sarua
southern african regional
universities association

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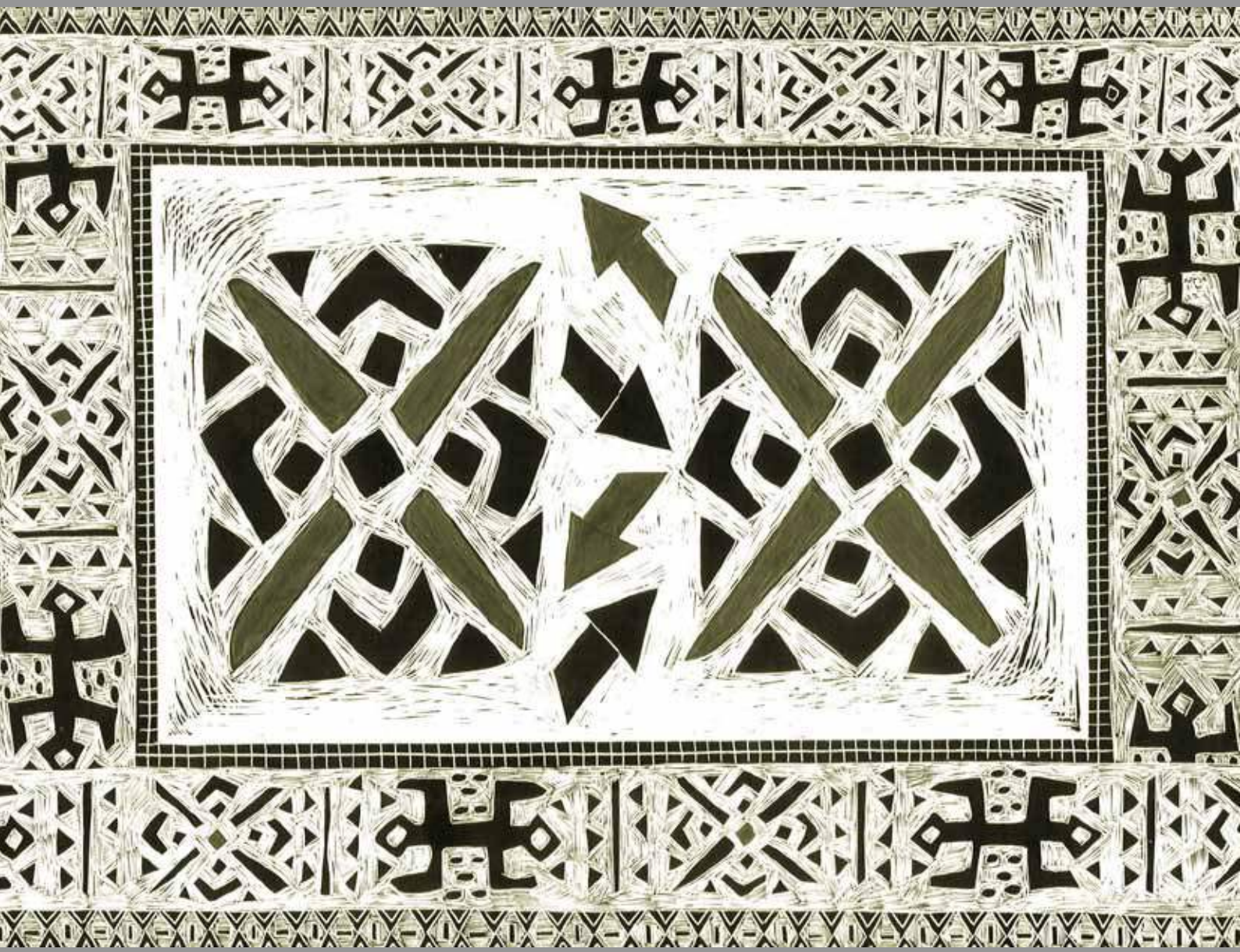
BUILDING HIGHER EDUCATION SCENARIOS 2025: A STRATEGIC AGENDA FOR DEVELOPMENT IN SADC



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EXPLANATION OF ARTWORK ON COVER

The brief was to make use of design elements utilising African motifs or patterns. After much research, it was decided to use the age-old concept of lino-cut, block-printing on fabric, with a minimalist colour range to enhance the dramatic effect of the design pattern.

The work has been executed using traditional wood cutting tools, in keeping with African craft tradition. The intricate, decorative design, with enlarged geometric elements, creates a strong visual impact and the repetitive use of the motif encourages movement of the eye, capturing the movement and mobility so inherent in the topic and discussions of this document.

The two-headed creature moves forward bi-directionally - lines radiate outwards from a pivotal point in the ensuing geometric design, which are echoed in the larger design, by the black and red arrows. The final element, creating a formal balance on either side of the frame, is two rows of triangular patterns, commonly used in many forms of African art.

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SARUA is a not-for-profit leadership association of the heads of the public universities in the 15 countries of the SADC region. Its mission is to promote, strengthen and increase higher education, research and innovation through expanded inter-institutional collaboration and capacity building initiatives throughout the region. It promotes universities as major contributors towards building knowledge economies, and towards national and regional socio-economic and cultural development and the eradication of poverty.

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SERIES EDITOR: Piyushi Kotecha
PUBLICATION MANAGER: Mark Burke

CONTENTS

ABBREVIATIONS

EFA	-	Education for All
GDP	-	Gross Domestic Product
GER	-	Gross Enrolment Ratio
HEI	-	Higher Education Institutions
ICTs	-	Information and Communication Technologies
IFs	-	International Futures
MDG	-	Millennium Development Goals
MENA	-	Middle East and North Africa
ODA	-	Overseas Development Assistance
PPP	-	Parity Purchasing Price
RRDF	-	Regional Research and Development Fund
SADC	-	Southern Africa Development Community
SARUA	-	Southern African Regional Universities Association
SSA	-	Sub-Saharan Africa
UNESCO	-	United Nations Education, Scientific and Cultural Organisation
UPE	-	Universal Primary Education

INTRODUCTION

The Southern African Regional Universities Association (SARUA), in partnership with the University of Zambia and the Copperbelt University, hosted a leadership dialogue event on 13 and 14 October 2011 in Lusaka, Zambia, around the theme of *Building Higher Education Scenarios 2025: A Strategic Agenda for Development in SADC*. The aim of the dialogue was to identify the change drivers in the regional higher education sector, explore the implications of these drivers and prioritise strategic interventions for building the capacity of the sector to meet the ever-increasing demand for higher education in the region.

The absence of a clear strategic vision has been recognised by Southern African Development Community (SADC) ministers of education and training as a key limitation. Ministers have pronounced that higher education should be accorded top priority in the implementation of the SADC Protocol on Education and Training and have mandated the establishment of a regional technical committee to craft an action plan. SARUA convened this dialogue to discuss the key priorities for higher education development and to initiate a conversation about the long-term vision for the sector.

This publication is an outcome of a strategic conversation about the future of higher education in the region. It is intended to serve as an input into the process of defining a future vision for its development. It reports on two interesting developments flowing from the scenario-building workshop.

Firstly, the publication explores the requirements and policy implications for significantly scaling up higher education in the region by modelling a base, optimistic and normative scenario for enrolment growth in higher education in SADC. The modelling exercise, undertaken by the Frederick S. Pardee Center for International Futures, reveals that the region has consistently outperformed sub-Saharan Africa (SSA) as a whole, but that SADC still lags behind most other regions of the world in secondary and tertiary enrolment. Enrolment in tertiary education underwent a massive amount of growth, but because this was off a low base, total enrolment in SADC only increased from .17% in 1960 to 6.3% in 2010. SADC spending on education is very close to what the high-income economies spend

and well above the amount spent by the developing countries combined. Despite these efforts, it was found that SADC would be unable to achieving the current global average of 30% tertiary participation by 2025, even in a highly optimistic scenario in which SADC enjoys a period of low population growth, high economic growth and high education spending. It is argued that this gap can, however, be closed with good education policies sustained over a long period of time.

Secondly, the publication reports on the outcomes of the scenario-planning workshop. Participants at the workshop identified technological change and human capability as the primary factors underlying, structuring and shaping the higher education sector in SADC. Four scenarios were formulated in which these factors impacted the future in different ways. At the same time, participants mapped the findings of the scenarios against the thematic priorities for higher education development identified by SARUA.

The background to the scenario-planning workshop and SARUA's medium- to long-term view of regional higher education development is outlined below.

BACKGROUND AND RATIONALE

Scenario planning in higher education is not pervasive. There are very few examples of scenario planning being used as a planning methodology in universities. Experience suggests that most institutions have their focus firmly on the day-to-day running of their institutions, trying to cope with the myriad of internal and external changes and challenges. While strategic planning is increasingly a common feature of many institutions, the planning horizon for such processes is typically only three to five years.

James Rieley likens this time horizon to someone who is standing in the woods against a tree with his or her nose touching the bark. They are able to focus their vision on the crevices on the bark, perhaps even on the small creatures that inhabit the tree cover. Consequently, it is easy to believe that their world is the tree bark and the small creatures. Being this close to the tree eliminates the ability to discern how large in diameter and height the tree is or how many trees are in the forest. Thus the mental models that exist of our environment often become locked into place by our restricted view.

It is important to step back to see the wood from the trees. It is SARUA's contention that now is an opportune moment to do so. There are several key issues in the environment that make this possible at this time.

In the first instance, there is a growing knowledge base on higher-education developments in the region. Over the last three to four years, there have been a number of research studies and other reports published, including the profiling research by SARUA, which provide a much firmer grasp of the size, shape and state of higher education in the region. This is a key pillar for making long-term planning possible. For instance, it is now known that the region is experiencing tremendous growth in higher education; that private sector

provision for higher education is emerging; that student mobility is a key feature of the regional higher-education sector; and that there is an urgent need to reinvest in human, physical and other infrastructures to support higher-education development.

Secondly, the research and other knowledge resources have informed a series of strategic conversations about the higher-education priorities in the region. These strategic conversations take place in various forums across multiple layers; in governments in the region, in forums convened by SADC and in meetings convened by SARUA. Increasingly, a shared understanding of what these priorities are at the regional level is emerging. These priorities include the need for scaling up investment in the sector; improving access and equity; ensuring the provision of quality higher education; and significantly increasing contextually relevant research in the region.

Thirdly, SADC member states have also recognised the need to intensify efforts aimed at higher-education development and have, as a result, agreed to the establishment of a SADC Technical Committee on Higher Education. The Technical Committee is mandated to develop a regional action plan on higher education, which will give concrete effect to the aims of the SADC Protocol on Education and Training. These are the institutional mechanisms for mobilising consensus around priorities as well as generating the funding required to implement the Action Plan.

Finally, the increasing use of the knowledge economy and information society discourse has raised the profile of universities as knowledge producers, given the prominence of knowledge as a source of development in present and future societies. Whereas two decades ago higher-education institutions were relegated to last in the queue in terms of public-sector spending on education, investment in the sector is looked upon much more favourably now.

These forces, taken together, provide an opportune moment to look ahead to what the future of higher education might be. Taking advantage of this opportunity requires wrestling with three questions: (1) What are the drivers of the changes in the sector? (2) Can we observe, analyse and appreciate the nature of the changes and their implications? and (3) Do our existing mental models allow us to appreciate the changes taking place globally, regionally and locally and to respond most appropriately or are we locked into patterns of thinking and doing based on those mental models that make it impossible to anticipate the future?

At higher education institution level there are several trends that have emerged over the last decade, if not earlier, with significant potential to change the sector. For instance, the growing trend towards diversification and specialisation among higher-education institutions, as well as the entry of private-sector institutions in the region, are challenging the traditional conceptions of the university. Furthermore, responses to institutional diversity challenge the existing models (collegiality, new public management, bureaucracy) of university governance and management. In *Re-Thinking Science: Knowledge and the Public in an Age of Uncertainty,* Nowotny and his colleagues make the point that

