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**Beyond Primary Education:  
Challenges and Approaches to Expanding Learning Opportunities in Africa**

**Parallel Session 7C**

**Transitions Between Upper  
Secondary and Higher  
Education:  
Similarities, Pathways and  
Orientations**

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**Sustainable Articulation Pathways and Linkages  
Between Upper Secondary and Higher Education in Africa**

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## LIST OF ACRONYMS AND ABBREVIATIONS

CHE	Commission for Higher Education
ECD	Early Childhood Development
EFA	Education For All
EMIS	Educational Management Information System
EU	Egerton University
FPE	Free Primary Education
GER	Gross Enrolment Ratio
GIS	Geographical Information System
GoK	Government of Kenya
GPS	Global Positioning System
GTT	Government Trade Tests
HELB	Higher Education Loans Board
IBE	International Bureau of Education
ICT	Information Communication and Technology
IGCSE	International General Certificate of Secondary Education
IT	Institute of Technology
IUCEA	Inter - University Council of East Africa
JAB	Joint Admissions Board
JKUAT	Jomo Kenyatta University of Agriculture and Technology
KCPE	Kenya Certificate of Primary Education
KCSE	Kenya Certificate of Secondary Education
KESSP	Kenya Education Sector Support Programme
KIE	Kenya Institute of Education
KNEC	Kenya National Examinations Council
KU	Kenyatta Iniversity
MDG	Millenium Development Goals
MoE	Ministry of Education
MMUST	Masinde Muliro University of Science and Technology
MTC	Medical Training College
MU	Moi University
NYS	National Youth Service
ODL	Open and Distance Learning
OECD	Organization for Economic Co-operation and Development
PUIB	Public Universities Inspection Board
QASD	Quality Assurance and Standards Directorate
SSP	Self Sponsored Programmes
TIVET	Technical, Industrial, Vocational and Entrepreneurial Training
TSC	Teachers Service Commission
TTC	Teachers Training College
TTI	Technical Training Institute
UK	United Kingdom
UNESCO	United Nations Educational Scientific and Cultural Organization
UNISA	University of South Africa
UoN	University of Nairobi
UPE	Universal Primary Education

## **ABSTRACT**

The recent and rising increase in enrollment at the primary school level since the introduction of the FPE in 2003 has led to a corresponding and significant rise in enrollment rates at the secondary school level. This has translated into an increased demand for higher education in the country. The demand for higher education is driven by the realization that this level of education forms the principal pillar of development. The current development agenda in Kenya is inspired by the realization that there are many available options and avenues via which the goals of industrialization and socioeconomic development can be achieved. Higher education will play the strategic role in the process. It is therefore necessary to explore and understand the nature of linkages which exist between upper-secondary and higher education levels in terms of access, equity, relevance, financing, curriculum, quality and articulation to the job market. This study has examined the evolving trends and what they portend for the development of higher education and life long learning in Kenya. It has critically analysed the articulation routes, delved into the quality aspect, the sustainability of the various initiatives, and identified the lessons learnt for possible best practices. Although the local focus of higher education is university education, there are four national polytechnics and several middle-level colleges which also absorb the secondary school graduates in Kenya. The demand for university education has led to the opening up of public universities for the Self Sponsored Programmes (SSP) and an increase in private universities. Horizontal and vertical articulation between the curricula and its assessment been discussed. The study previews the sustainability of the articulation pathways in the face of the expected surge in demand for higher education in the short and long term in Kenya. The study concludes that the recent initiatives to reform the upper secondary curriculum, to open up university access via the SSP route, to reconfigure student financing, to provide for the establishment of private universities and for admission of more female students have had positive impacts, and are sustainable. The limited horizontal articulation within the higher education sector and the tendency to take over ongoing middle-level institutions in order to provide for access need to be evaluated. It is also proposed to assess the impact of the long waiting period between upper primary and higher education and how it affects articulation and subsequent student performance in the university.

## **EXECUTIVE SUMMARY**

### **Background**

This study is based on the premise that one of the principal roles of government is to provide quality education and relevant training for its citizen in order to develop an efficient human resource manpower to turn the wheels of development. Given the various policy formulations and changes, the Kenya government has endeavored to not only improve the literacy rates but also achieve the targets of Education For All (EFA) and the Millenium Development Goals (MDG). The objectives of this Kenya case study were to establish the interconnecting routes and modes of articulation between upper secondary (Forms 3 and 4) and higher education in Kenya, and to explore the sustainability of the various innovative articulation pathways which have been established in Kenya over the last ten years.

This country case study has analyzed the various articulation pathways and linkages between upper secondary and higher education in Kenya. The efficiencies and value addition of the pathways and linkages have been assessed in order to determine mechanisms of enriching the whole education sector and fortifying its role in national development as well as identifying best practices and lessons to be learnt and shared with others.

The study has assessed how articulation and quality are impacted upon by the rate of access at the school and university levels; curriculum development, delivery and assessment; and gender and regional disparities. The status of Lifelong Learning in Kenya has been assayed, and several lessons for anchoring the proposed best practices have been extracted from the study.

Upper – secondary in Kenya is composed of Form 3 and 4 with a student age range of 15/16 to 17/18 years, while Higher Education consists of universities and other tertiary level institutions such as the national polytechnics, teacher training colleges, technical training institutes, institutes of technology, medical training colleges, youth polytechnics, and commercial/professional colleges.

The methodology used in the study included desktop research, commissioned papers, and interviews with education officials. The reports and data from the Ministry of Education, Kenya National Examination Council, Teachers Service Commission, UNESCO, Joint Admissions Board, Kenya Institute of Education and Commission for Higher Education were critically analyzed. Some of the information is tabulated to give evidence of the issues raised in the study.

### **Findings**

A large number of secondary school students do not currently access university admission in Kenya due to limited admission capacities in public and private universities in Kenya, one of the major education challenges facing Kenya is how to expand access to higher education in order to cater for the high number of students completing secondary school. This challenge will escalate when free secondary education is introduced in 2008. The government has responded to this challenge by expanding higher education opportunities through the creation of more public and private universities and university campuses. The articulation between upper secondary and higher education has been discussed in terms of access to university, national polytechnics, middle level colleges and TIVET institutions.

The challenges of negotiating articulation during curriculum development, review, delivery and assessment has been analyzed. Kenya migrated from the previous 7: 4: 2: 3 to the current 8:4:4 system of education in 1985. The transition heralded a spirited expansion of higher education capacities in order to open up access for the additional students seeking higher education starting from 1989, when the first cohort of 8:4:4 students entered the higher education sector . The transition



also led to financial challenges of the universities, since they entered into unsustainable financial obligations to construct physical facilities which had not been sufficiently planned for. The rapid expansion was also not matched by simultaneous expansion in staff development and equipment acquisition.

The stresses generated by the high number of students seeking university education led to the collateral expansion in the number of private universities, which rose from 2 in 1980 to 20 in 2007. Public universities also responded the increasing demand for higher education by introducing self sponsored students programs (SSP) for full fee paying students in 1997. The SSP students comprise over 50% of the student body in some public universities. This decision also contributed to the generation of additional income in addition to improving access and stabilizing governance of the universities.

The findings of this study indicate that access to higher education in Kenya is still largely dependent on performance in KCSE examinations, since this is used as the standardized selection criteria. Candidates who achieve a mean grade of C+ and above (25% of the candidature) at the KCSE qualify to enter university, but only 15-20% of those who meet the cut off point are eventually admitted under government support. The KCSE performance in the subjects that are essential for the country's development objectives (science and mathematics) is often below expectations, although a high number of those who take physics pass in relatively good grades. This is attributed to the fact the few schools that enroll students in physics have relatively good teachers and infrastructure. Mathematics is compulsory for all candidates while candidates are allowed to take at least any two of the three science subjects.

The study has established that a lacuna exists in the articulation of curriculum development and review between upper secondary and higher education. Whereas the curriculum development process at the Kenya Institute of Education (KIE) involves most stakeholders including higher education institutions, the curriculum in universities is developed by individual universities. This is justified by the principle of autonomy. As a result, there is weak linkage between the development of upper secondary curriculum and university curriculum. Perhaps due to some deficiencies, some employers prefer diploma holders from middle-level colleges over graduates from the university on the premise that universities do not equip their graduates with requisite skills for the job market.

The impact of curricula on articulation pathways was identified as being profound, especially in the ways the pathways increase access and enhance quality. The articulation elements in this case relate to the relevance and quality of educational curricula, and how learning relates to socio-economic, cultural and political parameters. The issues of relevance and quality continue to be addressed by the Government as reflected in Sessional Paper No. 1 of 2005. This ensures that the upper-secondary curriculum communicates with the curricula in higher education institutions and by extension with the needs of the job market. In addition to complying with articulation, other reforms in the secondary school curriculum have also had an impact on access to higher education. For instance, a dual intake was necessitated in 1990/91 when the first batch of 8-4-4 candidates and the last class of the 7-4-2-3 system entered the university jointly. In order to accommodate these numbers, one constituent college and two college campuses had to be established in 1990.

The study has also established that a significant number of secondary school graduates in Kenya who are unable to access higher education locally, opt to join higher education institutions outside the country. Apart from the universities, there are many local post-secondary institutions offering training at diploma and certificate levels. There are diploma colleges for the training of non-graduate secondary school teachers, and teacher training colleges for primary school teachers. Technical education institutions include national polytechnics, institutes of technology and technical training institutes. In addition to these, a number of government ministries also offer three years' professional training at diploma level for their middle-level manpower requirements.

The study further revealed that the current system of admission based solely on grades attained at KCSE does not promote geographical or socio-economic equity of access. For example, some administrative districts in Kenya have not had any students admitted into the competitive professional degree programs because of the poor performance of secondary schools in those districts. As a result, the current admission mechanisms breed imbalances in university enrolments which lead to social inequalities.

The number and quality of upper secondary teachers was identified as another element which plays a major role in articulation. Some schools preferred diploma teachers over graduate teachers for some subjects. Graduate teachers are claimed to be deficient in pedagogical skills and to lack the subject knowledge appropriate to the secondary levels. This is a reflection of the quality of university teacher education programs. For some subjects such as mathematics and science, teachers need to have in-depth grasp of the subject, in addition to having the requisite pedagogical skills. This type of backward articulation suffers from the limited subject content to which the teachers are exposed. In any case, the subject content to which the teachers are exposed is university level material, and may not be practically significant or relevant to the secondary school curriculum. These university education programmes should be restructured in order to generate teachers with eloquent pedagogy and knowledge competence.

The study has extracted various other lessons made suggestions for future best practices or for sharing with other countries. Most of the initiatives taken in curriculum reforms, expansion of access and entrenching quality assurance have been generally effective in responding to the challenge facing the education sector. The lessons learned have been grouped under education statistics, School Mapping, sustainability of SSP programmes, regularization of gender disparities, establishment of new universities and colleges, rationalization of the waiting period between upper secondary and university, and maintaining quality within the framework of a National Qualifications Framework.

# 1. INTRODUCTION

## 1.1 Background

The provision of quality education and relevant training to all Kenyans is the *sine qua non* for achieving the national development agenda. The government of Kenya has therefore focused its main attention on formulating appropriate education policies to ensure maximum development of the human resources who are essential for all aspects of development and wealth creation through industrialization. All education stakeholders recognize that quality education at all levels will enable Kenyans to utilize their natural resources efficiently and effectively in order to attain and maintain desirable lifestyles for all Kenyans.

Education is also essential for appreciating and preserving cultural norms, establishing the principles of a fair and inclusive political system, and recognizing and exploiting the synergies of national unity and integration. There are, however, many challenges which threaten the sustenance of a robust educational regime in Kenya. The key challenges include low enrolment and retention rates, constricted access and equity at higher levels, establishment and maintenance of quality and relevance, and myriad inefficiencies in managing the limited resources allocated to the education sector (GOK, 1998).

Implementation of the free primary education (FPE) has been responsible for the recent upsurge in the secondary school enrolments since 2003. Enrolment trends in secondary schools show a steady growth from 30,000 in 1963 to 860,000 students in 2003, and to over 1 million in 2006. Similarly the number of public secondary schools increased from 151 in 1963 to 3660 in 2005. One of the factors limiting growth in GERs at the secondary level is the limited number of secondary schools compared to the number of primary schools. The current gapping mismatch between the capacities at these levels is approximated by comparing the number of primary and secondary schools. The number of public primary schools was 18,081 in 2003 compared to 3,660 public and 641 private secondary schools in the same year. This mismatch will pose a major challenge in implementing the declared government policy of free secondary education with effect from 2008.

