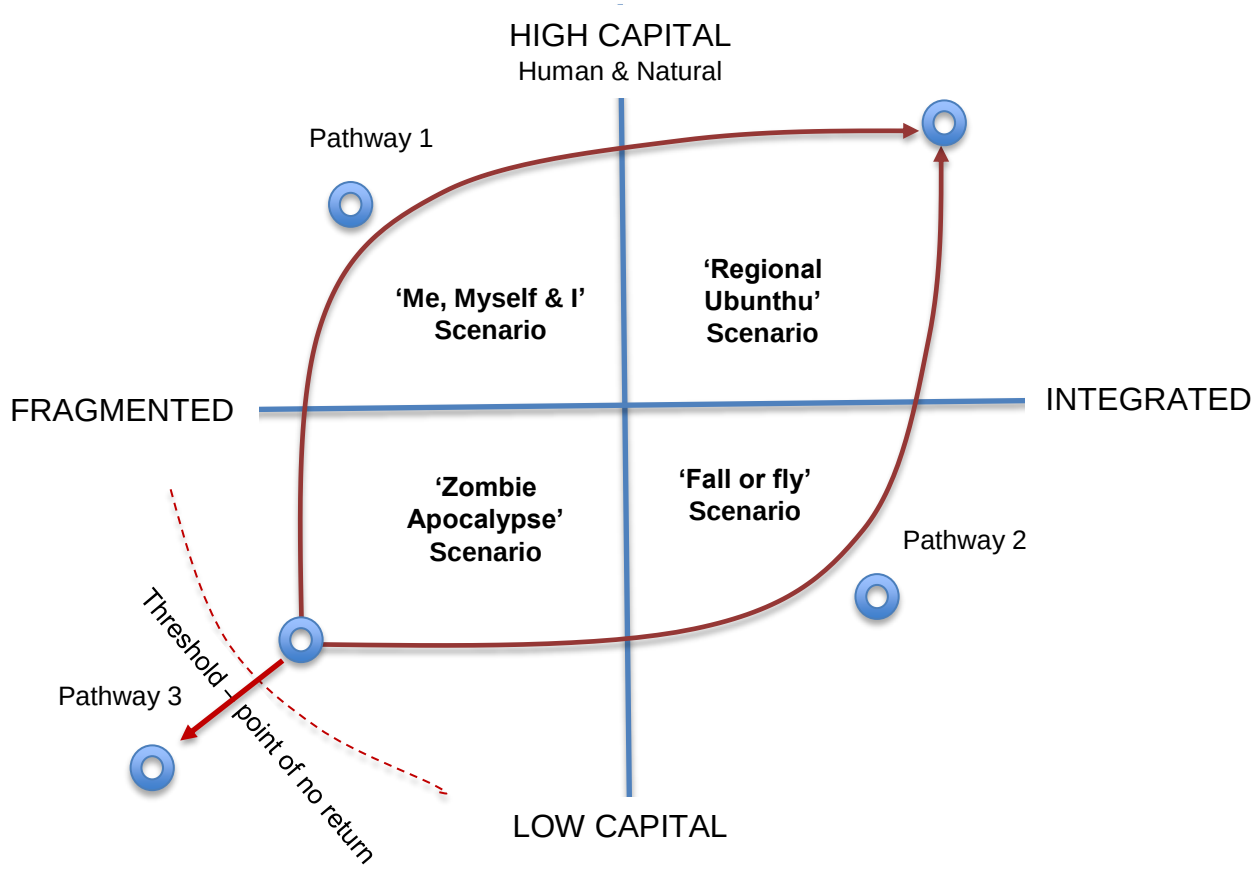
Participants were presented with the challenges identified in the commissioned research and the need for the region to become more socially and ecologically resilient. Renowned expert in resilience, Prof. Brian Walker, then unpacked the concept of resilience and how it is important to the region, where after scenario strategist, Chantell Ilbury, presented the value of scenarios to identify current development paths and possible future states in order to determine the development pathways and strategic decisions necessary to achieve desirable futures.

Based on these presentations, participants identified two key variables as important determinants of future resilience: 1) the degree to which countries in the region would work collectively or individually towards the goals of food, water and energy security; and 2) the levels of human and natural capital available at national level to address challenges. See Figure 1, below.

Participants agreed that, overall, the region leaned towards a fragmented approach to addressing challenges, and while levels of human and natural capital varied significantly across countries, it tended to be on the low side when viewed collectively. This positions southern Africa in the lower left quadrant, or 'Zombie Apocalypse' scenario space, with poor prospects for successfully managing the serious environmental and social challenges expected in the coming 35 years. See Figure 1 below.

Prof. Walker then explained that there were two main development paths that were most feasible to shift the perceived current regional situation into the more preferred stable state of 'Regional Ubuntu, the upper right-hand quadrant. The first was to attempt to improve human and natural capital at national level, and through this to attempt to then foster more integrated regional strategic planning based upon greater cooperation and improved delivery through increasing collaboration. He explained that generally this was a tough route to follow as improvements in human and natural capital required long time scales to enhance skills and capacity, while improving natural capital required enormous financial resources to extract more value from the system.

Figure 1: Scenario outline of the status of the Southern African region in 2050



The second development pathway suggested by Prof. Walker was that of enhancing integration of strategic planning among the nation states based upon the regional distribution of natural resources. Under this approach, the region would identify which areas are best suited to supply the region with sustainable, renewable energy; which areas would be best suited to agricultural production based on fertility and projected

rainfall; and which areas have the potential for economic development around ecological resources (e.g. wildlife-based tourism). They would then plan collectively to cooperate and collaborate to improve the human capital and enhance the value of natural capital at regional level. Participants agreed unanimously that this was the more pragmatic and desirable development pathway based on countries' ability to enter into agreements to engage in integrated strategic planning and collaborating in transboundary development projects to build human capacity, skills and expertise concomitantly with using regional 'muscle' to access large-scale development financing.

It became evident that to continue with business as usual would set the region on course for a slow slide towards the failure of national economies due to a lack of resources (energy, water, access to global finances, etc.); large-scale and widespread migration of populations across boundaries and within countries due to an increasing lack of access to water, food and energy; increasing corruption, poor delivery of services, as well as collapsing security and governance systems.

Delegates concluded the workshop with a deep sense of the need for increased regional cooperation, collaboration and integration of planning across sectors in order to mitigate the challenges that the sub-continent will experience in the next 35 years. There was a high degree of buy-in and commitment from delegates to form the core of an emerging and expanding network of 'champions' across the region who would not only make their colleagues in their national governments more aware of the urgency of addressing the looming challenges to the region, but also harness their participation in developing mitigation measures to ensure that the converging influences of climate change and incremental population growth would be counteracted or addressed – and where possible invoke new and innovative technologies, approaches and processes to ensure the resilience of ecosystems and societies in the region.

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Introduction

The recent regional drought has brought the issue of water security to the forefront of many a mind. At the same time, energy shortages in several countries in the region in the past few years have cost economies millions of dollars, constraining growth and progress. Social unrest in some countries have been linked to food shortages. Global climate change appears to be starting to take its toll on the region. At the same time, the regional population keeps growing, with expectations that it will double by 2050.

The ability of southern Africa to respond the challenges brought about by changing weather patterns characterized by rising temperatures and shifting rainfall and continue to provide for the basic needs as well as the social and economic development of its growing population is a serious cause for concern.

Two major river basins provide the aquatic and ecological lifeblood for the region: the Okavango River rises in the headwaters of the Cuito and Cubango Rivers in the highland plateau of Angola from where it passes through Namibia and disappears into the earth again in a massive delta in the north of Botswana. Stil in relatively pristine condition, the Okavango River Basin is recognized as internationally important for its biodiversity and biological production and is the mainstay of Botswana's tourism industry, the second largest source of foreign income for the country.

The Limpopo River snakes through South Africa, Botswana, Zimbabwe and Mozambique. It has a relatively dense network of tributary streams and rivers, though most of these tributaries only have either seasonal or occasional flows. In the past, the Limpopo River was considered to be a constant strong-flowing river but today the river flows frequently cease and, during drought periods, no surface water can be found over large stretches of the middle and lower reaches of the river.

In recognition of the regional value of river basins, USAID Southern Africa established the Southern Africa Regional Environmental Program (SAREP), and the Resilience in the Limpopo River Basin (RESILIM) Program, to work closely with the Permanent Okavango River Basin Water Commission (OKACOM)[1], and the Limpopo Watercourse Commission (LIMCOM)[2] respectively to strengthen the management systems to enhance the social, ecological and climate resilience of the river basins while addressing the legitimate social and economic needs of the riparian states.

In supporting the River Basin Organizations, SAREP and RESILIM have conducted various climate vulnerability studies to better understand the challenges faced in the river basins and to build scientific evidence that can guide the change needed to strengthen the resilience of the river basin systems.

[1] OKCAOM was established by treaty between the three riparian states of Angola, Namibia and Botswana.
[2] LIMCOM established by treaty between the four riparian states of South Africa, Botswana, Zimbabwe and Mozambique.

In the Okavango, increasing economic development in south-western Angola is threatening to put pressure on water quality and biodiversity in the river's headlands. Namibia plans to extract water from the river to serve the country's arid south west. Irrigation agriculture is increasing along the river, and could cause a potential increase in levels of chemical pollution in the river if not addressed. Transboundary management of the resource, although in place, needs to be strenghtened to ensure the achievement of water, energy and food security while preserving major ecosystems.

In the Limpopo Basin, water scarcity poses the greatest threat to livelihoods, economics and ecosystems in the basin. Water demand is currently so high that there is little water left to allocate to additional uses or growing demand. Climate change is further exacerbating the water scarcity situation, which will negatively affect all water users and all key economic sectors. High levels of pollution from agricultural run-off and mine acid drainage in the tributaries threatens communities throughout the basin, as far downstream as Mozambique. Therefore the opening of water flows in the basin, would be counterproductive in the absence of cleaning up or preventing pollutants.

In areas in the Limpopo Basin where water is plentiful, biodiversity thrives, and where biodiversity is intact, water tends to be of high quality. The areas in the basin that has the highest biodiversity and levels of endism are also high-altitude areas with the highest rainfall and run-off per unit area. Securing these water-producing areas and conserving the biodiversity will secure the important ecosystem service of sustainable water production.

A common vision for sharing benefits of effective transboundary water management is key to overcoming the challenge of accelerated water scarcity in the Limpopo River Basin.

"Global climate change will have a significant impact on Southern Africa. The drought that we are going through now has been difficult, but it has also given us an opportunity to identify areas where we need to invest more and to coordinate better. The absence of strong action on all our parts to increase the resilience of the people, environment and economies will hinder future development; conversely, smart investment and policies can drive greener, more resilient growth, resulting in a range of economic and social benefits."

~ Alonzo Wind, USAID Southern Africa Acting Mission Director.

What will BUSINESS AS USUAL mean by 2050 if we do not investigate and implement strategic interventions?