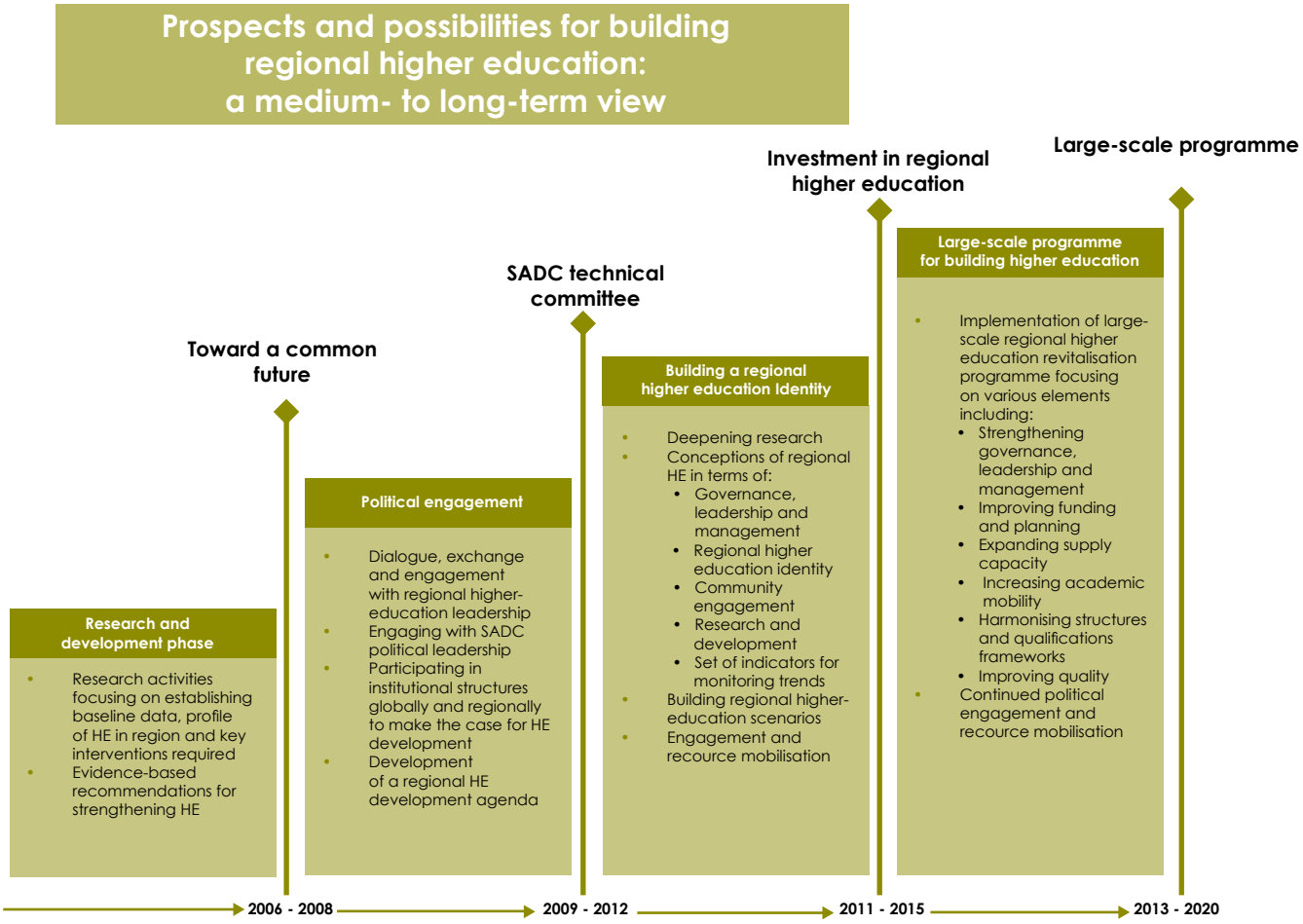
"universities may be unable to react rapidly and creatively to future demands if they are constrained within either a historically determined or bureaucratically imposed division of institutional labour".

Another example is the increasing role of information and communications technologies (ICTs) in higher education institutions. It provides both enormous opportunities such as more flexible and interactive learning methods as well as Open Access to knowledge resources on the one hand, but also huge risks of technology-path dependence on the other. It is clear that higher-education leaders require a strategic approach to the investment and adoption of technologies in institutions to exploit the opportunities and to mitigate the risks. SARUA maps out this approach over the medium- to long-term future.

CONCLUSION

SARUA has taken a medium- to long-term view of regional higher-education development, working towards the realisation of several iterative phases or scenarios, as illustrated in Figure 1 below, and assuming the further development of current regional activities.

FIGURE 1: A MEDIUM- TO LONG-TERM STRATEGIC VIEW OF HIGHER EDUCATION DEVELOPMENT IN SADC



Each of these phases lays the foundation for the subsequent phase. The period up to the beginning of 2009 can be characterised by the research and development phase during which SARUA undertook several studies to better understand the higher-education landscape in the region. The key milestone of this phase was the publication of *Towards a Common Future: Higher Education in the SADC Region* in which the data and findings of the different research studies were synthesised.

The focus of the next phase (2009 to 2012) can be described as the political engagement phase. During this phase, strong emphasis is placed on engaging with the leaders of higher education institutions and the political leadership in SADC. The dynamic processes of dialogue and exchange with the higher education leadership provides a mechanism for regional agenda setting. On the political front, the establishment of the SADC Technical Committee on Higher Education is expected to make a significant contribution to strengthening the sector in the region. The work of SARUA and the SADC Technical Committee should be directed at mobilising the requisite resources for the establishment of a regional higher-education expansion and capacity-building programme – the substance of the next two phases. This is primarily dependent on political will and financial investment by political leaders who, in conjunction with the higher-education leadership in the region, must implement such a programme.

The outcome of this dialogue hopefully makes a contribution to this process by providing valuable input, firstly by modelling demand for higher education in the region and secondly by documenting the outcomes of the workshop.

Piyushi Kotecha
Series Editor
Chief Executive Office
SARUA

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SADC HIGHER EDUCATION FUTURES 2050

Mohammod Irfan[1] and Eli S. Magolese-Malin[2]

ABSTRACT

Despite recent improvements in educational enrolment, SADC countries remain at a very low level of participation in higher education compared with many other regions of the world. If business as usual prevails, SADC will reach 16.3% enrolment in higher education by 2050. Given the most optimistic assumptions about the region's future, SADC will not be able to attain a 30% participation rate in higher education by 2050 – reaching 30% would require aggressive policy interventions. While potentially costly, the benefits from such policies would start to defray the costs by 2030 and by 2050 should provide a substantial profit.

INTRODUCTION

The Southern African Regional Universities Association (SARUA) requested the Frederick S. Pardee Center for International Futures based at the Josef Korbel School of International Studies at the University of Denver, to model the requirements for achieving the current global gross enrolment ration (GER) of 30% in the Southern African Development Community (SADC) region by 2050. The aim of this inquiry was to serve as an input for stimulating debate about the implications of significantly increasing higher education participation in the SADC region at the SARUA Leadership Dialogue on *Building Higher Education Scenarios 2025: A Strategic Agenda for Development in SADC*, convened in October 2011 in Zambia.

The paper briefly discusses the context for higher-education development in the region, reviews the past and current higher-education developments, and explores a base, an optimistic and a normative scenario, to elicit the policy implications for significantly scaling up higher education in the region. The historical data on enrolment and education spending used in this report comes from UNESCO Institute for Statistics.

1 Mohammod Irfan is based at the Frederick S. Pardee Center for International Futures, Josef Korbel School of International Studies at the University of Denver.

2 Eli Margolese-Malin graduated from the Josef Korbel School of International Studies at the University of Denver in August 2011 with a Master's Degree in International Studies. He works as a research assistant at the Pardee Center for International Futures.

CONTEXT

With a combined population of approximately 276 million people, the 15 SADC countries contain just over one quarter of Africa's total population. SADC has one of the youngest populations in Africa, with nearly half the people between the ages of 15 and 29. The region's large youth bulge and high average fertility rate (about five children per woman of childbearing age) ensures that demand for education will be high for many years to come, though declining fertility rates will eventually cause demand to taper off. The Democratic Republic of Congo is the single most populous country within SADC, with 68 million people. South Africa is the second largest with 50 million people.

The SADC region accounts for close to 30% of the continent's total income (in PPP terms), with more than half coming from South Africa, which alone produces close to 17% of Africa's GDP. Botswana, Mauritius, South Africa and Namibia have the highest per capita incomes in SADC; the World Bank classifies each as upper middle-income countries. The rest are all classified as low to lower-middle income countries.

PAST TRENDS IN EDUCATION

Over the last 50 years, the SADC region has seen a marked improvement in educational enrolment for both genders, at all levels of education. The region has also consistently outperformed sub-Saharan Africa (SSA) as a whole. However, SADC still lags behind most other regions of the world in secondary and tertiary enrolment. At primary level, gross enrolment rates grew from 55% of all primary-aged children in 1960 to 115% in 2010[3]. Female enrolment increased even more, from 51 to 112%. The 1960 to 2010 period saw primary enrolment rates increase at an average annual rate of 1.5%, with female enrolment increasing at a slightly faster 1.6%. Most of this growth occurred during the 20-year period from 1960 to 1980, when enrolment in the region nearly doubled, from 55 to 102%. Primary enrolment actually declined slightly from 1980 to 1990 before stabilising and then increasing again between 2000 and 2010. Compared with other regions within Africa, SADC's gross primary enrolment levels were second only to Southern Africa[4] in 1960, but after 1982 central Africa had the highest enrolment levels. Globally, primary enrolment in SADC in 1960 was roughly equal to enrolment levels in the Middle East and North Africa (MENA), 55 to 56% respectively, and 10 percentage points higher than in South Asia. At the same time, the world average stood at 71%. By 2010, SADC had surpassed every region but Latin America and the Caribbean - both stood at 115%. Female primary enrolment in SADC in 1960 was much higher than in either MENA or South Africa, 51% compared to 9% and 28% respectively. From 1970 to 1990, improvement in female enrolment rates in SADC outpaced the world average and ended the period with the highest enrolment rate of any region, at 112%.

Secondary enrolment in SADC showed even greater improvement than primary, in terms of percentage gain. From 1960 to 2010, total secondary enrolment rates in the

3 Because gross enrolment also counts grade repeaters and enrolled students above or below the appropriate age, the percentage can be above 100%.
4 Includes Botswana, Lesotho, Namibia, South Africa, Swaziland.

region increased from 5.5% to 46%, a percentage increase greater than in any region outside Africa. Female enrolment, despite starting at only 4.5% in 1960 compared with 7% for males, was within one percentage point by 2010, 48 vs 49%. Within Africa, the improvement in total and female enrolment placed the region ahead of every region but Southern Africa, which ended the period at 91%. Outside Africa, however, the SADC region remained behind all other regions. East Asia and the Pacific had 10.5% enrolment in 1960 and 75% in 2010. The Middle East and North Africa grew from 12% to 80% in 2010. By 2010, SADC was the only region (except SSA) where total secondary enrolment remained under 50%. Female secondary enrolment in the SADC region caught up to South Asia's in 1980 and for the rest of the period remained on a par with South Africa, which also reached 48% in 2010, though it started at a higher base of 9% in 1960. But both regions remained well behind the rest, and again were the only ones not to pass the 50% threshold.

Enrolment in tertiary education also underwent a massive amount of growth in terms of overall percentage gain, but because it began at such a low base, total enrolment in SADC only increased from .17% in 1960 to 6.3%. In terms of percentage gain, this was the largest gain for any region outside Africa. Female enrolment in tertiary education also grew remarkably, from .022% to 7.2%, higher than male enrolment, which only reached 5.3%. The period from 1960 to 1980 saw the fastest rate of increase, and 1980 to 2000 the lowest, but overall, total tertiary enrolment increased at an average annual rate of 7.3%, and female enrolment by 11.5% a year. Within Africa, the SADC region saw the second highest enrolment levels, though well behind North Africa at 22% in 2010 and only just above eastern, southern and western Africa. Central Africa remained the lowest at 4%. Within Africa, SADC remained at the lower end of tertiary enrolment rates, above only East Africa and central Africa. North Africa was the best performing region, growing from 2.2% enrolment in 1960 to 22% in 2010. Compared with the rest of the world, SADC was at the bottom of the pack along with sub-Saharan Africa. In 1970, tertiary enrolment rates in SADC, East Asia and the Pacific (EAP) were quite close: .75% versus 1.1%, respectively. But EAP then went on to massive gains while SADC did not. In 2010, EAP was at 22% enrolment, SADC at 6.3%. After 1990, South Asia was the one other region to remain below 15% enrolment; every other region ended the period with enrolment rates above 20%. SADC performed slightly better regarding female tertiary enrolment, outpacing the rest of SSA from 1995 to 2010, and surpassing South Africa around 2007, but again all other regions ended up above 20%.

From the above, we can see that SADC has seen steady progress in education over the last few decades, though more so for early education than for higher education. Much of the post-1990 improvements are the result of global education goals like Education for All (EFA) and the Millennium Development Goals (MDG), with one of its targets being universal primary education (UPE) by 2015. But as Table 1 shows, the progress made to date falls short of what would be required to meet demand. One out of every four elementary-age children is still out of school, the capacity at the lower secondary level is half of what is required, and at the upper secondary level, one third of what is required.

TABLE 1: SADC ENROLMENT RATES 1990 TO 2010

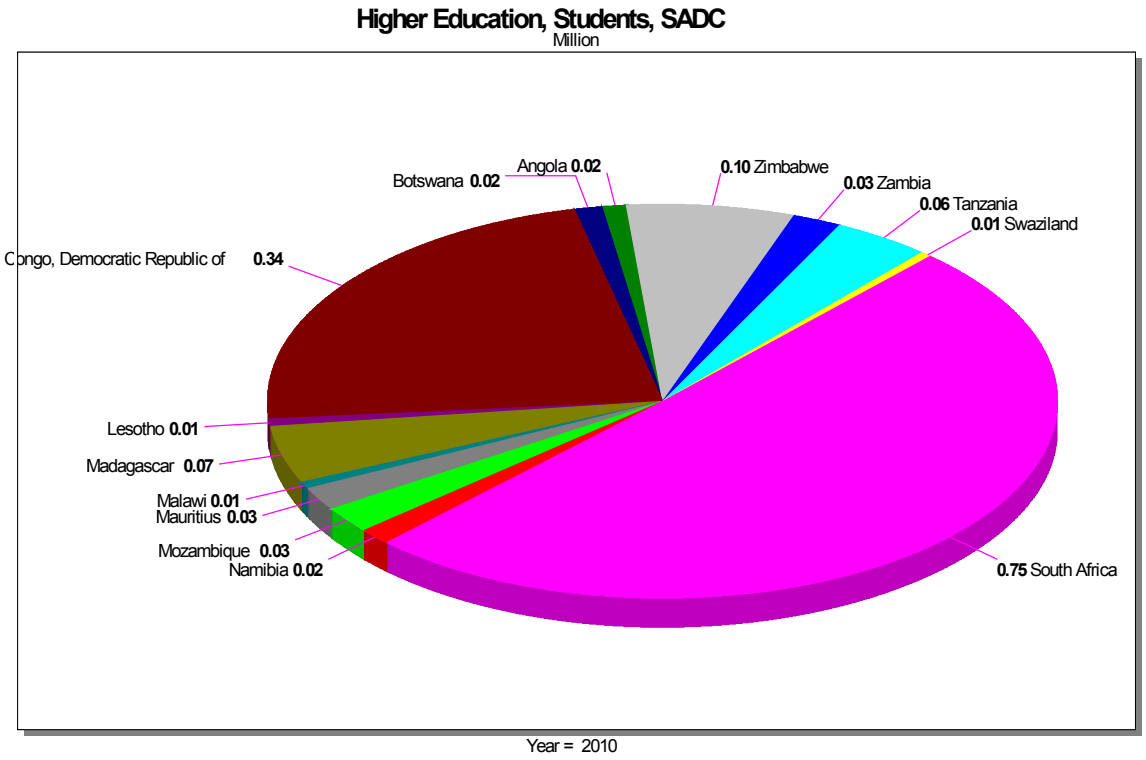
SADC enrolment rates in %					
Year	Primary net	Primary gross	Lower secondary gross	Upper secondary gross	Tertiary gross
1990	64.5	88.3	42.6	26.8	4.2
2010	71.9	107.7	49.6	33.4	5.4

Note: Table prepared with population weighted regional aggregate of country level enrolment data obtained from UNESCO Institute for Statistics. Back projections are done for missing data only when more than two points were available.