Secondary education is essential in developing the individual learner's potential and character, while at the same time fortifying the learner's employability and trainability for smooth integration into working life. Secondary education is also expected to be relevant to the national development goals, and inspire national unity and identity. Socio-cultural aspects of good citizenship such as inclusiveness, social justice, recognition and celebration of cultural and linguistic diversity, and promoting democratic values are the outcomes of a well-conceived, implemented and evaluated curriculum. The enduring knowledge domain includes skills and standards, as well as creativity and innovation in Mathematics, Science, Information Technologies and Life Sciences.

Secondary education also prepares learners for entry into institutions of higher learning such as universities for further training. This additional training is essential for aggregating the skills and human capacity needed for national development in today's knowledge-driven economies. There is a positive correlation between the proportion of high school leavers who proceed on to enter university and the human development index in a country. A mature higher education makes a country economically competitive, and induces development in other sectors of the national landscape. It is therefore essential to characterize the challenges which constrain access to quality higher education, and explore the nature and effectiveness of the approaches which have been adopted by various countries to mitigate the challenges. Specifically, there is need to identify the factors which influence the articulation between upper secondary and university in various African countries in order to isolate best practices which can be applied in other countries. This study was undertaken in order to identify how Kenya has managed to navigate the transition between upper secondary and higher education while maintaining quality, relevance and equity at the same time.

## 1.2 Objectives of the Study

This case study seeks to identify and chronicle approaches which have been adopted to address the challenges of access, equity, quality and sustainability of higher education in Kenya. It also seeks to establish the interconnecting routes and modes of articulation between upper secondary (Forms 3 and 4) and higher education in the country. The efficiency of these articulation routes will be determined by comparing enrolment and transition statistics at successive levels of education. It will also assess how articulation themes and quality are impacted upon by the rate of access at the upper secondary school and university levels by curriculum development, delivery and assessment, as well as by gender and regional disparities.

This case study also assesses the relative sustainability of the various innovative articulation pathways which have been established in Kenya over the last ten years. Finally, the case study proposes to extract lessons and potential best practices which have succeeded in Kenya over the last ten years, and may be adopted by other countries.

## 1.3 Methodology

This study was carried out through desktop research, commissioned papers and interviews with education officials. The reports and data from the Ministry of Education, Kenya National Examination Council, Teachers Service Commission, UNESCO, Joint Admissions Board, Kenya Institute of Education and Commission for Higher Education were critically analyzed. Some of the information is tabulated in the various chapters or in the appendix in order to concretize the issues raised in the study.

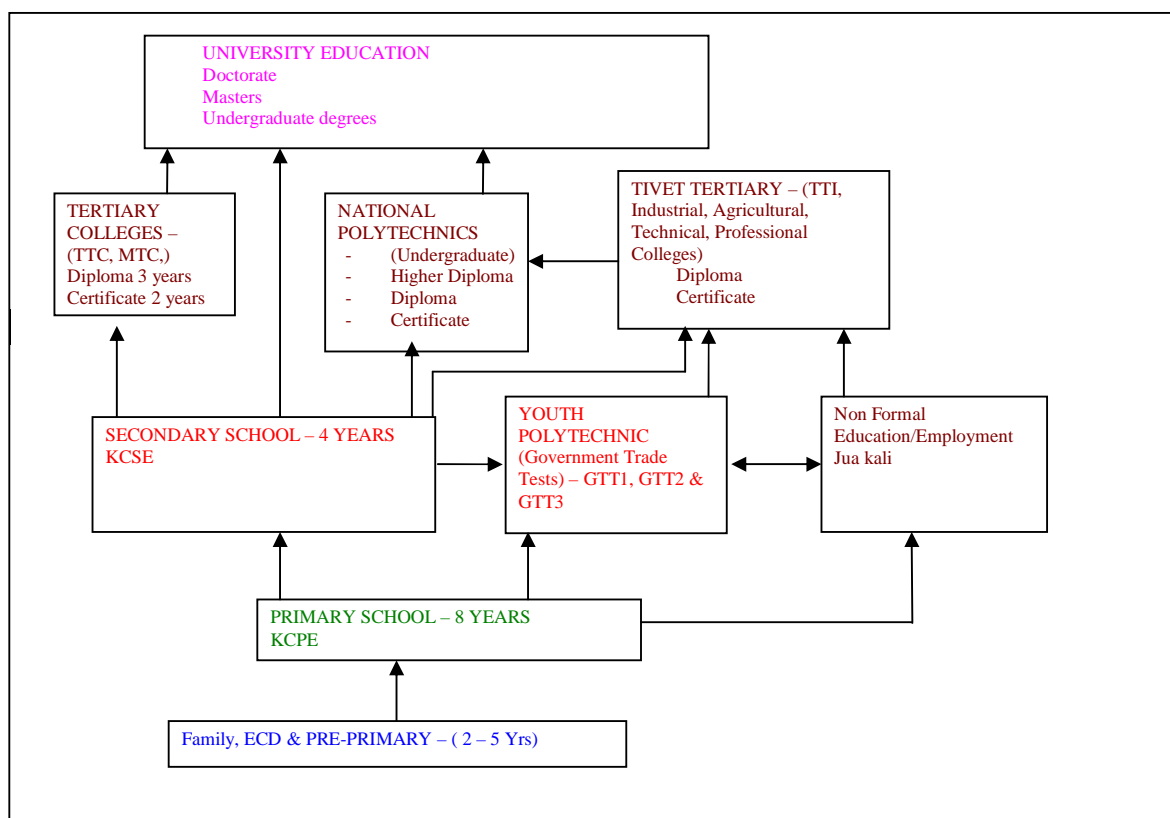
# 2. ARTICULATION LINKAGES IN THE EDUCATION SECTOR

## 2.1 Vertical and Horizontal Linkages

Higher Education is the third tier in the education system in Kenya. The level consists of universities and other tertiary level institutions such as national polytechnics, teacher training colleges, technical training institutes, institutes of technology, medical training colleges, youth polytechnics, and commercial/professional colleges. Upper-secondary is composed of Forms 3 and 4 with a student age range of 15/16 to 17/18 years. [Fig 1](#) below summarizes the various avenues by which learners can access higher education in Kenya.

The avenues of articulation according to the [Fig.1](#) include direct admission to university for those who meet the minimum entry requirements either as government sponsored or self sponsored students, based on their performance at the Kenya Certificate Secondary Examinations (KCSE) taken at the end of Secondary education. Other avenues of access to higher education include passage through tertiary colleges including National Polytechnics, Technical colleges, Institutes of Technology and Professional colleges including teacher, medical, industrial and agricultural training colleges. Youth Polytechnics admit primary school leavers who may not gain entry into secondary schools, and secondary school leavers who would wish to pursue courses leading to Government Trade Tests in areas such as Masonry, Carpentry, Tailoring, Agriculture and Metalwork.

**Figure 1.1: Articulation Routes within the Education System in Kenya**



Source: Adapted from Sessional Paper No. 1 (2005)

The vertical arrows represent vertical articulation where transitions from one level to another are determined by performance in the previous level of training. The horizontal arrows in the figure represent horizontal articulation. This accounts for movement of drop-outs or students who do not qualify for the vertical transition.

The TIVET tertiary institutions include private professional colleges which offer either accredited or non-accredited curriculum. The majority of these institutions are not registered with the Ministry of Education. The diplomas or certificates they offer are therefore not standardized since there is no framework to equalize them with those offered within the framework of the national curriculum

## 2.2 Challenges of Articulation

A large number of secondary school students do not currently access university admission in Kenya due to limited admission capacities in public and private universities in Kenya. One of the major education challenges facing Kenya is, therefore, how to expand access to higher education in order to cater for the high number of qualified students completing secondary school.

In view of the rising numbers of candidates who qualify to enter university against the limited university capacities, the relative cut-off points to enter university have continued to rise significantly over the years. Whereas students who obtain an aggregate grade of C+ at the KCSE are competent to benefit from university education, the minimum grade of those who eventually get admitted with Government sponsorship is usually a B+ (B-Plus). The minimum grade for admission and sponsorship into some academic programmes such as Medicine and Law is usually a mean grade of A-plain. The large number of students who do not access public universities with Government support usually access university via more costly options such as the self-sponsored programmes (SSP), the local private universities or studying abroad.

Another key element in articulation between upper secondary and higher education is the length of the transitional period between the two levels of educational attainments. The acceptable normal transition for smooth progression from one level to another should not exceed six months. The transitional period in Kenya between primary and secondary levels is two months, while that between secondary and university is two years. This is the same transitional period between secondary and other tertiary institutions. This two year period occurs at a critical development stage of the students, and has some impact on the students' performance at subsequent educational levels. A long break in the educational progression of young people is professionally undesirable.

The waiting period was originally occupied (1983 – 1987) by involving university-bound students into disciplined community service at the National Youth Service for six months before entering the university. This programmed activity was stopped in 1987. Currently students are using the two year academic void to engage in alternative courses such as professional training in computers and Accounts. Some students migrate into the university with the incomplete courses they had started during the 2-year intermediate period. This extra burden eventually impacts on their performance at the university.

There was limited deliberate effort to attract female students and students from disadvantaged regions into competitive academic programmes before 1987. In order to attract more of these marginalized/disadvantaged students, the admission criteria was modified to incorporate affirmative action in 1987/88 to allow for marginalized students to be admitted into universities with one point lower than the other students. This initiative has enabled over 2,000 additional female students to access university education over the last ten years. In spite of these encouraging outcomes, gender balance in the public universities has not yet been achieved, and persists as a major challenge of articulation

The availability of valid data and statistics is a major challenge not only in articulation but also in decision making and planning within the education sector. The Ministry of Education has recognized the need for reliable statistics and took the initiative to generate the required statistics in 2007 under KESSP. This has been done by embarking on a national effort to map out the actual situation on the ground regarding the number of educational institutions in Kenya. The precise location of each institution has been mapped and placed on a national grid as shown in [appendix 3](#).

## 3. FINDINGS OF THE STUDY

### 3.1 Navigating the Transition to Higher Education

The proportion of the cohort of students who completed secondary education in 1995 and had access to public university education was 7.1%. This proportion declined to 4.2 per cent in 2005. This declining proportion of school-leavers accessing university education is below the average of 5% for Sub-Saharan Africa. A comparison of the prevailing GERs between local and OECD countries is instructive. The ideal state is to increase the gross enrolment ratio in Kenya from the current 3% to at least fifteen percent (15%) by 2030. The average GER for sub-Sahara Africa is 5%, while that in OECD countries is above 30% (Kithuka 2007). The GER in UK is 43% and is projected to rise to 50% by 2010. The gross enrollment ratio is 46%, 43% and 37% for South Korea, the United States and France respectively (MoE, UNESCO, 2006).

Universities in Kenya are autonomous. All administrative functions are therefore independently managed through University Councils. Though autonomous, however, public universities receive funding from the Ministry of Education, while private universities raise funds mainly from students' fees and do not receive any direct grants from the State.

Direct articulation between secondary and university education in Kenya started in 1961 when the A-level system of education was established in Kenya. The system was established to facilitate entry of Kenyan students into the Makerere University College without having to take the A-level course at the college. The A-level system had substantial shortcomings as a route to university education. To begin with, the system compelled students to start specialization very early in their professional development, by separating them into Arts and Science streams. The choice of which stream to pursue was determined by the students' performance at the O-level examinations. The number of Arts students always exceeded science students since investing in Arts facilities was less costly than investing in Science facilities. There was also insufficient numbers of Science teachers. Finally, qualified students who were unable to gain university entry were often perceived to have wasted the two A-level years.

Although alternative routes for entering the university such as mature entry, admission of diploma students and repeating any failed A-level courses were available, it became necessary for Kenya to reform the system in order to address the above challenges. The previous 7:4:2:3 system was therefore modified into the current 8:4:4 system by restructuring the education system while keeping the total number of years unchanged. The total number of years spent on education in both systems was sixteen years. Primary education was changed from seven to eight years while secondary education was transformed from a total of six years to four years. The university education cycle was increased from three to four years. Scrapping the two year A-level sector was compensated for by the one-year increases at the primary and university levels.