Reinforcing the Message

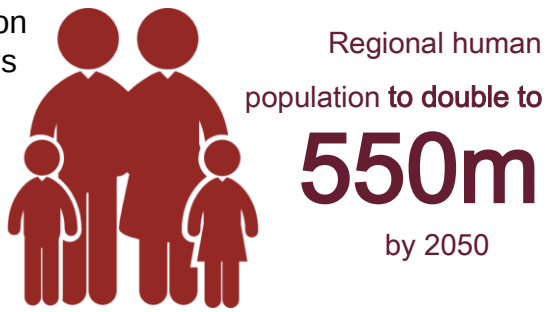
Western and central areas of southern Africa are prone to more extreme episodic events such as droughts and flooding – with a significant degree of average warming over the next 30 -100 years. This is according to an assessment of the Okavango River Basin by Peter Wolsky from the Climate System Analysis Group (CSAG) at the University of Cape Town, to better understand the impact of climate change in the basin, using the most cogent climate change models being promoted globally, and consolidating the predictions to determine the most probable elements of change.

Concomitant with this study was a Vulnerability Assessment carried out by CSAG (Waagsaether, K; Koelle, B, Arendse, CL: 2013) showing that "*All livelihood strategies assessed (tourism, commercial farming, communal farming, natural resource harvesting), with the exception of mining, were found to be sensitive to the possible impacts of climate change. Mining was seen as having the necessary financial means to buffer possible impacts. The socioeconomic impacts that were identified exposed communal farming as the livelihood with the greatest sensitivity to climate change*". RESILIM also carried out a Climate Vulnerability Assessment of the Limpopo River Basin with findings that matched and reinforced that of the SAREP-supported work.

Building on this, a further series of five desktop studies was commissioned to explore the potential impacts of the converging influences of climate change and doubling of human populations in the region by the year 2050 in terms of the quests for food, energy and water security, the vulnerability of wildlife and ecosystems, and the policy options available.

Impacts on Water Security

Southern Africa is experiencing population growth at an unprecedented rate, which is increases the demand for water, impacting on supply, which could possibly lead to tension and conflict.



The Limpopo River Basin, which serves key industrial areas in Southern Africa is already fully exploited while the Zambezi is approaching the same status. Climate change is expected to reduce the availability of water due to rising temperatures and increased evaporation. The region is also expected to experience a range of additional negative effects, including: severe droughts, flooding, reduced flows in many river basins, shifting seasons and areas for agriculture production. Agricultural activities, mining, energy generation, industrial waste, land degradation and human waste are polluting regional water sources. Fresh water is critical for food security to provide for doubling of the regional population, as well as for energy production, especially through conventional means such as hydro, fossil fuels and nuclear.

Failure to manage the limited water resources in the region collaboratively and effectively could result in large-scale human migration and conflict. It is seen that the problem is that national water security, food security and energy security which are currently managed as a sovereign concerns by the four central states in the Southern African region – Botswana, Namibia, South Africa and Zimbabwe – will increasingly become regional issues where future stability will require enhanced regional coordination around shared resources and considering the need to conserve, equitably distribute and sustainably use the water resources of the southern African region.

Water is critical for economic development. The region's river basins are exposed to shifting rainfall through climate change. There is need for regional collaboration and long-term, data driven, strategic planning to develop appropriate hydraulic infrastructure such as regional inter-basin transfers. Improved climate smart agricultural planning is required. There is also a need to diversify energy production away from large scale hydro-power initiatives.

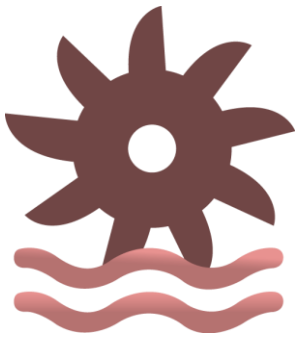
The internal drivers of the water management agenda are seen to be geo-politics – the interplay between central and impacted states and river basins; water pollution – non-point source pollution; water use – regional economic growth and energy demands. The external drivers are considered to be climate change and population growth.

The pressures being exerted on the water systems are:

- 2030 will be a time of transition, with significant implications for pivotal states such as Zimbabwe and South Africa as they become more water constrained.
- International equity; water sharing arrangements disadvantaging some nation states such as Mozambique and Angola.
- 90% of rainfall in southern Africa countries is lost through evaporation with only 10% that flows into rivers and is useful in an economic sense, as compared to the Continental average of 80:20, which is still much lower than the global average.
- Over utilisation of water in the low GDP agricultural sector with a need to shift these water resources into the industrial sector for higher GDP growth.
- Declining water quality in key river basins; mine closure, acid mine drain, poor sewage management, industrial waste, agricultural runoff and eutrophication.
- Basin Closure – The Limpopo is a closed River basin, whilst the Zambezi is approaching closure with direct implications for Botswana, Zimbabwe, Zambia and Mozambique.
- Climate Change – Some of the most exposed transboundary river basins in the region to climate change are all those which originate from the Bie Plateau in Angola; Cunene, Cuvelei, Okavango and Zambezi.
- Climate change – movement of the 860mm isohyet northwards and eastwards will expose the productive Zimbabwe agricultural areas, as the Kalahari Desert moves east.
- An undetermined, yet plausible scenario and pressure is human migration; large scale involuntary transboundary movement of people underpinned by food security

and investor confidence needed to attract capital into the region for job creation, social cohesion and political stability.

Impacts on Energy Security



Average annual energy produced by hydropower stations in SADC are expected to fall by over

30%

The findings from this study showed that there is an insufficient and unreliable supply of energy in the region due to ageing infrastructure and a lack of investment in new generation capacity has become increasingly pronounced in the past decade in Southern Africa, costing the region billions in lost revenue. In addition there is a lack of access to affordable electricity by the majority of the population, which means that people rely on biomass (such as wood, animal waste and charcoal) for 45% of the final energy consumption in the region, which has resulted in high rates of deforestation (0.46% between 2005-2010) with negative consequences for water quality and biodiversity.

The region depends on hydropower for about 20% of it's current electricity generation and plans for future generation include significant hydropower developments. However, rising temperatures due to climate change could reduce hydropower output significantly due to reduced river flows. With the expected increase in southern Africa' population, demand for electricity will increase, especially in urban areas where 50% of this population will reside.

Although the region has significant fossil fuel reserves, an energy future based on fossil fuels places significant pressure on already limited and stressed regional water resources, threatening biodiversity through pollution and habitat loss and fragmentation which will negatively impact food production and exports. Without energy security the region will not be able to achieve water or food security – energy is key for water abstraction, pumping water for irrigation, transporting water and wastewater treatment as well as food distribution processing and preparation.

The pressures being exerted on the energy sector are seen to be:

- Energy shortfalls are predicted based on population growth rates and urbanisation rates and associated energy demands.
- Limited access to energy in rural areas drives deforestation rates as people cut down forests to make charcoal, which impacts on ecological functionality.
- Rural poverty also drives deforestation as access to energy is expensive.
- Population growth rates in the urban centres will increase energy demand.
- Regional strategies are in place to increase energy production – but high dependency upon hydro-power, which is vulnerable to impacts of climate change.
- National strategies are also focused on coal and gas – but impacts on water quality and increasing greenhouse gases.
- Limited availability of surface water supplies / clean surface water supplies in some areas.
- Power cuts affect GDP and subsequently employment rates.

57%

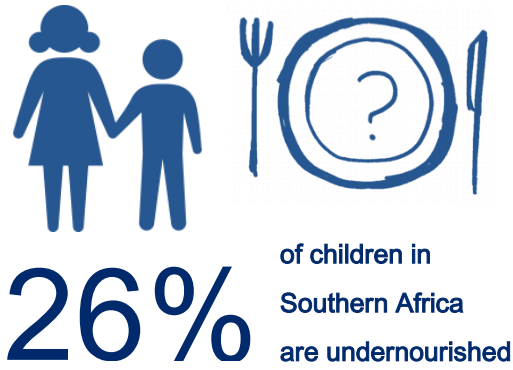
of people in the focal countries do not have access to electricity

Household air pollution from fuelwood cookstoves kills 600,000 people every year

US$6bn

The cost per month to South Africa's economy in lost manufacturing output due to power cuts

Impacts on Food Security



Global food production will have to meet the challenge of feeding 9 billlion people in 2050, of which 550 million will reside in southern Africa. About half of these people will be living in cities and will have changed dietary preferences away from raw grains to energy and water intensive proteins and processed foods. Food waste in the region has also increased to levels as high as a third of all food in South Africa, with the inherent water and energy also wasted, along with implications for additional pressure on water and energy resources to deal with the waste.

Agricultural production in the region has relied heavily on smallscale farming with low productivity due to inefficient practices and a dependence on rainfall, with expansion of farmed land (50% in the past 25 years) to meet increased demand, leading to deforestation and loss of biodiversity. Poor storage and distribution infrastructure and non-tariff barriers have added to the cost of food traded in the region and hampered intra-regional trade, while approximately 1/3 of food produced is wasted due to poor connections from farm to markets, failing cold chains and inefficient border passage.

Climate change is expected to lead to a decline in yields with some crops and areas more exposed than others as seasons shift, production areas become hotter and wetter or drier, while pest and disease levels increase. Rising energy prices and a reduction in the availability of clean water for irrigation are further challenges to food security.

The region still has large tracts of unexploited arable land available for development in areas with high yield potential and agricultural growth has the potential to reduce poverty by up to eleven times more than non-agricultural growth. Focusing more attention on women in agriculture has also been proven to result in increases in land productivity. To optimize these opportunity the region will have to engage in collaborative planning around shared resources and food production to ensure yields are optimised based on location, technology and investment, and food is traded freely and efficiently around the region.

The pressures being exerted on the food security component are seen to be:

- Limited availability of productive land and clean surface water.
- Poor agriculture and transport infrastructure.
- Increasing food prices outstrip wage increases combining with unemployment with a potential for this to lead to social unrest.
- Increasing food prices are caused by a decline in yield and an increase in demand, as well as an increase in production costs and transport costs (energy related issues).
- Climate change will lead to a further decline in yield; some crops are more exposed than others as seasons shift, production areas become hotter and drier, whilst pest and disease levels increase.
- Population growth caused by the youth bulge will lead to increased demand.
- There is mounting pressure on non-agricultural land to be converted it into agricultural land, with potential loss of wilderness areas and ecological functionality that will lead to significant declines in the contribution of ecotourism to national GDP.
- Global pressures to develop agricultural land in Africa to feed other developing countries.
- Pressure to abstract more water for commercial irrigation with potential impact to Ecosystem Services from those river basins.
- Historical increases in productivity were derived from land expansion, rather than improved yields or increased farm capacity.
- Urbanization and societal changes in food preferences, with animal production requiring more land and water than crop production.