HIGHER EDUCATION SECTOR TODAY

As at 2010, tertiary enrolment rates in SADC are about half of what they are in the rest of Africa and less than a sixth of those in the rest of the world. As the above table shows, higher education enrolment just managed to keep pace with population growth. Mauritius and South Africa, however, are exceptions to this. Mauritius raised their tertiary enrolment rates by over 20 percentage points over the last 20 years to just over 25%, 10 percentage points higher than in South Africa, about equal to China and 10 percentage points behind Brazil. South Africa, however, has the largest number of students in higher education (see Figure 1) with a student body more than twice that of the Democratic Republic of Congo, the SADC country with the highest population and second largest student body.

FIGURE 2: HIGHER EDUCATION ENROLMENT IN SADC COUNTRIES IN 2010

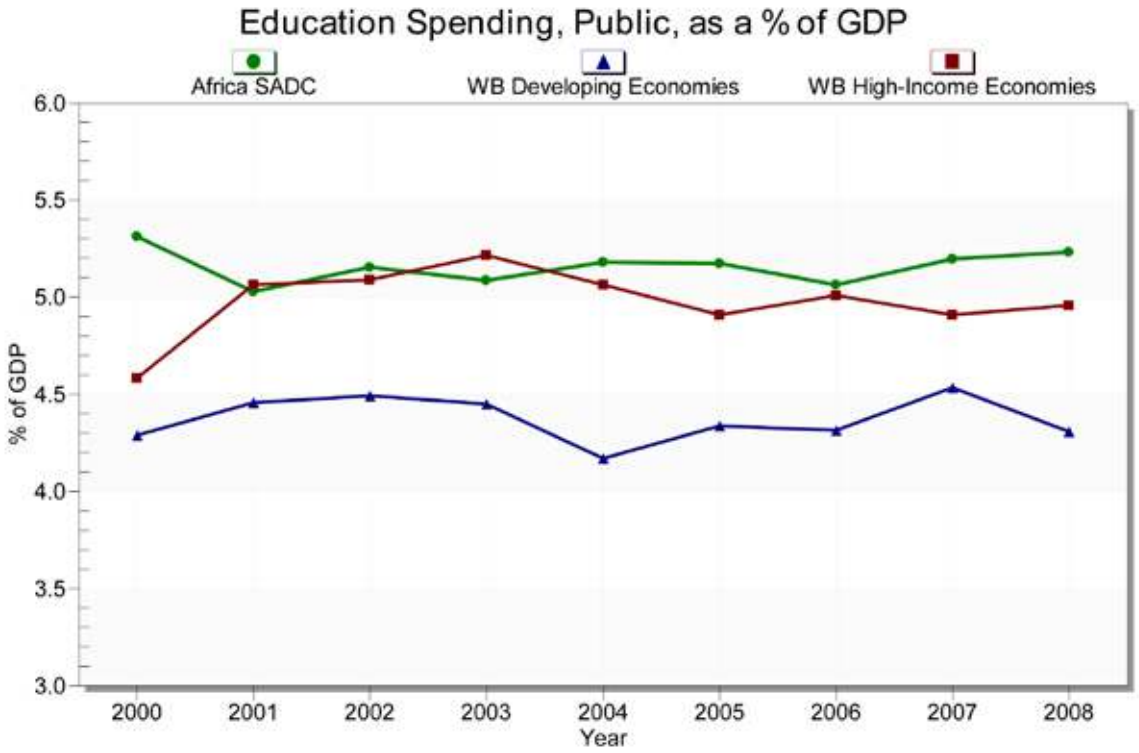


Women have made great strides in education in the region, catching up with men at all levels of education but especially so in higher education. In high-income countries, the much higher enrolment rates of women in tertiary education has shifted the global parity ratio to favour women at a value of 1.3 women for every man enrolled. In SADC, however, figures for women still lag behind those for men, with about three women for every four men in the region's colleges. Within SADC, the numbers for women are higher than those for men in Botswana, Lesotho, Mauritius, Namibia, and South Africa.

INVESTMENT IN EDUCATION

Annual spending on education in SADC has been in the range of 4.5 to 5% of GDP throughout the last decade. This is only 1 to 1.5% short of the UNESCO-recommended 6%. In fact, SADC spending is very close to what the high-income economies spend and well above the amount spent by the developing countries combined.

FIGURE 3: PUBLIC SPENDING ON EDUCATION AS A PERCENTAGE OF GDP: SADC COMPARED WITH DEVELOPING AND HIGH-INCOME COUNTRIES



Note: There is not enough data for 2009 and 2010 to show meaningful group aggregates.

Given that the countries of SADC (other than South Africa) have low GDPs, such spending in absolute terms may not seem like much, especially in comparison with East Asia, but when expressed in terms of per student spending at different levels of income in Parity Purchasing Price (PPP) in USD, SADC actually spends more than other countries at similar

educational achievement and income levels. Table 2 shows the absolute spending per student comparison between SADC and South Asia.

TABLE 2: SPENDING PER STUDENT IN 2010

Spending per student, 2010, PPP in USD				
Region	**Primary**	**Lower secondary**	**Upper secondary**	**Tertiary**
SADC	360	420	740	2 110
South Asia	240	210	720	1 810

The data on education spending by SADC provides two seemingly contradictory results. When education is measured in terms of the percentage of GDP devoted to each level of education, one can clearly see the impact of increasing secondary and tertiary enrolment, as spending remained largely flat during the main period of growth in primary education and then increased during the main period of growth at secondary and tertiary levels. But at the same time, when measured in terms of total government expenditure, whatever increases were there, came at the beginning of the 1970s, when most growth occurred at primary level, suggesting more government interest in primary education than in secondary or tertiary.

From 1970 to 1990, SADC's spending on education, as a percentage of GDP, remained close to the global average, but after 1990 the region's spending began to increase, to the point that by 2010 SADC was spending more than any other region. In 1970 the world, on average, spent 3.7% of GDP on education; for Africa as a whole, the average was 4.2%, while the SADC region was 4%. By 1990, SADC was spending slightly less than the world average (4.4 versus 4.6%) and slightly more than the African average of 4.1%. But by 2005, spending in SADC had increased to 6.5%, well above the world average of 4.8%, and more than in any individual region. From 1970 to 2010, spending in SADC grew at an average annual rate of nearly 1%, with the period 1990 to 2010 seeing the most rapid rate of growth. Much of the growth post-1990 may be due to high levels of spending by certain countries within the region; for example, Lesotho and Botswana in 2005 were spending 14 and 10% of GDP respectively. But at the same time, spending in Zambia and Madagascar fell to the lowest levels of any country in the region at 2.2 and 1.6% respectively.

When the spending data is examined in terms of the percentage of government spending going to education, rather than the percentage of overall GDP, the pattern becomes quite different. Spending on education by the SADC governments seems to follow the pattern for primary education enrolment, with most growth occurring from 1970 to 1980, a decline from 1980 to 1990 and level from then on, reflecting a strong interest in primary but weakening interest in higher education. From 1970 to 2010, the SADC region committed an average of 15% of government spending to education, ranging from 14.2% in 1970 to 15.1% in 2010, with a high of 15.6% reached in 1980. The world average during this period was 15% and the African average 14%.

WHAT THE LITERATURE SAYS

Based on existing literature on higher education in Africa, the sector's future hinges on how well the region's governments are able to address two major and interrelated challenges: demographics and finances. Though population growth rates are declining in many African countries, population growth continues to be quite rapid, resulting in ever-increasing numbers of young people requiring primary, secondary and tertiary schooling. From 1991 to 2006, the number of African students pursuing higher education (secondary and tertiary) tripled from 2.7 million to 9.3 million, and if current demographic trends continue, the number of higher-education bound students could reach 20 million, for the continent as a whole, by 2015 (World Bank, 2010). Ironically, these numbers will probably increase as the region continues to improve on primary school enrolment and completion levels (Mingat, Rakotomalala and Ledoux, 2010).

However, even as the number of students seeking higher education tripled, the amount of money devoted to higher education only doubled (on average, some countries saw increases of as little as 75%). This failure to keep up with increasing demand led to a 30% drop in per student funding from 1991 to 2006, resulting in worsening quality and a decline in the number of teachers. Decreasing numbers of teachers is concerning, as the World Bank (2010) estimates that the number of teachers in higher education will have to double by 2015 to keep up with the expected increases in demand. The number of classrooms and supporting facilities will also have to increase, as most are already overcrowded and many are in severe need of rehabilitation (United Nations University, 2009). The increasing number of students and the increasing demand for more teachers is also draining funds needed for school renovation and university-based research (Mingat et al, 2010), two important means of improving higher education effectiveness. Current estimates are that 80% of public education spending goes to personnel and student costs (Devarajan, Monga and Zongo, 2011).

The literature also suggests a number of ways to address these problems. An increased knowledge infrastructure is seen as vital - better ICT networks that allow for distance education and general information access that can help improve the effectiveness of higher education programmes and make them better able to retain local professionals and attract more professionals from outside the region (Ajakaiye, Kimenyi, 2011; World Bank 2002). Many studies have called for African countries to adopt more efficient means of funding for higher education, since the region is already spending more per student than any other region in the world. Because domestic funding sources are already over-stretched, they also call for more international funding (World Bank, 2010). The World Bank also points to the need for more effective regulatory frameworks for the higher education sector for better accreditation and quality assurance measures and to attract more foreign investment.

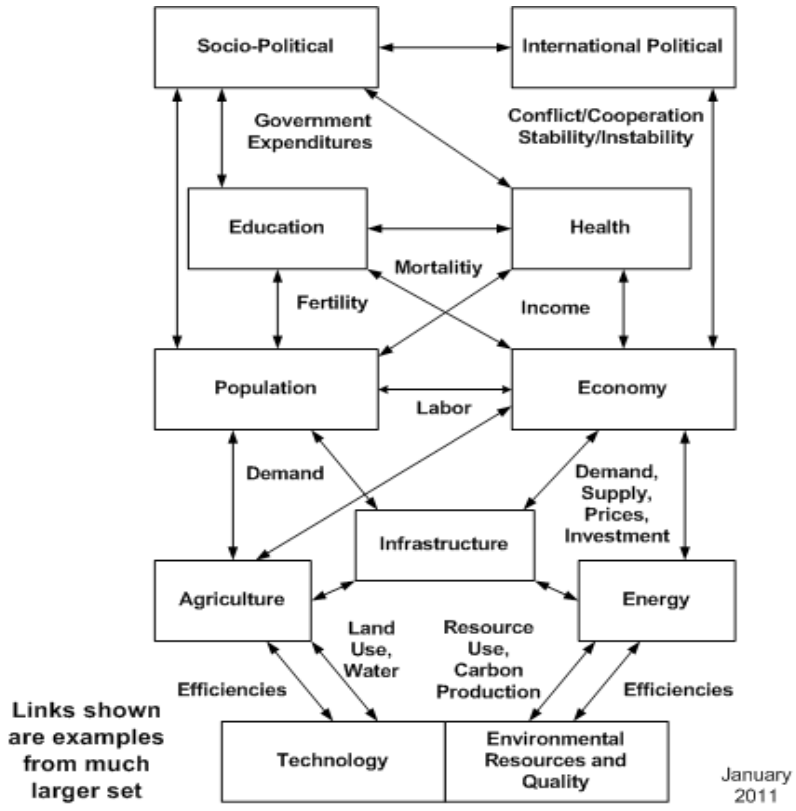
Given the litany of challenges facing the higher education sector in SADC and SSA, it seems a reasonable, if unfortunate, conclusion that a continuation of the current situation

in higher education is unsustainable, both in terms of meeting the needs of the region's population and in terms of financial resources.