The average annual university intake for Government (GoK, 2006) sponsored students over the last 10 years has been 10,000, while the number of those who qualify has ranged between 30,000 and 68,000. The number of those who qualified for university entry in 2006 was, for example, 64,000. In view of several GoK initiatives to expand access to university in 2007, over 16,000 of these students will be admitted into the public universities under Government sponsorship in 2008. The balance will enter local private universities, seek university admission outside Kenya or seek admission into public universities under self-sponsorship.

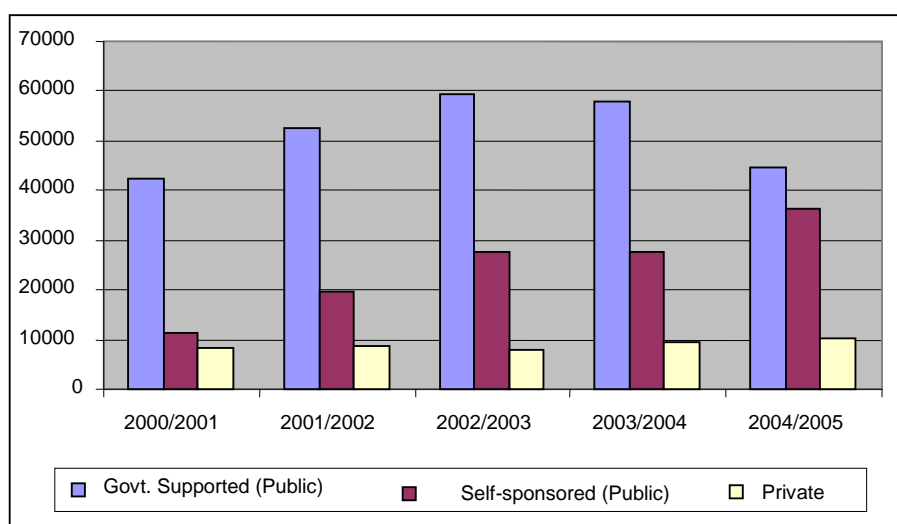
There are currently seven (7) public and twenty (20) private universities in Kenya with a combined enrolment of 112,000 students and offering over 125 academic programs (see Appendix--). The public universities have associated six (6) constituent colleges and five (5) campus colleges. The enrolment of students in local universities increased from 571 in 1963 to 7,418 in 1983 and to 18,943 in 1987. The figure rose to 58,016 in 2004 and almost doubled to 91,500 by 2005. The number of students now stands at about 112,000. These figures do not include students studying abroad, who are

now estimated to be more than 40,000 (PUIB, 2006). Local students who are studying by distance learning through foreign universities are also excluded from these figures.

Access to higher education in Kenya is primarily determined by performance at the KCSE, the standardized national examination which is taken at the end of the fourth year of study in secondary school. High cost private schools and the national public schools tend to produce the best performing students in national examinations. Students from these elite schools therefore tend to dominate the limited spaces in local universities, and to preferentially access the strategic and competitive academic programmes in the universities.

Fig. 3.1 illustrates the enrolment patterns in universities in Kenya (2000-2005), while Table 3.1 shows the pattern of enrolments in private universities.

**Figure 3.1: University Enrolment Patterns in Kenya Between 2000-2005**



Source: PUIB, 2006

A closer look at the numbers in Table 3.1 indicates that there is a higher number of female students than male students in private universities. This could be due to the existing gender imbalance in public universities in favor of male students, leading to more female students seeking university education in private universities. Female students in public universities comprise about 40% of the total number of students (PUIB,2006).

**Table 3.1: Private Universities Enrolment from 2000 – 2005**

	2000/2001		2001/2002		2002/2003		2003/2004		2004/2005	
	M	F	M	F	M	F	M	F	M	F
<b>Accredited</b>	3093	4050	3122	4089	3476	4163	3650	4371	3796	4546
<b>Unaccredited</b>	876	472	949	511	748	742	763	757	801	907
<b>Total</b>	3969	4522	4071	4600	4224	4905	4413	5128	4597	5453

Source: Commission for Higher Education, 2005



### **3.2 Impact of the Upper Secondary and University Curriculum on Articulation**

The curriculum at secondary level in Kenya is developed nationally by the Kenya Institute of Education (KIE). The second function of implementing the curriculum is undertaken by certified teachers under the supervision of the Quality Assurance and Standards Directorate(QASD) in the Ministry of Education. The final function of assessing and evaluating how effectively the curriculum has been implemented is undertaken by the Kenya National Examinations Council (KNEC), the independent national examination body. The prevailing syllabus provides for compulsory (mathematics, languages and sciences) and non-compulsory (optional) subjects. Substantial differentiation is evident among schools at the upper secondary levels, which determines the cluster of courses a student may eventually take at the university or tertiary level institutions.

An effective national curriculum coalesces the youth of a nation into a formidable force for purposes of achieving national development goals. It is a strategic road map that addresses the nation's present and future needs, and how to satisfy them. For example, Kenya may plan to migrate from an economy based on agriculture to one based on manufacturing and value addition to local resources. This can only be achieved by developing and implementing a strategic vehicle which addresses the nation's development agenda in the context of its current resources. The ideal curriculum contains the experiences and materials that will produce manpower capable of realising the national goal in the targeted time frame.

Having a good curriculum is not, however, a sufficient condition for achieving the national goals. The curriculum must be dynamic, flexible and reflect the nation's aspirations, ethos and collective response to socio-economic challenges of development. The curriculum also needs an implementing agency that will ensure that mastery learning takes place among the learners; and an effective evaluation agency that will provide evidence of the amount of mastery that has taken place in the learners.

### **3.3 Curriculum Review and Reforms in Kenya**

The Kenya Government is a signatory to various international conventions such as Education for All (EFA), Universal Primary Education (UPE) and the Millennium Development Goals (MDG). In 2003 the Government reviewed the primary and the secondary schools curricula and implemented free primary education (FPE). Because of this dynamism, frequent curriculum review and educational reforms are necessary to keep the education system relevant to the evolving national needs. Kenya's curriculum has therefore undergone several reforms and reviews in pursuit of relevance since independence in 1963. The change to the 8:4:4 system was driven by the need to improve curriculum content with more emphasis on technical education. Several other revisions were implemented in 1992 and 2002. The last two reforms are significant in the study of upper secondary articulation to university education. Upper secondary in the former is represented by two years of "A" level education and in the latter it is represented by Forms III and IV as these are the classes whose curriculum prepares students for higher education entrance in Kenya.

According to the KIE Needs Assessment Survey Report on the Secondary Education Curriculum (1999), there has been a continuous effort to focus education towards the achievement of the changing national aspirations, although the principal goals of education in Kenya have remained unchanged. These aspirations are articulated in documents relating to various past education commission reports, resting with the Sessional paper No. 1 of 2005 (REFS??). This later report singled the education sector as the major player in the envisaged industrialization by 2020. The curriculum was therefore expected to address industrialization as a central and cross-cutting theme. However, despite curriculum reforms, Kenya is yet to gain momentum towards industrialization as anticipated. The targets have therefore been shifted further to 2030.

In order to remain relevant, curricula needs should be reviewed, modified or reformed periodically (Ogula, 2006). There is, however, a divergence of opinion and approach to curriculum reforms. The recent debate on education reforms in Kenya has been on national education structures rather than curriculum reform. The main priority is not so much on improvement of the quality of education, but on how to reduce the costs of education to the state. Curriculum reform is an improvement or change on the curriculum for the better. It improves the development and the utilization of the curriculum in new and unique ways which will enhance the attainment of higher levels of students' achievement. Curriculum reforms are usually carried out to focus on relevance, maximize on scarcity of resources, respond to technological advancement, recognize developments in other countries and comply with the demands of new knowledge.

### **3.4 Triggers of Reforms in the Secondary School Curriculum**

The principal driver of education reforms and curriculum reviews is the need to establish and maintain a viable and relevant articulation space between upper secondary and university levels. The curriculum content and delivery should not only articulate with higher education, but it must also create provision for accommodating emerging knowledge and skill demands. It should also provide for long life learning and continuing education. Such considerations will ensure that the curriculum is crafted and implemented for reasons which stretch beyond the short-term objective of passing examinations. Performance in the national examinations should not be the only determinant for reviewing the school curriculum.

The original 8:4:4 curriculum was revised in 2002 in order to integrate and infuse emerging socioeconomic issues within the curriculum content. This was in response to feedback received from stakeholders. Such feedbacks are sought by the KIE through the constant monitoring carried out by KIE, providing feedback to inform the process and guide the curriculum revisions.

Currently there are plans to come up with a life skills component within the curriculum. Other responses to feedback from stakeholders include the move towards designing an alternative secondary school curriculum for the non-formal sector and the development of e-content for the secondary school curriculum. These have been as a response to making the curriculum more flexible and easily accessible to the public as well as increasing access to higher education.

## University Curriculum

The curriculum domain in the university includes content, structure, processing, and examination of what is taught and learnt. The curriculum at the university level should meet the needs of the students, the university and the wider community. It is imperative, therefore, that the content and processing of the curriculum be current, relevant and up to date. Recent surveys indicate that most universities in Africa review their curriculum at least once every ten years ( UNESCO,1999). A more desirable situation would be to review at least once in every academic cycle, and in tandem with reviews at the upper secondary level.

There are indications that the curricula in many Kenyan universities are dated in most programs. Universities appear to lack clear regulatory processes that would enable them to update curricula on a regular basis. Such processes would include, for example, interaction with stakeholders, professional associations and careful surveys of alumni. Updating of curricula has become a profession and is now done in consultation with professionals in the industry, it is necessary to have a systematic way of reviewing and updating curriculum in Kenyan universities periodically.

The upper secondary and tertiary level institutions in Kenya implement nationally designed curricula. Universities, on the other hand, implement their own curricula which have been designed internally. The curricula designed at the university are processed through internal quality assurance mechanisms which start from the academic departments for final approval by the senate. The curriculum is implemented independent of any external agency, except in the case of some professional programmes in which external boards provide post-graduation registration, validating the training given in the university. Curriculum design in private universities is validated by the Commission for Higher Education (CHE) before it is implemented, but public universities are not subjected to this scrutiny.

In view of this lack of oversight, the curriculum for various degree programmes in public universities may not have horizontal articulation since each university develops its programmes independent of the other universities. Both public and private universities do not provide opportunity for comparing the syllabi of similar programmes with respect to content, length and breadth of coverage. The number of academic programs in Kenya's public universities are shown in [Appendix 4](#).

### 3.5 The Role of Examinations in Mediating Articulation

Tests are used as instruments to determine the extend of learning that has taken place in a given curriculum and within a specified time frame. A good norm-referenced test, which has moderately difficult questions, reveals different levels of achievement among students.

The number of candidates sitting for the required subjects in secondary school is shown in [Table3.2](#). The matter of concern is that the number of students taking physics is dismally low, compared to the other science subjects. A pass in Physics is a requirement for admission to some strategic university programs such as medicine and engineering. Students who attend poorly equipped schools where physics is not offered are disadvantaged in accessing some professional programmes in the university. The other cause of low enrolment is the comparatively limited number of master teachers for physics.

**Table 3.2: Number of KCSE Candidates in Selected Core Subjects (2003– 2005)**

Subject	2003	2004	2005		
			Candidates	Grade A	Grade C+ and Above
English	206,489	221,288	259,170	554	91,813
Kiswahili	206,479	221,255	259,157	2122	84,391
Mathematics	206,280	220,805	259,177	3644	26,460
Biology	186,403	200,268	234,890	4216	64,019
Physics	56,497	60,093	69,435	3062	22,779
Chemistry	198,747	213,637	253,329	7116	46,540

*Source: Derived from KNEC 2005*

A relatively high percentage of those who take physics at the upper secondary level eventually pass the KCSE in relatively good grades. This may be attributed to the fact the few schools that enroll students in Physics have relatively good teachers and infrastructure, and the students may have developed passion for the subject. The mean performance in mathematics, however, is relatively low compared to that in the other strategic subjects. Such poor performance influences basic aspects of articulation, especially those aspects touching on the precise articulation paths which lead to specific programmes in higher education institutions.

The other science subjects which are crucial and relevant for the country's development objectives are usually performed poorly at the KCSE examinations. For example, the aggregated grade means for mathematics, physics, chemistry and biology for the last nine years are 17.2, 25.9, 22.0 and 28.0, respectively (Table 3.3). While mathematics is compulsory for all candidates, candidates have a choice to take any two of the other three science subjects. This flexibility has a positive effect on the mean scores for the science subjects, but a negative effect on the compulsory mathematics course. Achievement of the national development goals will therefore remain unrealizable unless the performance in these subjects improves. One of the ways in which the performance in these subjects can improve is by ensuring that the articulation space between upper secondary and higher education is efficiently managed from both the upper secondary and higher education interfaces.