1,000 litres

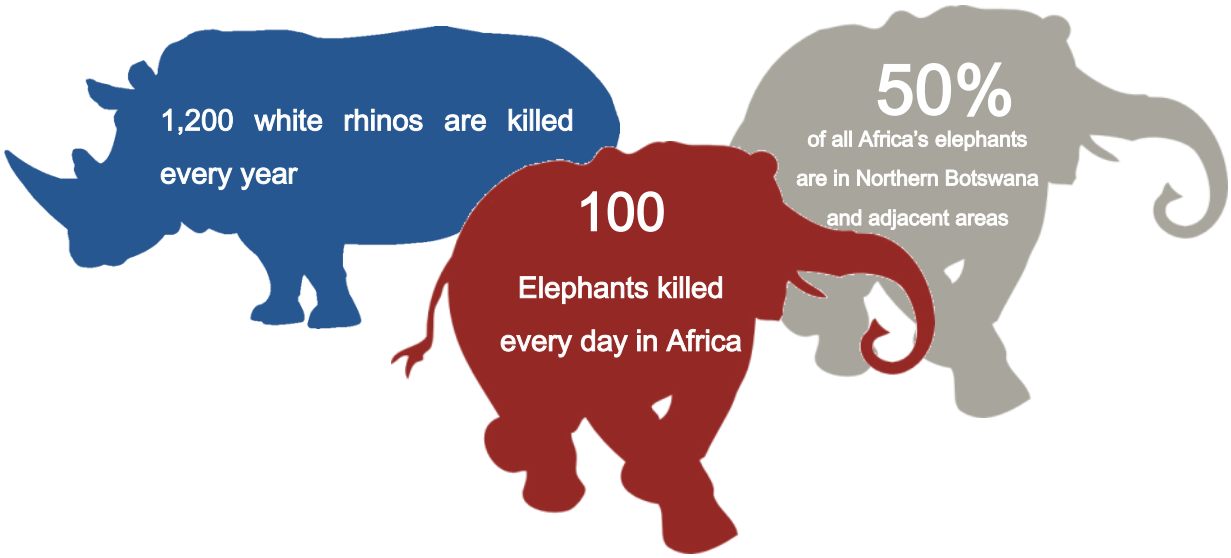
of water is needed to produce 1 litre of milk in South Africa

70%

possible increase in food prices by 2020 due to biofuel

Impacts on Wildlife Management

The region has a rich heritage of wildlife, hosting some of Africa's most important global wildlife tourism destinations – based upon large populations of charismatic wildlife such as elephant, lion, buffalo and rhino as well as abundant plains game species. These populations are however under severe threat from poaching for ivory and rhino horn; the demand for antelope-based wildlife meat, or 'bush-meat'; and from habitat fragmentation. Large areas of natural land used by wildlife are being undermined by the selective extraction of hard woods, charcoal and firewood and are under huge pressure to be converted to agricultural and related uses – reducing access to rangeland for wildlife and restricting their migratory movements. These pressures will soon start to threaten the growing ecotourism industry.



Alongside these population pressures, the region will experience increasing stresses and shocks from the effects of climate change, causing more severe droughts, flooding and extreme temperatures while some models show significantly reduced flows in many river basins linked to Angola's central highlands. Research shows that food security will decline significantly forcing more people to rely on natural resources such as wildlife meat.

Ecotourism is an important component of the region's GDP, and a key employer in rural areas, forecasted to increase in coming decades. However, rapid loss of habitat through pressures for land and natural resources is undermining the habitat integrity and connectivity of open, wild spaces that medium-to-large wildlife species need to retain viable populations. In addition, many of these medium-to-large species are also being depleted through illegal off-take for ivory, horn and bush-meat. Communities are seen to be integral in co-managing wildlife populations into the future to ensure their survival.

The key internal drivers influencing the wildlife sector include:

- lack of benefits flowing to communities from ecotourism activities;
- high levels of rural unemployment; limited alternative economic opportunities;
- poverty driving increased demand for natural resources (timber / non-timber forest products / charcoal / firewood / bush-meat / ivory / rhino horn);
- lack of effective deterrents to reduce illegal wildlife off-take i.e. low judicial penalties;
- lack of rural access to electricity;
- pressure to convert natural land to agriculture; and
- habitat fragmentation through infrastructural development.

60%

of the region's labour force employed by subsistence agriculture

Without alternative economic opportunities there will be a drive to exploit all available land for agricultural use

By 2050, southern Africa's arable land (47m ha) will , become saturated with 15 people per hectare of arable land.

The external drivers influencing the wildlife sector include:

- growing human populations;
- growing international demand for and trade in wildlife products and demand for hardwood timber products; and
- climate change impacts on the availability of water and hydropower, which further accelerates the demand for charcoal.

There are many pressures on wildlife systems:

- Growing human populations, which will:
  - Increase the pressure for natural resources such as firewood and charcoal leading to the loss of habitat integrity of parks, where extraction of these resources becomes increasingly targeted; and
  - Increase the pressure to develop fertile land for agriculture, leading to the loss of effective buffer zones around parks and wildlife range areas, and especially corridors connecting protected areas.
- Deforestation caused by extraction of wood for firewood and charcoal, as well as slash-and-burn clearing for agricultural expansion will lead to loss of ecosystems services and undermine ecological integrity and functionality of large areas of critical land.
- Increasing habitat fragmentation through the conversion of natural land to agriculture will further expose wildlife populations to the consequences of climate

change, by reducing their ability to migrate and move to find suitable food and water resources – eventually competing with them and escalating human-wildlife conflict.

- Expanding human populations and diminishing land for wildlife will increase the occurrence and intensity of human-wildlife conflict – triggering farmers to kill wildlife to protect their crops and remove competition for grazing and browsing.
- Economic dependence upon mineral resources in southern Africa has led to the development of mines within parks where developments destroy the ecological integrity and cause large-scale pollution. This pressure is expected to continue with the potential for consequential negative impacts to these sensitive areas.
- About 24.5 million tourists travelled to southern Africa in 2014, generating US$9.2 billion and employing 2 million people directly and 5.2 million indirectly. The loss of iconic wildlife species and the change of land use in parks will, therefore, significantly reduce tourism visitation and undermine this important economic sector.
- Climate change is adjusting rainfall patterns and reducing carrying capacity and altering habitat structure in wild areas, in places reducing its capacity to support wildlife populations and increasing the need to maintain connectivity between fragmented reserves and parks.
- An estimated 100 African elephants are killed each day by poachers seeking ivory, meat and body parts, leaving only 400,000 remaining. Between 2010 and 2014, the price of ivory in China tripled. As of 2011, the world is losing more elephants per year than the population can reproduce, threatening the future of African elephants across the continent. It is probable that fewer than 40,000 elephant will exist in southern Africa by 2050.

Key Governance and Policy Issues Impacting the Region

Causes of Southern Africa's ecosystem loss and habitat destruction include a combination of factors associated with population growth; economic development (large-scale commercial agriculture, oil and gas development, mining, aquaculture expansion, etc.); the demand for energy and water; the development of new infrastructure projects (ports, transit corridors, hydropower dams); unregulated and illegal activities; overexploitation and mismanagement of resources; human encroachment into conservation areas; rapid urbanization with neglect for rural land; among others.

Climate change is having a devastating impact on the growth and productivity of ecosystems; directly through changes in carbon dioxide and climate, and indirectly through the altered frequency and severity of disturbances such as fires and droughts. These changes have further perpetuated disease spread and increased human-wildlife conflict.

Sectoral approaches used to manage natural resources and conservation spaces has often led to disconnected and fragmented decision-making, conflict over the use of

resources and missed opportunities for more sustainable development. While progressive legislation exists in many countries, implementation has been slow.

Healthy ecosystems can deliver multiple economic, ecological and social co-benefits that support the region's poverty alleviation and development objectives. Defining spatial priorities, or vulnerable and exposed hotspots, at a regional level for applying an ecosystem-based approach must be a priority for southern Africa, with community-based responses implemented within these bio-critical areas.

The High Level Dialogue Retreat – Pilanesberg National Park

Against this background, USAID Southern Africa, through its two programs SAREP and RESILIM, gathered representatives from five of the riparian countries of the Okavango and Limpopo river basins, in Pilanesberg, South Africa, from August 8-9, 2016, for a high level dialogue to consider the evidence, construct scenarios of possible futures, and raise awareness of the urgency of appropriate action in order to ensure the resilience of the region. This represents the first in a series of activities and events aimed at raising high level awareness of the scientific evidence around the potential threats to the region's resilience that exist in the nexus between the quests for food, water and energy security; and spurring the necessary policy action required at national and regional level to ensure a stable and prosperous future for the people of southern Africa.

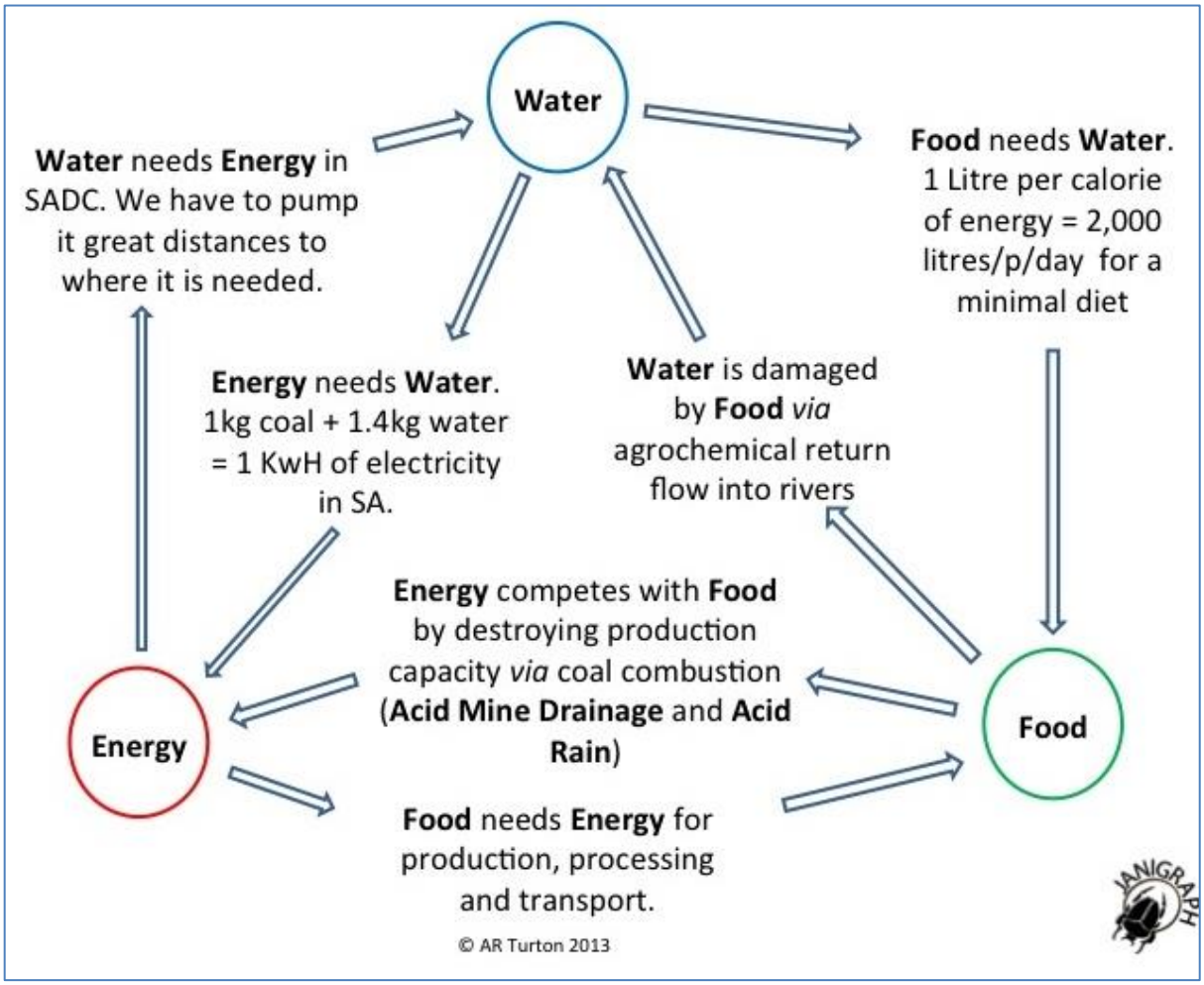
Photo: Participants in the first High Level Dialogue Retreat – Ivory Tree Lodge, Pilanesberg National Park