THE INTERNATIONAL FUTURES MODEL

International Futures (IFs) is a large-scale, long-term, integrated global modelling system. It represents demographic, economic, energy, infrastructure, agricultural, socio-political, and environmental subsystems for 183 countries interacting in the global system[5]. The central purpose of IFs is to facilitate exploration of global futures through alternative scenarios. Figure 4 shows the major conceptual blocks. Full issue-specific models represent most of the blocks, including education. The elements of the technology block are actually disbursed throughout the system, and the named linkages between blocks (and the identified linkages themselves) are a small illustrative sub-set,and by no means an exhaustive listing.

FIGURE 4: MAJOR MODULES IN THE IFS MODELING SYSTEM AND ILLUSTRATIVE CONNECTIONS



IFs begins computation with data from 2005 and can dynamically calculate values for all variables annually through 2100.

International Futures (IFs)
Overview: Issues and Modules

5 For an introduction to the character and use of the IFs modeling system, see Hughes and Hillebrand (2006).

The two models within the IFs system that interact most closely with the education model are the population and economic models. The IFs education model simulates patterns of education participation and attainment in 183 countries over a long time horizon under alternative assumptions about uncertainties and interventions (Irfan, 2008). Its purpose is to serve as a generalised thinking and analysis tool for educational futures within a broader human development context.

Figure 5 shows the major variables and components that directly determine education demand, supply, and flows in the IFs system, emphasising again the inter-connectedness of the components and their relationship to the broader human-development system. For example, during each year of simulation, the IFs cohort-specific demographic model provides the school-age population to the education model. In turn, the education model feeds its calculations of education attainment to the population model's determination of women's fertility. Similarly, the broader economic and socio-political systems provide funding for education, and levels of educational attainment affect economic productivity and growth, and therefore also education spending.

FIGURE 5: INTERNATIONAL FUTURES EDUCATION MODEL

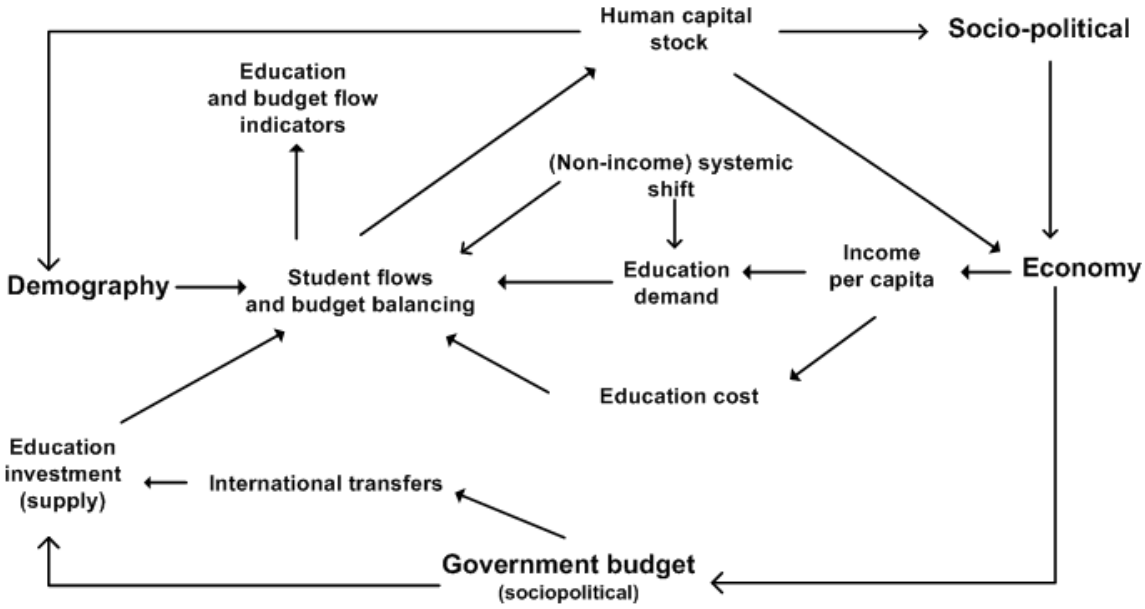
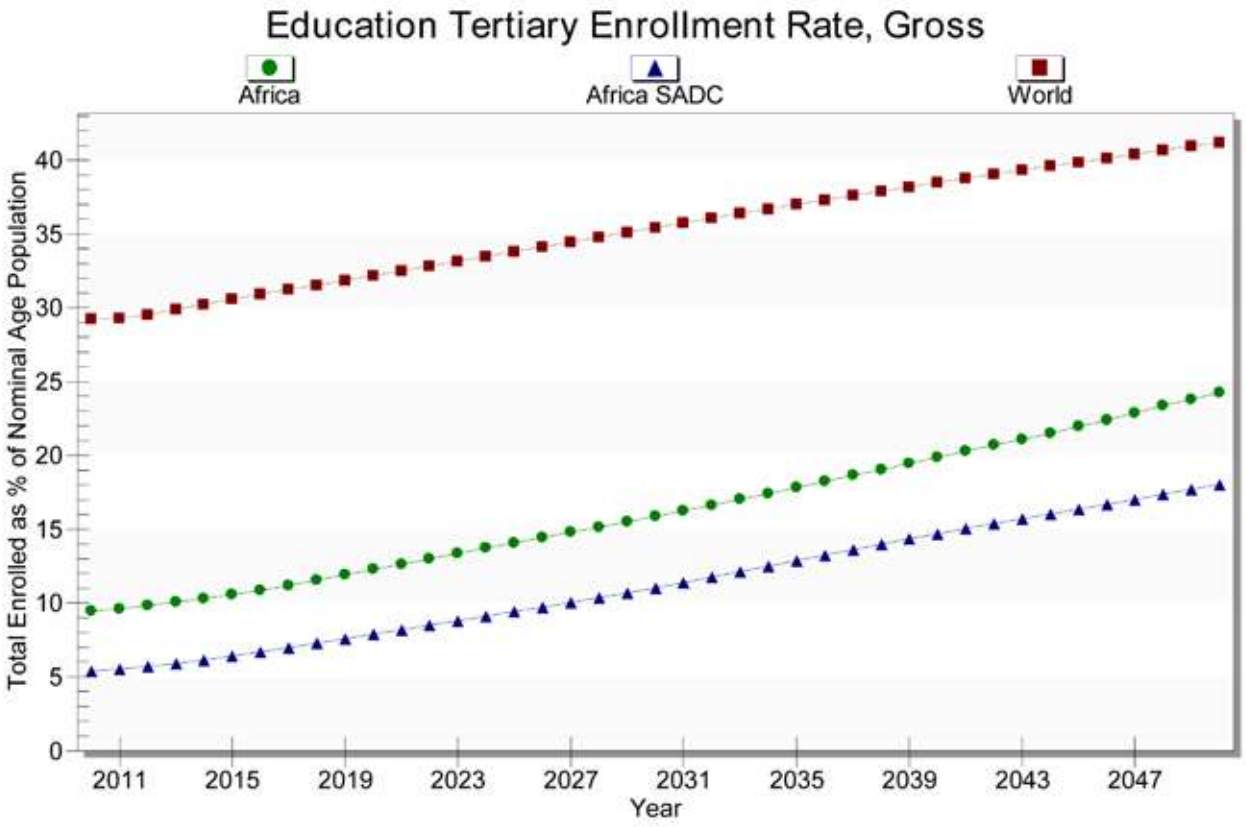


Figure 5 summarises the most important aspects of the accounting system, the dominant relationships and the key dynamics represented in the education model. At the accounting level, the major flows within the model are student and budgetary flows, while the major stock is that of gender-differentiated educational attainment of the adult population. The model structurally represents the formal education system from primary through tertiary levels, and further divides the secondary level into lower and upper secondary levels and into general and vocational categories within each of the secondary levels. It tracks students by grade and by gender. Intake (or transition to a higher educational level) and persistence or survival rates are the two variables that most immediately determine the patterns of student participation and progression through the grades.

EDUCATION IN SADC: BASE CASE

The education base-case scenario used in the analysis assumes that current trends and relationships between the drivers of education remain the same and no new policy interventions occur during the time period in question. It is a forecast of where we expect tertiary enrolment rates to be by 2050 should current demographic and economic trends continue.

FIGURE 6: TERTIARY ENROLMENT FORECAST, IFS BASE CASE, SADC, AFRICA AND WORLD

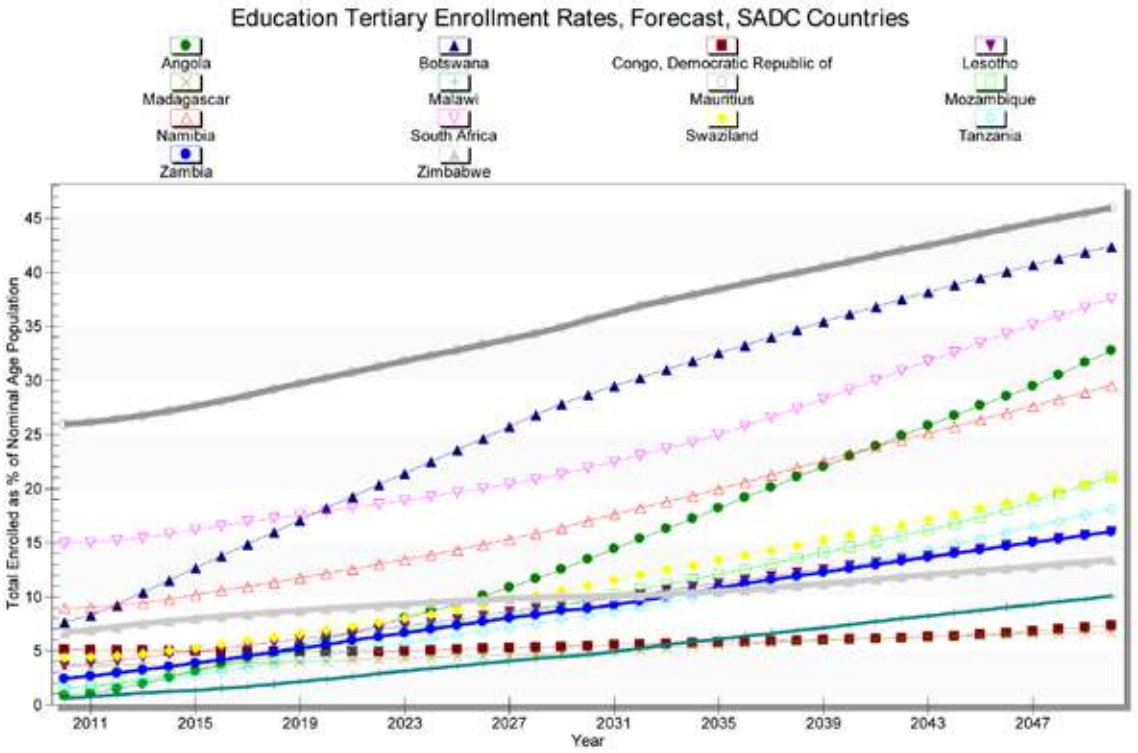


Under the base case assumptions described above, SADC will triple tertiary enrolment between 2010 and 2050. Within the same time period, the African higher education participation rate almost doubles, while there is a 33% growth in the global participation rate. Absolute percentage points added to the higher education enrolment rates of Africa, SADC and the world, within that four-decade period, are quite close (in the range of 12 to 14 points). For SADC, the 40-year progress of 11 points is several times the little more than 1% increase during the most recent couple of decades. This progress is not enough to raise the region much above its low initial value. If anything, the progress seems inadequate when we compare SADC enrolment in 2050 with the enrolment of countries at similar levels of development in the historical period. For example, SADC tertiary participation rates in 2050 are about six percentage points lower than those in the Arab

states in 2010, which at that time had a regional per capita income very close to the SADC per capita income in 2050 (about 6 000 constant international dollars). The high income group containing countries in North America and western Europe had a similar tertiary enrolment rate as early as 1960.

Figure 7 breaks down regional progress to country level. Mauritius continues at the top while South Africa falls to third place behind Botswana. Botswana manages to cover the historical gap with South Africa because of the prudent use of its growing resources to meet the increasing demand for higher education that comes with a general increase in income. Whether the progress in higher education is enough to diversify Botswana's economy, as the proceeds from diamond mining begin to decline, is a question that is beyond the scope of this analysis. Angola, which in 2010 has about a 1% tertiary enrolment rate, makes steady progress over the time period and catches up with Namibia, the SADC member with the third highest tertiary enrolment rate, by 2040. Given the recent improvements in Angola after the end of decades of conflict and increasing oil revenues, the country is likely to follow a more affluent path than many other SADC economies. Mozambique and Swaziland are two other countries that will achieve 20% enrolment in tertiary education by mid-century. Malawi, the Democratic Republic of Congo and Madagascar will either stay at or fall below 10% tertiary enrolment by mid-century. By 2050, these three countries together will hold close to 50% of SADC's population.