Examinations define the important aspects of a school curriculum and dictate, largely, the quality of the school experience for both the teacher and the pupil. Performance in the examinations reveals the standard of teaching and learning that has been achieved by the teachers and students. Thus examinations dictate not only what is taught but also how it is taught. As long as the examinations are good, there is nothing wrong with examinations influencing the curriculum. If the objectives and skills to be measured are carefully sampled and tests truly measure these objectives and skills, then the goals of instruction will become explicit and well-defined targets for teachers and pupils to achieve.

National examinations have tended to define the style and intensity of teaching at the school level. The examinations serve the primary functions of certification, selection and placement. While most examinations serve all three functions to some extent, selection is undoubtedly the main function in an education system that is pyramidal with vacancies getting fewer as one climbs the education ladder. Such is the Kenyan education system. Currently, over 57% of the teachers in secondary schools spend most of their time preparing pupils to master test-taking skills in order to pass national examinations. Furthermore, over 30% of the teachers in secondary schools use past examination papers as teaching resources in the classroom at least once per week. This is obviously excessive testing, since the pupils also have home work and other assignments intended to promote proper learning. Time for teaching is misappropriated to testing and coaching. This is understandable, since passing with relatively better grades means a different future world for both the learners and teachers (Kithuka, 2007).

**Table 3.3: Aggregate performance in KCSE (1997-2005)**

Subject	1997	1999	2001	2003	2004	2005	Ave
Maths	16.3	12.2	18.7	19.3	18.6	16.0	<b>17.2</b>
English	34.6	31.3	34.4	32.6	34.8	42.9	<b>34.3</b>
Kiswahili	44.6	40.6	42.7	49.1	40.8	45.9	<b>44.7</b>
Geography	43.9	37.0	34.3	37.8	41.3	41.3	<b>38.6</b>
History & Govern	40.9	44.8	50.0	51.1	57.0	51.3	<b>47.7</b>
Biology	30.8	31.2	27.5	25.7	30.7	26.0	<b>28.0</b>
Physics	27.1	30.8	18.5	23.2	25.2	25.9	<b>25.9</b>
Chemistry	26.8	28.9	15.9	19.7	20.9	20.0	<b>22.0</b>
Bus.Studies						50.2	<b>50.2</b>
<b>Total No of Candidature</b>	<b>156,714</b>	<b>172,883</b>	<b>194,883</b>	<b>207,730</b>	<b>222,676</b>	<b>260,665</b>	

*Source: Derived from KNEC 2005*

The current KNEC national examination system does not incorporate school-based assessments in determining the performance at the end of the secondary level, and hence access to higher education. The assessment system at the university level usually takes account of classroom performance as part of the grading system. A precise articulation between examination assessment at the school and university level may be cultivated by instituting a programmed introduction of school-based assessments at the upper secondary school level, or by introduction of additional criteria for assessing admissibility into university..

Candidates under the previous 7:4:2:3 system were required to study and sit examinations in at least four and at most five subjects at the upper secondary level. Syllabuses for Principal Subjects were designed as major subjects and syllabuses for Subsidiary Subjects were designed for minor subjects in a two year programme. A candidate obtaining a subsidiary pass in a Principal Subject was award a pass certificate. A pass in subsidiary level was considered to be equivalent to Credit 6 in the previous Kenya Certificate of Education taken at the end of the second level of the system.

Candidates were allowed to repeat any failed papers as private candidates during the previous educational system. In this way, many candidates were able to transit to university as private candidates, often several years after they had completed their upper secondary school curriculum. Lack of this provision under the current 8:4:4 system has disadvantaged many students who may have missed opportunity to join university due to poor performance in one or two subjects, and were not accorded opportunity to repeat the failed subjects. Space has now been expanded, and candidates now have opportunity to repeat failed subjects with effect from 2007. This will enable many more students to navigate the articulation space between upper secondary and higher education.

## University Examinations

All universities have their own appropriate rules and procedures for setting and processing examinations, but some appear to have poor implementations and light penalties for transgressors of

examination regulations. This problem is compounded by the challenges of marking examinations for very large numbers of students.

The appointment of external examiners for quality assurance is practiced in all universities. Their appointment has not, however, been very transparent. The Senate does not discuss the examination results or the External Examiners' reports in some universities. This has tended to compromise the seriousness and impartiality of external examiners.

It is necessary to harmonize the examination process both in the public and private universities in order to create routes for horizontal articulation. The harmonization should take account of the emerging view that learning is much wider than can be captured in a three-hour examination paper. There should be a programmed departure from the prevailing examination culture which dictates the learning and work habits of students.

The syllabus at the upper secondary includes some subjects which are not necessarily tested at the KCSE. This includes physical education, sports, music and the practical arts. There is limited continuity for students to pursue these creative activities at the university level. The Kenyan university curriculum does not require university students to take physical education or related practical arts during their university tenure. Furthermore, there is no provision for continuing to take non-examinable courses. Any additional non-examinable courses included in the curriculum are essential to develop holistic character and strengthen physical, moral, spiritual and intellectual capacities of the students.

### **3.6 The Role of Teachers in the Effective Delivery of School Curriculum**

Teaching does not guarantee learning. It was recently reported that 66.3% of secondary school teachers and 98% of primary school teachers who were interviewed admitted that their students do not master what they are taught. (Kithuka, 2007). These findings reveal that there is need for change in teaching approaches because testing and assessment alone cannot improve performance without improved quality teaching, no matter how good the tests are. Only quality teaching can improve learning performance.

The current teaching approach in Kenyan schools is geared towards covering and not emphasizing the syllabuses. In order to improve performance in upper secondary, teachers will need to adopt mastery learning and teaching approaches where the learners compete with themselves to meet specified criteria rather than with their classmates in norm-referenced testing. Learners who are prepared through criterion teaching and assessment during the instructional processes are likely to perform better than those prepared using norm-referenced teaching and assessment in the national examinations.

The Number and Quality of Teachers has a direct impact on articulation. The pedagogical competence and subject knowledge of graduate teachers is a reflection of the quality of university teacher education programs. The quality of non-graduate teachers also depends on their training at the college level. For some subjects such as mathematics and science, teachers need to have in-depth grasp of the subject, in addition to having the requisite pedagogical skills.

Most upper secondary school teachers in Kenya are graduates who have been trained in the university. The performance at KCSE depends on the quality of teachers which in turn depends on the quality of training programmes to which the teachers were exposed in the university. Education programmes in the universities seek to ensure a balance exists between subject content and pedagogical skills. This type of backward articulation suffers from the limited content to which the teachers are exposed. Furthermore, the content to which the teachers are exposed is at the university level and may not be practically significant or relevant to the secondary school curriculum.

Graduate teachers are rarely trained on the subject matter and content which they are expected to teach. There is therefore limited articulation between teaching at secondary school level and training of high school teachers at university level. It is notable that many secondary schools prefer to employ teachers who are trained up to the diploma level in teacher training colleges, as opposed to those who graduate from university programmes.

## **4. ACCESS AND EQUITY: QUEST FOR HIGHER EDUCATION IN KENYA**

### **4.1 Initiatives Taken to Address Challenges of Access**

There has been a succession of challenges of access to university education in Kenya for the last twenty years. The first challenge arose in 1983/84 when it became necessary for the University of Nairobi to admit two cohorts of students in order to clear up a backlog of students who had not been admitted the previous year due to university closure. In order to accommodate this double intake, the university took over facilities at two ongoing public institutions, the Government Secretarial College and the Kenya Institute of Administration (KIA). The training programs previously offered in the two institutions were permanently phased out and were not transferred elsewhere.

The second major challenge to access occurred in 1989/90 when the first 8-4-4 students and the last 7-2-4-3 students were admitted into the university together. The initial plan for accommodating this large inflow of students was to expand existing facilities in the universities. This expansion of facilities started in 1988, and it included construction of additional lecture theatres, laboratories, halls or residence and libraries in the existing universities. The program slowed midway in 1989, when it became obvious that the buildings under construction would not be completed on time to accommodate the dual intake. Additional space was therefore created by taking over three teacher training colleges and converting them into two new campus colleges (Chepkoilel and Laikipia) and one constituent college (Maseno). The diploma teacher training programs offered in these institutions were phased out in 1989.

The above initiatives to address the challenges of access generated collateral threats of compromised quality and equity. The expansion of university capacities, for example, led to expansion in program duplication, since universities were compelled to introduce courses that were not part of their mission in order to accommodate the additional students allocated to them. The expansion favoured the arts, humanities, education and social science programmes which did not require excessive infrastructure investment. Moi University was, for example, compelled to admit education (Arts) and social science students into programmes which were outside the original mandate and mission of the university.

Universities in other countries responded to the challenges of access by adopting innovative financing models, commercialization and market force approaches while maintaining quality. New financing models with semblance of commercialization of higher education in Kenya was triggered by its liberalization which started in 1985 when legal provisions were created to facilitate establishment of private universities. Since then, over 20 private universities have been established in Kenya. The framework for a new financing model which devolved more responsibility on government sponsored students was introduced in 1990. Another intervention to address access involved admission of full-fee paying students in public universities. Learning from the Makerere experience, public universities in Kenya ventured to exploit this niche in 1997/98 when the self sponsored programmes (SSP) were first established at the university of Nairobi and at Moi University. The SSP programmes have become a seminal source of university funding, in addition to facilitating the admission of more qualified upper secondary students, part-time working students and teachers based in schools.

The fashion of taking emergency responses to the challenges of access figuratively created an educational minefield with potential for explosion, and led to serious implications on university governance and the quality of higher education in Kenya. The period 1988-2002 was characterized by frequent student disturbances and university closures. The winning combination of private sector participation (establishment of SSP and private universities), use of more efficient delivery systems (ODL) and quality assurance has entrenched the current relative calm, peace and tranquility in the university sector in Kenya. The challenge of access is therefore best addressed via a combination therapy, since one initiative often generates implicate challenges which must be addressed simultaneously.

## 4.2 Education Statistics

The paucity of reliable education data is the major challenge in educational planning and policy development. Although most of the data and statistics required for this study was available from various sources, it was evident in some cases that the data was not current or robust enough. The Ministry of Education has recognized the need to develop reliable statistics and took the initiative to generate the required statistics in 2007 under KESSP. This has been done by embarking on a national effort to map out the actual situation on the ground regarding the number of educational institutions in Kenya. The precise location of each institution has been mapped and placed on a national grid as shown in [appendix 3](#).

The main objective of the school mapping exercise is the development of a GIS for the capture, management, analysis and dissemination of spatial and attributes data on all learning institutions in the country. The project aims specifically to collect spatial data on all education facilities using GPS which is then entered into an appropriate GIS platform. Data on institutional attributes are being collected using questionnaires. The eventual goal is to establish a GIS database at the MoE, harmonize codes used by KNEC & TSC; and eventually produce digital maps of educational institutions. This is expected to enhance effective management and planning in the education sector.

Preliminary findings from the on-going school mapping process indicate that the actual number of educational institutions is higher than what has been reported in the past. For example, the number of primary, secondary and tertiary institutions in Eastern province was previously reported as being 11,000, whereas the actual mapping has shown that the actual number is in excess with 12,000. In North Eastern Province, this ground-truthing exercise has established that there are over 1,000 institutions as opposed to the previously reported number of 500 (MoE, 2007).

Although this school mapping is work in progress, one of the major lessons that is emerging from this study is that statistics that are used for planning and decision-making should be validated through a reliable education management information system (EMIS) as is being done in Kenya. The envisaged EMIS should provide education data and relevant indicators of policy initiatives, interventions and education outcomes including those related to FPE, UPE, and EFA.

## 4.3 University Admission Processes

Admission to the public universities is coordinated by the Joint Admission Board (JAB), which is a forum in which all public universities come together to establish criteria for admission of Kenya Certificate of Secondary Education (KCSE) candidates into the various degree programs available in each of the public universities. The JAB admission is based on the students' performance at the KCSE, and on the capacities declared by the public universities. The threshold grade required for admission is an aggregate of C+ (plus) at KCSE. The trend in the candidature and performance at the KCSE examination are given in [Table 4.1](#)

Some fundamental questions which are relevant to articulation at this stage need to be raised. Is the prevailing system of accessing university education a suitable, reliable and robust articulation



mechanism, or is it inherently/structurally ineffective and inefficient in any way? Does the system capture all students who can potentially benefit from university education? To what extent does it favour privileged students who may have accessed the best public or private schools on the basis of their parents' capacity to pay?