The Food, Energy, Water Security Nexus

To provide the scientific basis for the dialogue and scenario planning, SAREP commissioned background papers on water security, energy security, food security and the policy options available to decision-makers in the region.

Dr. Anthony Turton, world renowned water expert, presented on current and anticipated water constraints, demonstrating the interdependence that exists between food, energy and water security in the region.

Figure 2: The Food-Energy-Water Nexus in southern Africa



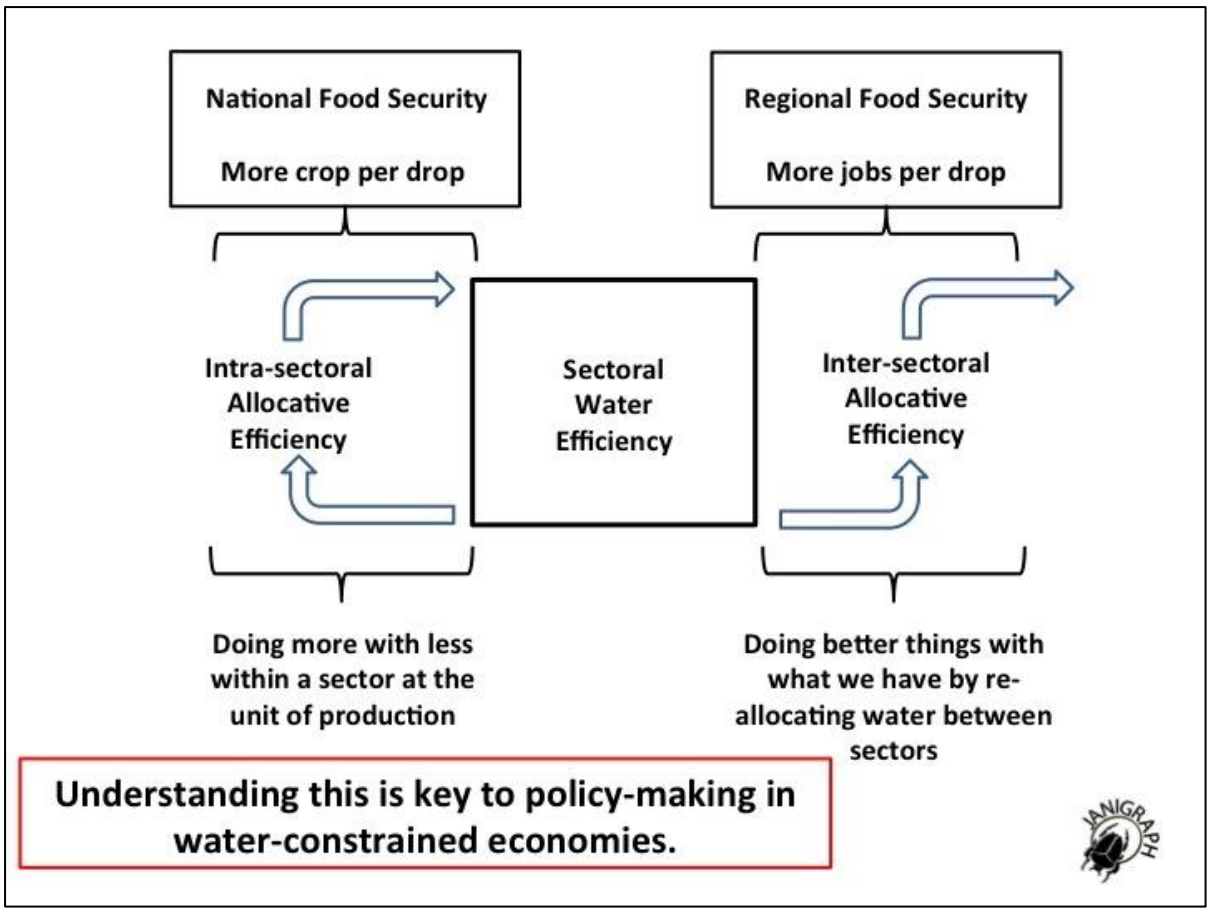
If, for example, southern Africa continues to produce food in the way it is done today (producing one calorie of food requires one liter of water), the sub-continent will not be able to increase supply sufficiently to meet the demand of the growing population with dwindling water resources, while the act of producing food in itself will pollute the little water left, compromising the availability of drinking water as well as tourism, an import source of income for the region. Furthermore, food production needs energy for processing and transport, noting that the production of 1KwH of electricity in South Africa requires 1kg of coal and 1.4kg of water.

According to Turton, 'big water', the water embedded in food, which is approximately 2,500 liters per person per day, is of the greatest strategic importance from a national planning perspective. This implies a shift in the public discourse away from 'small water' – the 1 liter or so required by a person to survive a day – *"If you look at the politics of water, it is the small water that attracts all the angry people and drive populism in the political arena,"* Turton pointed out, yet, *"as you are starting to approach water constraints, you need to consider sectoral water efficiency."*

In South Africa, 60% of water available nationally is allocated to the agricultural sector, which contributes only about 2-3% of GDP, but creates a lot of jobs.
Increasing intra-sectoral efficiency – in other words producing more crops per drop – will not be sufficient in the face of increasing water scarcity, Turton argues. Governments will have to consider diverting water away from the agricultural sector towards industry, and ideally, ultimately, towards the services sector.

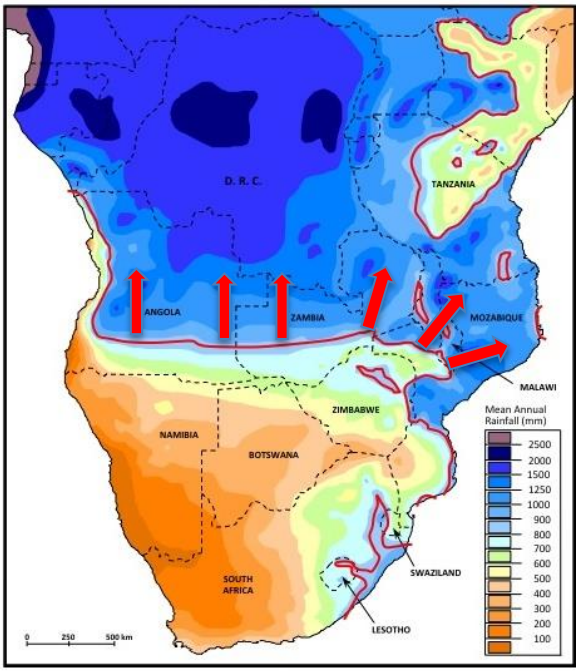
"Then you get to the services sector (like in Britain), which uses a very small amount of water, but generates the greatest contribution to your economy. If you think in the SADC region: one of the most efficient uses of water in terms of job creation is ecotourism – it brings in hard currency and creates a lot of jobs. So, if you look at this from a policy perspective – you have some hard decisions to make."

Figure 3: Linkages in the Food-Energy-Water Nexus



To demonstrate the urgency and inevitability of these strategic and transformational shifts, Turton highlighted the sobering reality that several southern African countries, including the region's biggest economy, South Africa, already face water constraints. *"By 2030* ***South Africa*** *becomes* ***fundamentally water constrained*** *raising the question about its role as a driver of regional growth."* Many of the Southern African countries receive water into their catchments from the highlands of central Angola (i.e. the Kunene, Cuvelai, Kwando/Chobe, Kavango and Zambezi basins). The 860mm isohyet (the line along which the annual average rainfall is around 860mm), intersects these basins from west to east and many climate change models predict that this isohyet will move increasingly northwards by up to 150 kilometers over the next 30 years – see red arrows in Diagram 4.

Figure 4: Predicted northwards shift of the 860mm isohyet across Southern Africa



As a result southern Africa as a whole will become even more exposed to water shortages as all of its southernmost river basins receive less water from existing catchments. This will lead **to a significant reduction in hydropower potential in the region**, **putting energy security (energy available per capita) at risk**. This will lead to a **greater reliance on charcoal** and biomass, especially in rural areas, leading to deforestation (accelerate **anthropogenic desiccation**) and surface and groundwater pollution, reducing the availability of drinking water, magnifying underlying tensions in society and generating **environmental refugees** within countries and the region. At national level, **insufficient energy will stunt economic growth**, resulting in **economic refugees** due to rising levels of unemployment. It is energy sovereignty, Turton argues, that will increasingly drive conflict in the future.

Further, Turton argued, ecosystems in southern Africa have reached their absorptive capacity, and highlighted the example of Hartebeespoort dam, which has reached a highly stable but undesirably toxic state due to pollution from acid mine drainage and mismanagement.

If current trends continue unchecked, Turton expects that pressure on the food-energy-water nexus will be exacerbated by climate change (with the greatest vulnerability being in Namibia and Botswana), raising the question of a 'need for national food security' debate (i.e. is it necessary for every state to be food-secure internally?) emerging from Botswana, Namibia, South Africa and Zimbabwe. Climate change predictions show that the most prolific food **production areas in the region** will emerge to be Northern Mozambique, Zambia and Angola, forcing a transition to a

Regional Food Security situation – and where re-allocating agricultural water to other sectors will be better investments so that industrialization and tourism economies could emerge, using the economic value of water more effectively in terms of GDP.

"We need to realize that we have to do things fundamentally differently," concluded Turton. *"If we can take just 10% of water out of agriculture and redirect it to industrial sectors, we will resolve our water constraints,"* he suggested.