FIGURE 7: TERTIARY ENROLMENT FORECAST, IFS BASE CASE, SADC COUNTRIES

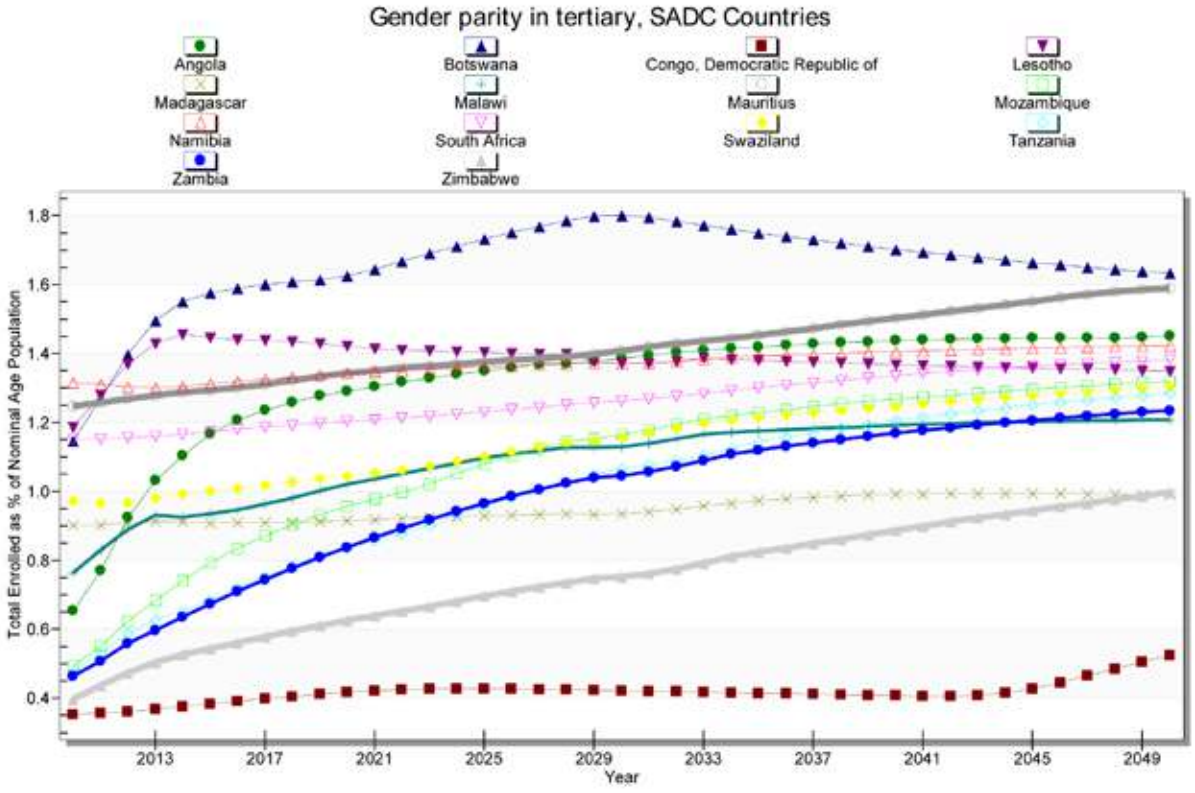


The gains women have made in higher income countries have led many experts to start talking about reverse gender parity in higher education. According to a New York Times (2006) report about the phenomenon:

"Women now make up 58% of those enrolled in two- and four-year colleges and are, over all, the majority in graduate schools and professional schools too".

There is no doubt that women's increased participation in the labour force and a gradual change in their role in the family have recently helped to boost women's participation in tertiary education. That does not mean men's participation regressed. In fact, hard science and technical subjects are still hugely male dominated while professions like teaching are largely female dominated. Socio-economically, reverse gender parity is seen more among the disadvantaged groups in high-income countries (Corbett, Hill and Rose, 2008).

FIGURE 8: GENDER PARITY IN HIGHER EDUCATION IN SADC COUNTRIES; IFS BASE CASE FORECASTS



KEY UNCERTAINTIES

There are several key uncertainties surrounding the tertiary-education forecast that must be taken into account. Key uncertainties include population growth rates, especially the rate of growth of the school-age population within the region, changes in family income, which impact both desire and ability to send children to school, and the resources

governments are able to devote to educating their citizens. Since this paper's aim is to study the feasibility of an optimistic higher education future for SADC, we developed scenarios that use optimistic assumptions about all three key drivers, ie reduced population growth[6], higher-economic growth[7] and larger share of national income spent on education[8]. The following table shows SADC tertiary enrolment forecasts from all four scenarios (base case and each optimistic scenario). Looking at each optimistic assumption independently, higher-economic growth, which indicates strong demand for higher education, seems to be the most significant driver of a better higher education future, increasing tertiary enrolment in SADC by 4% by 2050. Increasing government spending on education by itself is somewhat less effective than economic growth. This is because increased economic growth tends to increase spending, in absolute terms, almost instantly (due to increased revenues), whereas increased educational spending, while it does lead to increased economic growth, does so more gradually by increasing over time the pool of educated (and more productive workers) in the economy. Thus, forgoing other macroeconomic priorities important for economic growth, like building good quality infrastructure and focusing solely on education, might not be a very useful strategy. Reducing fertility rates, beyond the expected reductions from gains in income and education, will, on its own, increase enrolment rates by 2% by reducing the strain on the education system of a growing population. But it is highly unlikely, unless some draconian policy measures are undertaken, that Africa or SADC will reach a fertility rate below replacement rate by 2050.

We also imagined a "highly" optimistic scenario, which combines each of the interventions described above even though it is rare for all good things to come together (a reverse Murphy's Law). In this "highly" optimistic scenario, we imagined SADC enjoying a period of low population growth, high economic growth and high education spending. The impact of such an extreme scenario is quite substantial, increasing tertiary enrolment rates by 10% above the business-as-usual scenario by 2050, but this still falls far short of achieving the current global average of 30% tertiary participation by 2025.

TABLE 3: TERTIARY ENROLMENT RATES BY SCENARIO 2010 TO 2050

Tertiary enrolment rate in % for SADC					
Year	**IFs base case**	**Low population growth**	**High economic growth**	**High education spending**	**Optimistic scenario**
2010	5.4	5.4	5.4	5.4	5.4
2015	6.1	6.1	6.2	6.6	6.6
2020	7.2	7.3	7.4	8.2	8.5
2025	8.3	8.5	8.9	9.4	10.2
2030	9.6	9.9	10.6	11.0	12.5
2035	11.1	11.6	12.7	12.9	15.6
2040	12.8	13.7	15.3	15.0	18.9
2045	14.4	16.0	17.7	17.2	22.6
2050	16.3	18.5	20.4	19.4	27.5

6 IFs low population scenario gradually, over a period of 30 years, reduces total fertility rates in developing countries by roughly 30% relative to the base case (subject to a minimum TFR of 1.6).

7 The interventions made in IFs to create the high economic forecasts were largely variants in assumptions concerning productivity growth. The interventions were scaled to create something close to rates of GDP growth 1% faster than those of the base case.

8 Given that public spending on education averages just below 4.5% of global GDP, a total variation of about 0.5 around the base case forecast provides a reasonable range across which to look at the possible reactivity of education futures. We introduced that magnitude of variation into IFs gradually over 10 years, using upward multipliers on endogenously generated spending.

Thus even in this most optimistic of futures, the SADC tertiary enrolment rate in 2050 will not reach the current global average of 30%. This is somewhat discouraging, as it would be very difficult, if not impossible, for policy interventions to take the future beyond the best possible combination of framing uncertainties.

However, when we disaggregate the results from the "highly" optimistic scenario, we see that eight countries do reach over 30% tertiary enrolment by 2050. At least two countries, Mauritius and Botswana, will approach 60%, the average participation rate in OECD countries in 2010. Among the six countries that will remain below 30% in 2050, Malawi, Madagascar and the Democratic Republic of Congo will be under 15%. Had these countries followed the path taken by the best-practice countries (like Mauritius), achieving a 30% or higher tertiary enrolment rate by 2050 for the SADC would not be nearly so difficult.

TABLE 4: "HIGHLY" OPTIMISTIC SCENARIO 2010 TO 2050, COUNTRY RESULTS

Tertiary enrolment rate, optimistic scenario performance of SADC countries														
Year	Mauritius	Botswana	South Africa	Namibia	Angola	Swaziland	Tanzania	Mozambique	Lesotho	Zambia	Zimbabwe	Malawi	Madagascar	Congo, DRC
2010	25.9	7.6	14.9	8.9	0.8	4.4	1.4	1.5	3.6	2.4	6.7	0.6	3.6	5.1
2015	30.5	13.8	17.8	10.9	3.3	5.8	3.1	3.3	5.4	4.0	9.0	1.4	3.8	5.0
2020	38.0	21.5	21.6	14.3	6.8	8.3	5.8	5.9	7.8	6.9	11.3	2.7	4.7	5.1
2025	45.1	28.9	24.5	18.4	11.0	11.1	8.4	8.5	10.0	9.3	12.4	4.4	5.5	5.6
2030	50.4	35.7	30.0	23.1	16.9	14.9	11.2	11.3	12.6	11.6	13.8	5.9	6.5	6.1
2035	55.2	42.0	38.7	29.4	24.9	19.9	14.7	14.5	15.5	14.5	15.0	7.9	8.0	6.9
2040	59.5	48.1	45.3	37.4	31.4	26.7	19.4	18.5	18.5	17.6	17.1	9.9	9.5	8.4
2045	62.6	54.1	51.3	44.3	37.2	35.1	26.1	24.0	22.5	21.2	19.6	12.2	11.0	10.0
2050	65.5	59.7	56.5	49.8	46.4	45.1	35.9	33.2	26.7	25.3	22.4	15.0	12.6	11.5

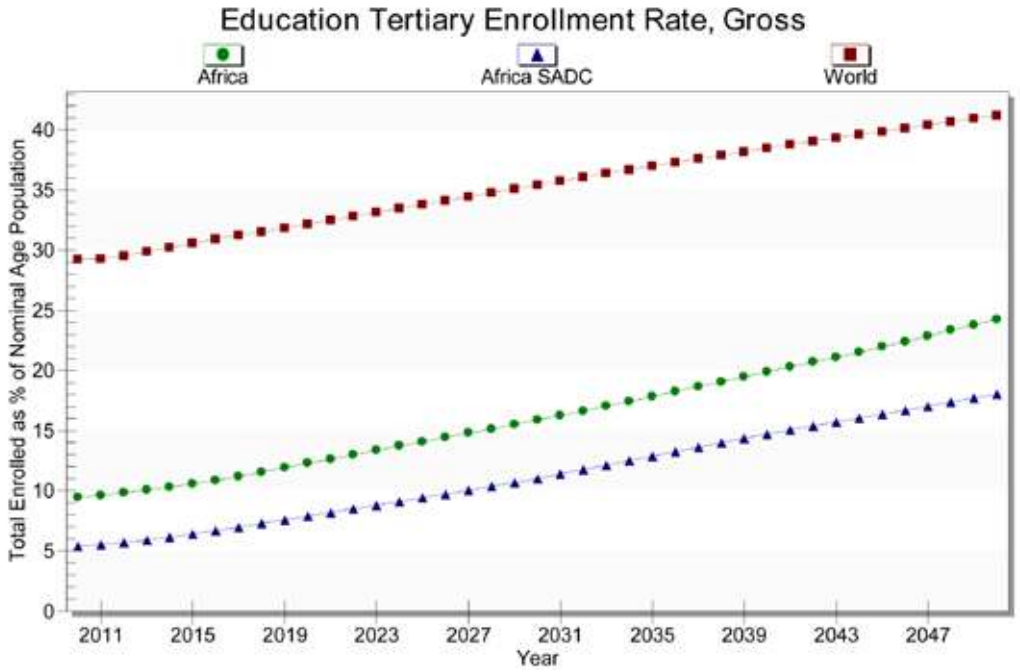
This leads us to the question: What if every country saw the same rate of improvement as the best-practice countries have seen in the past? Improving education, like all social transitions, is a slow process of diffusion. Like many other such processes, education diffusion follows an s-shaped curve. Clemens (2004) found s-shaped patterns in the historical advances of primary and secondary education. The logistic path makes it difficult to achieve rapid progress at the early stage of diffusion due to issues such as a lack of an economy of scale. Many of the non best-practice countries in SADC are still at this early stage and are thus unlikely to see the rapid increases sustained by current best -practice countries.

Figure 9 shows the trend in tertiary enrolment rates in those countries around the world that have made remarkable progress since 1990[9]. Other than Mauritius, the countries that made the most progress were already above a 15% enrolment rate when they embarked

9 South Africa, one of the two SADC countries included in the figure, did not make much progress. The country has the largest tertiary education sector in the region

on a path of rapid progress. Domestic and/or externally driven policy measures, like the UK's New Labour's emphasis on higher education or the EU's conditions for Turkey's accession, seemed to play a key role in each case. But it seems that had these countries not already reached a threshold enrolment level, such rapid progress might not have been possible.

FIGURE 9: TERTIARY ENROLMENT, COUNTRIES WITH HIGH PROGRESS



CHALLENGES

Among African regions, North Africa was the best performing, growing from 2.2% tertiary enrolment in 1960 to 22% in 2010, an annual increase of less than .5 percentage points. Mauritius, the best performing SADC country, added 17 percentage points over the last two decades. It will be a challenge for the low-income, high-population SADC members to replicate this success. One of the major obstacles will be the lower enrolment rates at earlier education levels. Unless countries already have high secondary enrolment and continue to grow their upper secondary enrolments (as Botswana has done), there will not be enough students to expand tertiary enrolment even if there are enough available seats. Another problem is the ability to fund an increased "push" in tertiary education, given the challenge of balancing the budget across all social spending sectors as well as meeting demand for all levels of education. One positive influence, at least, would be the lowering of overall costs as the tertiary sector scales up. But while students and their families in middle and high-income countries often share tertiary costs, families in the low-income SADC countries would have a hard time doing the same in the absence of efficient and affordable credit schemes.