The enrolment capacity in programmes that are in high demand is constrained in courses such as medicine, law, commerce whose admission criteria are grades A and A- only. During the admission process, applicants who are not able to secure a place into such programmes are offered courses they consider irrelevant to their career aspirations.

**Table 4.1: Trend in the number of KCSE Candidates with C+ and above and those Admitted into Public Universities for the last ten years**

Year	1998	1999	2000	2001	2002	2003	2004	2005
No. of candidates	168,398	172,883	181,984	194,993	198,356	205,730	219,405	260,653
Increase in candidature	11,684	4,485	9,101	13,009	3,363	7,374	13,675	41,248
No. at C+ and above	30,244	30,667	40,497	42,160	42,726	49,870	58,239	68,030
% of C+ and above	18.16%	17.74%	17.74%	22.25%	21.63%	21.24%	26.54%	26%
No. admitted to public Universities	10,000	10,000	8,899	11,147	11,046	10,791	10,200	10,000
No. of qualified but not admitted	20,244	20,667	31,598	31,013	31,680	39,079	48,039	58,000

*Source: Kenya National Examinations Council, 2005*

The Joint Admissions Board (JAB) processes admission of Government sponsored students into public universities. The average annual admission through JAB in all public universities has been 10,000 students since 1992. Table 4.2 shows the declining percentage of qualified students (students who attained a grade C+ or better) admitted into the universities between 2000 and 2005.

Although some other students are admitted into private universities and as privately sponsored students in public universities, it is estimated that only 20% of the qualified students eventually get admitted into local universities every year. Consequently, many students seek admission into foreign universities in Uganda, South Africa, Malaysia, India and OECD countries.

**TABLE 4.2: JAB ADMISSION TRENDS OF 2000/01-2005/06**

Academic Year	Total candidature	No. Qualified	% Qualified	JAB Admissions	% Admitted
2000/01	181,984	30,666	16.9	8,899	29.0
2001/02	194,993	40,447	20.7	11,147	27.5
2002/03	198,356	42,158	21.3	11,046	26.2
2003/04	205,730	42,721	20.8	10,791	25.3
2004/05	219,405	58,218	26.5	10,200	17.5
2005/06	260,653	68,030	26.1	10,000	14.7
2006/07		64,000		16,000	25.0

**Source:** *CHE, 2006*

The current system of admission based purely on grades attained at KCSE promotes meritocracy and transparency. It does not, however, promote geographical or socio-economic equity of access. For example, some administrative districts in Kenya have not had any students admitted into the competitive professional degree programs because of the poor performance of secondary schools in those districts.

Performance in standardized examinations does not determine potential to succeed in a chosen academic field, since these examinations are not aptitude tests. Such tests establish how effectively the curriculum has been covered (taught and delivered), and certify the level of knowledge and skills acquired by the learners. The level of performance in these examinations also serves as the basis for transition from upper secondary to university polytechnics, teacher and medical training colleges (TTCs, MTCs) and other private college.

#### **4.4 Government Sponsored KCSE Students**

Several pathways exist for students' seeking entry into academic programmes in Kenyan universities. The major category includes KCSE students with suitable KCSE grades who are admitted by JAB and who receive government sponsorship. The next category includes KCSE students who are self-sponsored in both public and private universities. Other pathways of accessing university include students with middle-level colleges diplomas, students admitted into Open and Distance Learning programmes and students with direct entry into foreign universities.

The Government Sponsored Students are admitted through JAB and receive government grants for their tuition, as well as government guaranteed loans and bursaries from HELB for their upkeep. The loans are remitted by HELB directly to the universities where the students have been admitted. The total number of selected students is determined annually by the public universities' declared capacities, the available government sponsorship and the weighted cluster points for each academic programme. The individual university capacities were linked to the available bed spaces up to 2006.

During the admission process, priority is given to the applicant's first choice. The applicant's second to fourth choices are considered where vacancies still exist. JAB makes the choice for the student in cases where vacancies which exist do not match with student's choice. However, due to limited capacity in popular programs, some qualified students with the required cut-off points end up in courses that might not have been their preferred choices.

Upper secondary school students wait for two years after their KCSE before they are considered for admission into public universities under Government sponsorship. Even after this long wait, many students end up not getting admission to the courses of their choice. This leads to de-motivation, apathy and misplacement of talents. The above two year inter-phase causes a non-academic disconnect which subsequently influences the performance of students at the university level. Students do not have any programmed academic or non-academic activities during this two year period.

#### **4.5 Self Sponsored Students Programmes (SSP)**

Self Sponsored Students meet the full cost of their university education. The admission of this category of students commenced at the University of Nairobi in 1998. Depending on their ability to pay, students are admitted to the courses of their choice provided they meet the minimum requirement of C+ and above at the KCSE examinations. The admission of SSP students is processed by the individual universities independent of JAB.

The number of self sponsored students constitutes over 50% of the student population at the University of Nairobi and Kenyatta University. The growth in the number of students in Self

Sponsored Programs (SSP) has resulted in a rapid rise in enrolment from 59,193 in 2,000/2,001 to 91,541 in 2004/05 (Economic Survey, 2005). This pathway has increased access as well as placement to preferred programmes for those students whose parents are able to pay. The admission into the SSP disadvantages some more qualified but students who cannot meet the full cost of university education.

The Self-Sponsored programmes are increasingly becoming an important source of university revenue. Whereas the government sponsored students pay a uniform figure irrespective of the course they are enrolled in, the self sponsored students meet the full unit cost of their university education. The programmes have therefore emerged as the primary means of generating additional income to supplement recurrent and development expenditures of public universities. The uncontrolled commercialization of university education tends to compromise the quality of education, especially in Science and Technology programmes, if adequate measures are not put in place to cushion the universities and the students.

Self-Sponsored Programmes (SSP) Students have advantage over the others since they can get admission as soon as their KCSE results are released, thus establishing a one-and-half year head-start over their colleagues who must wait for the regular JAB admission in order to qualify for Government support. The SSP students are often admitted to the programmes of their choice, and their cut-off points for admission to most programmes is not as stringent as those used in JAB. The admission criteria of self-sponsored students are set by each university.

#### **4.6 Effects of Articulation Mechanisms on Equity**

The current admission mechanisms breed imbalances on University Admissions and enrolments which lead to social inequalities. A household survey has revealed that households headed by individuals with secondary level education and above are better off than those headed by individuals with primary education (Economic Survey 2005). The poverty index at the Coast, Eastern and North Eastern provinces which stands at 57.6%, 58.3% and 64.2%, respectively correlates with the low enrolments in universities.

The growth in the number of students has not been similarly matched with an expanded infrastructure and human capacity since 1983. The decline in the transition rate from secondary to university education is as a result of the inadequate development of infrastructure. The transition rate for the JAB selected candidates has been decreasing from 4.86% in 2003 to 4.55% and 3.83% in 2004 and 2005, respectively

Disparities in achievement levels in secondary education have compounded regional disparities since some districts/regions end up having very few candidates qualifying for university education. In addition, those who qualify from such districts end up in less competitive degree programs. This has increased inequalities that are manifested in the low numbers of students accessing university per region as well as producing professionals such as doctors, engineers, lawyers etc. per province/districts. This state of affairs is likely to undermine social cohesion in the long term.

Kenya's eight administrative provinces are not equitably endowed in the provision of education. Students from some of the provinces with low enrolments and diminishing development indices are disadvantaged in accessing quality secondary schools and eventually squeezed out of the competitive programmes in public universities. The economically disadvantaged provinces tend to have poorly equipped schools and less motivated teachers and learners. They also tend to admit students who are had not performed well at the primary examination. Such provinces end up sending low numbers of students to the universities, especially into the competitive academic programmes.

The number of candidates who obtained mean-grades of A and A- in 2003, 2004 and 2005 was 11,383. During the same period, only 371 candidates (constituting 3.2%) from Coast province scored similar mean grades, while Central province had 2,458 students constituting 21.6% (Table 4.3). This

relationship implies that fewer candidates from Coast province have a chance to be admitted into competitive programs in the public universities compared to those from Central province.

**Table 4.3: No. of Candidates per Province Who Scored Mean Grade C+ and Above  
In 2003, 2004 and 2005 Combined**

PROVINCE	GRADE							Total	% of Total
	A	A-	B+	B	B-	C+			
Coast	65	306	595	1054	2020	2507	<b>6547</b>	<b>3.69</b>	
Central	392	2067	3814	5671	9175	11132	<b>32251</b>	<b>18.20</b>	
Eastern	154	1315	3196	5544	8192	11983	<b>30384</b>	<b>17.14</b>	
Nairobi	480	1617	1930	2334	2474	2653	<b>11488</b>	<b>6.48</b>	
Rift Valley	250	1990	4326	7307	10578	15048	<b>39499</b>	<b>22.29</b>	
Western	146	895	2208	3804	6076	8990	<b>22119</b>	<b>12.48</b>	
Nyanza	159	1537	4136	6541	9454	12580	<b>34407</b>	<b>19.41</b>	
North Eastern	0	10	28	78	139	289	<b>544</b>	<b>0.31</b>	
<b>Total</b>	<b>1,646</b>	<b>9,737</b>	<b>20,233</b>	<b>32,333</b>	<b>48,108</b>	<b>65,182</b>	<b>177,239</b>	<b>100.0</b>	

*Source: KCSE data 2006*

### **Access into Competitive Programmes**

The main drivers of the current knowledge based economies are science, technology and innovation. Academic programs which are based on these drivers are strategic and have potential to yield profitable careers in future. They are therefore found to be most competitive and difficult to access in the public universities. The programmes are also expensive to mount. Both private and public universities do not have the resources for developing these areas. As a result the number of university students in these programs remains low as reflected in the low capacities shown in Table 4.4.

**TABLE 4.4: Popularity of University Science Courses By 1<sup>st</sup> Choice**

COURSE		2000/2001 CAPACITY	1 <sup>st</sup> CHOICE
1.	Bachelor of Medicine (M.B.Ch.B)	164	872
2.	Bachelor of Laws (LL.B)	164	846
4.	Bachelor of Science (Elect. Eng)	136	468
5.	Bachelor of Science (Computer Sc)	108	372
6.	Bachelor of Pharmacy	40	310
7.	Bachelor of Science Nursing	52	366
8.	B Sc General (UON) 2005	235	80
9.	B Sc General (KU) 2005	265	38
10.	B Ed (Science) (KU) 2005	211	76
11.	B Sc General (JKUAT) 2005	200	32
12.	B Sc General (EU) 2005	158	10
13.	B Ed Science (EU) 2005	161	52

**Source:** PUIB (2006)

Table 4.4 above shows the high preference for these applied science programmes by many candidates, as opposed to the equally strategic basic sciences which sustain the applied sciences. Furthermore, most candidates appear not to prefer the teaching profession as a first choice. Thus the majority of graduate teachers are those who chose teaching as the profession of last resort, or as a stepping stone to other careers.

#### **4.7 Alternative Routes of Accessing University Education**

In addition to the universities, there are a number of post-secondary institutions offering training at diploma and certificate levels. In the field of teacher training, these include diploma colleges for the training of non-graduate secondary school teachers, and teacher training colleges for primary school teachers. For technical education they include national polytechnics, Institutes of technology and technical training institutes. In addition to these, a number of government ministries also offer three years' professional training at diploma level for their middle-level manpower requirements (REFS, Appendix??)

The impact of various educational and examination policies, such as the recent policy change to allow students to retake a failed subject at a subsequent KCSE sitting will obviously have a profound effect on access to university and other tertiary institutions. This is bound to reconfigure a number of articulation routes. Introduction of bridging courses and opening alternative/indirect routes of accessing university admission will also alter articulation significantly. How do students who access university via the alternative routes (including self-sponsored students) perform vis-a-vis the regular students in the same program? What will be the subsequent impact of the free primary education (FPE) policy introduced in 2003 on enrolments, access and quality at the upper secondary and university levels?

Other national policies which will affect articulation include policies on gender and students with special needs. Consequently, analysis is being carried out on the extent of drop-out rates, gender disparities, and students with physical challenges and special needs at the upper secondary level. Of particular interest is the widening gender disparity during the transition of cohorts from primary through lower secondary to upper secondary and then to university. It has not been possible to gain innovative insights into this problem yet.