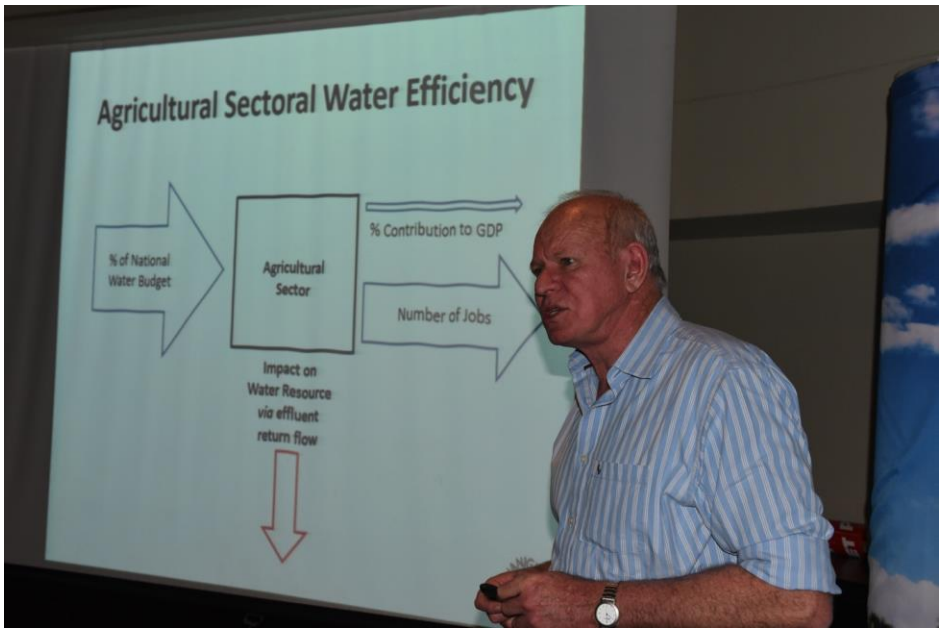


Photo: Dr. Anthony Turton explains the interdependence that exists between food, energy and water security in the region.

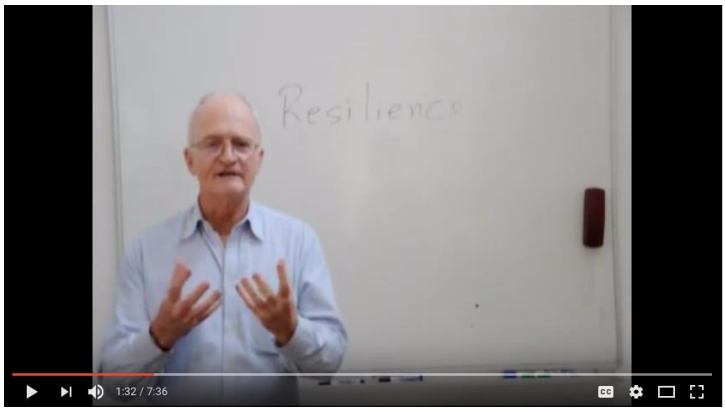
Future optimization of water, energy and food security will have to happen at a regional level. Policy responses will need better coordination and collaboration than is currently the case.

"Thomas Malthus observed some years ago, that population growth ultimately has the potential to outstrip the capacity of an ecosystem to sustain it… The Malthusian world view does not necessarily held sway over the long term. What distinguishes humans from all other mammals is that we have the ability to shape our landscape, shape our environment, and therefore shape our future through policy intervention." *Tony Turton*

However – current science shows that human population growth will outstrip the capacity of countries to provide water, energy and food to their citizens over the next 30 years if adequate planning is not carried out across national borders – integrating and consolidating the strengths of some countries to provide for the burgeoning numbers of people in all of the region's states.

Resilience Explained

Dr. Brian Walker of the Commonwealth Scientific and Industrial Research Organization (CSIRO) in Australia is a global thought leader on resilience. During an insightful presentation at the High Level Dialogue, he explained how 'resilience' is a key concept in determining the decisions and actions required to realize positive future scenarios in the southern Africa region by 2050.



Watch the short video in which Brian describes resilience for the Stockholm Resilience Network.

Our world is composed of myriads of interconnecting elements, processes, relationships and influences that together constitute a 'system'. How these factors all inter-relate under varying external 'forces' cause changes or shifts that can move these systems out of a stable state (equilibrium) into different configurations or states. The ability to be able to move back to the same stable state is called 'resilience'. Resilience has become the buzzword all around the world at the moment. It is understood to be the ability of a 'system' to experience a shock, adapt to the impacts and then keep on functioning in more or less the same way, or, more formally put: *"The capacity to absorb disturbance and re-organize so as to retain essentially the same function, structure and feedbacks – to have the same identity."* Much of this thinking originated in the context of ecological studies – looking for the causes of changes or declines in species populations and compositions, associations of species and other environmental factors.

Disturbances cause changes in the important, controlling variables that determine how a system functions. There are limits, or threshold levels, to how much these controlling variables can change before the system begins to function differently, changing its structure in response to changes in function. Depending on internal and external variables, these **threshold levels change over time**.

There are two ways for describing and managing resilience: 1) Find out where particular thresholds might be and how to avoid crossing them, also known as **specified resilience**; or 2) make the system more resilient in all ways, also known as **general resilience**.

The closer a system is to a threshold, the smaller the shock that could send it over the edge.

Thresholds also exist in social and economic systems, not just in ecological systems where they are usually referred to as tipping points. *"Interestingly, social scientists have found that, if you have a source of a riot – somebody or something is annoying you – and people start rioting and 10 or 15% of the crowd are rioting and the source of the riot goes away, the riot goes away. But if 18-20% of the people have started rioting, even if you take away the source of the riot, it will still develop into a full-blown riot."* In economic systems, for example, there is a debt to income ratio where a business stops functioning.

"However in systems, there is a danger of focusing too much on some known threshold; making it resilient in one way can make it less resilient in another. So there are trade-offs. Therefore, it is important to enhance the general resilience. That is the adaptive capacity, the ability to cope with any shock and continue to function."

The following are required to enhance general resilience:

- high **diversity** (especially response diversity). In an ecosystem, for example, if you only have one species of legume that fixes nitrogen in the soil and it gets taken out, the system can fail.
- **variability** (vs. trying to control and reduce it)
- being **modular** (not over-connected)
- **responding quickly** to change (having tight feedbacks)
- being **open** (emigration and immigration)
- **reserves**, biophysical (seed banks), social (memory, financial)
- fostering **learning, innovation, novelty** (vs. subsidies to continue doing the same thing that's not working)
- **social capital** (trust, leadership, social networks)
- adaptive and *distributed* **governance**

When you are doing a resilience assessment, you have to determine whether any of these are weak or missing in your system. This is where you start intervening to build resilience. Then you have to ask yourself whether any of these are changing and need to be addressed.

Five important points about resilience:

1. Resilience is not about not changing. Trying to keep a system constant, preventing disturbance, reduces its resilience. Probing the boundaries of resilience is necessary for maintaining and building resilience.
2. One cannot understand or manage the resilience of a system at one scale. All complex systems function at multiple scales and the interactions across scales are critical to resilience.
3. Resilience is neither 'good' nor 'bad'. Undesirable states of systems can be very resilient (e.g. Saline landscapes, inner city slums, debt-ridden economies). A system state that once was considered to be in a 'desired' state can become 'undesirable' through changes in external conditions (the context).

4. Most losses in resilience are unintended consequences of narrowly focused optimization, e.g. efficiency drives. So-called ‘redundancy’ is often in fact ‘response diversity’.
5. Adaptation or transformation? Does further adaptation simply amount to digging the hole deeper? If a shift into a “bad” state has happened or is inevitable, and is irrecoverable, the only option is ***transformation*** to a different kind of system.

Walker then pointed out that resilience and transformation are not opposites, but complementary. Maintaining resilience at one scale can require transformational changes at another. This is the case in much of the developing world. But this is very hard to do and often requires a crisis to spur the transformational changes.

Where is there a need to build resilience, and where is there a need for transformational change?

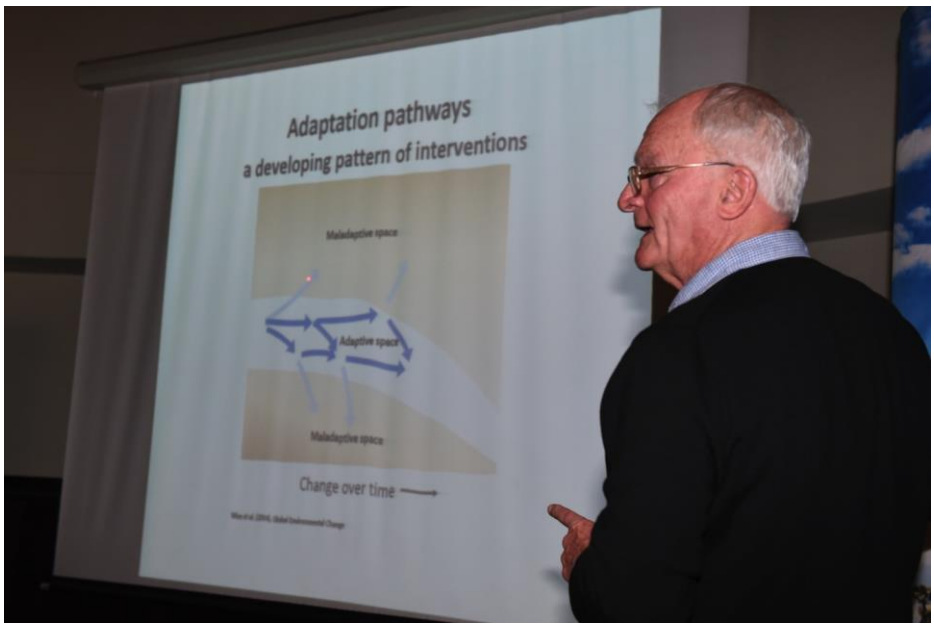


Photo: Dr. Brian Walker explains the concept of 'resilience' as a way to develop positive scenarios for the southern Africa region by 2050.