Resources are, of course, not the only factor in achieving higher enrolment. As Clemens (2004) emphasised, broader development policies are also critical in achieving higher

enrolments. As Clemens wrote in another volume on advancing education around the world: "Without encouragement from parents and family, sufficient economic well-being to provide the freedom to attend school, basic supportive systems such as transportation, and employment opportunities to use education, expansion of opportunities may simply prove inadequate".

Analysis of all these drivers for every country in SADC is beyond the scope of our model. Instead, what we have done is to develop an aggressive, but reasonable, path of annual enrolment growth equalling 1% in tertiary education, with a faster convergence to the global norm of per student cost (our scenario drivers are actually on the flow variable that contains the policy leverages, ie entrance and graduation rates and the annual growth rate addition follows a logistic path achieving a maximum of 1.2% annual addition in intake rate and 1% addition in graduation rate before starting to taper off).

Since enrolment in tertiary education is contingent upon progress at earlier levels, our scenario incorporates enrolment growth and faster cost-efficiencies at the earlier levels as well[10]. Finally, we have taken away all budget constraints in order to assess what it will take for SADC to achieve aggressive but reasonable growth, and whether such investment will pay off. This is our normative scenario. Table 5 summarises the scenario drivers for our normative scenario:

TABLE 5: NORMATIVE SCENARIO DRIVERS

	Intake/ transition	Survival	Per student expenditure
Primary	2.2 percentage points annual increase	1.2 percentage points annual increase	Converges to the global cross-sectional function by 2030
Lower secondary	1.0 percentage points annual increase	0.8 percentage points annual increase	Converges to the global cross-sectional function by 2030
Upper secondary	0.5 percentage points annual increase	0.3 percentage points annual increase	Converges to the global cross-sectional function by 2030
Tertiary	1.2 percentage point annual increase	1 percentage point annual increase in graduation rate	Converges to the global cross-sectional function by 2030

Table 6 compares the tertiary enrolment rates in the SADC for our base case, the most optimistic case, and the normative scenario. In the normative scenario, the SADC reaches 30% tertiary enrolment as late as 2050. And even under these aggressive but reasonable assumptions, SADC will only reach around 15% tertiary enrolment by 2025. By 2030, only seven of the 15 countries in SADC (Angola, Botswana, Mauritius, Namibia, South Africa, Swaziland, Zimbabwe) will be at or above 15%. By 2050, every country but Malawi will see tertiary enrolments above 23%.

10 Scenario drivers for earlier levels of education are borrowed from Dickson, Hughes and Irfan (2009). Enrolment rates are output variables driven by intake and/or transition and graduation and/or survival rates. Our scenario uses those leverage points accordingly. For tertiary education, for example, we used a maximum graduation rate increase of one percentage point per year and a little higher (a 1.2 percentage point) growth in intake rate.

TABLE 6: SADC TERTIARY ENROLMENT RATES 2010-2050, BY SCENARIO

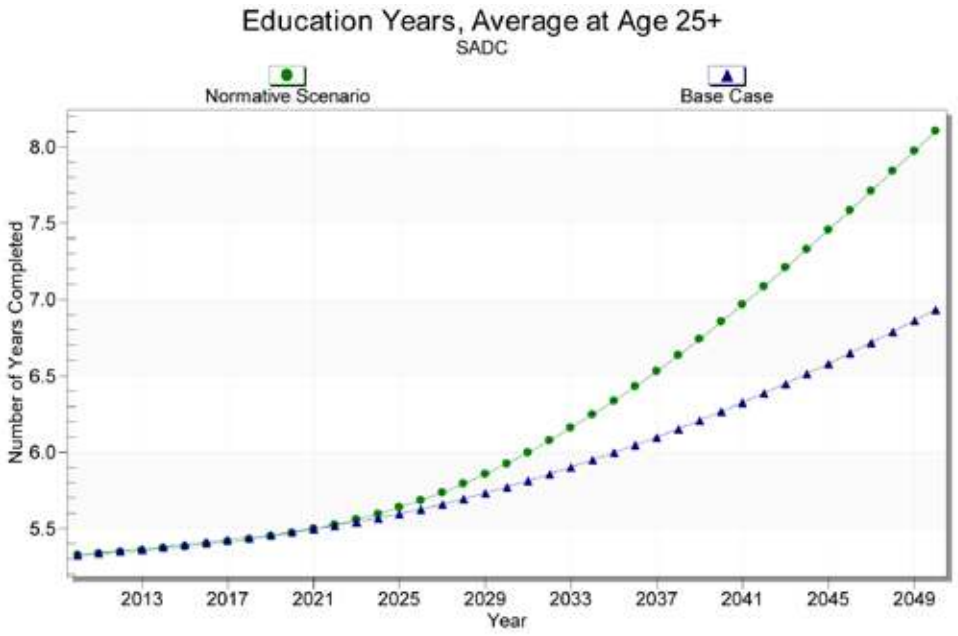
Tertiary enrolment rate, SADC			
Year	IFs base case	Optimistic scenario	Normative scenario
2010	5.4	5.4	5.4
2015	6.1	6.6	6.9
2020	7.2	8.5	9.4
2025	8.3	10.2	12.0
2030	9.6	12.5	14.9
2035	11.1	15.6	18.3
2040	12.8	18.9	21.9
2045	14.4	22.6	25.8
2050	16.3	27.5	29.9

COST BENEFIT ANALYSIS

As explained above, we tried to avoid fiscal constraints in our normative scenario. However, our enrolment and per student cost forecasts makes it possible to estimate the spending demanded in such a scenario. The question is whether countries would be able to provide these funds domestically or whether the global community should or would have to come forward to do so. Some of the additional costs to increasing tertiary education would, of course, be paid for by the economic growth resulting from increased tertiary education.

Ultimately, it is the education attainment of adults, not enrolment rates, that drive economic productivity and bring other socio-economic benefits. Because attainment levels increase much more slowly across age-cohort structures than enrolment levels, the economic gains to be had by increasing enrolments will take time to be felt. As shown in the figure below, the average number of years of education for adults in our normative scenario starts to move up from the base case only after 2025.

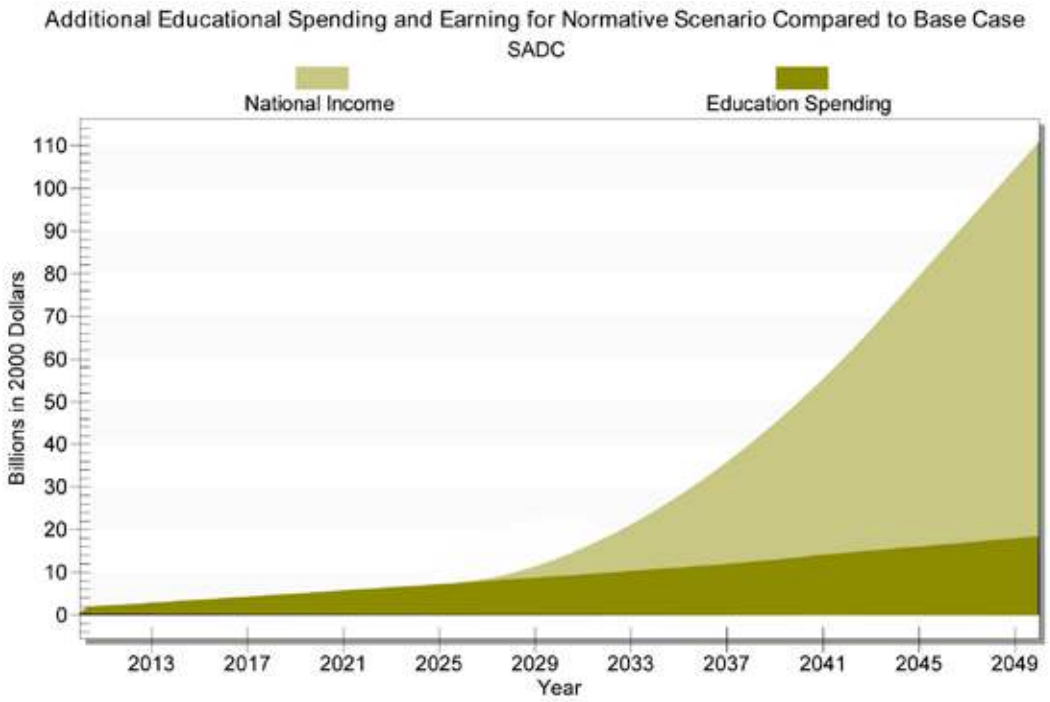
FIGURE 10: SADC AVERAGE YEARS OF EDUCATION, BASE CASE AND NORMATIVE SCENARIO



This slow pace of transformation makes understanding the broader impact of education somewhat difficult. Also, a longer period of time allows for changes in other contextual variables, making it difficult to single out the benefits of education. Finally, many of the social benefits derived from education cannot be directly measured in financial terms[11].

Keeping these constraints in mind, we contrast the costs of achieving increased enrolment rates in our normative scenario with the most direct benefits (or costs) from such policies, ie the changes in the size of the economy. The following figure shows the differences between the normative scenario and the IFs base case for the educational spending and the GDP of the SADC countries combined[12]. The cumulative benefits, as we can see in the figure below, begin to break even with cumulative costs by 2030 and then outperform the costs substantially by 2050.

FIGURE 11: SADC EDUCATIONAL SPENDING AND GDP DIFFERENTIALS BETWEEN IFS BASE CASE AND NORMATIVE SCENARIO



CONCLUSION

Improving education requires long-term policy interventions, and there is a lag in reaping the benefits from such policies. However, those countries that have managed to sustain such a process over time have seen large benefits from it. For example, tertiary enrolment rates for SADC and East Asia and the Pacific (EAP) were quite close in 1970, at .75% and 1.1% respectively. Over the subsequent decades, enrolment in the EAP continued to grow rapidly and by 2010 had reached 22%, whereas SADC had reached only 6.3% enrolment during the same period. Of course, the growing gap in education went hand in hand with an increasingly severe income gap in the two regions. History and forecasts show that SADC will be able to close this gap if they adopt good education policies and are able to sustain such policies over a long period of time.

11 The integrated characteristics of International Futures makes the social impact of education accounted for to some extent indirectly through the impact of education on social variables and the impact of those social variables on economy.

12 We use a 3% discount for both GDP and educational spending.

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WHAT WILL SADC HIGHER EDUCATION BE IN 2025? A SUMMARY WORKSHOP REPORT

INTRODUCTION

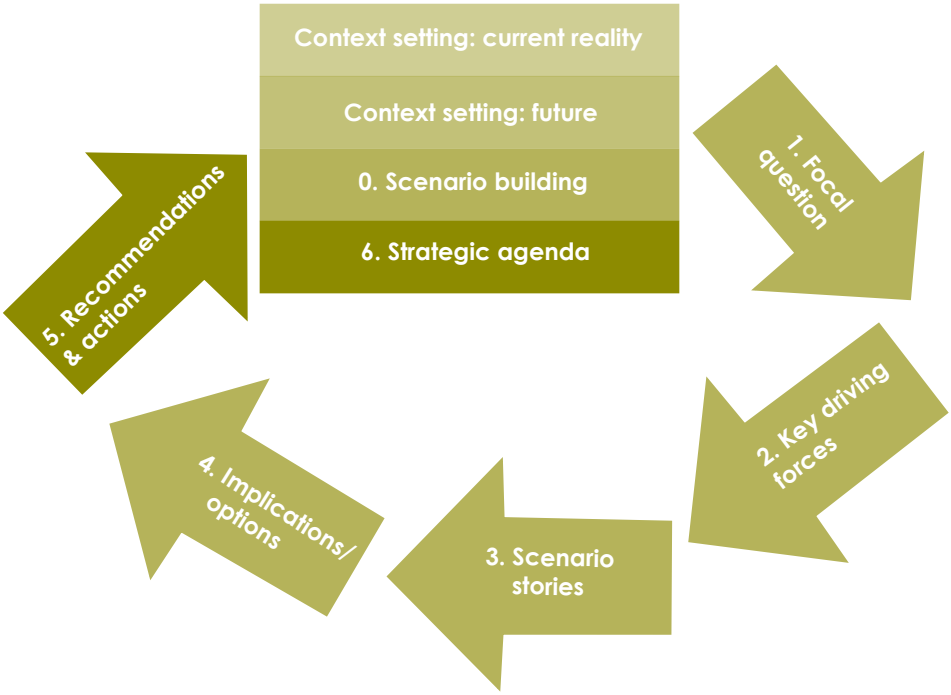
The SARUA dialogue convened the vice-chancellors and deputy vice-chancellors and invited higher education leaders from the SADC region in Lusaka to engage on future scenarios for higher education in Southern Africa in October 2011. The convention sought to fulfil the need for a strategic vision for higher education in the region over the next 10 to 15 years, employing a scenario-based approach that would enable participants to transcend the myriad internal and external changes and challenges that they face in the day-to-day running of universities and university systems. The dialogue provided for an open, creative, process-driven conversation designed to elicit the views of the participants.

Scenario planning methodology has been increasingly and successfully used internationally when institutions have had to engage with complex and dynamic issues when planning into the future. Scenario planning enables a systematic approach to thinking about what we want to achieve, enabling a longer and broader view around a focused question. The process extends participants beyond mental models and assumptions about the future, challenging definite assumptions about the future – assumptions that are normative and often misleading due to practical limitations in accurately predicting futures that are often complex.