Establishment of the second university in Kenya in 1985 opened a floodgate which has led to the establishment of the current seven public universities and twenty private universities. In addition to the universities, other relevant post-secondary training institutions in Kenya include:

- Teachers Training Colleges for producing of primary and secondary school teachers;
- Polytechnics and commercial-based institutions;
- Agricultural and Veterinary Colleges;
- Cooperatives training colleges;
- Medical training colleges;
- Water training colleges;
- Kenya Institute of Mass Communication
- Utalii College
- Transport and Communication colleges such as Bandari College for marine transport, and Railway Training Institute for railway transport;
- Kenya Institute of Administration.

There are currently over 544 private colleges in Kenya, but only nine of them are currently accredited to offer nationally approved curriculum. This brings into question the quality of training being carried out in such institutions.

#### **4.8 Admissions Based on Alternative Curricula and Certifications**

In addition to the standardized national curriculum which is used in a majority of Kenyan schools, other foreign curricula are offered in schools which prepare students for further studies in foreign universities. These curricula include the professional programmes offered by foreign professional bodies for chartered secretaries and accountants, as well as the programme which is followed in secondary schools. Kenya has several secondary schools which offer the IGCSE curriculum, which is unrelated to the national curricula and does not appropriately articulate with it. The IGCSE curriculum is based on the O and A level structure similar to the previous 7.4.2.3 national curriculum. Students who follow this curriculum are able to gain admission into universities outside the country.

Some students who have completed the IGCSE programme have been admitted to some local private universities. Recent evidence suggests that the IGCSE curriculum is as broad as the 8.4.4 curriculum and offers training for university entry as well as for development of practical skills such as music, sport, dance and practical arts. The foreign examination bodies which offer foreign curriculum are accredited by KNEC, which also coordinates the local management of the examinations.

The curriculum at the school level provides for essential guided reading and exploration of social studies and humanities through literature reading. Continuous reading of great books is essential for enriching university education, for character formation and for positioning identity and normative values. The focus on reading fundamental classics on economics, history, political science, literature and philosophy are not required or encouraged. A graduate of the university may not have been exposed to any great books which provide foundations for a rewarding university education. It is necessary to reconsider the common core courses to stipulate that they are required and to extend them beyond communication skills to more rigorous courses, the essential liberal arts, upon which specializations may be founded.

#### **4.9 Graduates of Middle level Colleges**

Middle-Level College programmes are diverse, work relevant and cost-effective. Students who graduate from accredited middle level colleges with strong diploma certificates are considered for admission into relevant academic programmes in local public universities. The number of students enrolled in national polytechnics are shown in [Table 4.5](#).

**TABLE 4.5: Enrolment In National Polytechnics (2001 –2005)**

National Polytechnics	2001		2002		2003		2004		2005	
	M	F	M	F	M	F	M	F	M	F
Kenya	4523	1385	4586	1984	4488	2016	3,272	1,528	3,352	1,629
Mombasa	3567	1092	3149	1401	2647	1390	2,778	2,436	2,136	1949
Kisumu	785	240	947	410	937	421	937	433	998	520
Eldoret	647	515	1527	660	1523	684	1,675	752	1,759	820
<b>Sub Total</b>	<b>9522</b>	<b>3232</b>	<b>10209</b>	<b>4455</b>	<b>9595</b>	<b>4511</b>	<b>8662</b>	<b>5,149</b>	<b>8,245</b>	<b>4,918</b>

In 2004 there were 1891 students (GOK 2005) enrolled in Government Diploma Teacher Training colleges and 16,396 in National Polytechnics. Many more students are enrolled in other public and private institutions offering diploma certificates. Depending on the quality of the diploma certificate, students from mid-level colleges may get admission into university programmes with at least one year course credit transfer.

## TIVET INSTITUTIONS

Since independence, the Technical Industrial Vocational and Entrepreneur Training (TIVET) system has undergone tremendous growth. This is one avenue of access to higher education that is specifically focused on industrial development for the country.

Currently, about 50% of TIVET institutions are run by the private sector. About 43 % of the institutions are Youth Polytechnics while the remaining 7% are Public institutions spread across several Ministries and Public Corporations and Parastatals. This has led to disparities in the provision of training programmes in terms of scope, content, duration, quality and standards. Institutes of technology have been set up through local and provincial initiatives and they provide training for school leavers with the Kenyan Certificate of Secondary Education, equipping them for employment in medium and large-scale industry. Courses last between two and four years and cover subjects such as Construction, Engineering, Business Studies, Textiles and Agriculture. Technical training institutes offer training at both Craft and Diploma level. The national polytechnics offer Certificate, Diploma and Higher Diploma courses.

There are about 1,600 institutions, scattered in over 15 Ministries and private Sector in Kenya offering TIVET programmes. Transition from Primary and Secondary level of education into TIVET System is estimated at about 30% and 24% respectively with majority of the entrants being male. Most of the TIVET Institutions are concentrated in urban areas with limited regard to catering for special needs of physically challenged persons.

For the TIVET system to meet its critical role of producing work force that will contribute significantly to the achievement of national development, the Human Resource capacity building becomes critical. Stronger quality assurance systems are required to ensure that training in TIVET Institutions is realigned to meeting the need and expectations of the industry which calls for the review of the present curricula and establishment of skills inventory and a National Training Framework. Establishment of strategies to harmonize and put in place governance and mechanisms that ensure high training quality and standards.

Some of the challenges facing the TIVET system are; inadequate access and equity, limited physical facilities and equipment, high poverty levels, low public image of TIVET, inflexible curriculum, unequal distribution of TIVET institutions and cultural barriers (Gender). Others are; inadequate capacity, low quality and relevance, weak governance and management, lack of an appropriate legal framework, lack of legal instruments for governance, quality assurance, standards credit transfer and accreditation, low utilization/ integration of technology (ICT), lack of a culture for production and utilization of ICT tools in the TIVET System, and a weak mechanisms for generation and utilization of resources by TIVET Institutions.

#### **4.10 Kenyan Students in Foreign Universities**

The limited access to universities which is caused by rigid admission criteria, the time lag of two years before admission by JAB, the desire to undertake programs of candidate's choice and affordability are some of the reasons that lead a large number of Kenyans to study in foreign universities. Admission of Kenya students into foreign universities is determined by the individual admitting institutions themselves, but the students are usually expected to meet the minimum entry qualification of C+ at the KCSE examination.

A few foreign universities also mount aggressive annual recruitment campaigns for local students. The Kenyan students account for a substantial source of funding for the foreign universities they attend. Foreign universities have also established a high profile presence within Kenya, by which they recruit Kenyan students to their home countries.

The mobility of Kenyan students to study outside the country is relatively high compared to other African countries. As at 2004, Kenya had 14,123 students studying in foreign universities, which represents a 13% outward mobility ratio. During the same period, Uganda had 2,454 students (2.8% mobility ratio) in foreign universities, while the corresponding figures for Tanzania, Nigeria and South Africa were: 3,909 (9.1%); 15,139 (1.2%); and 5,619 (0.8%) respectively (UNESCO, 2006). The data available on the mobility of Kenyan students need validation, since the statistics are scattered in many offices (MoE, Department of Immigration, MoFA, Foreign Embassies, etc) which are not centrally coordinated.

#### **4.11 Open and Distance Learning**

A substantial number of Kenyan students are accessing university education through Open and Distance Learning (ODL) programmes mounted by some of the public universities. These ODL programmes have greatly enhanced opportunities for further studies to students in remote areas of the country. Most of the beneficiaries of these programmes are mature students and employed people. The total number of ODL students in Kenya is about 6,000 (PUIB, 2006), and has remained comparatively low over the years.

Kenya does not have a formal Open University. Such an institution would be able to absorb a substantial number of students who are not able to access universities under the regular programmes. Open Universities have the potential to meet the high demand for higher education as demonstrated in the case of Tanzania, South Africa, Nigeria, India and UK where open universities have been established. The most successful regional Open University, the University of South Africa (UNISA), has an enrolment of over 250,000.

Some local universities have entered into articulation arrangements with foreign education providers for provision of their programmes via distance education and e-learning. The Jomo Kenyatta University of Agriculture and Technology collaborates with Sunderland University in UK to offer degree programmes through distance education from the UK institution.

ODL provides an opportunity for introducing modular courses to meet specific skill requirements for the economy. It provides an opportunity for non traditional but equally effective modes of course delivery. This mode also enhances equity as distance learning centres can be established in remote, underdeveloped and marginalized areas thus bringing education closer to the learner.

#### **4.12 Horizontal Articulation between the Universities**

The Inter University Council of East Africa (IUCEA) undertook harmonization of university programmes in 1980s using subject panels of professionals drawn from universities in the three East African countries. The panelists reviewed the basis of curriculum development and learning outcomes



for implementation in the universities in their respective countries. The subject panels further served to ensure shared attainment levels for purposes of quality assurance and horizontal articulation between the universities. The change of Kenya's curriculum in 1985 has made it difficult to continue with this harmonization process.

A nation that has a university system of seven public and 20 private universities should institute subject panels which should meet regularly to consider various developments and harmonize curriculum design, implementation and assessment. Such harmonization would include harmonization of course units or modules to be taken during various levels and also the time required for coverage.

The curricula being implemented by public universities were developed in 1986/87 for implementation in 1989 when the first 8.4.4. entered university. Any subject matter that universities felt was not covered sufficiently at secondary level was included for coverage at the first or second year of the new university curriculum. Other core subjects such as communication skills were introduced in order to provide for proper breadth and depth and expose students to holistic education. These subjects were introduced in order to ensure continuity with respect to the 8.4.4 system. The upper secondary curriculum has been reviewed two times since it was introduced. The university curriculum needs to respond to these reviews by instituting coordinated reviews of the university curricula.

## **5. LESSONS LEARNED FOR POTENTIAL BEST PRACTICES**

Kenya has responded to the various challenges of mediating articulation between upper secondary and higher education institutions by implementing various innovations and reforms which have been discussed in this paper. Implementation of these innovative responses has enabled the accumulation of the following lessons which will serve as beacons for future reforms, and may be shared with other countries intending to undertake similar education reforms.

### **5.1 Need for Reliable Education Statistics**

The availability of valid data and statistics is a major challenge not only in articulation but also in decision making and planning within the education sector. Preliminary findings from the on-going school mapping process indicates that the actual number of educational institutions is higher than what has been reported in the past. For example, the number of primary, secondary and tertiary institutions in Eastern province was previously reported as being 11,000, whereas the actual mapping has shown that the actual number is in excess with 12,000. In North Eastern Province, this ground-truthing exercise has established that there are over 1,000 institutions as opposed to the previously reported number of 500 (MoE, 2007).

Although this is work in progress, one of the major lessons that is emerging from this study is that statistics that are used for planning and decision-making should be validated through a reliable education management information system (EMIS) as has been achieved in Kenya. The envisaged EMIS should provide education data and relevant indicators of policy initiatives, interventions and education outcomes including those related to FPE, UPE, and EFA.

### **5.2 Lessons on Access**

Kenya has handled the challenges of access by a three-pronged strategy. The components of the strategy have included expanding university facilities by converting ongoing tertiary-level institutions into university campuses, maximizing the efficiency of available facilities/resources by offering university training under the SSP programmes, and facilitating establishment of private universities.

## **Access by taking over ongoing tertiary Institutions**

Tertiary institutions which have been converted into university campuses over the last twenty years were previously offering essential middle-level training. Most of them were teacher training or technical training institutions. Taking over these institutions has generated a collateral deficit in essential skills, which has generated skewed human capacity development. The creation of access using this approach of taking over technical training institutions has been at the expense of craftsman, artisans and technicians. Taking over the teacher training institutions, on the other hand, has necessitated the expansion of education training programmes in the universities, and the introduction of school-based teacher training degree programmes. These alternative teacher education schemes do not appear to measure up to the quality of teachers that were trained in the previous diploma colleges.

Any anticipated future expansion of facilities to accommodate additional students should avoid the easy temptation to abolish existing training programs at tertiary level, since this would lead to a situation of skewed and dysfunctional skills assets.

## **Access via Self Sponsored Programmes, SSP**

The Self Sponsored Programmes are an innovation that serves as an avenue for access to higher education for a large number of students who would otherwise lack admission. The programmes have also proved to be a viable income generating stream for the public universities.