In this context, the CSIRO and Global Environment Fund has developed a framework for a resilience-based approach to regional development – the Resilience, Adaptation Pathways and Transformation Assessment Framework (RAPTA) – based on the following five steps:

1. **Multi-stakeholder engagement and governance** requires identifying who should be involved and what they could contribute, identifying potential barriers and opportunities for engaging with stakeholders and determining project governance arrangements.
2. **Development of goals and pathways of change (**aka theory of change). What are the major drivers of change in the region, and what are the possible **scenarios** for the future of the region? Within the desirable (acceptable) scenario, what is the possible, overall, long-term goal? For example, 'healthy ecosystems, viable populations of key plant and animal species, and improving livelihoods and wellbeing of people'. Then identify the **necessary and sufficient pre-conditions to achieve this overall, long-term goal.** For example, you need a hydrological regime for resilient ecosystems and species in wetlands/rivers, use/harvesting below critical levels, an effective resource management system and new markets. Then determine the **actions/ interventions** to achieve these pre-conditions (e.g. Reduce illegal poaching/fishing, limit conversion of ecosystems to agriculture/forestry, new laws or governance systems), the **necessary sequence of interventions, and who needs to be involved?**
3. **Describing the system.** Explore stakeholders' views of the system, including what they value and why, and what stresses they anticipate. This includes determining the focal scale, and what other scales are important, describing the social system and governance; describing the structure of the biophysical system, with a focus on the key determinants of its main components; describing key relationships / interactions in the way the system functions, including (especially) interactions across scales; and synthesizing conceptual models. Describing the system requires information about (i) drivers and shocks (outside the system); (ii) actors; (iii) main resource uses; (iv) valued components and products of the system; (v) the controlling variables of (iv); and (vi) key interactions - at the focal scale and across scales.
4. **Assessing resilience in the system.** Identify the current state and possible future states of the system; assess general resilience (where is it weak or changing, and how can it be strengthened?); identify known thresholds and thresholds of potential concern; carry out research/experiments to generate state and transition models to explore irreversible changes. Is there a need for transformation?

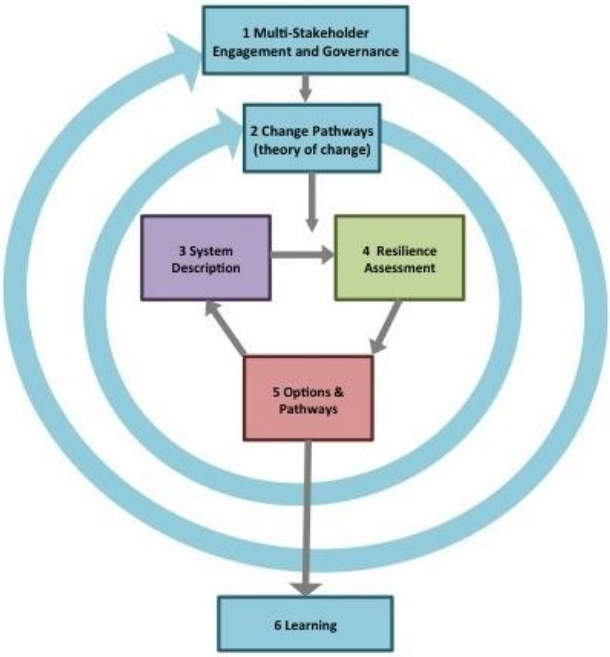
"How do we, as policy makers, get into a resilience mindset? How do we ensure there is resilience thinking in our systems?"

~ Participant

5. **Developing options and pathways**, and where necessary enabling transformational change. Develop intervention options, build pathways and sequence the intervention options; develop an implementation plan using the understanding gained from all components; action the implementation plan.

6. **Iteration** of all steps resulting in on-going learning.

Figure 5: Resilience, Adaptive Pathways and Transformation Approach (RAPTA) for regional development, governance and management



A critical element of successfully determining appropriate adaptive pathways for change and appropriately intervening requires constant assessment of whether the pathway is sufficiently ***responsive*** to a changing environment and stays on course to achieve the desired objectives. In the state of the system, there is an adaptive space and there is a maladaptive space where you do not want to be. Thus, you need to be able to change your decisions if they put you on a track into the maladaptive space which you cannot get back from. *"You don't try and pick the perfect future that you want. You identify the boundaries to futures you definitely do not want and your effort goes into staying away from those boundaries and you remain in an acceptable set of states."*

Scenario planning

Chantell Ilbury, scenario planning expert and co-author of Mind of a Fox and several other publications, outlined how scenario planning was useful in helping decision makers determine appropriate 'development paths' into the future based upon the identification of key certainties and uncertainties. These are then plotted on two axes that represent key variables – providing four quadrants each representing four potential 'scenarios' or possible future states of being.

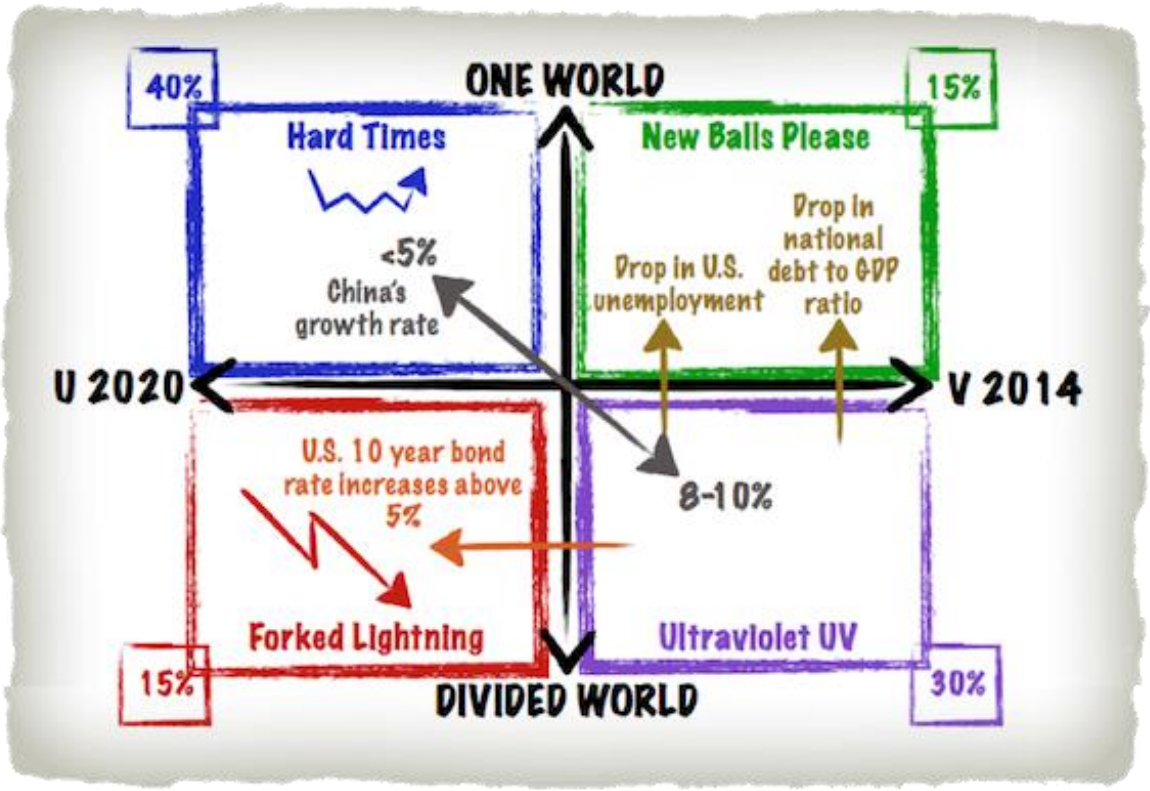
"According to Charles Darwin, the most successful species are not necessarily the most powerful ones but those that most readily adapt to whatever nature throws at them. Similarly, individuals or organizations of any kind require strategies that can be suitably adapted for the changing environment around them if they are to enjoy long-lasting success and prosperity.

Photo: Chantell Illbury takes delegates through a scenario planning exercise

The key to doing this is to look out, then look in. This entails a combination of steps starting with scenario planning, a trusted technique that allows you to visualize possible changes to the environment that may affect you. The second step is to examine the consequences of each scenario. Finally - based on the severity of the potential consequences - you need to work out the best possible plan to cope with the challenges and act on it."

She sketched four potential global scenarios: Hard Times, True Speed, New Balls Please, Forked Lightening, dependent on the level of globalization in the world and the economic health of our planet, as a context for regional scenario building.

Figure 6: Global scenarios according to Ilbury and Sunter

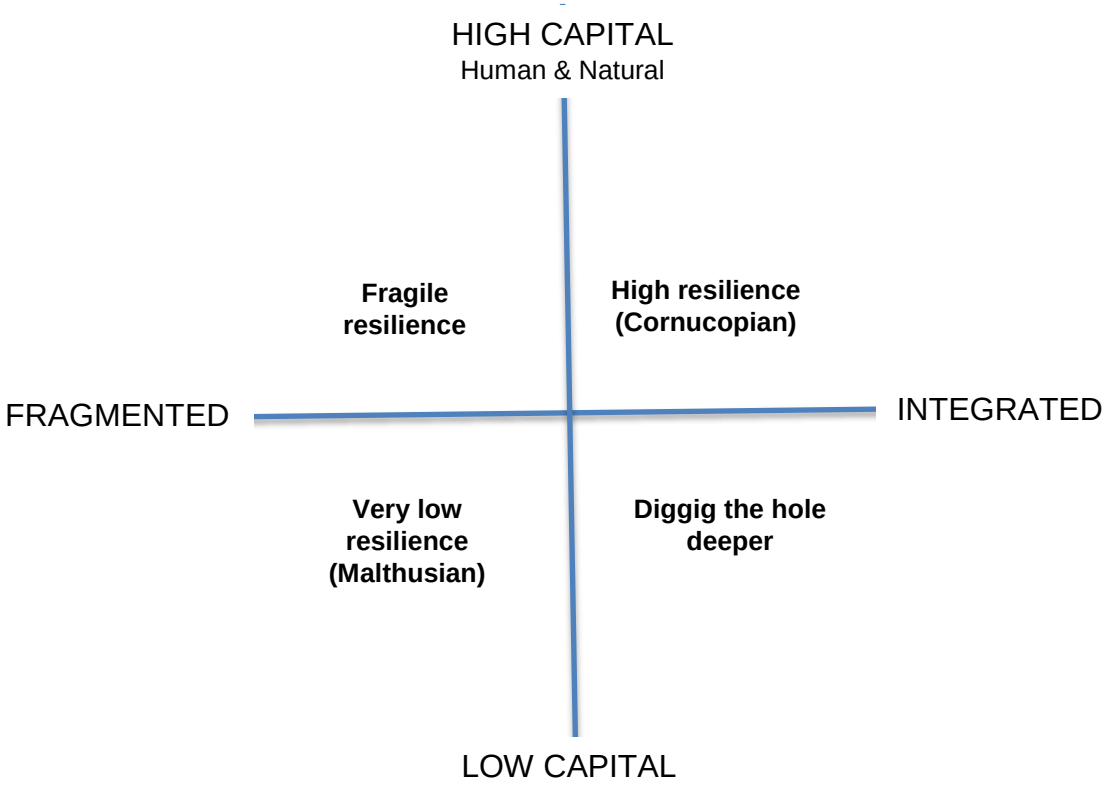


Ilbury engaged participants to identify some key certainties and uncertainties in respect of the region's future.