The approach taken in this Future of Higher Education in SADC scenario planning process was designed to include:

- Multi-stakeholder participation. The leadership team present had been targeted to ensure a mix (not necessarily representative) of different countries, institutions, position, demographics, and points of view.
- Participatory strategic conversation. The process was designed to include a combination of large and small groups, structured and unstructured conversations to draw in participants' views to the greatest degree possible.
- "Devil's advocate" questioning. A deliberate process of extending participants beyond their normative perspectives by prompting consideration of alternatives.
- "The three-ring world view". Superimposing and reinforcing three key spheres for consideration: the university (in southern Africa), Africa, and the world.

FIGURE 12: PROCESS OVERVIEW FOR FUTURE OF HIGHER EDUCATION IN SADC SCENARIO PLANNING



The workshop outputs included a set of what the participants deemed to be plausible scenarios for higher education in the region, and a series of analytical reflections about them. These were captured onto charts and tables and submitted to the workshop organisers who undertook to capture and collate these.

EVOLVING SCENARIOS FOR HIGHER EDUCATION IN SADC 2025

Having determined that the focal question about higher education in SADC over a 15-year time horizon would be: "What will SADC higher education be in 2025?", the participants went on to systematically build up scenario logics and stories for a set of different possible futures.

Choosing the key driving forces

The process directed the participants to identify "key driving forces" for the scenarios that required the identification of the primary factors or variables underlying, structuring and shaping the higher education sector or its context in SADC towards 2025. Further consideration was also given to the relative impact and degree of uncertainty of the variables chosen. Of particular interest in the process were those variables that had a likelihood of high impact, but that were also deemed uncertain or volatile in terms of how they might play out.

A range of issues were identified, including: leadership of the higher education sector; technological change; the policy environment; the pace of economic growth; political accountability; among others. Through a process of conversation and debate, two key driving forces were ultimately selected and expressed as axes representing continuums of possibilities:

The critical and potentially disruptive role of technology and technological change emerged as a strong theme. Although the increasing – and transformative – role of technology in education and learning may be considered a fait accompli, a major question remains around the extent to which regional institutions will be able to participate in, and leverage off, the technological revolution. If they are unable to do so – quite possibly being excluded by a number of potential capacity or resource constraints – the implications and impacts point to very different possible futures for the sector and the region.

Issues of human capital formation and an environment that recognises and enables its productive deployment were deemed critical to the region's future: we cannot develop in a knowledge economy without capable people. However, the regional system is currently strained in this regard and it remains a critical question for our future: will we generate or find the extent of human capability required to drive regional development and a strong higher education sector?

These two variables – **accessibility of the technological revolution** and **extent of human capability** – were therefore selected as the basis for scenario thinking and development in the planning process.

The scenario narratives

Based on the two key driving forces, accessibility of the technological revolution and the extent of human capability, four distinct possible future scenarios were crafted.

FIGURE 13: FOUR SCENARIOS FOR WHAT SADC HIGHER EDUCATION MIGHT BE IN 2025

The following sections present the stories that evolved about each scenario through the scenario conversations. A moderately edited version of each scenario narrative is presented, followed by a short summary of the key assumptions and consequences or implications of the story.

SCENARIO ONE

ACCESSIBLE TECHNOLOGY + ABUNDANT HUMAN CAPABILITY =

I) The Knowledge Village

This scenario describes a future where SADC communities have the benefit of a strong and abundantly capacitated higher education system, coupled with access to all the benefits of the technological revolution. It represents the "best-case scenario".

SADC News Bulletin from Mapungubwe Village:

Good morning. News just in: a 17-year-old girl from Mapungubwe Village, Kamwangi Zulu, has won the Nobel Prize in Physics!

How is it that a 17-year-old girl from our little village in Central Africa can win the Nobel Prize? The story behind this prize is very interesting because she was prepared by our own universities. With our abundance of human capacity enabled through advanced technologies, we are a true knowledge village and have been able to achieve this kind of high-end outcome.

The village is characterised by technological connection. Every household in the village has a laptop, and everybody in the village – from the young to the older generations – is competent in using technology. The village has had numerous examples of successful social innovations enabled through strong links with local universities. Recently, the villagers were saved from the worst impacts of severe flooding due to an early warning system facilitated by the village's connectivity. This enabled timely evacuation. The village also achieved food security some years ago through a set of innovative programmes, and the community is thriving.

So asked how a 17-year-old girl from our little village could win the prestigious Nobel Prize, the answer is that it is because we recognise and invest in potential among our students, including ensuring their mentorship by other successful people; we engage with academics and innovators as key stakeholders in the society and we facilitate their easy access to all our local data; and we have state-of-the-art infrastructure available to all. Our schools are locally relevant, and there is universal access to higher education.

It is wonderful that in 2025 we are able to announce that through the foresight of regional integration and concerted investment in our universities, all our children are in schools. This amazing story of high achievement is possible because we have invested in higher education.

This plausible future points to broad-based societal benefits that are enabled through universal access to higher education (eg neither income nor gender prevented Kamwangi's access to high-quality education), wide-spread technological connectivity and competence and an overall system that values human capital and social innovation.

In the knowledge village future, there is high demand for higher education that has been harmonised, liberalised and is financed by both the public and private sectors. These successes have combined to enable significant progress in achieving improved ICT connectivity, quality assurance systems, academic mobility, and a high level of relevant research output.

SCENARIO TWO

ACCESSIBLE TECHNOLOGY + SCARCE HUMAN CAPABILITY =

II) Higher education: a missed flight

This scenario describes a future where SADC communities have actively participated in the technological revolution and have high-end access and connectivity but are stunted by inadequate human capability in the higher education sector.

Mr Rogers, a business executive, was hoping to fly to Nairobi from Dar es Salaam to attend an important meeting with donors at 10h00 that morning. His flight from Dar es Salaam was due to leave at 08h00. As it is only an hour-long flight to Nairobi, he was sure that he would make it in good time. Mr Rogers took a taxi to the airport, leaving home at 06h30. It would be a half-hour ride to the airport, and he knew he could use the fast check-in option and easily make it to his boarding gate on time.

What Mr Rogers did not know was that the president was also flying out that morning. So, as usual when the president is travelling, all roads are closed. Mr Rogers' taxi was stopped when he was only five kilometres away from the airport, where a very large traffic jam had developed due to the presidential stoppages. He had no choice but to wait impatiently in the taxi for the road to clear. The presidential motorcade eventually passed at 07h45. With 15 minutes left to rush through the remaining five kilometres, his taxi eventually reached the airport at 08h05, minutes after the flight had taken off.

Simply, this was a flight that was missed. The technology was there: the car, the roads, the careful schedule. The efficacy of these was, however, negated due to poor human vision and systems.

Considering a situation where we have scarce human capability but are wealthy and have ready access to technology, what happens in our higher education system?

The learners in the institutions will not be able to fully utilise technology because the instructors do not have the necessary capabilities. There will also be a reduction in quality, because educators would be scarce; too few instructors would be shuffled around the system trying to fill the gaps in the existing institutions in the country. Given their scarcity, and the likelihood of poor monitoring due to personnel strains in the system, the administrators could also become grossly inefficient, negligent and even corrupt.

The infrastructure, the computer labs, the scientific equipment, sophisticated systems and connectivity, may be there, but are grossly underutilised and therefore of little use in enabling the economic growth or development of the countries. The technology is therefore merely a wasted investment. So sorry, we missed the flight.

In this future, the hardware exists, but without the requisite software to operate it is useless. Advanced technological infrastructure that is underutilised (or even misused) suggests an inefficient use of funds, which cannot easily or quickly be addressed as building up a strong human-capital base would take time, during which the existent investments are likely to become redundant.

As the title suggests, this is therefore the story of an opportunity squandered due to poor system planning. Technological investments made with a short strategic horizon and without systemic consideration can be wasteful. Building human capability requires foresight and long-range planning.

SCENARIO THREE

INACCESSIBLE TECHNOLOGY + ABUNDANT HUMAN CAPABILITY =

III) University searching for its soul

This scenario describes a future where the region has successfully built a strong human capital base in higher education, but where there is poor technological advancement and access.

> *It is 15h00 on 8 February 2025. I present my report as the vice chancellor of the Zambezi Ubuntu University to the chairperson of the University Council. Mr Chairperson, I would like to preface my report to you with two key observations: i) We have an abundance of human capability in our institution which gives us tremendous opportunity to achieve our strategic goals; however ii) We are constrained by inaccessibility to a technological revolution, which is rapidly debilitating us.*
> *Learners outside my office have been threatening to riot for a few days now, and the police have just arrived at the main gates with tear gas. This is not the first time this year. Our learners are feeling frustrated and alienated. They have a high level of interest in learning, and great potential for innovation, but we are severely constrained in our ability to fully support them. Our facilities, infrastructure and equipment are outdated, and we are unable to provide them with the basic information and technological access and connectivity that have become standard in most developed countries. They are taught by unmotivated faculty members, who themselves are frustrated by the same issues. There have also been a few highly publicised cases of disciplinary actions against learners for piracy, and there is a view that this has been a course of last resort for learners, who are desperate to access the latest software and material which the university is unable to provide at affordable cost.*

The staff members are also threatening industrial action. They feel that they are held to performance requirements without the necessary enabling infrastructure, and they complain of being undersupported and underpaid. As a result, they have low morale and we are experiencing a severe brain drain as they pursue academic careers in more advanced countries where they are highly sought after for their skills.

In addition to this, our administration has become grossly inefficient and unstable. We are using old legacy systems, and personnel face persistent challenges with equipment maintenance. Under these circumstances, staff have become despondent and take no responsibility for their inability to adequately support the educators and learners. The truth is that the quality of our university is severely compromised, and we face great instability.

While there is a rising entrepreneurial spirit, examples of promising innovations including leverage of local indigenous solutions, and strong cooperation to share the limited resources available, progress is now hampered by lack of technology access and costs. The latter in particular (the high cost of access), is creating inequalities in the system where only the elite can afford a functional level of access and service from our university. Inevitably, our tuition fees have risen to provide what little access we can, yet many of our students cannot find employment after they graduate. We now have a highly polarised society that is potentially creating social unrest in our broader society.

In conclusion, planning and sacrifice are required in certain areas to resource the technological revolution. Unless something drastic is done for this great Zambezi Ubuntu University, we will not recover...

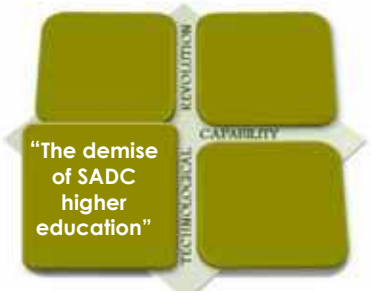
The higher education system in this future is frustrated in its inability to provide an acceptable, by any global standards, learning environment and is therefore unable to actualise its potential. There is a strong human capital base that shows great entrepreneurial and innovation potential; however, potential and aspirations are constrained by limited and expensive access to technology and information resources. The consequence is access and opportunity for those who can afford it, and exclusion – including policing and autocratic controls – for those who cannot.

Ultimately, those who can emigrate to more developed societies and institutions do so. Those who must stay are frustrated and begin to rise up against the system, resulting in a very precarious situation.

SCENARIO FOUR

INACCESSIBLE TECHNOLOGY + SCARCE HUMAN CAPABILITY =

IV) The demise of SADC higher education



The final scenario is the inevitable "doom and gloom" scenario. It describes a future where weak human capability in universities and poor technological advancement combine, with dire consequences.

Announcement: the creditors of the SADC Higher Education system are cordially invited to register their claims against the SADC Higher Education Estate with the Master of the Court, Lusaka, Zambia, before 12 noon on 14 October, 2025.

Background: the year is 2025, and we are at the Zambezi Ubuntu University. Professor Mumba, a poor, elderly man with a Master's degree attained in 1990, is in Lecture Hall SE101 teaching Economics 101. Actually, he is trying to cope with teaching 1 000 students in a lecture hall with a capacity of 300, while they are all carrying on their own conversations. The man is frustrated. He has been waiting for five years for two additional lecture posts to be filled in order to ease the student numbers in this course. The university cannot afford to access new learning resources or equipment for the course. He is therefore trying to project the same lecture slides that he has used since 2005, on an old-fashioned overhead projector. And while his students can barely see past the awkward contraption, they themselves have the latest mobile and smart devices, which they acquire in other parts of the world or purchase over the Internet.

The apathetic attitude that the learners have to Professor Mumba's course is hardly surprising. Indeed, why should they study when they are fairly certain that their success in life will bear little relation to the outdated material that he is so tediously presenting on his antiquated equipment? They are quite aware that they are merely being warehoused at the university until they get their "qualifications", and that the real opportunities will come from new, media-based industries for which the university is unable to adequately prepare them. The work environment has become fairly tight, and a tertiary qualification is often used as a short-listing filter by institutions that already expect to have to [re]train their own human resources. Real learning and research programmes at the university are "by rumour", as are all infrastructure and equipment allocations. The very few top-notch faculty members at the university are stretched to their limits, and the attrition rates are high as they seek more conducive learning, teaching and research environments elsewhere in the world.

For the learners, the diagnosis is dire. Indeed, as some wise person mentions, "Anyone can google, but not just anybody can create Google". These graduates may get paper qualifications, but they have no idea how to fully function, innovate or compete in the real world.

In this future, the regional university is faced with a high demand for tertiary education, but the teaching is of low quality and the academic pursuit has been minimised to a paper qualification process. Due to understaffing, poorly supported teaching programmes and a very weak technological base, a culture of mediocrity has been created and has become cyclical. The research undertaken is of low or no impact, and universities produce little innovation or value-add to society. Over time, the public and private sectors will begin to train their own resources directly as the universities become more and more unproductive and irrelevant.