The programmes have grown and spread rapidly over the last ten years. Some public universities are at the threshold ratio of 50% of the student body consisting of self sponsored students. The rapid expansion has not been matched by a corresponding expansion in facilities, equipment and academic staff. This situation has led to unconfirmed doubts by stakeholders concerning the quality of graduates. The programmes have, however, led to financial stability, fewer student disturbances, and predictable university calendars.

Although this route is a sustainable approach to meeting the rising demand for higher education, it must be implemented under strict protocols in order to avoid compromising quality. The threshold ratios between regular and SSP students as well as between staff and students should not be violated. The programmes should also be implemented in a manner which does not distort equity, by ensuring that students whose households do not have the resources to pay the full fees have equal university access through the SSP programmes.

## **Access via Private Universities**

The growth of the private university sector in Kenya has been fuelled by the limited opportunities available in public universities; the constant closures of state-funded universities; the need to complement government-managed higher institutions of learning; and the determination by some religious organizations to open higher learning institutions largely for their followers. There are currently twenty private universities in Kenya. The leading four private universities generate substantial income from student fees. The fees in private universities are charged strictly in accordance with market forces on the basis of full cost recovery, and do not differ appreciably from the fees charged by public universities under the SSP programmes. Most private universities have achieved gender balance in the programmes they offer. This private intervention will continue to be a viable route for accessing university education. An enabling policy, legal and socio-economic framework should be established to motivate additional private sector investment in this sector.

## **5.3 Gender Disparities**

In spite of massive expansion in higher education, gender and regional imbalances have shaped and continue to shape the development of higher education in Kenya as in other African countries. The proportion of girls' enrollment declines as they move up the educational ladder. As a result, female

students make up about 30 percent of total enrollments in the public universities. Female students' under-representation is higher in engineering and technical-based professional programs. In order to correct this imbalance, the Joint Admissions Board formulated an affirmative action for admitting more female students through a compensation formula based on one additional credit point above the total KCSE points obtained by the female students. Over 2000 girls have benefited from this scheme during the last ten years, although a suitable formula has not been established for attracting female students into competitive academic programmes.

.Gender parity is evident in all the accredited private universities, with women comprising 54.5% of the 1999-2000 total student enrollments. Most women enroll in private universities because they fail to secure admission into the public universities, and also due to the fact that the course offerings in these institutions are in the social sciences, education, arts, business administration, accounting, and computer science.

One major lesson is that affirmative action should not wait until students reach the university, since the cause of the problem remains unchallenged. Appropriate innovations should be introduced at the upper secondary level to enable girls and other challenged students to have smoother articulation pathway to the university. The aim should be to attain gender balance in the rate of transition between upper secondary and university. It is more sustainable to address the cause of the distorted gender balance in the transition rate than to address the effects after the facts.

## **5.4 Curriculum reforms**

One of the key triggers of the migration from 7-4-2-3 to the current 8-4-4 system was the need to make the education system more relevant to the national development agenda. The 8-4-4 curriculum has been reviewed twice over the last twenty years. These reviews have driven curriculum reviews at the university level as well. In order to ensure smooth articulation between upper secondary and university the university in 1989, the universities revised their curriculum taking into account the curriculum content at the upper secondary level. Common core courses were introduced to expose the 8-4-4 students to academic disciplines beyond their specialization, and to ensure that holistic graduates are produced in the universities. A common course on communication skills is taken by all students in order to make up for deficiencies in the upper secondary curriculum.

Conversion of the 7-4-2-3 system into the current 8-4-4 system was implemented in 1984. This reform was driven by good intention of ensuring that the upper secondary education articulated both with higher education institutions as well as the world of work. Consequently the 8-4-4 curriculum required that all students to take required courses such as mathematics, languages and sciences, in addition to electives. All schools were expected to offer vocational/technical courses such as Agriculture, woodwork and metalwork in order to enable students to articulate better with the world of work. Unfortunately, implementation of this noble curriculum did not proceed smoothly since many schools did not have the required workshops and teachers to offer these vocational courses. A limited number of schools continue to offer these courses. The principal lessons in this case is that any major education reform process should be well coordinated and sufficient resources made available to ensure provision of facilities, staffing, regular appraisal and performance review.

The regular upper-secondary curriculum review undertaken over the last ten years does not seem to have triggered related reviews in the higher education sector. Stakeholders have called attention to some gaps and deficiencies in the university curriculum which could form a basis for regular reviews in order to enrich the curriculum with new knowledge, skills and practices.

## **5.5 Nature of the Intervening Period**

The nature and impact of the two year gap between upper secondary and university has not been investigated. It is felt that the period should be shortened in order to provide for smooth linkage

between university and secondary school. There is need to undertake urgent studies to identify implications of the long waiting period to subsequent access and performance at university.

## **5.6 Global Perspectives and Trends**

Knowledge-based competition within a globalizing economy is prompting a fresh consideration of the role of higher education in development and growth (Gaya 2007). Previously it was often viewed as an expensive and inefficient public service that largely benefited the wealthy and the privileged. Now it is understood to make a necessary contribution, in concert with other factors, to the success of national efforts to boost productivity, competitiveness and economic growth. Viewed from this perspective, higher education ceases to compete with primary and secondary education for policy attention. Instead, it becomes an essential complement to educational efforts at other levels as well as to national initiatives to boost innovation and performance across economic sectors.

There is a positive correlation between the rate of change in the production of new knowledge by universities and the economic development of a country. The rapid rise in new knowledge in South East Asian countries is proportional to their rapidly expanding economies. The rate of growth in generation of new knowledge rose in South Asian countries by over 500% between 1988 to 2003. The situation in Africa declined by -7% over the same period (NSF, 2006).

China and India have recognized the importance of knowledge as critical components to their national economic development, and as a major driver to global economy. As a result the number of university students doubled from 4.9 m to 9.4 m in India within the 1990's. This has unfortunately led to a decline in quality in some universities. In order to assure quality, India preemptively established an elite corps of institutions under the umbrella of the Indian Institutes of Technology.

The expansion of higher education in China has also been phenomenal. In the 1980's only 2-3 % of secondary school leavers went to university. This ratio rose to 17% in 2003. Furthermore, the growth of doctoral degree recipients rose from 2000 in 1993 to 10,000 in 1999 and peaked at a figure of 18,000 in 2003. Most of the doctorates earned in China between 1992 and 2003 were in engineering (38% of all the doctorates) (NSF, 2006).

The World Bank has acknowledged and incorporated this understanding within its Africa Action Plan for 2006/08. The Plan highlights several roles for higher education under its strategic objective of building skills for growth and competitiveness. These include the provision of relevant skills to the labor market; a capacity to understand and use global knowledge in science and technology, particularly for agriculture; a capability to assess existing information and generate new understanding through research; and a much closer working relationship with the productive sectors of the economy.

The lesson from China, India and other South-East Asian countries is that African higher education can also facilitate technological catch-up and thus improve the potential for faster growth. For several decades, donor institutions have neglected tertiary education as a means to improve economic growth and mitigate poverty in Africa. African Nations must reorient their attention, and view universities as development agents, a role which the universities can fulfill effectively if there is efficient and sustainable articulation between upper secondary and higher education institutions in Africa.

## **6. CONCLUSIONS AND RECOMMENDATIONS**

The clamor for expanded access to higher education has elicited major implications on the education system in Kenya in terms of quality, equity, resource allocation, and regional balance. The government and private sector continue to explore additional avenues for accessing higher education, even as the supply-demand curve in the job market becomes distorted by the increased number of graduates. As the upper-secondary level prepares to accommodate extra numbers due to the anticipated free secondary education, universities and tertiary institutions should start preparations to deal with the numbers. Private colleges should also brace up for higher intakes, as more upper secondary graduates realize that they do not automatically qualify for a place in the university or national colleges. These

preparations, including the training of required staff, should start at least four years before the “education tsunami effect” manifests itself.

The self sponsored programmes in the public universities as well as the programmes in private universities are premised on the ability to pay. This locks out a significant number of upper-secondary graduates from accessing higher education. It similarly disenfranchises qualified students who are not able to pay from their own resources, especially in the more expensive courses such as medicine, architecture and engineering. The universities should make deliberate effort to tailor any anticipated new academic programmes according to the demands of the job market. The HELB should consider availing loan facility to needy students who choose to join university under the SSP module.

The trend of taking over diploma and certificate colleges to become university campus or constituent colleges may signal an era of decline of tertiary colleges in Kenya. There is a clear need to have the numbers of craftsmen and artisans, technicians and engineers structured in a pyramidal shape. This ideal ranking may be distorted existing tertiary institutions continue to be taken over at the expense of middle-level technical training. This would have disastrous consequences to the national economy. As the government and private sector concentrate in expanding university education, other institutions of higher learning should not be sacrificed with the sole purpose of creating more university places. Rather such colleges should be empowered to offer degree courses together the diploma and certificate courses for which they were created.

While the expansion of existing universities is a welcome development, quality must be guaranteed in order for this initiative to become sustainable and relevant to the country’s development. Higher education should be responsive to industry and the job market so as to meet the demands of highly skilled personnel. The expansion should not, however, be based on solely taking over existing middle level colleges, since this may eventually generate deficits in middle level skills which are critical for development.

The sudden increase of commercial colleges is a private sector response to the rising demand for higher education. The participation of private sector is a welcome initiative which should be encouraged. This private sector-driven expansion should, however, be monitored in order to safeguard public interest. As a first measure, the existing colleges should be inspected for accreditation by CHE. Needy students who are admitted in private accredited colleges should also be considered for student loans through the HELB.

The important lesson in this case is that private sector participation in the provision of education services should be strictly controlled to ensure quality assurance and recognition of qualifications. A National Qualification Framework (NQF) should therefore be constructed to ensure standardization of certifications and qualifications in cases where there is a multiplicity of service providers, and in order to ensure provision of quality assurance for the public protection.

Public universities in Kenya made a deliberate attempt at affirmative action to ensure equity and gender and regional parity over ten years ago. Although the affirmative action initiative has not generated gender parity in most academic programmes, nor has it attracted students from marginalized regions and other pockets of poverty into strategic courses, it should be extended for much longer time. The same may also be considered for implementation in other tertiary level institutions. Most important, however, is to develop ways of ensuring that many more female students at the upper secondary level are able to qualify for direct university admission in future.

The question of reliable education statistics cannot be overemphasized. Any major education policy or policy change should be based on sound judgment and reliable statistics. Results and lessons from the school mapping project in Kenya should be widely disseminated when the project is over. Precise data on the flow of Kenyan students to seek studies in foreign countries is also a major indicator of the efficiency of local articulation.

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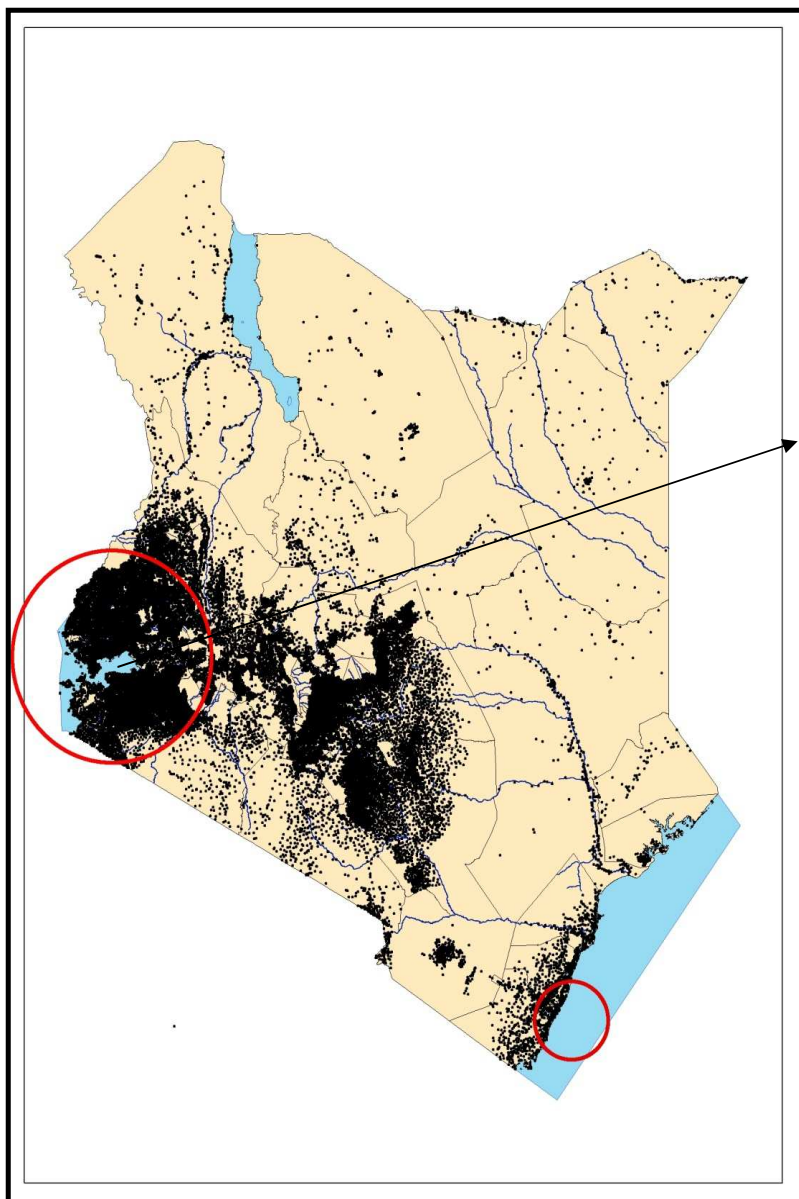
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## 8. APPENDICES