Certainties	Uncertainties
• Population growth • Impact of climate change • Increased demand for food, water and energy • Cost of renewables decreasing • Shift in the energy mix – away from fossil fuel & driven by technologies • Technological evolution (Rapid integrated technology development) • Borders will remain porous • Urbanization will increase • Declining ODA • Quality of water will continue to decline • Increased probability of extreme events • World will impact of drug resistant pathogens • Youth bulge • Existing trade agreements will change (e.g. AGOA) • Increasing competition for declining resources • Ecological integrity will decline • Globalization will continue • Immigration and migration • We will have a more literate population • The skills required will be different • Increase in inequality	• Capacity of the political system to adapt to the changing realities • Political stability in the region • Increased probability of extreme events • Capacity of SADC to play a meaningful regional development role • Eeradication of malaria by 2050 • Global political stability • Quantity of water available • Capacity of countries to implement national and transboundary resource sharing agreements • Levels of crime & corruption • Future preferential trade agreements

Based on these projections about what the future may look like, Ilbury and Walker guided participants towards developing four possible future scenarios characterized by their level of capital – human and natural – on the one hand, and the level of integration and regional cooperation and collaboration on the other.

Figure 7: Towards possible future resilience scenarios for southern Africa



A Resilient Future for Southern Africa – a simulation

On the second day a hugely successful and fun simulation exercise started the day - allowing delegates and participants to identify key factors driving social, economic, political and environmental trends in the region and use these in deciding on a set of model scenarios possible by 2050. See the Rules of the Game.

Participants were divided into three imaginary countries, Malanji, Asara and Bonkwani. They were provided with individual and communal rations of water, food and energy and given objectives to manage these resources over time while their populations grew and externalities such as droughts and floods came into play.

"Malanji which had a dictatorship didn't really care about the rule of law and as soon as the game started, sent out emissaries to try and raid everybody else. Key lessons: You need to keep control of your resources. People were talking and the next moment the bottle of water was gone. You need to keep track of what resources you have. The treasury is very important in any country. You need to have written agreements. It was also never clear of who had a mandate to talk to whom? So at one stage there were emissaries talking to each other and then the dictator went to talk to the other president and tried to make a deal. The first instinct of most participants, was to throw up the walls.. It wasn't to try to make a deal. Once things got out of hand, everybody threw up the walls," Steve Collins.

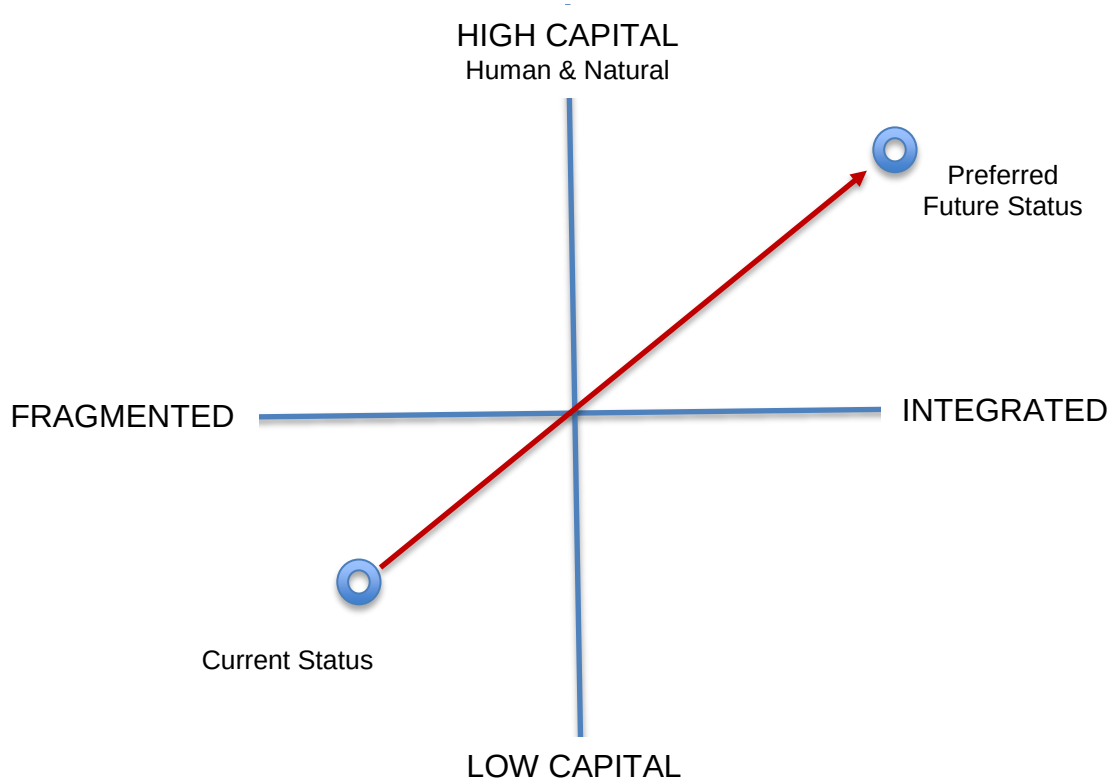
"The country that had most – Asara – had all the resources and a good amount of land. It had so much that it was inward-looking, it didn't see the need for regional collaboration. It was the other two countries, because of the stresses and shocks – they had drought and climate change impact, so they realized we've got to work together here so they were starting to set up dialogues and so on. But when those stresses did come in, there were riots and breakdown and chaos and stress which led to Asara becoming even more inward-looking, creating even more barriers fragmenting yourself even more. So when you started to get shocks and started to see the need for trade, those guys had already set up the pipeline scheme and so on. I saw a discussion with Nkobi going out and saying "Please sell us your food" – "Oh no, we don't want your food anymore, we've got everything we need." This fragmented isolationism was my main observation," Chris Brooks.

Photo: Delegates participate in a role play exercise to identify key factors driving social, economic, political and environmental trends in the region.

Developing the Scenarios of the Southern African Region

Walker and Ilbury then used the results of the simulation exercise and the identification of the 'certainties' and 'uncertainties' from the earlier exercise, to outline three possible development pathways that would be most likely result under different responses from the combined regional governments in southern Africa. Using two intersecting axes with the major comparative variables being the existence of High or Low Natural and Human Capital in the region against that of the existence of High or Low cooperation, collaboration or integration amongst governments in the region.

Figure 8: Plotting current status and preferred future status

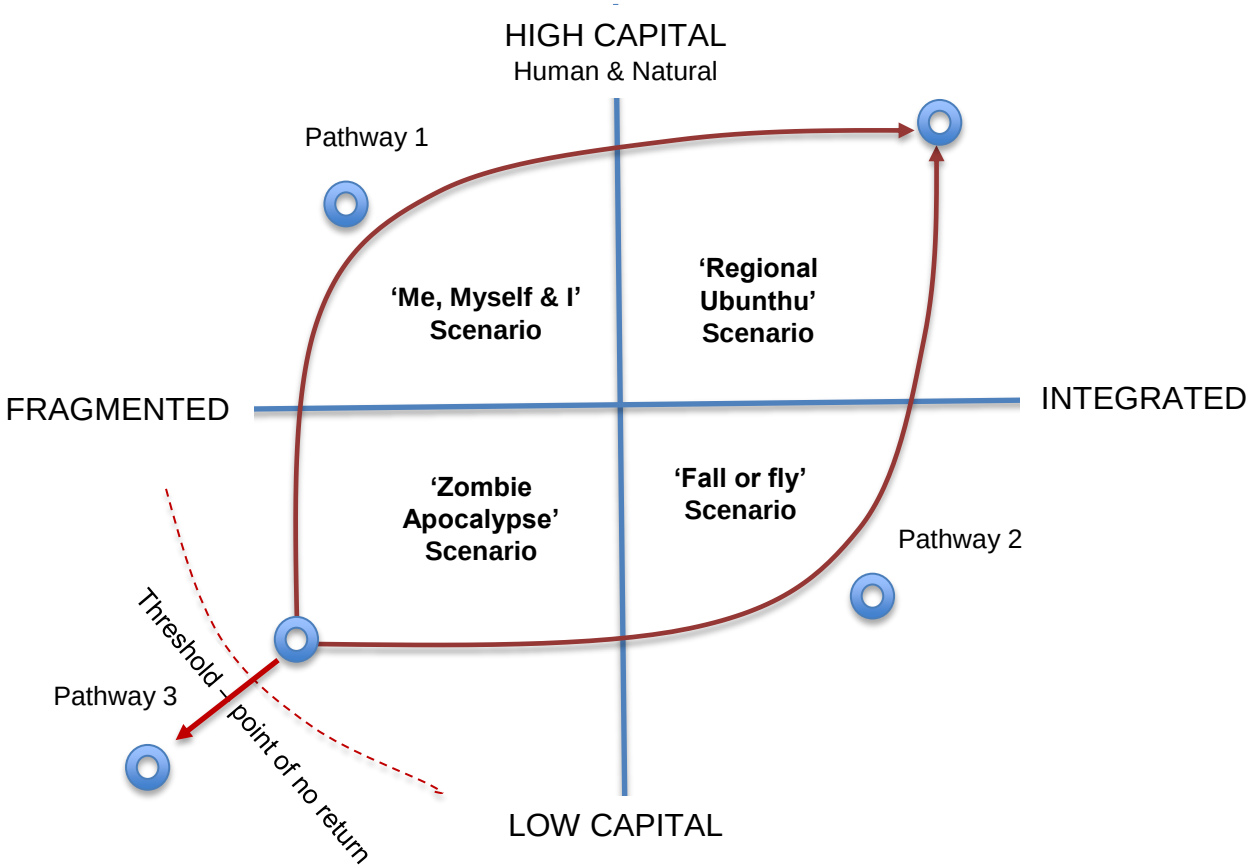


Brian Walker worked with the participants to identify where they thought the region was positioned at the current moment in terms of the two major variables being compared with each other. In general the group indicated that there were significant areas of differentiation or 'disagreement' on certain sovereign matters – i.e. differences in immigration, trade, economic, security, customs policies and many others – despite the high level of 'meeting of minds' in the SADC processes. It was felt that there were enough differences to place the status on the lower end of the 'Fragmented-Integrated' axis. Again in terms of the existence of levels of Human and Natural Capital – it was felt that although some countries were rich in natural resources – generally the region was lacking in human capital in many areas, placing it in the lower end of the spectrum. The combined perspectives then were plotted on the axes and showed that the region in general was in the lower left hand quadrant.

All participants felt that the region was facing a significant crisis over the next thirty years given the converging climate change and population growth forces and therefore the preferred future status would naturally be in the upper right hand quadrant, and that the region had work to do to be able to shift itself to achieve that joint goal. Walker then explained the possible development pathways that the region could take given different choices to be made by the governments in Southern Africa.

One pathway, the harder, more expensive and less stable of the three (1) is to concentrate increasing natural and human capital/capacity as a thrust to achieving a preferred future. The second possibility (2) was to use enhanced/increased regional cooperation, collaboration and integration as the vehicle to gain improved capacity and skills to address emerging issues and challenges over the next 40 years. The third possibility (3) was 'business as usual' and a slow decent into a chaotic future.