ANALYSING THE SCENARIOS

The 2025 scenario narratives each invoked different implications for consideration in strategic planning for the higher education system. These were carefully considered by the participants, and their corresponding opportunities or responses were explored and mapped against the thematic priorities for higher education development identified by SARUA.

Thematic priorities for action

The higher education sector in SADC is at a critical juncture in its evolution. A glance at the top-line statistics suggests that the revitalisation of the sector is well under way. According to UNESCO, tertiary enrolment in sub-Saharan Africa has increased 22.3 times to 4.5 million students between 1970 and 2008, albeit from a low base. On average, public expenditure on education in Southern Africa has grown by 6.5% per annum since 2000. Tertiary education receives on average about 20% of public expenditure on education.

With a growth in student numbers of about 17% over the last 15 years, a key question that arises is whether funding, infrastructure and other capacity development measures can keep pace with the growing demand for higher education in the region. Moreover, the growth in student numbers is taking place during a time of significant change in the higher education sector, including changing ideas about the role of higher education in society and new developments in post-school education pathways, the nature of instruction and the application of technology.

Work done by SARUA and other institutions points to several challenges that need to be addressed. Finance, equity and access, quality and research have been identified as the key thematic priorities for strengthening and building the higher education sector in SADC, and are briefly discussed below as the starting point for considering the future development of the sector.

Financing higher education in SADC

It is no coincidence that several studies over the last decade have attempted to assess, analyse and understand the critical issue of financing higher education development in Africa in general and sub-Saharan Africa in particular. Current thinking on this vexing problem seems inadequate in the face of one of the fastest rates of growth in tertiary enrolment in the world, coupled with enormous pressure to sustain and increase the current levels of investment to meet this demand.

Enrolment at the tertiary level in sub-Saharan Africa increased from 0.2 million in 1970 to 4.5 million in 2008, representing a 20-fold growth at an annual average growth rate of 8.4%. As a result of this rapid increase, the share of tertiary students of the total student population in sub-Saharan Africa grew from 0.7% in 1970 to 2.5% in 2008. With increases in the primary gross enrolment rate (GER) to 101.6% and an increase to 34.1% at the secondary level in sub-Saharan Africa, further pressure on the demand for tertiary education is exerted. This situation is further compounded by the fastest population growth of any region of the world, so that the tertiary education system will be expected to accommodate many millions more young people over the next several decades. At the current rate of expansion, in 2015 sub-Saharan Africa might have twice as many tertiary enrolments than in 2006. It should be noted that the average tertiary gross enrolment rate of 6% remains by far the lowest in the world compared to 13% in south-west Asia and other developing regions, where enrolment rates are most commonly between 20% and 40%.

Countries in sub-Saharan Africa invest relatively large proportions of their government budget in the education sector, notwithstanding the relatively low gross domestic product (GDP) per capita. Education expenditure represents from 7 to 28% of total government spending in most countries, with an average of 18.3%. The region allocates 5% of total GDP to public education expenditure, which is the second highest percentage after North America and Europe (5.3%). The continent's current average annual public expenditure per student remains relatively high and is more than double the respective average for non-African developing countries. It is estimated by the World Bank that African countries will have to seek international financing equivalent to 150% of current national expenditure on the education sector to respond to quantitative development needs while ensuring an acceptable level of quality. Africa already receives 5.6% of its total public education resources from Overseas Development Assistance (ODA), amounting to USD2.6 billion in 2008.

Access and equity: opening up higher education in SADC

The rapid and sustained increase in tertiary education student enrolment in SADC member states has put tremendous pressure on higher-education systems in the region. Countries and institutions have found different coping strategies to deal with the massive increase in student numbers. Strategies at country level include the differentiation of the tertiary-education sector, introducing open and distance learning and providing support for

student mobility. At institutional level, a range of pedagogical practices have emerged, such as the specialised training of staff to deal with large numbers of students and the use of open-educational resources.

Underlying many of these innovations is the rapid diffusion of information and communication technologies (ICTs). These have contributed to the opening up of higher education in respect of the diversity of institutional forms, epistemological changes and teaching and learning practices. Despite the opening up of the higher-education landscape, however, countries and institutions remain under pressure since the demand for higher education in the short- to medium-term will far exceed supply. Thus, broadening access to tertiary education with an associated investment in the expansion of the human and physical resources necessary to support the required levels of growth remains a major challenge.Moreover, the question of access to tertiary education is inextricably linked to the issue of equity – the extent to which tertiary education contributes to social inclusion and social justice through providing fair opportunities for entrance and success in tertiary education. The principle of equity recognises that class, financial position, gender, ethnicity and other factors influence access to tertiary education and must be taken into account in policy. This involves the implementation of deliberate measures to accomplish equity such as dividing resources fairly and justly as well as putting in place positive discrimination in favour of groups that have been historically marginalised.

Quality

The increase in student enrolment in tertiary education has taken place without a commensurate increase in the public funding necessary to support these levels of growth. There is a link between inadequate public financing and deterioration in the quality of higher-education systems. The effects are most visible through high student-teacher ratios, overcrowding in lecture theatres, dilapidated infrastructure, outdated equipment and an underinvestment in research and research infrastructure. In the study conducted by SARUA in 2008, it was reported that challenges related to retaining qualified and experienced staff, attracting high quality faculties and the brain drain of lecturers were experienced by many institutions across the region. Severe staff shortages were reported most frequently in the science, engineering and technology fields of study.

The expansion of the higher education system in the region will require considerable investment in infrastructure, such as lecture halls, libraries, laboratories and teaching and administrative equipment. The main risk is that the current levels of investment do not meet the levels required to maintain the existing quality of tertiary education in the region. Thus, the key challenge is to navigate the mutually-exclusive demands of greater access to tertiary education while at the same time maintaining and improving the quality thereof.

Many countries in the region have embarked on processes of establishing functional quality assurance bodies and implementing institutionally-based quality assurance mechanisms as a means to address this challenge. Furthermore, at the regional level the

SADC Protocol on Education and Training requires that "Member States agree to work towards harmonisation, equivalence, and eventual standardisation of university entrance requirements". Achieving this requires that both national and regional quality assurance systems are in place and functioning effectively. Putting in place structured processes for quality assurance has in recent times gained momentum in the region, but involve considerable human, technical and financial resources that are not readily available.

Research output

Local research can contribute to socio-economic innovation and development in Southern Africa. However, its impact is dependent on publication and dissemination. The region needs to move beyond being a consumer of knowledge produced elsewhere to a state of rapid increase in knowledge production, addressing regional development challenges. Unfortunately, the region is well below optimal performance levels in terms of both research output and human capacity development in research, due to factors such as underinvestment in research and research infrastructure as well as the haemorrhaging of talent to more developed nations. Some of the main problems include:

- Researcher productivity is poor in most countries, with only South Africa and Namibia approaching the international standard of one publication per full-time equivalent researcher per year.
- The conduct of research is highly concentrated, with three African countries, Egypt, Nigeria and South Africa, collectively accounting for over 80% of the total output of scientific papers.
- Research collaboration, so essential to productive research and human capacity development, is restricted to three distinct clusters on the continent, with relatively poor collaboration between the clusters. Although co-authorship is relatively common within the SADC HEIs, north-south partnerships dominate, and south-south collaborations are comparatively weak.
- The output of PhDs is very low within most SADC countries, both in absolute and normalised terms (PhD qualifications per full time equivalent researcher per year).

A possible solution to these problems is the establishment of a university Regional Research and Development Fund (RRDF) to support collaborative and transnational research projects in areas of high regional relevance within SADC, thereby building R&D capacity and networks in critical areas. Although in the past there have been similar examples of regional funds, this initiative will be novel in the following respects: it will be a south-south fund with a regional HEI focus; it will support only transnational research and will be expertly managed (and governed) to ensure delivery, clear reporting to donors and a low administration to disbursement ratio. Further, there are numerous other strategies for the development and improvement of research capacity that can be considered, including investing in doctoral production and adapting policy to support research capacity development.

IMPLICATIONS AND CONSIDERATIONS

This section presents these findings mapped against SARUA's four thematic priorities: financing, access, quality, and research output. In each case, the considerations are presented in a high-medium-low road framework where the Knowledge Village (best-case scenario) and demise (worst-case scenario) are mapped out at the high and low ends respectively. The two middle scenarios are combined into the "middle-road."

i) FINANCING HIGHER EDUCATION IN SADC

	High road	Middle road	Low road
FUNDING	• Finance higher education through both public and private sectors • Increase institutional partnerships within the region, and invest in collective policies and programmes • Re-invest resources into the higher-education system eg through the establishment of a University endowment fund	• Ensure political will, both from government as well as from the private sector as a prerequisite • Establish benchmarks for higher-education budget allocations as a proportion of national or regional budgets • Ensure effective oversight of spending, eg through expenditure reviews and rankings • Explore innovative financing strategies, eg taxing the turnover of relevant companies operating in the region or locale towards promoting local universities • Leverage existing budgets for collective bargaining and efficiencies, eg for purchasing full-access journals, learning materials and resources; funding SADC students (SADC	• Establish minimum financing thresholds for viability of institutions • Emphasise regional cooperation to achieve maximum efficiencies in system, eg research fund for the region focusing on academic and student mobility and joint research projects; and a common fund for supply of affordable ICT equipment to universities

II) ACCESS AND EQUITY

	High road	Middle road	Low road
ACCESS	• Foster regional cooperation in information and communication technologies (ICT) acquisition, standards and capacitation for higher education • Develop policies for improved cross-border connectivity • Promote harmonisation of ODL and e-learning in the region; priority should be given to developing regional standards	• Ensure dynamic strategies and plans for boosting sector capacity to match enrolments eg infrastructure capacity and academic preparation • Develop an open curriculum for region, eg the MIT approach • Achieve advocacy at the highest levels to secure continuum and availability of bandwidth in support of higher education in region • Harmonise regional degree structures • Enable portability of students and academics of all socio-economic backgrounds	• Strengthen capacity for open distance learning (ODL) and e-learning to diffuse access and ease pressure on university infrastructure provisioning and maintenance • Develop policies for regulation of private higher-education providers

III) QUALITY

	High road	Middle road	Low road
QUALITY	• Ensure a harmonised higher-education system • Develop self-regulated and informally propelled quality assurance systems for higher-education institutions in the region • Encourage regional, continental and international student and staff exchange programmes, eg consider transferability of credits in the region	• Ensure shared vision, commitment and buy-in to higher-education quality standards • Develop regional quality standards and indicators • Establish a regional regulatory body for monitoring quality in HE • Ensure harmonisation of curriculum and promotion of joint programmes • Establish common qualifications frameworks for the region • Establish and, if necessary, collaborate regionally to establish, appropriate management information systems for universities	• Establish minimum standards for curriculum and teaching • Identify human capability as a priority for the region, and develop jointly • Remove barriers for students, research and academic mobility

IV) RESEARCH OUTPUT

	High road	Middle road	Low road
RESEARCH	• Establish joint regional research programmes, and a Research Development Fund • Focus increasingly on open innovation and licencing with effective intellectual property rights (IPR) protection and marketing internationally • Enable evidence-based policymaking • Increase production of marketable goods and services • Establish public-private partnerships • Develop policies for institution of research levies • Establish regional niches of research excellence across the region in specific areas such as water, energy etc	• Create a regional environment conducive to excellence and productivity in research. This would include for example: research funding; infrastructure and equipment; bandwidth access; local, regional and global partnerships etc • Promote regional collaboration in research, as well as academic and student mobility • Create regional centres of excellence • Increase access to research outputs regionally • Establish frameworks and funds towards establishing / ensuring the relevancy of research programmes • Enable mentoring support within and between institutions regionally, and between sectors	• Research fund for the region focusing on academic and student mobility and joint research projects

SUMMARY OF RECOMMENDATIONS

The following main categories of recommendations emerged from the discussions and anaylsis:

1)	**The regional environment will affect the sector**	• Regional focus on growing the income base of countries • The impact of SADC's success and pace in achieving regional integration in general on the kinds of cooperation sought for the sector • Consideration of global influences and dynamics (eg emerging geopolitical formations and trends in the development / donor community) • The importance of political will, trust, effective leadership and governance systems
2)	**Cooperation is important to achieve efficiencies**	• A harmonised regional higher-education system to create and serve an increased demand for higher education • Collective negotiation and innovation to increase funding quantum and find critical economies of scale • Cooperation on ICT infrastructure and connectivity • Cooperation in securing higher education human capability for priority or gap areas • Regional student funding support (eg SADC bursaries) • Regional collaboration in research and mentorship support
3)	**Regional standards and benchmarks are necessary**	• A minimum threshold level of higher-education funding • Quality assurance through common minimum standards for teaching and learning activities, and common evaluation frameworks • Regional standards for e-learning • Harmonisation of and increased access to open and distance learning (ODL)
4)	**Regional policies and regulation are required**	• Policies for regulation of private HE providers • Policies for improved cross-board connectivity • Policies for academic and student mobility

Four priority areas were ultimately identified at the end of the session:

1) Support a strong enabling policy environment for regional integration and networking of higher-education institutions, their programmes, regulation and curricula
2) Effectively harness regional human capability across borders
3) Make technology and technology cooperation central to the future development of SADC higher-education infrastructure
4) Support innovative methods for regional and global collaboration for the financing of higher education in SADC.

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