### Appendix 8.1:

#### Educational Institutions Distribution Map

Adapted from School Mapping, Ministry of Education, 2007



## APPENDIX 8.2

### Degree Programmes Offered in Public Universities ( 2005) and the Average Annual intake

DEGREE PROGRAMMES	ANNUAL INTAKES	UNIVERSITIES
<b>BACHELOR OF ARTS</b>	<b>1290</b>	
1. Building and Economics	30	UoN;
2. Land and Economics	29	UoN;
3. Design	58	UoN; MU
4. Planning	27	UoN;
5. Anthropology	130	UoN;
6. Music	10	KU; MU
7. Fine Arts	8	KU:
8. Kiswahili	29	Moi
9. Social Studies	144	Moi; MU
10. Language and Literary Studies	122	Moi
11. Economics	49	Moi
12. Geography	50	Moi
13. Cultural Studies	119	Moi
14. Creative Arts – Theatre Arts	30	Moi
15. Communication and Media Tech	41	MU
16. Urban and Regional Planning	31	MU
17. History	30	EU
<b>BACHELOR OF EDUCATION</b>		
1. Arts	1221	EU;KU;MMST;Moi; MU; UoN;
2. Science	585	EU ;KU; MMST; Moi ; MU; UoN;
3. Special Education	73	KU: MU
4. Home Economics (Arts)	21	KU:
5. French (Arts)	50	KU:
6. Fine Art (Arts)	5	KU:
7. German (Arts)	21	KU:
8. Music (Arts)	7	KU:
9. Early Childhood Education	35	KU
10. Guidance and Counselling	37	Moi
11. Technology	46	Moi
12. Early Childhood and Primary Education	28	Moi
13. Primary Education	10	MMST
<b>BACHELOR OF COMMERCE</b>	<b>382</b>	KU;;UoN;
<b>BACHELOR OF LAWS</b>	<b>162</b>	Moi ;UoN;
<b>BACHELOR OF DENTAL SURGERY</b>	<b>21</b>	UoN;
<b>BACHELOR OF MEDICINE</b>		
1. Pharmacy	51	UoN
2. Surgery	178	Moi; UoN
<b>BACHELOR OF SCIENCE</b>	<b>1103</b>	
1. Environmental and Biosystems Eng	30	UoN
2. Agriculture	119	EU ;UoN
3. Food Science and Technology	66	EU ;Moi ;UoN
4. Range Management	30	UoN
5. Agriculture Education and Extension	27	UoN
6. Agribusiness Management	99	EU ;UoN
7. Food Nutrition and Dietetics	82	EU ;UoN



<b>DEGREE PROGRAMMES</b>	<b>ANNUAL INTAKES</b>	<b>UNIVERSITIES</b>
8. Civil Engineering	92	JKUAT;KU ;UoN
9. Electrical and Electronic Engineering	99	JKUAT;UoN
10. Mechanical Engineering	80	JKUAT;UoN
11. Geospatial Engineering	27	UoN
12. Nursing	74	KU ;Moi ;UoN
13. Actuarial Science	53	MU;UoN
14. Industrial Chemistry	44	KU ;UoN
15. Mathematics	11	UoN
16. Meteorology	32	UoN
17. Biology	31	MMUST;UoN
18. Geology	39	UoN
19. Statistics	11	UoN
20. Wildlife Management	48	Moi ;UoN
21. Biomedical Laboratory Technology	13	UoN
22. Computer Science	222	EU ; JKUAT;KU ;Moi; MMUST;MU; UoN
23. Biochemistry	99	KU Moi ;UoN
24. Analytical Chemistry	45	KU
25. Biotechnology	32	KU
26. Computer Engineering	24	KU
27. Software Engineering	31	KU
28. Water Technology	30	KU
29. Energy and Engineering	31	KU
30. Manufacturing and Engineering	30	KU
31. Environmental Education	40	KU
32. Environmental Health	65	KU ;Moi
33. Family and Consumer Sciences	9	KU
34. Textiles Sciences and Design	13	KU
35. Hospitality and Tourism Management	40	KU
36. Medical Laboratory Science	25	KU
37. Exercise and Sport Technology	54	KU
38. Recreation and Leisure Management	41	KU
39. Telecom and Information Tech	40	JKUAT;KU
40. Crop Protection	15	JKUAT;
41. Computer Technology	22	JKUAT;
42. Biomechanical and Processing Eng	31	JKUAT;
43. Food Science and Post-harvest Eng	22	JKUAT;
44. Mechatronics Engineering	17	JKUAT;
45. Electronics and Computer Eng	19	JKUAT;
46. Geomatics Engineering	16	JKUAT;
47. Soil, Water and Environment Engineering	20	JKUAT;
48. Construction Management	21	JKUAT;
49. Horticulture	110	EU; JKUAT;MU
50. Food Science and Nutrition	9	JKUAT;
51. Ornamental Science and Landscaping	20	JKUAT;
52. Agriculture and Biosystems Eng	18	JKUAT;Moi
53. Microbiology	44	Moi
54. Agricultural Biotechnology	14	Moi
55. Food Service Technology	10	Moi
56. Seed Science and Technology	12	Moi
57. Forestry	39	Moi
58. Wood Science Technology	39	Moi

<b>DEGREE PROGRAMMES</b>	<b>ANNUAL INTAKES</b>	<b>UNIVERSITIES</b>
59. Information Sciences	51	Moi
60. Fisheries	40	Moi
61. Agriculture Biosystems and Management	9	Moi
62. Soil and Land Use Management	10	Moi
63. Agro-Forestry and Rural Development	29	Moi
64. Agriculture, Economic and Resource Management	56	Moi
65. Horticultural Science and Management	29	Moi
66. Apparel and Fashion Technology	8	Moi
67. Earth Science	31	MU
68. Applied Statistics	32	MU
69. Ecotourism <sup>2593</sup> , Hotel and Institute Management	42	MU
70. Biomedical Science Technology	31	MU
71. Disaster Management and International Diploma	11	MMUST
72. Disaster Mitigation and Sustainable Development	8	MMUST
73. Disaster Preparedness and Environmental Technology	10	MMUST
74. Biotechnology	12	MMUST
75. Sugar Technology	10	MMUST
76. Agricultural Engineering	36	EU
77. Community Development	25	EU
78. Environmental Science	35	EU
79. Water and Environmental Engineering	27	EU
80. Applied Aquatic Science	20	EU
81. Manufacturing Eng and Tech	26	EU
82. Instrumentation and Control Engineering	26	EU
83. Animal Production	30	EU
84. Agricultural Education	80	EU
85. Agricultural Economics	77	EU
86. Natural Resources	52	EU
87. Cloth, Textile and Interior Design	8	EU
88. Biomedical Science Technology	34	EU
BACHELOR OF ARCHITECTURE	54	JKUAT; UoN
BACHELOR OF VET. MEDICINE	90	UoN
<b>BACHELOR ENVIRONMENTAL STUDIES</b>		
1. Environmental Res. Conservation	42	KU; MMUST
2. Community Development	64	KU; MMUST
3. Science	27	KU
4. Planning and Management	35	KU
BACHELOR OF MUSIC	9	KU; MMUST
B. LANDSCAPE ARCHITECTURE	23	JKUAT
B. TECHNOLOGY		
1. Electrical and Communication Engineering	55	Moi
2. Production Engineering	58	EU; MMUST;Moi
3. Computer Engineering	32	Moi
4. Chemical Process Engineering	31	Moi
5. Civil and Structural Engineering	57	Moi
6. Textile Engineering	32	Moi
<b>B. TRAVEL AND TOURS OPERATIONS</b>	21	Moi

<b>DEGREE PROGRAMMES</b>	<b>ANNUAL INTAKES</b>	<b>UNIVERSITIES</b>
<b>MNT</b>		
B. BUSINESS MANAGEMENT	<b>172</b>	Moi
B. TOURISM MANAGEMENT	<b>33</b>	Moi
<b>B. HOTELS AND HOSPITALITY MNT</b>	<b>27</b>	Moi
B. BUSINESS ADMINISTRATION	<b>94</b>	Moi
B. ENVIRONMENTAL SCIENCE	<b>30</b>	MMUST
B. CRIMINOLOGY	<b>11</b>	MMUST
B. SOCIAL WORK	<b>9</b>	MMUST
<b>B. JOURNALISM AND MASS COMM.</b>	<b>10</b>	UoN
<b>TOTAL 148</b>	<b>10,675</b>	

Source: Generated by PUIB from JAB Admissions, 2005

### Appendix 8.3 Student Enrolment by Gender in Universities, 2001/2002 - 2005/2006\*

INSTITUTION	Numbers									
	2001/2002		2002/2003		2003/2004		2004/2005		2005/2006*	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
<b>Public Universities</b>										
<b>Nairobi</b>	15,426	9,270	16,200	9,489	16,991	9,720	21,268	11,706	20,940	11,665
Full time	8,724	4,450	9,163	4,428	9,603	4,406	9,987	5,250	9,800	5,325
Part Time	6,702	4,820	7,037	5,061	7,389	5,314	11,281	6,456	11,140	6,340
<b>Kenyatta</b>	6,831	4,984	10,737	4,998	10,753	5,023	11,252	4,803	10,896	4,787
Full time	5,384	3,983	4,972	3,329	5,221	3,495	4,313	2,887	4,356	2,947
Part Time	1,447	1,001	5,765	1,669	5,532	1,528	6,939	1,916	6,540	1,840
<b>Moi</b>	5,469	3,869	6,275	4,549	5,804	4,643	6,796	5,214	6,731	5,314
Full time	4,066	3,179	4,086	3,195	4,107	3,211	4,304	3,195	4,311	3,200
Part Time	1,403	690	2,188	1,354	1,697	1,432	2,492	2,019	2,420	2,114
<b>Egerton</b>	6,816	2,284	6,975	2,387	6,908	2,444	6,351	2,246	6,262	2,236
Full time	6,161	2,053	6,307	2,151	6,207	2,196	5,540	1,960	5,322	1,890
Part Time	655	232	668	236	701	248	810	287	940	346
<b>Jomo Kenyatta(JKUAT)</b>	2,565	1,115	3,184	1,404	3,203	1,454	4,315	1,959	4,207	1,111
Full time	857	339	1,442	613	1,373	624	2,201	999	2,240	1,016
Part Time	1,708	776	1,742	791	1,829	831	2,114	960	1,967	95
<b>Maseno</b>	2,531	1,518	3,505	2,130	3,429	2,178	3,413	2,168	2,826	1,698
Full time	1,922	1,132	2,885	1,736	2,777	1,765	2,660	1,690	2,106	1,240
Part Time	608	386	620	394	651	414	753	478	720	458
<b>MMUST</b>	-	-	-	-	-	-	-	-	775	287
Full time	-	-	-	-	-	-	-	-	420	182
Part Time	-	-	-	-	-	-	-	-	355	105
<b>TOTAL</b>	<b>39,637</b>	<b>23,040</b>	<b>46,875</b>	<b>24,957</b>	<b>47,088</b>	<b>25,462</b>	<b>53,394</b>	<b>28,097</b>	<b>52,637</b>	<b>27,098</b>

\* Provisional

\*\* Revised data on university enrolment inclusive of parallel (part time) degree programmes

Source: Ministry of Education, Science and Technology