Figure 9: Mapping possible development pathways



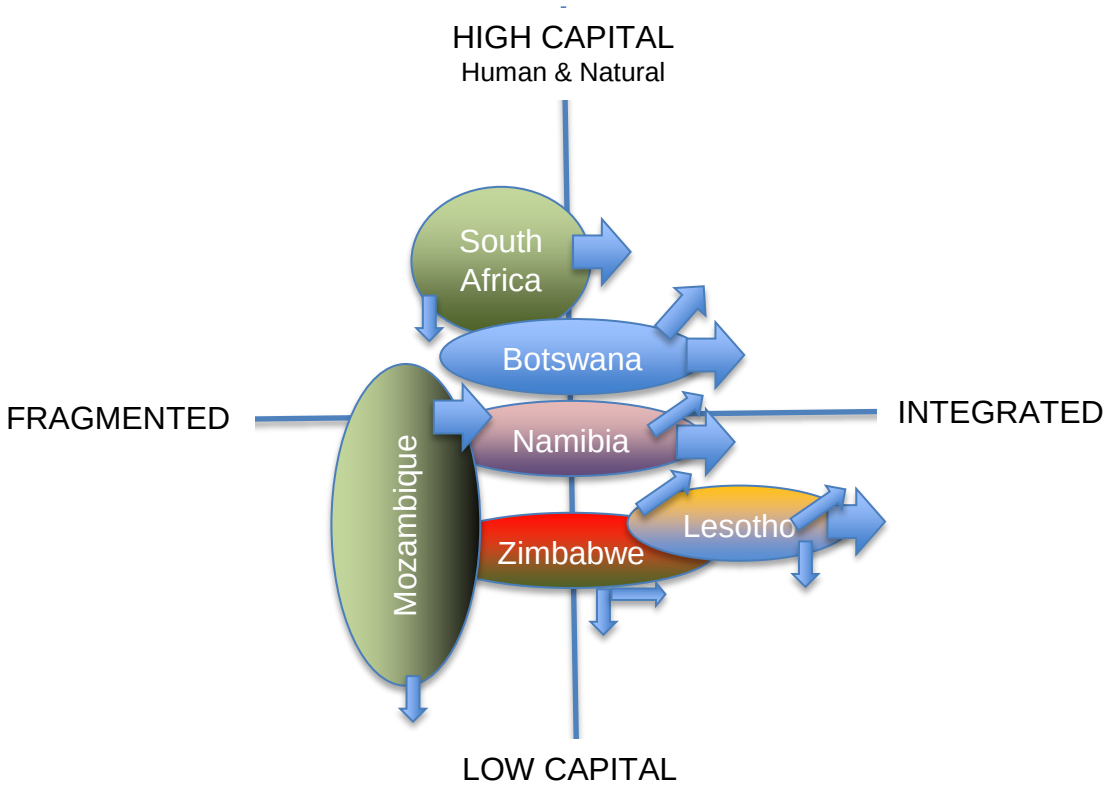
It was apparent from the simulation game and the presentations on the impacts of the converging forces of climate change and population growth constraining the availability of water, the insecurity of food and inadequacy of energy supplies by 2050 if a business as usual approach is maintained – it was necessary for greater regional integration of planning and more intense transboundary cooperation in future developments across the region. Without this greater collaboration – the region would be doomed to a state

of intense competition for resources – especially water – at all scales – at the community level, the national level and international level.

Participants also considered the possibility of a country simultaneously increasing capital and embracing greater regional collaboration to take a short cut into the top right-hand quadrant as the most desirable state. Although it was agreed that this would be the most desirable approach, participants agreed that it was also an unlikely development pathway considering current realities and trends.

Participants were also asked to indicate the direction in which they believe countries in the region were moving within the scenarios. The overwhelming trend appears to be positive for most countries, with some worrying trends evident for South Africa in terms of a loss of capital. Participants in general anticipate greater regional collaboration and cooperation.

Figure 10: The position of Southern African countries in terms of the scenarios



The absence of sufficient and efficient feedbacks loops in the regional system was highlighted as a stumbling block to building greater resilience. *"If you are dumping waste in water and there is a feedback from downstream where it is affecting a community, resulting in a penalty, you will stop doing so. If there is no feedback, you will keep doing it. So you need to focus on feedbacks,"* explained Walker.

Further, it was highlighted that in order to ensure the resilience of the region, *"we need a new language. In a region that is fundamentally water constrained you must stop talking about water sharing. Because you are sharing something that is dwindling and under severe pressure. You need to start talking about sharing benefits. Water is infinitely recyclable. What you want to do is benefit sharing."* Tony Turton

"It makes sense to think of benefit sharing in the presence of all this uncertainty and all these realities. Are we waiting for a crisis to hit to think in terms of benefit sharing as opposed to what is in it for me because it seems so logical to think that way? Is it indeed the case that there has to be a shock first?"

~ Dr. Khathutshelo Sikhitha (photo right)

Participants agreed that it is necessary to anticipate and pre-empt the crisis that is imminent in the region in order to make the necessary changes to avoid the crisis situation forecast by the research: *"If you can show through research (and effective communication!) that the cost of not doing something will be so much higher than the cost of doing something in the short term, you can trigger the change needed. It is about getting a best estimate of the long term cost of not doing it,"* suggested Brian Walker.

This morning when we went through that exercise of the three states that we have out – we realized that we started thinking about the state itself. It became clear that as countries we are more self-centered than outward looking. Doing what Brian talked about earlier will help us to identify or isolate the problem that we want to address. We should be thinking what are the problems at the regional level in the context of the region?

~ Dr. Nkobi Moleele

Further, participants acknowledged that, as we move forward, not every country is going to have the ability to be secure in each of those three areas – water/food/energy security – and in order to be resilient as a region, we would have to identify the areas best suited for producing food and energy and focus on those, while equitably sharing the dwindling water resources available in the region between sectors and countries.

"One of the important things about benefit sharing is positive sum – win-win solution – this defines top right hand quadrant which makes it stable. Which should all strive for that," concluded Turton.

Conclusion

A key agreed finding of the event was that increased regional cooperation, collaboration and integration of planning across sectors nationally and regionally was essential to mitigate identified challenges that the sub-continent will experience in the next 35 years.

The event spurred a high degree of buy-in and commitment from the government delegates to take the message back to integrate into their national planning processes. It was agreed that the delegates should form the core of an expanding network of regional government officials who would champion the process of increasing resilience into the future.

A follow on event is planned for October 2016 in Livingstone, Zambia. This event will target a broader audience of regional Directors General and Permanent Secretaries to achieve greater cross-sectoral representation from riparian states. A key objective of this event will be to carry out an explicit resilience assessment of the two basins to describe the systems, how they are connected, who are involved, what people get out of them, what the drivers are of the systems, in order to identify thresholds. It would further be aimed at fleshing out the future scenarios developed during this first event to get a clear picture of what they entail.

SAREP and RESILIM are approaching a range of potential donors to obtain funding for a short-term full time position to support the continuation of the work of the resilience network in the region through regular contact with event participants, fundraising, spearhead additional research into comparative case studies.

We are in a crisis – we know we are in a drought crisis, but are we already in a sufficiently serious FEW Nexus crisis to spur changes needed to change our trajectory? How do we take advantage of this crisis and try to push those things we have always thought are important but couldn't push under normal circumstances?

~ Tlohelang Aumane

I remained quiet but it doesn't mean I haven't learnt anything. One of the things that we have to do – the first thing we have to realize, is that we have to work together.

- Humberto Gueze, Mozambique.

"What I saw in this room were a room of strangers displaying all the humility, trust and commitment required to deal with these issues. We want to do more of this in this region. There are complex reasons the US government is interested in this region. But we want to see this region succeed."

~ Doreen Robinson

These two events are envisaged as part of a series of six similar events, culminating in a ministerial-level dialogue. As both SAREP and RESILIM are ending in the next few months, other donors will be invited to step in and take this process forward.

Commitments from participants

Engage the DPME process. Invite the presenters to QEVETOS (DEA Think Tank) – strategic planning process. Engage CSIR-NRE on local resilience network. Empower Lebo, Wadzi and Khatu to present.

Will create awareness amongst the decision-makers on resilience planning in addressing WEF nexus. This will be done under the SADC mandate of implementing the RSAPIV (Work program on Nexus issues).

Support the development of a SADC Nexus Framework

To ensure that all bilateral agreements between individual SADC countries are marketed extensively and recognized under the regional grouping.

To ensure that we foster a relationship or cooperation with other SADC countries that are affected by the wildlife management problems – i.e. rhino and elephant poaching – to jointly strategize on how to tackle this problem (will engage the Minister/Deputy Minister of Environment).

Start an engagement at departmental level and broaden it up from there.

Simultaneously encourage and facilitate economically empowering cross border/transboundary interaction.

I am going to brief my Permanent Secretary about the proceedings of this meeting with a view for the country to actively participate at regional level and wherever I have an opportunity I will act in the capacity of an advocate.

I think that my government is aware of the need to work together with other countries, so I will convince my government to bring together those countries for the benefit of everyone in the region.

I commit to furthering the efforts to improve/increase support towards the “weakest links” (governments, institutions) in wildlife conservation by lobbying critical players (e.g. ICPs, governments, NGOs) to get more/better involved.

Since citizens are part of the process, I will convince the government to initiate a process of showing them the advantages of living as brothers for the benefit of all.

I am going to brief the High Commissioner and write a report to the Ministry of International Relations and Cooperation on this fruitful and educative dialogue I attended.

To being part of a successful case study of resilience thinking and showcasing resilient models or examples.

- Strengthen the planning process on matters of resilience
- Identify ways to do things differently to respond to the need to be resilient
- Take the plan to cabinet for endorsement and implementation, especially creating multilateral agreements in a structured manner.

Going to ensure that food, water, energy nexus is in the National Strategic Development Plan.

Going to work hard to promote resilience building (general resilience) as a necessity.

Going to organize a dialogue on the issues learnt here, and take advantage of the celebration of the 50th anniversary to introduce future thinking.

The approach to problem solving and analysis is different and would require the buy-in of various players. Creating awareness of that which we could be thinking is obvious, but is not necessarily.

Short and medium term policies and interventions should be adopted bearing in mind the long term goal of WEF sustainability.

I commit to promoting the ideas generated here in all of my professional endeavors as a though leader (where appropriate). Mainstream these ideas through the South African Water and Energy Forum (SAWEF) during their planned event in 2017. I invite RESILIM/SAREP to engage with SAWEF and will gladly facilitate this as needed. (Tony Turton).

Best practices on collaboration to address transboundary problems.

Set up adaptive structures that can transform culture of doing things.

Build collaborative, personal and strategic working groups.

Annexes

1. High Level Dialogue Concept Note/Overview
2. Agenda
3. Infographic: Energy Security in Southern Africa
4. Infographic: Water Security in Southern Africa
5. Infographic: Wildlife in Southern Africa
6. Infographic: Food Security in Southern Africa
7. Presentations
8. Photos from the event
9. Participants' List
10. Simulation exercise – rules of the game